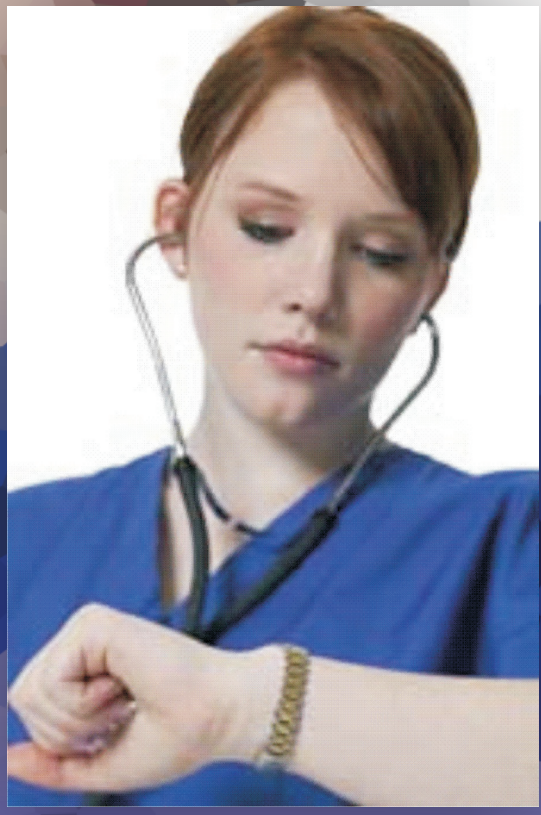
HEALTH



MK - NI 042

AIR POLLUTION AND LEAD IN BLODD – LEAD LEVEL IN CHILDREN'S BLOOD

Period of indicator assessment

- September 2007 – April 2008

Explanation

- Justification for indicator selection

Urban population is exposed at air pollution with lead. Lead is toxic to living beings, including humans. Contact with lead and its compounds and thus exposure to its harmful effect in a form of acute, sub acute and chronic poisoning is possible under various conditions. Non-occupational poisoning occurs under every day living conditions, through emissions released from lead smelters, motor traffic where engines use ethyl containing fuel or from other industrial facilities and craftsman workshops, as well as through transmission from soil in the nutrition chain or drinking water by intake in the organism usually by inhalation and ingestion. In the case of lead intake through food and water children are more sensitive than adults because the lead with them is resorbed up to 59%, while with adults this extent is 10%. In lead intake by inhalation, there is a difference due to respiratory volume amounting 20 m^3/day with adults and only 5 m^3/day with children, and absorption is around 40% with both population groups.

Behavioural and mental retardation problems have been evidenced with children exposed continuously to low concentrations of lead. As a result of the use of lead in water supply pipes, wide use of lead containing dyes, extensive use of petrol with tetraethyl lead and lead particles emissions from zinc and lead smelteries, the lead has become a common pollutant of the environment. When the level of lead in the blood of exposed population is above 15 mg/dl, certain measures for exposure reduction should be undertaken. Children exposed to lead have been proven to suffer from hemoglobin falling at lead level in the blood of 40 mg/dl. Examination of children aged 4 and older with lead levels in the blood below 25 mg/dl showed deficit by 2-3 points for IQ (intelligence coefficient), and at each further increase in lead level in the blood by 10 mg/dl, IQ falling by 2-3 points could be estimated. According to such estimates, the average IQ with lead non-exposed population is 100, while the average IQ with comparable population with 25 mg/dl lead in the blood is only 95.5.

Definition

This indicator tracks the exceedances of guideline values of lead level in children's blood in urban areas. The level of lead in the blood of children in the municipality, region or country is expressed as average value of individual concentrations of lead in the blood in micrograms/ deciliters (μg/dl).

Excess in air quality limit values occurs when the concentration of pollutant exceeds the limit values specified for lead in the Decree on the limit values of levels and types of polluting substances in ambient air and on the alert thresholds, deadlines for the limit values

achievement, margins of limit value tolerance, target values and long-term targets (Official Gazette of the Republic of Macedonia No. 50/20005).

Where there are several limit values (see the section on Policy goals), the indicator uses the most stringent case:

- Lead (Pb): annual limit value in ambient air
- Lead (Pb): level of lead in blood

Units

- Lead (Pb) concentrations in ambient air are expressed in micrograms/m^3.
- Lead level in the blood is expressed in micrograms/dl.

Policy relevance of the indicator

List of relevant policy documents:

The Second National Environmental Action Plan – NEAP 2 (2006) sets the improvement of air quality through reduction of basic pollutants emission as its main priority. The same document specifies two basic measures that need to be taken: to prepare national plan for ambient air protection and strengthen the ambient air quality monitoring and assessment process.

The 1999 National Environmental Health Action Plan identifies the goal of implementation of targeted epidemiological investigations of the health status primarily with vulnerable population groups in health risky areas (Lead and Zinc Smelter - Veles) in terms of air pollution (non-ferrous metallurgy).

Legal grounds

The Law on Environment regulates areas that have direct impact on the quality of air, i.e. should contribute to air emissions reduction. Thus, the Law regulates the issues of IPPC, EIA/ SEA, local environmental action plans and climate change.

The Law on Ambient Air Quality was adopted in August 2004 (Official Gazette of the Republic of Macedonia No. 67/2004) It was amended (Official Gazette of the Republic of Macedonia No. 92/2007) and represents framework law in the area of air. The goals of this Law include: avoidance, prevention and reduction of harmful effects on human health and environment as a whole, prevention and reduction of pollutions leading to climate change, as well as provision of adequate information on the ambient air quality. This Law stipulates adoption of high number of bylaws in accordance with the requirements of the *Acquis Communitaire*.

The same Law, together with the Decree on the limit values of levels and types of polluting substances in ambient air and on the alert thresholds, deadlines for the limit values achievement, margins of limit value tolerance, target values and long-term targets (Official Gazette of the Republic of Macedonia No. 50/05) transposes the requirements of the relevant EU Directives.

To be more precise, the following EU Directives have been transposed in the Law and the Decree:

- Framework Air Quality Directive 96/62/EC on ambient air quality assessment and management
- Directive 1999/30/EC on limit values for sulfur dioxide, nitrogen dioxide and nitrogen oxides, suspended particulate matters and lead in ambient air.

The level of lead in ambient air and lead in the blood of exposed population are defined in the WHO Air Quality Guidelines of 1987 and 2000.

Targets

The Decree on the limit values of levels and types of polluting substances in ambient air and on the alert thresholds, deadlines for the limit values achievement, margins of limit value tolerance, target values and long-term targets specifies the limit values for lead. The WHO Air Quality Guidelines define the guideline values for the lead concentration in ambient air and lead level in the blood of exposed population.

Limit values for the lead concentrations in ambient air and lead level in children's blood

According to the said Decree, with regard to lead the limit value for human health protection has been defined. The limit value should be achieved by 1 January 2012 in the vicinity of specific industrial sources located at places polluted by industrial activities.

- Annual limit value of 0.5 μg/m3 in ambient air.
- Lead level in children's blood below 10 μg/dl.

Key policy issue

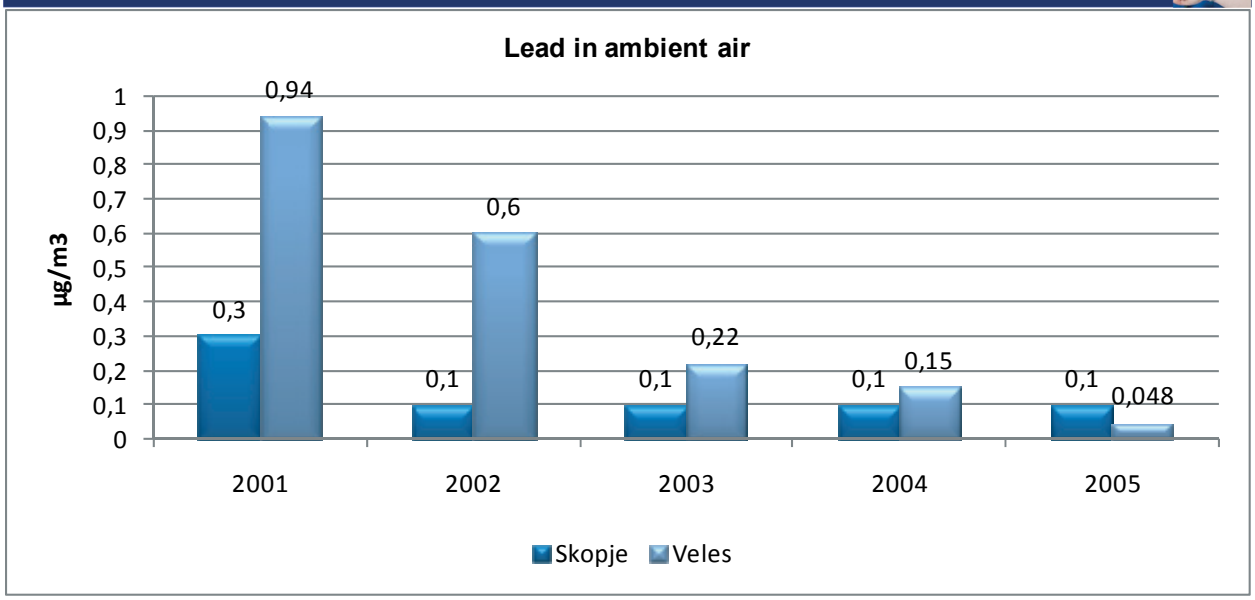
What progress has been made towards reduction of pollutants concentrations in urban environments in order to achieve the limit values for ambient air in urban environments defined in the Decree?

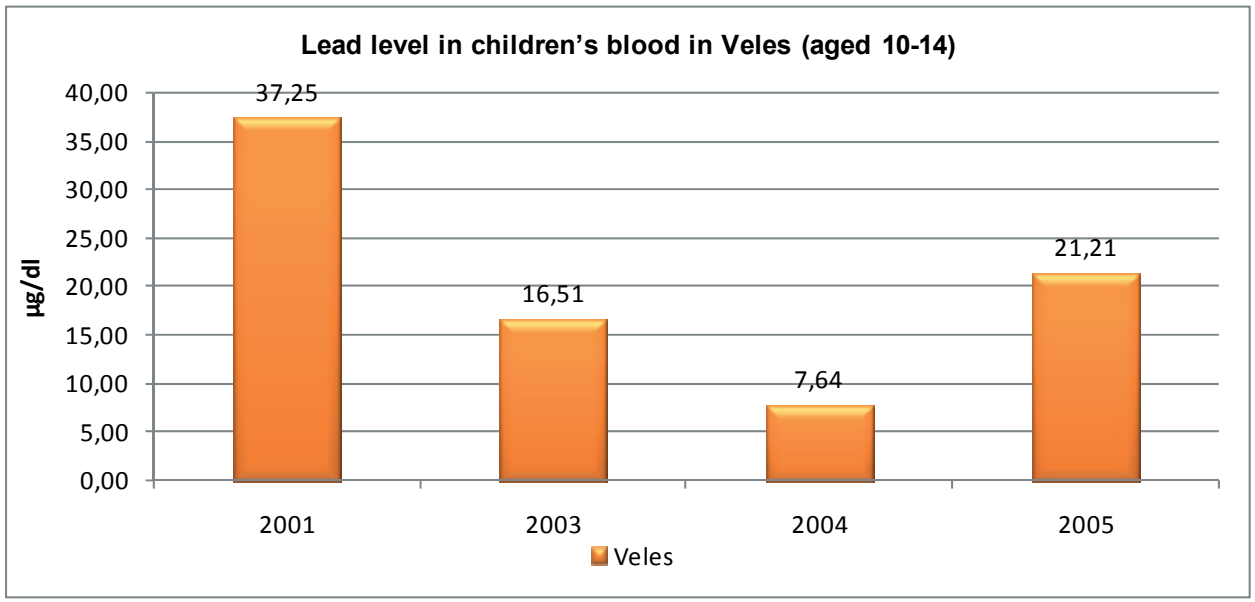
What progress has been made towards reduction of lead level in blood of vulnerable segment of the population, such as children in urban environments defined in the WHO Guidelines?

Key message

Lead - Pb

The lead concentrations have generally reduced since 2001 and excess in limit values of 0.5 μg/m3 in ambient air specified in the Decree has been recorded only in Veles; however, this has not been the case in Skopje with continuously low concentrations significantly below the limit values set for the lead in ambient air.





Assessment

Lead

The lead in the air most frequently originates from lead and zinc ores smelting. The occurrence of high lead concentrations in the ambient air in Veles in the period before 2003 resulted from the emissions released by Lead and Zinc Smelter in Veles.

High difference in lead concentrations in Veles measured in the period 2001-2002 was due to the emissions released by Lead and Zinc Smelter, while lead concentrations in ambient air decreased between 2003 and 2005 as a result of the terminated operation of the Smelter.

The level of lead in the blood of school aged children between 10 and 14 has been falling along with the improvement of the ambient air quality with regard to lead as air pollutant. In the period from 2001 to 2003, the level of blood with children in Veles was in excess of the levels recommended by the WHO. In 2004, when the Lead and Zinc Smelter was out of operation, the recorded levels of lead in school aged children's blood was below the guideline value of

WHO. In 2005, there was another increase in the level of lead in children's blood.

The graphical presentation shows the falling trend in lead concentrations in the ambient air in the period between 2001 and 2005.

The graphical presentation shows the falling trend in the levels of lead in children's blood in the period between 2001 and 2005.

Methodology

- Methodology for the indicator calculation

Lead in ambient air – Pb µg/m^3

For each station located in urban environment, annual lead concentration in ambient air annual limit value of 0,5 µg/m^3) is calculated using available 24 hourly data during entire year. Selected urban stations include stations of the following type: stations measuring the pollution from the traffic, stations measuring pollution from industry and so called urban background stations. The average concentration is obtained by averaging the results from all stations located in Veles. In Skopje, there is only one monitoring station with discontinued monitoring.

Lead in children's blood – Pb/blood µg/dl

Analysis is made on vein blood taken from school aged children between 10 and 14 in Veles and the individual levels of blood recorded have provided the average level of lead in the blood (Guideline value of WHO is below 10 µg/dl). Analysis is made to estimate the level of current exposure of children to lead in urban environment resulting from historical pollution (up to 2003) and pollution caused by traffic.

Data specification

Title of the indicator	Source	Reporting obligation
Excess in air quality limit values in urban areas **Level of lead in children's blood**	IHP Veles RIHP	– European Environmental Agency – Exchange of air quality data based on the Council Decision on the establishment of reciprocal exchange of information and data from all networks and individual ambient air quality measuring stations (97/101/EC). – World Health Organization - ENHIS – Levels of lead in children's blood, according to WHO Air Quality Guidelines, 1987 and 2000.

Data coverage (by years):

Table 1: Average annual concentration of lead in ambient air (average annual value – 0.5 µg/m^3 in Macedonian urban environments

City	Unit	2001	2002	2003	2004	2005
Skopje	µg/m^3	0,3	0,1	0,1	0,1	0,1
Veles	µg/m^3	0,94	0,6	0,22	0,15	0,048

Source: PHI Republic Institute for Health Protection

Table 2: Level of lead in children's blood (Guideline value by WHO is 10 µg/dl)

City	Unit	2001	2003	2004	2005
Veles	µg/dl	37.25	16.51	7.64	21.21

Source: PHI Republic Institute for Health Protection

General metadata

Code	Title of the indicator	Compliance with CSI/EEA or other indicators		Classification by **DPSIR**	Type	Linkage with area	Frequency of publication
MK NI 004	**Excess in air quality limit values in urban areas**	CSI 004 AP14	Exceedance of air quality limit values in urban areas	**S**	**A**	Air quality	Annually
MK NI 042	**Level of lead in children's blood**	ENHIS RP G4_Chem_ Ex1	Blood levels in children	**S**		Health	Annually

Geographical coverage: Republic of Macedonia

Temporal coverage: 2001 – 2005

Frequency of data collection: Data collection by the Public Health Institution (PHI) Institute for Health Protection – Skopje and Veles on ambient air quality with regard to lead concentration is performed on annual basis, sent via mail to the PHI Republic Institute for Health Protection – Skopje.

Data on the level of lead in children's blood is obtained on the basis of examinations conducted by the PHI Republic Institute for Health Protection – Skopje in cooperation with the Institute for Health Protection - Veles. Data on the level of lead in the blood is reported to ENHIS (European Environment and Health Information System).

Uncertainty

- Methodological uncertainty

Generally, data is not representative for the whole urban environment in the Republic of Macedonia. The indicator is subject to changes from year to year, conditioned by the operation of the Lead and Zinc Smelter in Veles. Compared to the defined methodology of the European Environmental Agency, where the indicator is calculated using data only from the so called urban background stations, in our indicator calculation we have used data on ambient air quality with regard to lead content produced by one measuring station in the Municipality of Centre in the City of Skopje, with monitoring of discontinuous type. Such monitoring has not been established in other cities of our country.

- Uncertainty of data

Data is generally not representative for the whole urban environment in the Republic of Macedonia. According to the defined methodology of the European Environmental Agency, only data series from monitoring stations with at least 75% coverage in the course of one year

shall be taken into account in the indicator calculation (or more than 274 valid daily data during one calendar year). In our case, this was not observed in the use of data from the monitoring station in Skopje. Representativeness of choice in the case of monitoring stations in Veles on ambient air quality with regard to lead content complies with the requirements of the EU Directive 1999/30/EC.

Future activities

■ Short-term activities

– Definition of the national set of indicators of air quality and lead level in children's blood.

a. Description of the activity

– Establishment of work group concerning the indicators of air quality and lead level in children's blood.

b. Required resources

– Engagement of national experts from governmental institutions in the area of air quality and health assessment of the level of lead in children's blood.

c. Status

– Early initiative

Deadline: 1 year.

■ Long-term activities

– Long-term activities will be defined by the work group.

MK – NI 043

MORTALITY DUE TO RESPIRATORY DISEASES (J00 - J99) WITH INFANTS

Period of indicator assessment

- September 2007 – April 2008

Explanation

- Justification for indicator selection

Environmental pollution, especially the presence of PM, ozone, nitrogen oxides and sulphur oxides in ambient air of indoor and outdoor environment is a proven factor of adverse impact on human health, specifically on bronchial tubes and respiratory pathways and organs. In this context, children are particularly vulnerable group and morbidity in correlation with air quality has been proven exactly with this population. According to the WHO Review of effects of air pollution on children's health and development (2005), there is a strong causal relationship between air pollution and mortality of respiratory diseases in neonatal period. Although infant mortality caused by respiratory diseases can be also linked with other pathological conditions or factors with infants, it is still used as indicator of environmental burden, i.e. air pollution.

Definition

The indicator shows mortality rate of respiratory diseases (J00 - J99) with infants. In this contents, infants are alive born children aged 1 to 12 months, respiratory diseases are acute or chronic condition of respiratory systems, including acute respiratory infections, bronchitis, pneumonia or influenza (J00—J99). According to data available from epidemiological studies, infants' mortality could be in correlation with the level of air pollution in the environment, along with series of other factors that can influence respiratory diseases mortality and morbidity. Therefore, the indicator is considered useful in the assessment of the load of diseases attributed to ambient air quality.

Units

- Number of deaths per 1000 alive born infants aged between 1 and 12 months.

Policy relevance of the indicator

List of relevant policy documents

The Second National Environmental Action Plan – NEAP 2 (2006) sets the improvement of air quality through reduction of basic pollutants emission as its main priority. The same document specifies two basic measures that need to be taken: to prepare national plan for ambient air protection and strengthen the ambient air quality monitoring and assessment process.

The 1999 National Environmental Health Action Plan identifies the goal of implementation of targeted epidemiological investigations of the health status primarily with vulnerable

population groups in health risky areas (Lead and Zinc Smelter - Veles) in terms of air pollution (non-ferrous metallurgy).

The National Children's Environment and Health Action Plan in which the current children's health profile in the country is presented, identifies the current environmental health risks to children from air pollution, indoors primarily passive tobacco smoking and outdoors, including the lead.

The Handbook – Planning to protect Children against hazards – The Regional Priority Goal III reads: We aim to prevent and reduce respiratory diseases due to outdoor and indoor air pollution thereby contributing to a reduction in the frequency of asthmatic attacks in order to ensure that children can live in an environment with clean air. We aim to achieve a substantial reduction in the morbidity and mortality from acute and chronic and respiratory disorders in children and adolescents."

Legal grounds

The Law on Environment regulates areas that have direct impact on the quality of air, i.e. should contribute to air emissions reduction. Thus, the Law regulates the issues of IPPC, EIA/ SEA, local environmental action plans and climate change.

The Law on Ambient Air Quality – the principle of precautionary and accountable behaviour stipulates that: In the course of activities that may affect the quality of ambient air, everyone shall be obliged to behave in a careful and responsible manner in order to avoid and prevent ambient air pollution and harmful effects on human health and environment as a whole.

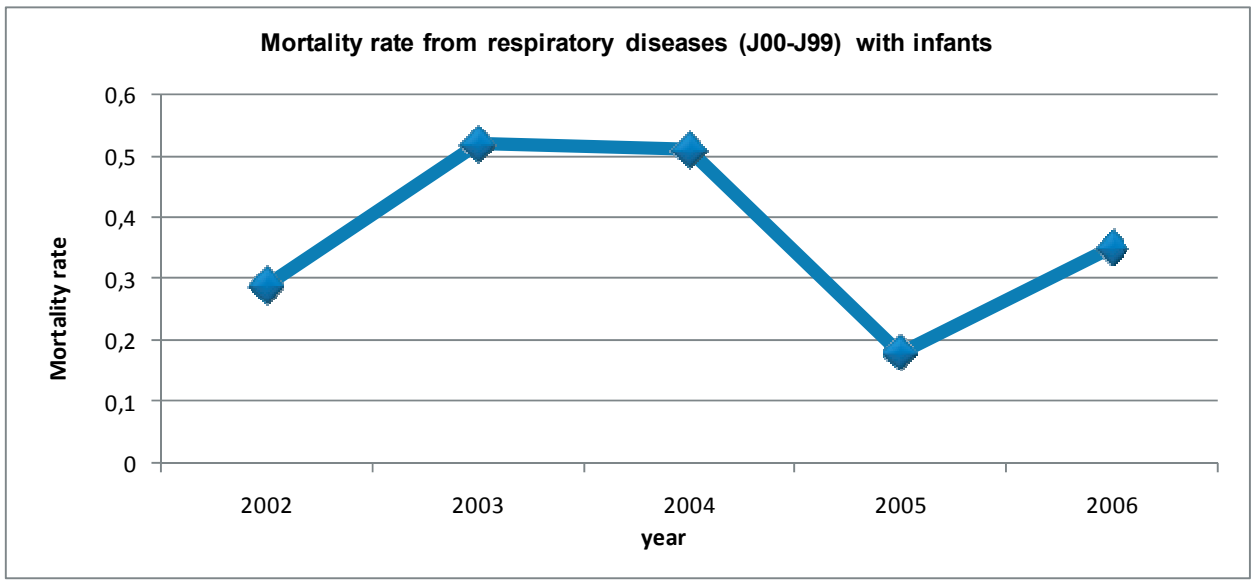
Targets

To reduce the mortality rate from respiratory diseases (J00 - J99) with infants. Or prevent the mortality rate increase.

Key policy issue

What steps have been taken to reduce or prevent the increase in the mortality rate from respiratory diseases (J00 - J99) with infants?

What cross-sectoral policies have been implemented so far in order to reduce respiratory morbidity and mortality with the general population and with infants in particular?



Key message

The mortality rate from **respiratory diseases (J00 - J99)** with infants, in the period 2002 – 2006, ranged between 0.18 and 0.52. The analysis of the trend indicates a variable state in the said period with an evident drop in 2005 which increased again the next year. The increased mortality rate with infants from respiratory diseases can be attributed to exposure at pollutants in the ambient air both indoors and outdoors, while the falling of the rate results from improved conditions and air quality. However, such significant changes in the levels of air pollution were not observed. Different criteria in diagnosis setting and reporting of death and causes leading to it may have had influence on this variable trend. Respiratory diseases with infants are not attributable only to air pollution, but also to biological and genetic factors of infants, presence of allergens, infective agents, nutrition, socio-economic factors and parents' educational background. In some developing countries, other congenital or gained diseases play an important role, such as HIV/AIDS and malaria – all these can have impact on the mortality rate.

The mortality rate is also dependent on the effectiveness of the health care system and availability of health services. Mortality rates from respiratory diseases in developed countries have remained stable for decades, and even reduction in mortality has been tracked despite of the rising morbidity rate.

The analysis of the causes for death with the general population for the period 2003 - 2005 concluded that respiratory diseases as cause for death with the general population held the fifth position with a rate between 3.9 and 3.4, while the rate of conditions appearing in the prenatal period was 1.0.

On the other hand, mortality rate with infants was 11.3 in 2003, 13.2 in 2004 and 12,8 in 2005,meaning that respiratory diseases in infancy had very low contribution to the total mortality of this population.

Methodology

- Methodology for the indicator calculation

The indicator of mortality from respiratory diseases (J00 - J99) with infants is calculated as a rate of infants died from respiratory diseases (J00 - J99) per 1000 infants aged from 1 to 12 months.

Data specification

Title of the indicator	Source	Reporting obligation
Mortality due to respiratory diseases (J00 - J99) with infants	– State Statistical Office	– Every doctor stating death is obliged to fill in the reporting list on the death event, stating the causes for the death and then such data is collected in the national database of the State Statistical Office

Data coverage (by years): 2002-2006

Table 1: Mortality rate due to respiratory diseases (J00 - J99) with infants

Year	2002	2003	2004	2005	2006
Mortality rate	0,29	0,52	0,51	0,18	0,35

General metadata

Code	Title of the indicator	Compliance with CSI/ EEA or other indicators		Classification by **DPSIR**	Type	Linkage with area	Frequency of publication
MK NI 043	**Mortality due to respiratory diseases (J00—J99) with infants**	ENHIS Air_E2	Mortality due to respiratory diseases	**C**		Air Health Traffic Local self-government	Annually

Geographical coverage: Republic of Macedonia

Temporal coverage: 2002 – 2006

Frequency of data collection: annually.

Future activities

■ Short-term activities

a. Description of the activity

– Comparable methods of information collection, classification, description and recording are important in order to facilitate comparisons of mortality. Rising quality and coverage of population by European registers of mortality establish solid basis for the future monitoring activities. National databases with comprehensive data on the overall mortality and specific mortality rates are of vital importance. An important co-indicator is the concentration of individual pollutants in the air, children living in humid homes, children exposed at tobacco smoke, accessibility of health care services, socio-economic data on the family.

b. Required resources

– Multi-sector team composed of national experts in the area of traffic, transport, education, medicine, building with regard to adequate planning solutions of the space, urban and rural development in the context of the public awareness rising and capacity building in relation to this issue.

c. Status

– Activities are underway.

Deadline: June 2008



MK – NI 044

ИINCIDENCE OF CHILDHOOD LEUKAEMIA

Period of indicator assessment

- September 2007 – April 2008

Explanation

- Justification for indicator selection

The causes of childhood leukaemia remain unknown in most of the cases. Certain number of causes and highly suspected risk factors has been identified, but reviews underline that they are responsible only for low number of cases. The known and highly suspected causes include genetic factors (2 – 3% of the cases are connected with Dawn syndrome), exposure to Epstein Barr virus (for certain types of childhood Hodgkin's lymphoma), intrauterine and after birth exposure to ionizing radiation. Infectious diseases may play a role in the aetiology of childhood leukaemia, especially acute lymphoblastic leukaemia (ALL). Delayed exposure to infection in early childhood could result in abnormal reaction leading to leukaemia development. Leukaemia could also be a rare reaction to specific, although not identified infectious agents.

Other risk factors, including environmental factors, have been less clearly identified. International Agency for Research on Cancer has concluded that extremely low frequency (ELF) magnetic fields are possibly carcinogenic to humans, based on consistent statistical associations of high-level residential magnetic fields with a doubling of risk of childhood leukaemia. Several studies have indicated that children exposed to certain dangerous chemicals (benzene, hazardous air pollutants) are at higher risk of childhood leukaemia, where benzene could be possible causal agent. Several works have demonstrated statistical relationship between the risk of childhood leukaemia and exposure to insecticides used in households on plants and green areas and in the lice shampoos.

There are different leukaemia types with different patterns of geographical distribution. Among children aged between 0 and 14 years app. 75% of leukaemia is classified as ALL; in developed countries, this includes 70% of pre B-cell type representing peak occurrence in early phases of life and explains the difference observed in the global standardized incidence of leukaemia between countries. Actually, ALL shows an incidence up to 40 cases per million in Western countries among white population, from 20 to 30 cases per million in Eastern European countries, but below 15 to 20 cases per million in sub-Saharan countries. Second most frequent type of childhood leukaemia is the acute myeloid leukaemia (AML), accounting for 20% of all cases of leukaemia and shows a remarkably stable worldwide incidence of 4-10 cases per million.

The Committee on the Medical Aspects of Radiation in the Environment (COMARE) has reported that the rates of many childhood cancers, including those of leukaemia, are slightly higher in areas with high socioeconomic status compared to more deprived areas. The reason for this is not known. The correlation could be relevant for the differences observed in the results between Eastern and Western countries obtained by ACCIS. Due to the insufficiently

clear causal factors of leukaemia, policies for incidence reduction are difficult to formulate.

Definition

Incidence of leukaemia is the rate of new diagnosed cases of leukaemia defined by ICD-10 codes C90-95 in children aged 0 to 14 years.

Units

- Number of diagnosed cases of leukaemia per 100 000 persons aged 0 to 14 years.

Policy relevance of the indicator

List of relevant policy documents

Leukaemia is often discussed when environmental issues and childhood diseases are considered. The causes of the majority of cases are, however, unknown. As a result, there is a lack both of policies aiming directly at reducing the incidence of leukaemia and of major programmes fostering research into the potential risk factors for leukaemia in Europe.

The new Regulation of the European Parliament and the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) is of relevance. It considers that the carcinogenicity, mutagenic and reproductive toxicity of chemical industrial substances are priority criteria when they are submitted to security constraints and declarations authorizing their use. The target of REACH is to substitute progressively substances that are known to be safer for most carcinogenic, mutagenic and toxic industrial substances. Of further relevance is Council Directive 97/43/EURATOM, which aims to protect patients from excessive exposure to radiation for medical use and ensure that there is minimum exposure during pregnancy and early childhood.

The Second National Environmental Action Plan - NEAP 2 (2006), as its main goal, sets the achievement of environmental quality by which concentrations of pollutants will not lead to significant impacts or risks to human health, establishment of effective system of prevention, control and assessment of health risks in accordance with the requirements of the national and EU legislation, as well as with WHO recommendations, through taking the specific measure of NEHAP review and further implementation, with particular accent on the risks to children's health.

The 1999 National Environmental Health Action Plan, in its section on ionising and non-ionising radiation, specifies the priorities and specific activities that need to be undertaken to reduce negative impacts from these radiations on human health.

Legal grounds

The provisions of Article 89 of the **Law on Chemicals**, section on Overall human health and environment protection, provide legal grounds for the Minister of Health and the Minister of Environment and Physical Planning to order temporary prohibition or restriction of production, distribution or use of hazardous chemicals in case of suspicion that they are harmful for human health and environment.

The Law on Ionising Radiation incorporates provisions concerning the protection of the

population against ionising radiation. The legal person causing ionising radiation, in case of caused release of radioactive substances in the environment, and consequently adverse impacts on human health, shall compensate the damage.

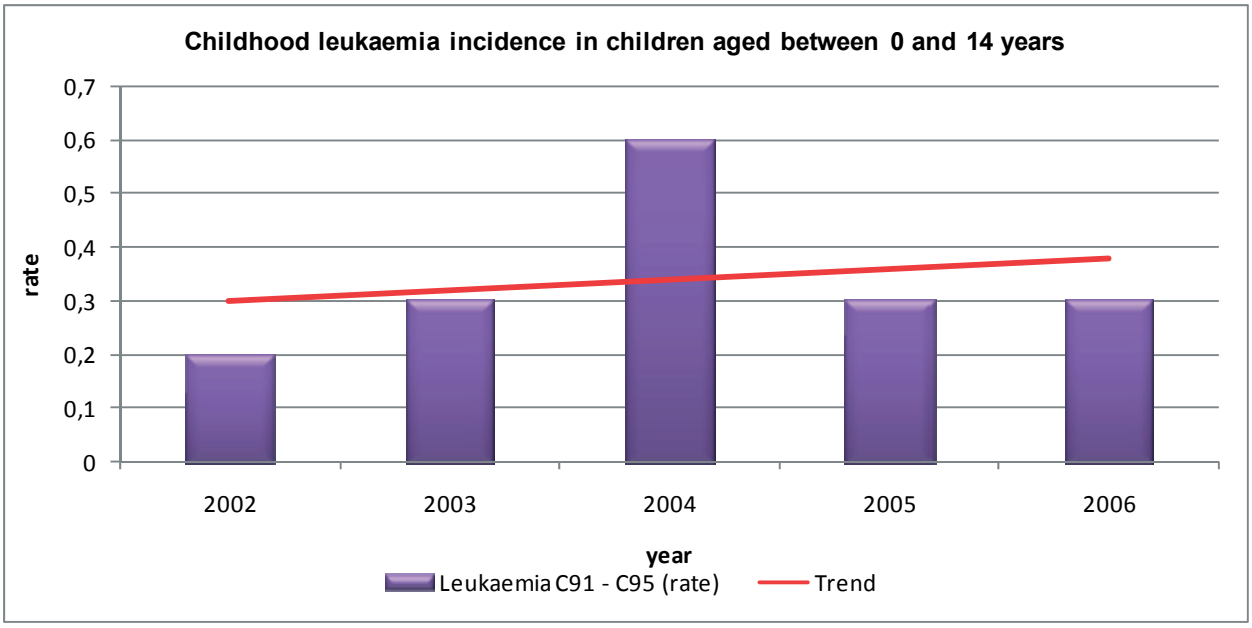
The Law on Non-Ionising Radiation is under drafting and it has been scheduled for adoption by the end of 2008. The draft of this law incorporates provisions concerning particularly the protection of children population against non-ionising radiation during their stay at school, pre-school institutions and hospitals.

Targets

To reduce leukaemia incidence in children aged 0 to 14.

Key policy issue

What progress has been made to reduce the incidence of childhood leukaemia?



Key message

The incidence of childhood leukaemia shows a stable trend in the reporting period 2001-2005, with a peak of the incidence in 2004. During the past several years, environmental management capacity in the Republic of Macedonia has been strengthened in order to reduce exposure to certain agents and thus improve the health of the population.

Assessment

The indicator uses data from the national register of malignant diseases for the period 2001 - 2005. The indicator is based on data on children aged 0 - 14 years.

Considering the fact that causal factors of leukaemia are not clear, policies to reduce incidence are difficult to formulate or have limited effects. For example, policies to reduce exposure to

ionising or electromagnetic radiation potentially prevent only a small portion of leukaemia cases. Therefore, it is necessary to undertake further coordinated research into environmental impacts on leukaemia and environmental/genetic interactions. It is particularly important to monitor childhood leukaemia. National registers with continual follow-up that employ standardized or comparable methods should be universal.

In the context of public health, leukaemia related mortality is an important co-indicator for assessment of the quality of health care system.

Methodology

- Methodology for the indicator calculation

National estimates of incidence rates are standardized to world standard population aged 0 – 14 years: number of new cases per 100 000 person-years.

Data specification

Title of the indicator	Source	Reporting obligation
Incidence of childhood leukaemia in children aged 0 - 14 years	– National Register of malignant diseases	– Every doctor establishing diagnosis of leukaemia is obliged to fill in the reporting list on the malignant disease, and then such data is delivered to Regional Institutes for Health Protection, further delivered to the Republic Institute for Health Protection

Data coverage (by years):

Table 1: Childhood leukaemia incidence in children aged 0-14 years

	2002	2003	2004	2005	2006
Leukaemia C91 - C95 (rate)	0,2	0,3	0,6	0,3	0,3

General metadata

Code	Title of the indicator	Compliance with CSI/ EEA or other indicators		Classification by **DPSIR**	Type	Linkage with area	Frequency of publication
MK NI 044	Incidence of childhood leukaemia	ENHIS RPG4_Rad_E1	Incidence of childhood leukaemia	**S**		Health Waste Consumption of radioactive preparations	Annually

Geographical coverage: Republic of Macedonia

Temporal coverage: 2001 - 2005

Frequency of data collection: annual

Future activities

- Short-term activities

a. Description of the activity

– Comparable methods for information collection, classification, description and registration are important in order to enable comparisons of leukaemia incidence and mortality. Rising quality and coverage of the population by European cancer registers establish solid basis for the future monitoring activities. National registers with comprehensive data on leukaemia are of vital importance.

b. Required resources

– Improvement of human and technical resources for leukaemia diagnostics and treatment. Introduction of measures to reduce exposure to ionising and non-ionising radiations, adequate waste disposal to reduce environmental burden and population exposure accordingly.

c. Status

– Activities are in progress.

Deadline: June 2008.

MK – NI 045

INCIDENCE OF MELANOMA IN PEOPLE AGED UNDER 55 YEARS

Period of indicator assessment

- September 2007 – April 2008

Explanation

- Justification for indicator selection

Melanoma is a malignant transformation of pigment cells (melanocites) in the skin. Most of the melanomas seem to be caused by acute, irregular and excessive exposure to the sun, mainly during childhood, although exposure in adult age also contributes to increased risk factor for melanoma. The light skin prototype (types I and II), high number of birthmarks or atypical and family history of skin cancer are the most frequent predictors of risk for melanoma.

Melanomas occurring in those aged under 55 years seem to be strongly linked to exposure to UV radiation in childhood. These melanomas are often localized on the body trunk (males) and on the legs (females). The fact that melanoma in the elderly occur on the most chronically exposed parts of the body illustrates that chronic exposure is more important for melanomas occurring among elderly people. Melanoma is more frequent among people in the higher socioeconomic layers and among northern European populations. This is probably due to their higher excessive intermittent exposure to UV radiation in combination with a light skin prototype.

The main way to prevent melanoma is to advise people to limit their exposure to the sun by avoiding such exposure during the hours of the day when UV radiation is most intense (approximately two hours each side of the solar noon) and to wear appropriate clothes, hats and sun-glasses. Special attention needs to be paid to children. The use of sunscreen preparations may help to prevent sunburn and skin cancer but may also lead to increased exposure to the sun. Survival is strongly linked to the stage of the disease at diagnosis, which provides a rationale for considering organized screening programmes for melanoma. Since the incidence of melanoma is expected to keep increasing in the future, early detection remains an important strategy to combat the disease. Prevention campaigns carried out in north-western European countries since the 1980s have probably resulted in a decrease in the average thickness of melanomas and stabilization in melanoma mortality in young people.

Definition

The incidence of melanoma in people aged under 55 years is the number of detected cases during one year expressed per 100 000 residents of selected population.

The incidence is obtained by calculating the number of cases on the mean population size during the period considered. The age-standardized rate is calculated using the age groups. The age group considered here are those aged 0–54 years.

Units

- number of cases per 100 000 person-years.

Policy relevance of the indicator

List of relevant policy documents

Melanoma is strongly linked with exposure to UV radiation during childhood and is therefore largely preventable. WHO has launched the INTERSUN Global UV Project to stress the importance of increasing awareness and knowledge about the potential negative health effects of exposure to UV radiation, especially during childhood. This information should be readily available through various channels such as television, radio, campaigns, meteorological websites and in schools. Representatives of the tourism industry can also play a crucial role in minimizing the risks associated with exposure to the sun by disseminating information to their customers and by taking essential measures in tourism facilities and services. A UV radiation index can help to identify appropriate action based on the measured UV radiation levels. Furthermore, the use of sunbeds by children should be strongly discouraged, if not forbidden. The INTERSUN Project recommendations can serve as a framework for an action plan to reduce exposure to UV radiation.

Nevertheless, there are at present few official regulations in most European countries on policies to reduce excessive exposure of children to UV radiation. There are thus major opportunities for developing policy as well as for harmonizing and strengthening efforts to reduce such exposure. National policies to reduce exposure to artificial UV radiation, including regulations for the use of sunbeds by children and teenagers should be implemented in more countries in the WHO European Region.

Excessive exposure to solar UV radiation can best be prevented by regional and local awareness-raising and information campaigns, especially in educational institutions. The aim is to encourage schoolchildren to take measures to protect themselves against the sun.

The Second National Environmental Action Plan - NEAP 2 (2006), in its part on non-ionising radiation, specifies the main targets and measures towards the establishment of effective system of environment protection and control against harmful effects of non-ionising radiation in the Republic of Macedonia.

The 1999 National Environmental Health Action Plan, in its section on non-ionising radiation, specifies the priorities and specific activities that need to be undertaken to reduce negative impacts from this radiation on human health.

The National Strategy for Climate Change, in its part 6.6. Health, provides an overview of climate change impacts on human health.

Targets

To reduce the incidence of melanoma through implementation of cross-sectoral policies aimed at public awareness increase and improved education of the population.

Key policy issue

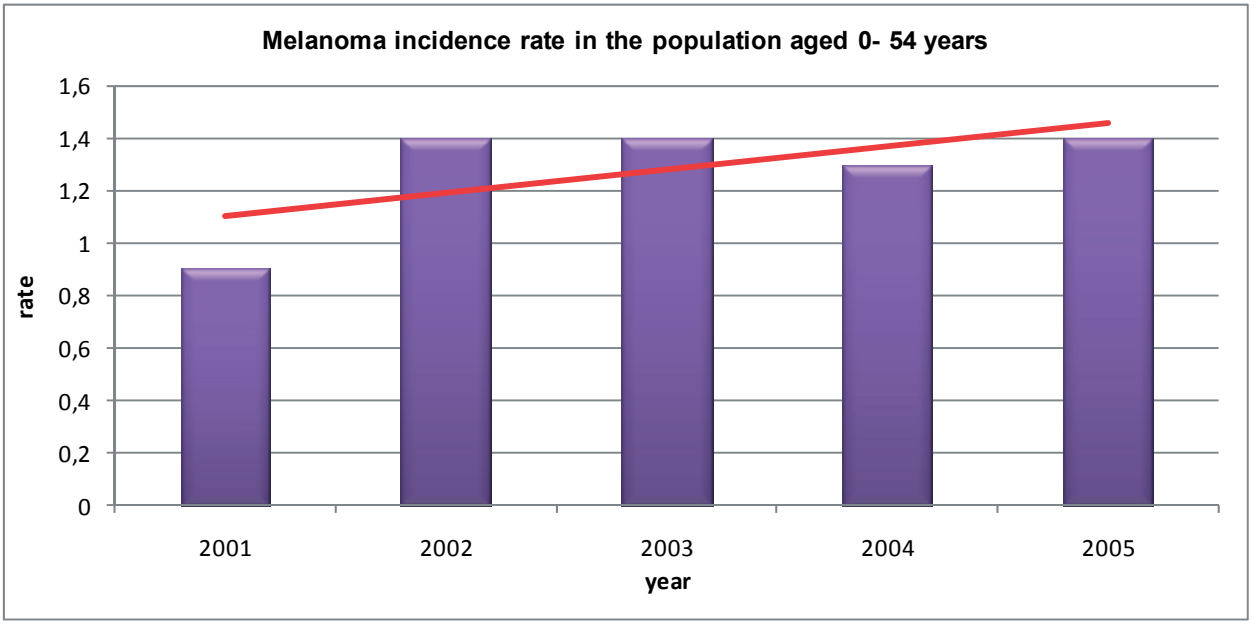
What steps have been taken to prevent the rising trend of melanoma?

What cross-sectoral policies have been implemented so far to reduce the exposure of the general population and especially children, as it seems that the latter population is the most sensitive and exposure during this period of life leads to consequences in later age?

Key message

The analysis of the incidence of melanoma over five year period shows significant rising trend in the 2001-2002 period, which is then retained, but with increased incidence rate. The rising trend is an alarm for taking preventive measures, i.e. protecting the population against UV radiation.

The incidence of melanoma skin cancer in people aged under the age of 55 years in Europe varies considerably between countries. The highest incidence rates are found in northern and western countries and the lowest in southern countries, with rates from three to eight times lower for men and women, respectively. In eastern European countries the incidence rates are low to intermediate. These variations are likely to be linked to specific behaviour (winter holidays, sun-seeking behaviour) as well as to improved diagnoses resulting from better detection of melanoma.



Assessment

The incidence of melanoma ranges between rates of 0.9 in 2001, retained at 1.4 during the follow-up years, which means that it tracks an increasing trend.

Melanoma is one of the cancers with the fastest rates of increase among people in Europe, and this trend has been observed in our country, too. Trends in rates differ between regions: in northern Europe where the rates are high, they appear to have levelled off since the 1990s, particularly among people aged less than 55 years. This seems to be the result of a change in sun-seeking and protective behaviour against UV radiation among the younger generations. In

contrast, in southern and eastern

Europe, as a Region where the Republic of Macedonia belongs, the rates are generally still increasing steeply in all age groups.

The main way to prevent melanoma is to advise people to limit their exposure to the sun. Thus, the national policy should pay greater attention to the prevention of over-exposure to UV radiation during childhood, in observation of recommendations of expert literature and scientific research evidence. This policy approach is supported by the experiences from western European countries. The stagnation, as of 1990s, in previously rising trends in northern Europe among people aged under 55 years supports the conclusion that specific protective activities against UV radiation in these countries have proven effective.

Methodology

- Methodology for the indicator calculation

The incidence of melanoma in people aged under 55 years is calculated as the number of new diagnosed cases of melanoma during one year per 100 000 residents.

Data specification

Title of the indicator	Source	Reporting obligation
Incidence of melanoma in people aged under 55 years	– National Register of malignant diseases	– Every doctor establishing diagnosis of melanoma is obliged to fill in the reporting list on the malignant disease, and then such data is delivered to Regional Institutes for Health Protection, further delivered to the

Data coverage (by years):

Table 1 Incidence rate of melanoma in population aged 0 - 54 years, 2001 - 2005

Year	2001	2002	2003	2004	2005
rate	0,9	1,4	1,4	1,3	1,4

General metadata

Code	Title of the indicator	Compliance with CSI/ EEA or other indicators		Classification by **DPSIR**	Type	Linkage with area	Frequency of publication
MK NI 045	Incidence of melanoma in people aged under 55 years	ENHIS RPG4_U vrd_E1	Incidence of melanoma in people aged under 55 years	**S**		Health Climate change Tourism	Annually

Geographical coverage: Republic of Macedonia

Temporal coverage: 2001 - 2005

Frequency of data collection: annual.

Future activities

■ Short-term activities

a. Description of the activity

– Comparable methods of collection, classification, description and registration of information are important to allow comparisons of melanoma incidence and mortality. The increasing quality and population coverage of European cancer registries are good bases for future monitoring efforts. Complete national data registries for melanoma are of crucial importance. Estimates of mortality from melanoma are an important co-indicator, since melanoma prognosis is strongly correlated with the type of the tumour at diagnosis.

b. Required resources

– Multi-sectoral team composed of national experts in the fields of medicine, environmental health, education, tourism, finance, etc., in order to develop a long-term project aimed at public awareness increase and capacity building with regard to this issue.

c. Status

– Activities concerning diagnosis, recording, data delivery and strengthening the national register of malignant diseases are in progress, as this risk presents a challenge to public health.

– With regard to public education aimed at awareness increase, activities have been undertaking starting in primary education, through daily information via media. Republic of Macedonia, as southern European country, has many sunny days during the year and hot waves during summer season. Thus, HMA informs the citizens on daily basis via the media on the value of UV index. At days with exceptionally high values of UV Index, the RIHP and Ministry of Health address population with information including recommendations for the behaviour in such conditions.

Deadline: June 2008

■ Long-term activities

a. Description of the activity

– Preparation of Strategy for protection against UV radiation and reduction of melanoma incidence, to elaborate in detail all long-term activities and stakeholders to take part in its implementation. Multidisciplinary approach should be the ground for the development and implementation of this strategy.

– Targets to be established in this strategy should take a prominent place in the development of future NEHAPs.

– Capacity building and promotion campaigns on the meaning of UV radiation and its UV Index value, the impact of UV radiation on ecosystems, effects on human health and especially adverse health effects. Protection and prevention measures with regard to adverse health effects.

b. Required resources

– Multi-sector team composed of national experts in the area of traffic, transport, education, medicine, building with regard to adequate planning solutions of the space, urban and rural development in the context of the public awareness rising and capacity building in relation to this issue.

Deadline: December 2010.

MK – NI 046

MORTALITY FROM TRAFFIC ACCIDSENTS WITH CHILDREN AND YOUNG PEOPLE

Period of indicator assessment

- September 2007 – April 2008

Explanation

- Justification for indicator selection

Traffic injuries are leading cause of death for children and young people in the European Region and mortality rates are unacceptably high, recording differences which in certain areas reach as much as eight times. On the other side, intervention measures in certain countries indicate however that injuries attributable to traffic accidents and deaths related to them are preventable, i.e. their rate can be easily be reduced. All this indicates that there is an urgent need to implement safety policies in transport and strategies for injuries prevention. Children and young people constitute a vulnerable group with regard to traffic accidents due to their different psychological and physical features compared to adults. Children under the age of 10 years have limited ability to get along with traffic and thus they are exposed at higher risk in conditions of dense overcrowded traffic, restricted and lower visibility, reduced prediction of the outcome of situations, etc. The risk is further increased when drivers fail to focus on cyclists or pedestrians. In case of accident, children are particularly vulnerable, as their head/torso proportion increases the risk of head injury, and their tallness increases the probability that vital bodily organs are injured in accidents. Traffic accidents lead to post-trauma stress with almost 33% of children, and all this in combination with their risky behaviour, limited experience in traffic and higher sensitivity at alcohol increase their vulnerability.

Environmental conditions contribute significantly to traffic accidents, with attributive fraction being assessed at 25% in European Region. It has been assessed that as much as 35% of traffic accidents is due to environmental conditions, especially to urban planning policies and practice, roads design, traffic congestion and density of population, as well as number of motor vehicles.

Definition

The indicator shows the mortality rate from traffic accidents for children aged 0 - 14 years and young people aged 15 - 24, the trend in a given period and comparison of data on European Region and policy relevance related thereto.

Units

- Number of deaths per 100 000 children aged 0 - 14 years or per 100 000 young people aged 15 - 24 years, respectively.

Policy relevance of the indicator

List of relevant policy documents

The National Children and Environment Protection Action Plan which presents the current health profile of children in the country defines the existing environmental health risks for children for the purpose of their protection against accidents and trauma.

The Guidebook - Planning of Children's Protection against Hazards – Regional Priority Goal II reads: "We aim to prevent and significantly reduce health consequences from accidents and injuries and pursue a decrease in morbidity from lack of adequate physical activity, by promoting safe, secure, and supportive human settlements for all children".

Legal grounds

The Law on Traffic Safety at Roads - This Law regulates the safety and protection on roads; obligations in case of traffic accident; conditions for acquiring the right to drive a vehicle; candidates training for drivers; driving examination taking and checking of driver's ability; checking of vehicles, devices and equipment that are compulsory for the vehicles; dimensions, total mass; axial loading of vehicles and conditions that shall be met by vehicles in traffic; technical check-ups of vehicles; special safety measures; organization and tasks of the safety at roads councils, as well as misdemeanour sanctions and misdemeanour procedure administered with regard to misdemeanours in the field of traffic at road.

Targets

To reduce the mortality rate from traffic accidents with children and young people populations through appropriate intervention programmes, i.e. to prevent the mortality rate increase.

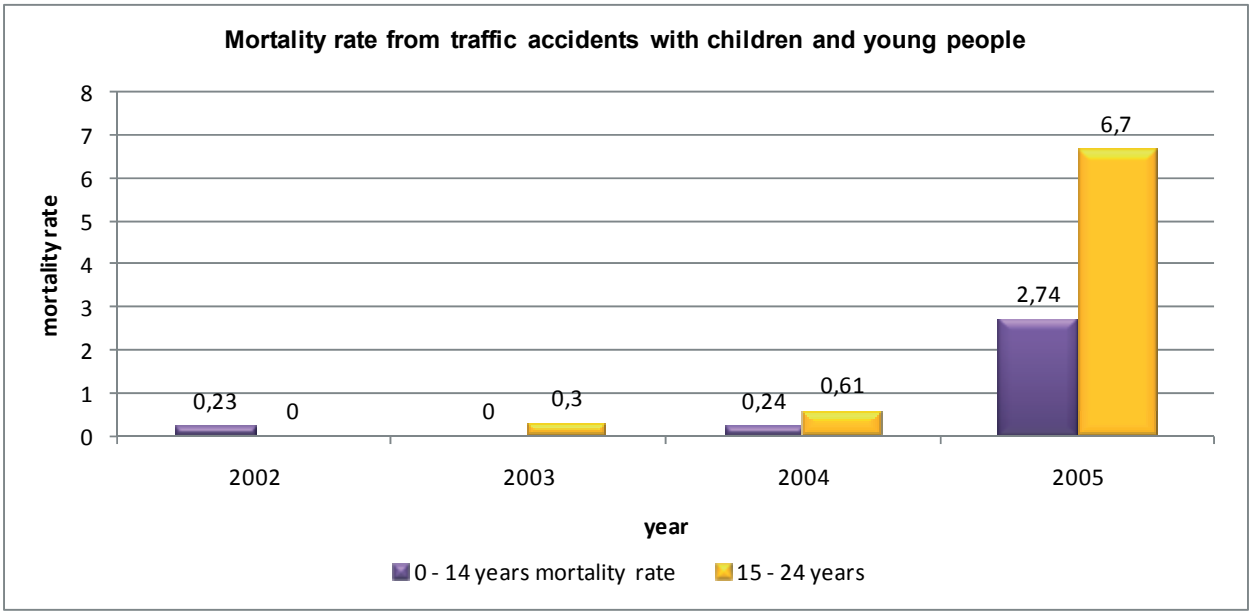
Key policy issue

What steps have been taken to reduce the mortality rate from traffic accidents with vulnerable groups like children and young people or prevent its increase?

What cross-sectoral policies have been implemented to reduce the number of traffic accidents for the general population and especially children population, as it appears that this population is the most sensitive and exposure in childhood results in consequences at later age?

Key message

The mortality rate for children aged 0 - 14 years and young people aged 15 - 24 years was low during 2002 - 2004, ranging between 0 and 0.24 for children and 0 to 0.61 for young people. The rate is relatively low compared to specific mortality rates in other European countries like Greece, Spain, France, Germany. However, there was a rapid increase in 2005, tracking as high as 10 times higher rate, namely 2.74 for children aged 0 - 14 years and 6.7 for young people aged 15 - 24 years. The rapid increase in 2005 could reflect the improved system of reporting of causes of death. Nevertheless, this growth could be a fact indicating the need for introduction of intervention programmes as part of cross-sectoral policies.



Methodology

- Methodology for the indicator calculation

The indicator mortality from traffic accidents (800 and 848) is calculated as rate of deaths attributable to traffic accidents involving persons aged 0 - 14 years and aged 15 - 24 years per 100 000 residents from among the said age groups.

Data specification

Title of the indicator	Source	Reporting obligation
Mortality from traffic accidents in children and young people	– State Statistical Office	– Every doctor stating death is obliged to fill in the reporting list on the death event, stating the causes for the death and then such data is collected in the national database of the State Statistical Office

Data coverage (by years):

Table 1 Mortality from traffic accidents in children aged 0 - 14 years and young people aged 15 - 24 years

	0 - 14 years	15 - 24 years
	Mortality rate	
2002	0,23	0
2003	0	0,30
2004	0,24	0,61
2005	2,74	6,70

General metadata

Code	Title of the indicator	Compliance with CSI/EEA or other indicators		Classification by **DPSIR**	Type	Linkage with area	Frequency of publication
MK NI 046	Mortality from traffic accidents in children and young people	ENHIS Traf_E1	Mortality from traffic accidents	**S**	A	Health Transport Local self-government Physical planning	Annually

Geographical coverage: Republic of Macedonia

Temporal coverage: 2001 - 2005

Frequency of data collection: annual.

Future activities

Short-term activities

a. Description of the activity

- Comparable methods of information collection, classification, description and recording are important in order to facilitate comparisons of mortality. Rising quality and coverage of population by European registers of mortality establish solid basis for the future monitoring activities. National databases with comprehensive data on the overall mortality and specific mortality rates are of vital importance. An important co-indicator is the rate of injuries caused by traffic accidents, considering the fact that the mortality rate is in close correlation with the injuries rate.

b. Required resources

- Multi-sector team composed of national experts in the area of traffic, transport, education, medicine, building with regard to adequate planning solutions of the space, urban and rural development in the context of the public awareness rising and capacity building in relation to this issue.

c. Status

- Activities are underway.

Deadline: June 2008