

POSTER
OF THE REPUBLIC OF MOLDOVA TO THE JOINT EMEP/AMAP
WORKSHOP
on Photooxidants, Particles, and Haze across the Arctic and North
Atlantic: Transport Observations and Models

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Dear Mr. Chairman, Ladies and Gentlemen, Colleagues and Friends!

The Republic of Moldova acceded to the Convention on Long-range Transboundary Air Pollution 9.06.1995.

At the beginning of the 90' the Republic of Moldova had any economical and political problems attaced the period of transition. It is a reason why our country made the duties regarding the Convention no so active. Since 1997 the Republic of Moldova began to develop the activation and signed the two Aarhus Protocols under mentioned Convention:

- Aarhus Protocol on Heavy Metals (24.06.1998);
- Aarhus Protocol on Persistent Organic Pollutants (24.06.1998).

Our country plans to ratify these Protocols during this year.

Also, the Republic of Moldova participated in preparing of the Gothenburg Protocol to the 1979 Convention on Long-range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone, which was signed by Republic of Moldova 23 May 2000 in conformity with stipulation of the art. 14 of mentioned Protocol. In Gothenburg Protocol the Republic of Moldova included our obligations regarding the emission ceilings for sulphur, nitrogen oxides, ammonia and volatile organic compounds for year 2010. This Protocol is universal, multi-pollutants and multi-effects and very complicated from all existing Protocols under Convention LRTAP.

In conformity with article 2 the objective of the Gothenburg Protocol is to control and reduce emissions of sulphur, nitrogen oxides, ammonia and volatile organic compounds that are caused by anthropogenic activities and are likely to cause adverse effects on human health, natural ecosystems, materials and crops, due to acidification, eutrophication or ground-level ozone as a result of long-range transboundary atmospheric transport, and to ensure, as far as possible, that in the long term and in a stepwise approach, taking into account advances in scientific knowledge, atmospheric depositions or concentrations do not exceed critical loads of acidity, of nutrient nitrogen and ground-level ozone for Parties within the geographical scope of EMEP etc.

Actually the Republic of Moldova is not Party of the Gothenburg Protocol, because our country didn't ratified yet this Protocol. Unfortunately, the greatest obstacle of the earlier ratification is the difficult economic situation in which we have been put now. At the same time we plans to ratify the above-mentioned Protocol in further.

1. Country size and short description of the climate:

Country size is 33.8 thousands km² Total population of the country is 4. 300 million inhabitants.

The moderate continental climate of the Republic of Moldova is characterized by mild, short winter, warm, short summer and scarcity of snowfall and rainfall.

The Republic of Moldova is situated in the South-East of the Europe in the zone of the humidity scarcity.

The solar light duration varies in the country from 1940 to 2180 hours.

Air temperature is not stable in the winter. The frequent thaws and the frostiness load negatively on the agricultural crop.

The coldest month of the year is January; temperature ranges $-2.5 \dots -5.5$ ° C. The winter precipitation of 100-140 mm is registered (20 % of the annual amount). Just in 10 % of the winters, the snow layer gets 0.5 min the north regions and 20 – 30 in the central and south ones.

The summer is dry and warm. The hottest month of the year is July. The average temperature of July ranges 19-22 ° C. The temperature on the soil level is 62-66 ° C. In the 60–95 of days, a high air temperature of 25 ° C is registered, over 30 ° C – 10 days/year.

The total duration of air temperature of 25 ° C and higher ranges from 300 to 600 hours.

The rainless periods are typical for the regional climatic regime. The total duration is 66 days in the north and 88 in the south of the Republic.

2. Air pollutants:

As a result of activity of industrial and power plants, as such the traffic's emissions in air, in the nearly laer of soil are ozone concentration, which is the biggest compound of the summer tuft. As it is known, a number of men made pollutants, as nitrogen oxides and volatile organic compounds (VOC), that can affect the photochemical activity, are emitted into atmosphere.

3. Emissions:

Republic of Moldova effectuates calculations of the anthropogenic national annual emissions of pollutants, including ozone precursors in atmospheric air.

Below are showed the table of the anthropogenic national annual emissions of pollutants, including ozone precursors in atmospheric air. Ниже приводятся таблицы национальных годовых антропогенных выбросов прекурсоров озона и их секторального распределения.

The quantitative indexes of anthropogenic national annual emissions in atmospheric air were calculated and presented by State Ecological Inspectorate of the Ministry of Environment and Territorial Development. For calculation of emissions in atmospheric air in the quality of raw data there were used:

- Statistical data regarding production indexes,
- Statistical data of thermo-energetic balance and other official statistical indexes;
- Atmospheric Emissions Inventory Guidebook EMEP/CORINAIR (Russian version published in 1997);
- Greenhouse Gas Inventory Reporting Instructions (in framework IPCC);

In our report emissions data for SO_x, NO_x, NMVOCs, NH₃ for 1990 and emissions ceilings for 2010 are indicated in conformity with annex II of the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone.

Also, we would draw your attention, that since 1993 emission data are presented without registration of data of certain sources, which located on the left side of Dniester river. At the same time in this report the quantitative indexes of anthropogenic national annual emissions from the biggest energetic source of our country – Moldavian electric station (large combustion plant), which is located on the left side of Dniester river are included. There is a large drop in our emission data between 1991 and 1992, that appears due to a considerable decrease in all branches of national economy, import and consumption of combustibles, raw materials and substances. For example in conformity with official statistical data:

- Import of solid combustibles in our country is reduced twice;
- Import of gasoline for automobiles is reduced more than twice;
- Import of natural gas is reduced in 2,5 times and etc.

As resulted from the tables, the emissions comparative with the starting year 1990 are more low, because the little work of the power.

Also, were effectuated certain measures for reduction of the emissions and for stimulation of use of the most ecological technologies and installations:

- The main goal of the Law on the Payment for Environmental Pollution was implementation of the principle “Polluter pays” and stimulation of industrial enterprises in the process of restructuring and privatization. It was made for the implementation of the most economic installations with minimum impact on the environment, and also resources collection for formation of ecological funds for financing of environmental projects.
- There was increased the volume of burning of gaseous fuels in comparison with other types of fuels in the Republic of Moldova in order to reduce the emissions from stationary and mobile sources.
- The import of transport with the exploitation period more than 10 years was prohibited.
- Installations of vehicle refueling vapor recovery equipment at petrol stations.
- Low-NO_x burners are used.
- Romanian standard SR - 176; 1977”Benzines with lead for auto vehicle” was prohibite1998 by Decision of the Department of the Technical Control, Standards and Metrology on the territory of the Republic of Moldova because of the discordance in physic-chemical indexes of European standard EN 228 and State standard 2984 – 77.
- Prohibition of use of leaded petrol was introduced as obligatory requirement for the construction of petrol stations in the cities of Chisinau, Balti and Cahul as a result of examination of projects by State Ecological Expertise.
- There were introduced economic instruments for stimulation of import of unleaded petrol.
- Best management practices such as good housekeeping, preventive maintenance programmes and primary measures such as the enclosure of dust-creating units.
- Prohibition of use of heavy fuel oil high-sulphur, was introduced as obligatory requirement for the construction of certain energetic and other enterprises in the cities of Chisinau, Balti and Cahul as a result of examination of projects by State Ecological Expertise.
- Enterprises under construction or reconstruction are designed according to the legislative acts, ecological and health standards which call for the use of minimum emission technology. The experts performing the environmental appraisal assess whether the right technology has been selected to reduce adverse environmental impact. The Law on Ecological Expertise and Environmental Impact Assessment stipulates that

projects involving the construction of new enterprises or reconstruction of existing ones must make provision measures for reducing emissions in the environment, including atmospheric air, utilizing the best available technology.

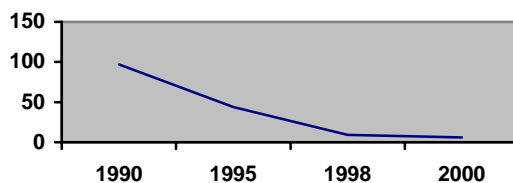
- Multiple BAT requirements are contained in the Law on Protection of Environment and other laws. The Law on Protection of Environment, the Law on Atmospheric Air Protection and the Law on Ecological Expertise and Environmental Impact Assessment require the permit that should be obtained before commencing construction. This permit is a result of examination of projects for the construction of new enterprises or reconstruction of existing enterprises, effectuated by State Ecological Expertise. Also, there are requirements regarding obligatory obtaining of permit for emissions of pollutants in atmospheric air.

- In conformity with national legislative acts and normative documents import and export of harmful products and substances is undertaken in the base of license, given by competent authorities with accord of the environmental protection authorities. The Law on Regime on Harmful Products and Substances stipulated that physical and juridical persons are obliged to take into consideration sanitary requirements and technical norms managing harmful products and substances, including transportation, import and export, and should undertake measures in order to prevent and liquidate harmful impacts on human health and environment.

- A range of provisions of the Law on Wastes of Production and Consumption notes the obligatory character of procedure realization for waste management, including their destruction or disposal, environmental risk minimization or exception of any risk.

The Republic of Moldova effectuated also calculations of solid substances in conformity with a old methods, which were elaborated in Former Soviet Union. Diagram of emissions changes of dust is showed bellow. Unfortunately it doesn't include some emissions data of a range enterprises, a such a household part.

Dust Emissions data in atmospheric air (in thousands tonns)



4. Monitoring of air pollution:

In conformity with information presented by Hydrometeorological Service of the Ministry of Ecology, Constructions and Territorial Development of the Republic of Moldova monitoring of air pollution (solid substances, nitrogen oxides, sulphur oxides, carbon oxides, phenol, formaldehyde) is effectuated in 5 industrial cities (Chisinau, Balti, Tiraspol, Ribnita and Bender) at 16 stationary posts. In conformity with the difficult economic situation monitoring of other substances doesn't effectuated by Hydrometeorological Service. Presently monitoring of VOCs, POPs, HMs and NH₃ air pollution isn't undertaken in our country. Ministry of Health effectuate certain measurements of Benzo(a)pyrene.

Hydrometeorological Service of the Republic of Moldova has one post for monitoring of transboundary air pollution and station posts for observations. At the same time the difficult economic situation, in which we have been put now only selection of samples of atmospheric precipitation with their further analysis in laboratories for monitoring of atmospheric pollution of the Hydrometeorological Service is made. There is a post for the observations on the transboundary long-range pollution, which is functioned since 1987.

Bellow there are the tables of concentrations in conformity with Hydrometeorological Service observations data:

- Of ground-level ozone (1991-1996);
- Of ozone precursors (1991-2000);
- Of dust (1991-2000).

Determination of the Nitrogen oxides effectuate by calorimetric method, of dust – by graviometric method and CO – by with use of the gasoanalyser “Palladii-3” by method of the potentiometric ampereometretion.

5. Assessment of the Critical Loads and Levels:

Republic of Moldova undertakes its first steps in the framework of the International Co-operative Programme on Mapping Critical Loads and Levels.

Following the conclusions and recommendations of two earlier subregional workshops of ICP Mapping National Focal Centres (NFCs) in Eastern Europe, responding to the suggestion of the Executive Body to increase participation of Eastern and Southeastern European countries in effect oriented activities and noting the relevant activities of a number of countries a "Training Workshop on Critical Loads Calculations for Air Pollutants and Mapping in East and South-East Europe" was organized. The meeting held from 22 to 24 March 2001 in Chisinau, Republic of Moldova was jointly sponsored by the Ministry of Environment and Territorial Development of the Republic of Moldova and the German Ministry of the Environment, Nature Conversation and Nuclear Safety. The meeting was co-chaired by Dr. Vladimir Brega and Prof. Vladimir Bashkin and attended by 31 experts from 8 countries (Belarus, Bulgaria, Germany, Russian Federation, Republic of Moldova, Romania, Sweden and Ukraine). The Bureau of the Working Group on Effects (Vice chairman), EMEP (MSE-East) and the ICP Modelling and Mapping were represented. Representatives of the Ministry of Environment and Territorial Development of the Republic of Moldova were also presented. Actually we effectuate the preparation of the publication of the above-mentioned workshop proceedings.