



## Expert meeting on “Implementation of the renewed Air Quality Directive”

### REPORT

**TIME:** May 31- June 1, 2007  
**PLACE:** Kabli, Estonia  
**PARTICIPANTS:** Representatives from Ministry of Environment (Estonia, Latvia, Lithuania); Estonian Environmental Research Centre; Latvian Environment, Geology and Meteorology Agency; Environmental Protection Agency (Lithuania) and municipalities from all Baltic countries as well as an expert from Finland. In total 22 participants (including BEF team).

The expert meeting was organised within the framework of the project titled “Expert meeting: Air Quality” supported by the Estonian Environmental Investment Centre.

#### **WESTERN EXPERT:**

Mr. Harri Pietarila Finnish Meteorological Institute, Finland

#### **GOALS OF THE WORKSHOP:**

- To discuss the current situation in participating countries
- To point out common challenges
- To find potential solutions
- To facilitate ground for co-operation

#### **PROCEEDINGS:**

##### **Thursday, May 31**

##### **Opening of the workshop, by Ms. Ingrida Brēmere, Baltic Environmental Forum, Latvia**

Ms. Brēmere opened the workshop briefly introducing the project, the goals of the workshop and the agenda. Following a small introductory round was carried out among the participants of the expert meeting.

##### **New Air Quality Directive, by Mr. Marek Maasikmets, Ministry of Environment, Estonia**

Mr. Maasikmets gave a short overview of the Thematic Strategy on Air Pollution (COM(2005)446), which was adopted by the European Commission in September 2005 as a result of the EU CAFE (Clean Air for Europe) programme. The main objective of the ambitious Strategy is human health. Following Mr. Maasikmets concentrated on the key elements of the new Air Quality Directive - Directive on Ambient Air Quality and Cleaner Air for Europe (the “CAFE” Directive) (COM(2005)447), which will incorporate the current Directive on Ambient Air Quality Assessment and Management (96/62/EC) and 3 daughter directives. During his presentation Mr. Maasikmets emphasised the need for co-operation.

##### **Discussion**

During the following short discussion Mr. Maasikmets answered the questions of participants. As the new Air Quality Directive is not yet in force it was asked what are the current obligations. Mr. Maasikmets explained that hopefully the new directive will come into force by the end of this year but even if it does not there are current obligations to be fulfilled and he gave the example of PM<sub>2.5</sub> monitoring (measuring average exposure) by 01.01.2008.

Regarding the reduction of PM<sub>2.5</sub> by 59% by 2020 compared with the year 2000 he said that the calculations will be made based on activity data but there is a question of the quality of the databases and he was doubtful if the quality of Estonian database is high enough.

**Implementation of the renewed Air Quality Directive in Latvia**, by *Mr. Armands Plāte, Ministry of Environment, Latvia*

Mr. Plāte started his presentation with briefly talking about CAFE-directive and the Thematic Strategy on Air Pollution. Next he explained the issue of PM<sub>2.5</sub> bringing out that in Latvia the required reduction of it is 17% but having a doubt if EU proposed measures are effective enough to achieve that. In general PM<sub>2.5</sub> has already low levels in all Baltic countries so reducing it even more might become problematic but there is still 10 years to achieve that. Mr. Plāte also pointed out the topic of sustainable costs – does it mean that if costs are not sustainable then the pollution reduction level does not have to be reached? He emphasised that problems might emerge regarding this issue on municipality level.

Mr. Plāte listed some activities that have been carried out in Latvia regarding the New Air Quality Directive:

- Huge improvement in translating the legal text of the directive into Latvian
  - Ca 50% if terms have been changed compared to 2004/2005 translation
- Transposition has started but not much effort is needed as there are not many changes in the structure of the directive
- Monitoring – tough task that needs much efforts
- Currently there is a project being carried out about PM<sub>2.5</sub> - assessing primary sources and prioritising nationally applicable measures for reduction

**Implementation of the renewed Air Quality Directive in Estonia**, by *Mr. Marek Maasikmets, Ministry of Environment, Latvia*

Mr. Maasikmets begun by introducing the legislation that regulates air quality monitoring in Estonia. He brought out that in Estonia there are starting from 2004 2 zones – North Zone and South Zone - and 2 agglomerations – Tallinn and Kohtla-Järve. Before 2004 there were 15 zones (every county was a separate zone) but as many of these had similar air quality conditions then 2 zones were formed (based on real air quality measurements and taking into account emission inventories as well) from which the North Zone is mainly industrial and South Zone mainly agricultural.

Following he introduced shortly the Estonian air quality monitoring network which includes 4 urban stations and 3 background stations. He emphasised that taking into account the requirements of the new Air Quality Directive it can be concluded that Estonia does not need additional stations as the monitoring network is already covered (for fixed measurements). Nevertheless, there is a plan to build 2 new stations (one to North Zone and one to South Zone) and buy new equipment to be ready for monitoring PM<sub>2.5</sub> starting from 01.01.2008. Mr. Maasikmets gave short overview also about other requirements set by the new Air Quality directive – the Average Exposure Indicator, sampling points, compliance with the limit values and contributions from natural sources. He pointed out that regarding the contributions from natural sources no research has been done to find out its share in Estonia.

During the following discussion Mr. Maasikmets pointed out that the main source for PM<sub>2.5</sub> in Estonia is domestic heating. Regarding domestic PM<sub>2.5</sub> he stressed that there is an uncertainty regarding activity data and Estonia mainly has statistical data but a project is planned in frame of which domestic heating is assessed (which boilers, wood used etc).

He also brought out the issue of conflicting policies → energy production (i.e. promotion of burning wood) versus greenhouse gases (burning wood causes PM).

**Air Quality Management in Finland**, by *Ms. Tarja Lahtinen, Ministry of Environment, Finland and presented by Mr. Harri Pietarila, Finnish Meteorological Institute, Finland*

Mr. Pietarila started his presentation by stressing that the Finnish Ministry of the Environment sees also the need for co-operation. He brought out that the basic act in Finland for air quality is the Environmental Protection Act, which states 3 main levels of authorities – Ministry of the Environment, regional environment centres and municipal environmental protection committees - and their main responsibilities. He said that regional environmental centres co-ordinate air quality assessment whereas municipalities are

doing the real work (actual measurements). Mr. Pietarila then shortly described Finnish Meteorological Institute, which is the expert organisation on air quality in Finland.

Following Mr. Pietarila introduced briefly the measures Finland has taken to improve air quality including emission standards, fuel quality standards, environmental permits, local and regional programmes and action plans, economic instruments, Air Pollution Control Programme 2010 (can be found from <http://www.environment.fi> > environmental protection > air pollution control).

Mr. Pietarila stated that the main problems in Finland regarding air quality are:

- Local air quality
  - Urban areas – traffic, small-scale wood burning etc.
  - Industrial locations – pulp and paper industries etc.
- Acidification – lakes, terrestrial ecosystems

Mr. Pietarila also said that the air quality objectives in Finland are regulated by two types of Finnish guidelines – non-compulsory guide values (not binding, used in city planning and environmental permit procedure) and legally binding limit values (identical with EC directives). He stressed that the limit values to be attained by 2005-2010 may require further abatement measures. Currently there are limit values for PM<sub>10</sub> and NO<sub>2</sub> but not for PM<sub>2.5</sub> – for that the values will be set later.

Regarding zoning Mr. Pietarila explained that in Finland there is different zoning for different pollutants – health based limit values (all but benzene), limit values for ecosystem and vegetation protection and ozone, metal and benzo(a)pyrene target values.

Mr. Pietarila brought out that the main PM<sub>10</sub> contribution during wintertime comes from winter sand and Helsinki has applied winter sand derogation since 2003 – the plan was submitted in 2004 and approved by the Commission in 2006.

Mr. Pietarila finalised his presentation by talking more specifically about implementation of the renewed Air Quality Directive in Finland. He pointed out that the renewing was initialised during the Finnish presidency but as it is not yet in force then not much has been done regarding it. Nevertheless, he listed some issues for example Preliminary Air Quality Assessment for PM<sub>2.5</sub> including analysis of existing data, additional measurements, dispersion modelling, defining number and location of urban background stations, zone definition and measurement programme. He stressed that it is not decided yet if the real measurements will start on 2008 or 2009 and also brought out that there is a lack of PM<sub>2.5</sub> data near industries (metal) and also small-scale wood burning data.

### Discussion

It was discussed that in Baltic countries and also other countries there is only one zoning system not like in Finland (different zoning for different pollutants) and that different zoning might not help having comparable data in EU level (which is the idea of the directive). It was brought out that zoning is not only measuring but also management and depends on national legislation. It also includes large amount of reporting including new requirements for reporting which Finnish do not like.

Regarding winter sanding derogation plan Mr. Pietarila explained that it is made to show that this is a major PM<sub>10</sub> source and also includes a plan how to avoid exceeding. Exceeding is allowed 35 times per year but in Finland the average is 60-70 times (depends on winter). The report to EC about winter sand derogation in Helsinki was prepared by the city of Helsinki with help of expert institutions as in Finland the municipality is responsible.

### Plenary discussion

During the plenary discussion 3 issues were raised – legislation, PM<sub>2.5</sub> and compliance with limit values. Each country was asked what has been done so far regarding these topics and what still has to be done. The results of the discussion are presented in following 3 tables.

## LEGISLATION

Country	What has been done?	Still to do
EST	<ul style="list-style-type: none"> <li>• Draft text</li> <li>• Preliminary assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Change Ambient Air Act</li> </ul>
LAT	<ul style="list-style-type: none"> <li>• Draft text</li> <li>• Zoning</li> </ul>	-
LIT	<ul style="list-style-type: none"> <li>• Draft text</li> </ul>	<ul style="list-style-type: none"> <li>• Transposition</li> <li>• Preliminary assessment on a way</li> </ul>
FIN	<ul style="list-style-type: none"> <li>• Preliminary assessment</li> <li>• Existing directives are implemented</li> </ul>	<ul style="list-style-type: none"> <li>• Regarding new directive nothing has been done yet</li> </ul>

## PM<sub>2,5</sub>

Country	What has been done?	Still to do
EST	<ul style="list-style-type: none"> <li>• Tallinn – 1 station since 2007</li> <li>• 1 industry station</li> <li>• Preliminary measurements</li> </ul>	<ul style="list-style-type: none"> <li>• 2008 - 2 more stations</li> <li>• Upgrading of 1 station</li> <li>• Estimation of chemical composition</li> </ul>
LAT	<ul style="list-style-type: none"> <li>• Riga agglomeration– 2 stations</li> <li>• Transboundary pollution stations - 2</li> <li>• Pollution from road traffic</li> <li>• Measures for reduction</li> </ul>	<ul style="list-style-type: none"> <li>• Preliminary assessment</li> </ul>
LIT	<ul style="list-style-type: none"> <li>• Measurements in 4 cities: one in each Vilnius and Kaunas agglomeration and two in zone</li> </ul>	<ul style="list-style-type: none"> <li>• Rural background stations</li> </ul>
FIN	<ul style="list-style-type: none"> <li>• 9 measurement stations</li> <li>• 1 city background station</li> <li>• Chemical composition measuring only in 1 station</li> <li>- Research</li> </ul>	<ul style="list-style-type: none"> <li>• 3 rural background stations</li> <li>• 1 city background station</li> </ul>

## COMPLIANCE WITH LIMIT VALUES

Country	What has been done?	Still to do
EST	<ul style="list-style-type: none"> <li>• Mainly Tallinn has problems</li> <li>• PM10 – Tallinn</li> <li>• NO2 – near to annual limit value <ul style="list-style-type: none"> <li>- Will be future problem in Tallinn city centre</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• MoE responsible for making action plans – nothing done yet</li> <li>• Changing legislation to give responsibilities to municipalities</li> </ul>
LAT	<ul style="list-style-type: none"> <li>• Action plan and programme in Riga for PM10 and NO2 – exceedings only in Riga</li> </ul>	-
LIT	<ul style="list-style-type: none"> <li>• PM10 in all zones/agglomerations</li> <li>• O3 in some cases</li> <li>• NO2 episodes in some zone cities</li> </ul>	<ul style="list-style-type: none"> <li>• Municipality plans are in force to reduce → results not yet</li> <li>- Only for PM10</li> </ul>
FIN	<ul style="list-style-type: none"> <li>• PM10</li> <li>• NO2 – in Helsinki</li> <li>• Heavy metals – target values</li> </ul>	<ul style="list-style-type: none"> <li>• Action plan for Helsinki</li> </ul>

**Implementing the renewed Air Quality Directive requirements in Lithuania**, by Mr. Juozas Molis, Environmental Protection Agency, Lithuania

Mr. Molis began by explaining that in Lithuania there is one zone (whole country) and 2 agglomerations (Vilnius and Kaunas). He said that regarding the number of sampling points there is only one city

background station missing for Kaunas agglomeration for fixed measurement of concentrations of SO<sub>2</sub>, NO<sub>2</sub>, NO, PM<sub>10</sub> and PM<sub>2,5</sub>, Pb, benzene and CO but there is a plan to have it in 2008. All other sampling points correspond to the requirements of the directive. He also presented the state monitoring programme for the year 2007 and air quality data for the year 2006, which shows that in 2006 Lithuania had problems with PM<sub>10</sub>, ozone and episodes of NO<sub>2</sub>.

Regarding the implementation of the renewed Air Quality Directive Mr. Molis brought out some actions that are carried out during current year (2007) – for example wet precipitation collector for rural background stations and air quality plans for agglomerations. He also pointed out that bigger cities already have these plans for PM<sub>10</sub>.

Following Mr. Molis listed the gaps regarding existing Lithuanian network, the requirements of the directive and the concrete problems –

- Rural background
  - PM<sub>2,5</sub> automatic measurements
  - Chemical composition - also complicated, even though quite good equipment is existing that is not the only thing that is needed
- Agglomerations and zone
  - Contributions from natural sources – big problem, discussions are needed and it has to be shown how to do as there are no such research stations in Lithuania as in Finland
  - Ozone precursor substances – automatic analyser is planned to be bought this year
  - City background station in Kaunas agglomeration
  - Average Exposure Indicator – complicated issue
- National laboratory
  - Accreditation according to EN/ISO 17025 by 2010 – only 2,5 years left and it is still not clear how to do
  - Demonstration of equivalence - methodology exists but needs lots of monetary sources

#### Discussion

During the following short discussion the issue of accreditation of measurements was raised. It was brought out that this might be the topic for co-operation. In Finland there is accreditation for reference laboratories, in Estonia the laboratory is accredited but not yet the sampling part (no actual standard yet and Estonians cannot design it themselves as there is no capacity for that). The Estonian direction is to accredit laboratory + network by German accreditation body – for Estonian Environmental Research Centre and in future also for air laboratory. It was also stressed that there is a lack of experts who could do national accreditation.

#### **Monitoring in Estonia**, by Mr. Erik Teinmaa, Estonian Environmental Research Centre, Estonia

Mr. Teinmaa gave a short overview of the legislative background of the monitoring in Estonia. Following he talked more specifically about zones and agglomerations in Estonia (since 2002 – designated according to administrative county borders - and 2004 – based on the real air quality measurements and emission inventories) bringing out the positive and negative aspects of both systems. He pointed out that if there is an exceeding for example in one point of South Zone then there has to be made an action plan for the whole zone not only to that concrete area. He also brought out that the responsibility of the zones is not yet set – which county is responsible of North/South zone.

Mr. Teinmaa described the Estonian national air quality monitoring network consisting of 4 urban background stations from which 3 are located in Tallinn and one in Kohtla-Järve and 3 background stations located in Vilsandi, Lahemaa (both EMEP) and Saarejärve. In addition there are 17 precipitation monitoring sites across the country. Mr. Teinmaa also presented mobile laboratories, which emission measurements are used for issuing new pollution permits or for inspection of the existing permits. Additionally in Estonia are used displaceable containers to check EDBs and solving causes of specific pollution episodes and locations of pollution sources (i.e. locating them nearby industry for at least 2 weeks – electricity limits possible locations). There are 2 new such containers that have been designed and manufactured in Estonia. In addition to national air quality monitoring network there are 8 automatic air quality monitoring stations also owned by industry (located mainly around Tallinn).

Regarding preliminary assessment of air quality Mr. Teinmaa explained that most regions have problems with PM levels and the levels of other pollutants are rather low (except NO<sub>2</sub> levels in traffic junction of cities that might cause possible problems with annual limit value in future). He stressed that based on the current data Estonia will use existing zoning also for PM<sub>2.5</sub>. He also pointed out that the 2 weeks for preliminary assessment are actually not enough to give an overview for whole year.

To conclude Mr. Teinmaa listed the actions planned to be able to fulfil the requirements of the new directive –

- New PM (both PM<sub>10</sub>/PM<sub>2.5</sub>) stations for North Zone (Narva city) and South Zone (Tartu city)
- Upgrading Lahemaa EMEP background station to Level II
- PM<sub>2.5</sub> analyser to Kohtla-Järve agglomeration
- Modelling adequately PM levels – a critical prerequisite to meet the requirements of the directive

### Discussion

During the discussion it was brought out that in United Kingdom there is flexible zoning system, which means that if a problem emerges then one additional zone will be formed until the problem is solved. In Finland air quality monitoring is responsibility on municipality level even in case of a large zone. In Estonia on the other hand the Ministry of Environment is responsible although they want to make the changes in legislation in order to give some responsibility also to municipalities.

### **Monitoring in Latvia**, by Aiva Eindorfa and Tamara Vasiljeva, *Latvian Environment, Geology and Meteorology Agency, Latvia*

Ms. Eindorfa explained that in Latvia the air quality monitoring network falls under two main categories – regional network featuring the region that is involved in activities under international monitoring programmes and national network of 11 sites of local air quality monitoring in 8 cities. There are also 2 background stations in Zoseni and Rucava.

Ms. Eindorfa gave a short overview on the history of air quality monitoring in Latvia and also described the Air Quality Observation Network in Riga city consisting of 6 stations from which 2 are traffic stations. She also pointed out that in Latvia the DOAS (different optical absorption spectroscopy) has been picked out as basic instrument for continuous monitoring of gaseous components in the air.

The following actions are carried out during 2007 in order to comply with the requirements of the new directive:

- PM<sub>2.5</sub> measurements in four towns – Riga, Ventspils, Liepaja and Rezekne
- PM<sub>2.5</sub> measurements at rural stations – Rucava and Zoseni

During the following discussion the representatives of Estonia were interested if the data of the air quality monitoring station in Aluksne (near Estonian - Latvian border) might be available also for Estonian side and it was confirmed by Latvian side to be possible.

Also a question rose regarding DOAS. It was brought out that as DOAS is not a reference method then how the equivalence is/will be presented to the new Air Quality Directive. This was said by the Latvian side to be something still to think about.

SM200 Particulate Analyser with PM10 Head manufactured by: OPSIS AB P.O.Box 244 S-244 02 Furulund Sweden has been assessed by Sira Certification Service and for the conditions stated on this certificate complies with: MCERTS Performance Standards for Continuous Ambient Air Quality Monitoring Systems, Version 5 (May 2007). Certificate No: Sira MC 070109/00.

### **Air Quality Assessment in Finland - Measurements**, by Mr. Harri Pietarila, *Finnish Meteorological Institute, Finland*

To begin with Mr. Pietarila gave a brief overview about the history and aims of preliminary assessments of ambient air quality in Finland. He also explained that there is one agglomeration in Finland – Helsinki Metropolitan Area - and 13 zones (based on Regional Environmental Centres). He also pointed out that there is different zoning for different pollutants.

Mr. Pietarila also brought out that Finland has a long history regarding air quality measuring – more than 30 years. The first pollutant to be measured was SO<sub>2</sub> and during last 2 years the number of measurements of PM<sub>2.5</sub> have risen. In total there are about 150 measurement stations located in 70 municipalities and 35 different measurement networks. Also continuous real time measurements are carried out in 120 stations in 60 municipalities. Local environmental authorities operate municipal stations in Finland. He also pointed out that not all received data is officially reported to EU.

Regarding PM<sub>10</sub> (60 measurement stations) and PM<sub>2.5</sub> (9 measurement stations) measurements in Finland Mr. Pietarila explained that they have quite good coverage for PM<sub>10</sub> although in Lapland there is no continuous PM measuring in urban areas – and there should be taking into account that there are too many in the rest of Finland. For PM<sub>2.5</sub> there is a need to have stations in eastern part of the country. He brought out that in Tampere Finnish own method is used for measuring which is not optical but includes 10 different size categories.

To conclude Mr. Pietarila brought out the preliminary conclusions regarding PM<sub>2.5</sub> concentrations in Finland:

- PM<sub>2.5</sub> annual averages are below 15 µl/m<sup>3</sup> in all over Finland so they have no problem in meeting the limit value
- Long range transport has main contribution to PM<sub>2.5</sub> levels
- Major local emission sources are transportation and small scale wood burning (organic carbon coming from wood burning constitutes about 50% of PM's chemical composition), also industry in some places
- Last summer there were highest PM levels because of the forest fires

As a final remark Mr. Pietarila stressed that it is challenging task to reduce urban background concentration levels in Finland by local or national measures.

#### Discussion

During the discussion Mr. Pietarila was asked about the different responsibilities of the 35 different air quality monitoring networks → different data quality. He explained that Finnish Meteorological Institute (FMI) is doing the intercomparison measurements (this year for PM<sub>2.5</sub>), also giving guidance and training courses. He also pointed out that all networks have their own databases but FMI also gets the data.

#### **Study visit**

During the expert meeting a study visit was organised to Maxit Estonia AS factory Fibo ExClay, which is situated in Häädemeeste. The factory produces ExClay - the versatile lightweight aggregate and blocks made of it for buildings and infrastructure. It is an environmentally friendly product composed of natural clay and has a long life span.

Following are listed some reflections from the participants regarding the study visit –

- Problems with energy
- Trying to improve (green energy)
- No “problems” – so excellent company
- Smell problems – animal waste (bone powder)
- New monitoring system – 18-20 parameters monitored, bought from Finland
- During sunny days – dust problems on the territory
- No respirations for people
- They have permission to burn all wastes they have (also sludge but they are not yet doing that)

#### **Air Quality Assessment in Finland – Dispersion Modelling**, by Mr. Harri Pietarila, Finnish Meteorological Institute, Finland

Mr. Pietarila gave a brief overview on different modelling systems used by Finnish Meteorological Institute including:

- Weather prediction models – i.e. ECMWF, HIRLAM RCR, HIRLAM MBE, Arome LAPS
- Dispersion models – long-range, regional – i.e. SILAM LTR, HILATAR LTR

- Aerosol process models – much research regarding these has been carried out recently and these also allow to include secondary particulates – MONO32, UHMA
- Dispersion and effects models – urban, local – i.e. combined CAR-FMI and UDM-FMI, ESCAPE

Following Mr. Pietarila gave different examples of modelling based on PM<sub>2.5</sub> concentrations in Helsinki metropolitan area. He also pointed out that modelling tool is used quite intensively in Finland, also for city planning.

As a one example of using dispersion modelling Mr. Pietarila shortly described the research project PUPO for small-scale wood burning and air quality in the frame of which emissions of wood burning in real situations were measured and emission factors were defined.

He also brought out that for PM<sub>2.5</sub> transboundary aspect is important and in Finnish case there are uncertainties regarding Russian side.

As forest fires have been a very important topic in Finland in recent years then Mr. Pietarila gave an example of operative model for forest fires. He described in more detail the operational model SILAM, which is publicly available but needs HIRLAM or other weather forecast model to support it. More information regarding SILAM can be found from the webpage <http://silam.fmi.fi/> (in English).

Mr. Pietarila also talked briefly about the national air quality portal, which collects data and info about current situation and showed how it works. This portal was launched in the mid of May by Finnish Meteorological Institute.

To conclude Mr. Pietarila introduced in few words co-operation projects with other countries i.e. with St. Petersburg, Botnia Uruguay, Macedonia and Lithuania.

#### Discussion

During the following discussion Mr. Pietarila answered several questions regarding the project where the emissions of small-scale wood burning of private houses were measured. He explained that developing of the sampling method needed the most effort. Regarding the use of the same technique in other countries he brought out that the technique is not commercial but the results are publicly available. As in the frame of that project emission factors were defined then the question was raised regarding the possibility to use them also for other countries but Mr. Pietarila stressed as they depend on wood (its moisture etc.), boilers and other factors then probably applying them directly is not advisable.

#### **Air Quality Management System in Estonia**, by *Mr. Erik Teinmaa, Estonian Environmental Research Centre, Estonia*

Mr. Teinmaa begun with introducing the main goals of Estonian Air Quality Management System (AQMS) – national obligations to EU, planning activities and assessment, informing public. He explained that Air Quality Management is an endless loop of Ambient Air Quality Monitoring Data, Emission Databases and Air Quality Modelling. The principle of the system is that based on meteorology and emission inventories the levels of air pollutants are calculated using dispersion modelling. Calculated levels are then compared with measured values and if these two are different the emission sources are checked by measurements.

Following he brought out the responsible institutions in Estonia and what their role is. He also presented the scheme of National AQMS. Estonian AQMS is based technically on AirViro software (Swedish software) and there are 7 models in Estonian system currently (soon there will be also the odour model). Following he described in more detail the AirViro software which is Internet based application including emission database module, data collection and presentation module and dispersion module with series of models i.e. wind model, grid model, heavy gas model etc.

Mr. Teinmaa then brought out in more detail the international, national and other obligations that Estonia has regarding air quality and stressed that using current AQMS helps to comply with these obligations. He also pointed out the main threats to Estonian AQMS - problems with the input data, the important role of County Environmental Departments and local authorities regarding the overview of real situation on local level and long-term financing of the system and legal obligations (not yet under law).

Mr. Teinemaa summarized his presentation by saying that Estonian Air Quality Management System enables assessing and management of air quality throughout the Estonian territory and the information about air quality and pollution episodes can be found from <http://mail.klab.ee/seire/airviro> (in Estonian).

### Discussion

During the following discussion it was asked why local authorities are seen as a challenge and Mr. Teinemaa explained that at the moment there is no clear legal act stating that local authorities have to use and insert data to the AirViro system as there are also other databases, which might not be compatible to AirViro. It was pointed out that even though in Latvia and Lithuania is used Enviro software, Riga also uses AirViro software. In Lithuania there is also one German model introduced, it is an open model, which still needs to be adopted, and one UK model as the modelling topic is ongoing in Lithuania.

It was also mentioned that Estonia is starting the forecasting modelling (HIRLAM) and in Latvia there is nothing planned regarding that topic yet.

### Plenary discussion

At the end of the day each country delegation was asked to assess the importance of given pollution sources from the viewpoint of PM. The results are following -

#### **Origin of PM**

XXX- very important

XX- important

X- moderate

0 - not important

? - no info

**X** - Lithuania

**X** - Latvia

**X** - Estonia

**X** -Finland

Pollution source	PM <sub>2.5</sub>	PM <sub>10</sub>
Natural (sea spray, forest burning)	<b>XX</b> <b>X</b> <b>XXX</b> (episodes) <b>X</b>	<b>XX</b> <b>XXX</b> <b>XX</b> (episodes) <b>X</b> (episode <b>XXX</b> )
Combustion (large, small plants)	<b>XX</b> <b>X</b> <b>XX</b> <b>XX</b>	<b>XX</b> <b>X</b> <b>XX</b> <b>XX</b>
Domestic (fire place)	<b>XXX</b> <b>XX</b> <b>? XX</b> <b>XXX</b> (cold period)	<b>XX</b> <b>X</b> <b>? XX</b> <b>XXX</b> (cold period)
Transport	<b>X</b> <b>X</b> <b>X</b> <b>XX</b>	<b>XX</b> <b>XX</b> <b>XXX</b> (including re-suspension) <b>XXX</b>
Transboundary (from neighbouring countries)	<b>X</b> <b>XX</b> <b>X</b> <b>?</b>	<b>X</b> <b>X</b> <b>?</b>
Long-range transboundary	<b>X</b> <b>X</b> <b>?</b>	<b>X</b> <b>X</b> <b>?</b>
Agriculture (secondary)	<b>X</b> <b>X?</b> <b>0</b> <b>X</b>	<b>0</b> <b>X</b>
Salting & sanding	<b>XX</b> <b>X</b>	<b>XX</b> <b>XXX</b> <b>X</b> <b>XX</b>

It can be concluded that for PM natural, domestic and combustion pollution is quite important for all countries. Regarding domestic pollution it was pointed out that awareness raising of inhabitants is essential in the sense of what they are burning. For PM<sub>10</sub> important are also transport and salting/sanding. Most unclear are still transboundary and secondary agricultural pollution. In general the trend seems to be quite common for all countries so the question was raised if that could be used for experience exchange.

It was stressed that research is really needed in each country as EU does not accept using other country's data but methodology agreements are possible.

## **Friday, June 1**

**Air Quality Programs and Plans in Helsinki Metropolitan Area**, by Mr. Jari Viinanen, City of Helsinki, Finland and presented by Mr. Harri Pietarila, Finnish Meteorological Institute, Finland

Mr. Pietarila introduced the Air Quality Programmes and Plans in Helsinki Metropolitan Area including –

- Air Quality Program in the Helsinki Metropolitan Area – the general plan which has regional activities and includes also cities of Espoo, Vantaa and Kauniainen
- City of Helsinki Air Quality Action Plan - long-term objectives for i.e. public transport, urban planning etc.
- Readiness Plan for Regional Public Transport in the Metropolitan Area for NO<sub>2</sub> episodes – that was the first plan made in Helsinki regarding air quality
- City of Helsinki Readiness plan for serious air pollution episodes (includes administration readiness plans) – gives guidance in the situation where the concentrations of some pollutants rise rapidly

Following Mr. Pietarila described more specifically the readiness plan for traffic based NO<sub>2</sub> episodes (one episode in 5 years approximately) stressing that the third state of the readiness – full readiness – has never been used in Helsinki. He pointed out that the detailed plan includes clear instructions for different administrations regarding how to act in case of different levels of concentration.

Mr. Pietarila also gave an example of an operations model in the street dust episode situation which main action is sprinkling with weak salt solution, which prevents the dust from coming away from the streets. He emphasised that there are a lot of studies carried out for salt concentrations. He also said that sprinkling is not a cheap solution but this also shows that air pollution is taken seriously in Finland.

The examples of operations model during smoke and fine particle episode, “Normal” long-range transportation and forest fires, major fires, strong smell of smoke in large areas were briefly introduced.

Mr. Pietarila brought out the 3 main problems of the Helsinki Metropolitan Area regarding air quality –

- NO<sub>2</sub> episodes (mainly traffic emissions) – 1 time in 5 years (2-3 days in a row then), plan exists
- Spring dust episodes – almost every year (PM<sub>10</sub>↑), also smaller cities have that problem, plan exists
- Transboundary air pollution episodes – every second year, last year – forest fires, plan exists

## **Discussion**

During the following discussion Mr. Pietarila explained that readiness plan was made first and some parts of it are included to Programmes and Plans. Readiness plan is binding for the city but he was not sure if EU legislation affects it.

Regarding the possible problems with sprinkling and nature protection he said that there has been made a research on the effects of salting (to avoid slippery) and he stressed that CaCl is only used for episodes not continuously.

**Air Quality in Riga: Monitoring results 2006, indicated problems**, by Mr. Jānis Kleperis, Riga City Council, Latvia and presented by Mr. Armands Plāte, Ministry of Environment, Latvia

Mr. Plāte started his presentation by giving a short overview on the history of Air Quality Management in Riga. He pointed out that even though the Air Quality Protection Division was founded at Riga City Council in 1992 there were also some actions taken in air quality field earlier. Then he described the air quality monitoring network in Riga (2005) – location and the type (traffic, city background or industrial pollution) of

the stations and measured substances. As an example he also showed the monitoring results of some stations/some pollutants.

Following Mr. Plāte indicated the air quality problems in Riga regarding SO<sub>2</sub>, PM<sub>10</sub> (exceeding), NO<sub>2</sub>, benzene and O<sub>3</sub>.

He stressed that the main polluter of air in Riga is traffic bringing out that in 2003 total amount of NO<sub>2</sub> was 3725 t/y, CO – 4238 t/y and benzene 47 t/y.

Mr. Plate also gave an overview of the Air Quality Action Plan for Riga where different activities were stated as 9 activities with appropriate budget and time schedule. As the Action Plan also includes informing people then he introduced one public inquiry made in 2006 where people were asked if they are interested in air quality – 54% of 946 respondents said that they are.

There are different ways how citizens of Riga are informed about air quality of Riga –

- Using AQI – Air Quality Index – in press – [www.agenda21riga.lv](http://www.agenda21riga.lv)
- Online data (renewed hourly) – [www.riga.lv](http://www.riga.lv)
- Using lights on 2 air monitoring stations for O<sub>3</sub> and NO<sub>2</sub> where green → good and red → bad

To summarize he said that in Riga air quality is tightly connected with traffic, that air quality is taken into account in city planning (in the new City Development Plan for 2006-2018) and that the activities stated in the Action Plan are distributed between different projects and depend only from budget facilities of Riga city.

The problem of understaffing was raised during the following short discussion and it was brought out that –

- In Helsinki in general 10 people are working with air quality issues
  - Air Quality Department of Ministry of the Environment - 5-8 people work on measurements, collecting data
  - Helsinki city's Environmental Centre – 2-3 people
- In Riga – additionally 4 are needed
- In Tallinn – 1 person
- In Vilnius – 2 people

#### Plenary discussion

During the plenary discussion all countries were asked about air quality plans and programmes in municipalities –

- Main problems in cities regarding air pollution
- What has been done?
- What could be solutions?

#### **Estonia**

The problem regarding plans and programmes is wider – not only air quality but in general –

- As air quality is in state level then local authorities do not have expertise
- In case of exceeding local government has to do a plan but they try to avoid it (difficult to make, costly)
- In case of long-term bad situation state has to do a plan and does not even have to include local government in plan-making
- The main problem is the legislation
- Regarding monitoring the law is tricky – there is state, local government and industrial monitoring but it is not stated when it must be done - same problem is also in Latvia

In Tallinn there is a plan to do plans. The main achievement was some years ago when a city regulation was issued about central heating system → houses had to start using it (if they did not earlier) in case it existed. Regarding traffic – dangerous areas are calculated (for city Master Plan) and city also heavily supports public transport system (trams etc.).

In Tallinn also an environmental fund was established to get money for different environmental issues and monitoring.

## **Lithuania**

Municipalities in co-operation with Regional Environmental Departments who have to implement these prepare plans and Programmes. There are problems with the co-operation but that does not depend on bad legal acts but institutional co-operation.

The law says that municipalities are responsible for own monitoring (costly) but 1 or 2 stations do not give good quality data. Examples of Panevezys and Vilnius were given regarding monitoring.

Vilnius – does not have problems with co-operation between different institutions and next year there will be a programme for air pollution for next 10 years. At the moment they only have an action plan for PM<sub>10</sub>, as it is a problem.

Also Kaunas has an action plan for PM<sub>10</sub>.

## **Latvia**

Ventspils (44 00 inhabitants, 6<sup>th</sup> largest city in Latvia) in general does not have exceedings so they also do not have a special action plan for air quality. They do have the Environmental Policy Plan in which one part is action plan for different issues not only air quality. They also have a readiness plan for port activities/terminals but not for the whole city.

Regarding co-operation it was said that state institutions/agencies have sometimes problems. State is also responsible for measurements and monitoring.

## **Finland**

The main problem is from where to get money for monitoring as they do have ca 150 stations. Solution might be financing by industries and energy companies

### **Air quality problem in Kohtla-Järve area, by Mr. Erik Teinmaa, Estonian Environmental Research Centre, Estonia**

Mr. Teinmaa presented a practical example of using modelling (SO<sub>2</sub>, H<sub>2</sub>S) based on the case of Kohtla-Järve. He began with shortly describing the problem - continuous complaints about air quality and especially bad smell since 2003. As there were only indicative H<sub>2</sub>S measurements in the area then it was not possible to track down possible sources of pollution and according to air pollution permits everything was within the limit values. To solve the problem in 2004 continuous monitoring of H<sub>2</sub>S started. Possible polluters were oil shale processing plant and water treatment plant and based on mapping it was clear that the latter was main polluter but oil shale plant also had impact. As a result the air pollution permits will be revised and a new modelling will be carried out based on the revised emission data.

Similar project is currently ongoing near Tallinn (Muuga) where are 13 different oil terminals and modelling will help to identify the ones to cause problems.

During the following short discussion it was clarified that the Ministry of Environment initiated the project after local people sued the Ministry of Environment. The Estonian Environmental Investment Centre financed the actions.

Mr. Pietarila commented that in Finland industry would have had to finance it so the final conclusion was that PPP (Polluter Pays Principle) does not always work in practice (at least not in Baltic countries).

### **Survey among participants: Mapping of topics**

All participants were handed out stickers and asked to state 1-3 topics of interest regarding air quality issues.

The results were following:

- Origin of the PM<sub>2.5</sub>, PM<sub>10</sub>
- PM origin measurements
- PM measurements
  - Demonstration of equivalence
  - Intercomparison measurements
- PM<sub>2.5</sub> and PM<sub>10</sub> chemical composition
- Workshop on PM<sub>2.5</sub> sources and measures for emission limitation

- Workshop on establishing of PM<sub>2.5</sub> cap and reduction target
- PM10 measuring in emissions
- Rural background stations, PM
  - Co-operation possibilities – EST, LAT, LIT
- Experience exchange on sampling methods
- Domestic heating
  - PM
  - Emission coefficient
  - Co-project
- Impact of emissions from domestic heating systems to the air quality
- Monitoring (emissions)
- Monitoring network
- Derogation of winter sanding
- Solving VOC (volatile organic compounds) problems
- VOC and smells
- Intercomparison measurements
- New NEC directive (2008)
- Implementation of directive requirements on Hg measurements
- Regular meetings between Baltic + Finland, co-operation on different topics (PM intercomparison measurements, domestic heating and PM emissions etc)
- Compare and determine emission factors
- Dissemination of AQ data
  - Baltic AQ portal
  - AQ index
- Air quality action plan
  - How to involve industry to municipality action plans?
- AQ dispersion modelling
- Transboundary pollution
- Inventory improvement

#### Next steps

Firstly, as the need for regular meetings was foreseen, the topic of next meeting was discussed – it was proposed to have the next meeting next time in next country and it was suggested to have it in Latvia as this time it was organised in Estonia. Possible financing sources for organising such expert meeting would be –

- Estonian Environmental Investment Centre for Estonia
- Latvian Environmental Protection Fund for Latvia
- Structural funds for Lithuania
- Funding from Finland is possible in case there is funding also from Baltic side (it is not possible to get whole funding only from Finland)

A possibility that experts will pay themselves and only organising is needed was suggested.

It was stressed that the meetings should be on expert level not in high political level.

Secondly, the issue of common webpage with real-time data was brought up. The comments were following:

- Information would have to be renewed continuously → needs agreements (political level) not only making the website
  - Estonia - would be ready to give data
  - Lithuania – too complicated and does not see a point for that as such information can be easily found from Lithuanian webpages
- Transboundary issues could be seen there
- Directive says that public has to be informed but what is then the target group of the website – wider public or experts? Suggestion was to target it to experts at first as they need an overview of general situation and common public would need more concrete information about their own cities.

It was also pointed out that if there will be similar platform in EU level (and there should be in future) then in regional level it is not needed.

Following the need for exchange platform was discussed and from Latvian side it was commented that people already are overloaded and adding information takes time, the idea itself is good as in our small

countries there are not so many experts so such platform might be needed but the experts who would contribute to it are already overloaded.

So it should be thought regarding the exchange platform -

- Is there a real need?
- What is planned on EU level?
- If it is needed the who will maintain it later?

To conclude the discussion it was agreed that there will be discussion among BEF Group about the next steps with an aim to write a small project first in Latvia and then in Lithuania (similarly to the Estonian one) and the possible topic for next meeting could be PM.

Also setting of the meeting was discussed (having much plenary discussion instead of working groups) and it was agreed that such setting is efficient as in case of such small countries experts usually work with different topics and separation to different groups might be difficult.

## CONCLUSIONS

- The new Air Quality Directive is not yet adopted at European Union, however Member States are obliged to take some actions (monitoring of PM<sub>2.5</sub>)
- In meeting set targets - taking into account different policies (air quality/energy production/climate change) will be essential to avoid conflicting situations
- The monitoring systems are set in each county but additional stations are necessary to fulfill new requirements in all countries
- In establishing of origin of PM, its composition is very important factor, however methodologies still have to be defined
- Municipalities should have significant role in air quality management, although in many cases the responsibilities are not clearly defined
- Successful co-operation among countries could be developed for solving common air quality issues (methodology development, accreditation of monitoring systems)

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