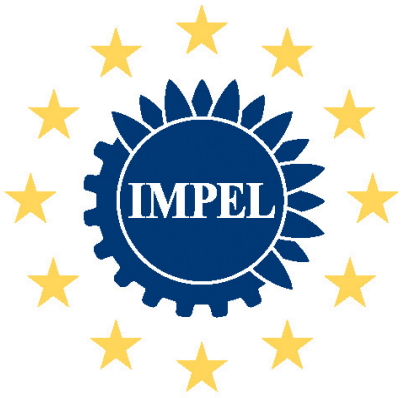
PIAQ

Comparison Programme Implementation Air Quality standards and industrial air emissions

Final report: **June 2012**



European Union Network for
the Implementation and Enforcement
of Environmental Law

Introduction to IMPEL

The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) is an international non-profit association of the environmental authorities of the EU Member States, acceding and candidate countries of the European Union and EEA countries. The association is registered in Belgium and its legal seat is in Bruxelles, Belgium.

IMPEL was set up in 1992 as an informal Network of European regulators and authorities concerned with the implementation and enforcement of environmental law. The Network's objective is to create the necessary impetus in the European Community to make progress on ensuring a more effective application of environmental legislation. The core of the IMPEL activities concerns awareness raising, capacity building and exchange of information and experiences on implementation, enforcement and international enforcement collaboration as well as promoting and supporting the practicability and enforceability of European environmental legislation.

During the previous years IMPEL has developed into a considerable, widely known organisation, being mentioned in a number of EU legislative and policy documents, e.g. the 6th Environment Action Programme and the Recommendation on Minimum Criteria for Environmental Inspections.

The expertise and experience of the participants within IMPEL make the network uniquely qualified to work on both technical and regulatory aspects of EU environmental legislation.

Information on the IMPEL Network is also available through its websites at: http://impel.eu

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Executive summary:

On paper looking at ***permitting*** there seems to be a level playing field in the European industrialized areas. In general BAT is required everywhere for new installations. However looking at ***enforcement*** big differences can be seen. This is where the level playing field ends. In two workshops information from a questionnaire was used to find a list of 'Best Practices'. In collaboration with all the participants the good practices were ranked using the scoring criteria and a plenary discussion.

Disclaimer:

This report is the result of a project within the IMPEL Network.

Contents

Summary

Over the past few years the air quality directive and its daughter directives have been implemented in the EU Member States. A limited scope study in 2009 showed that directives have been implemented in practice in different ways by the different IMPEL Member States**.** These different practices could lead to different air quality management activities with respect to permitting and enforcement of sector industry. The goal of this programme is to learn form each other and find out which permitting, control or enforcement strategies can lead to the best air quality. To gather information and identify best practices in permitting and enforcement and the effects on emissions by the main sectors of industry within a city/region or country a questionnaire was sent to all the IMPEL members who might be interested to participate in the PIAQ project. All the IMPEL members that returned the questionnaire were invited to take part in the first workshop.

The overall conclusions of the questionnaire and workshop are:

- All Member States have fully implemented the EU directives.
- Industries need to comply with BAT and have to monitor air emissions themselves in all Member States The industries may choose an accredited laboratory to perform this monitoring.
- Most Member States do not have specific permits for ambient air quality. In order to improve the air quality it is better to focus on the emission of pollutants than on the air quality itself.
- When the authorities would like to improve the air quality, and therefore the industry has to do better than BAT, it is important to get the industry involved voluntarily because the authorities can't ask for more than BAT. To get the industry involved voluntarily the discussions with the industry (and public) should start in an early stage.
- Air quality is measured in all Member States. However the automated systems are different for each Member State.
- The measurements are used for enforcement. But not all Member States make optimal use of the measurement data.
- Air quality modelling is hardly used to forecast the short term ambient air quality.

There seems to be a level playing field in regards to the implementation of the air quality directive. However in most Member States legislation used for permitting and enforcement had no link to the air quality directive. The same European legislation is used for permitting, and permitting is done in roughly the same way. On paper looking at ***permitting*** there seems to be a level playing field in the European industrialized areas. In general BAT is required everywhere for new installations. However looking at ***enforcement*** big differences can be seen. This is where the level playing field ends.
To use the information gathered through the questionnaire and the first workshop to assign 'Best practices' with regard to the implementation of air quality regulation a second workshop was organised. During the workshop a sensitivity analysis on the list of 'Best Practices' and the criteria was conducted. This sensitivity analysis resulted in the final list of 'Best Practices'
In collaboration with all the participants the good practices were ranked using the scoring criteria and a plenary discussion.

The **5 top-ranking** best practices have been described in more detail. IMPEL members now have information on these best practices, what is needed to implement these best practices,

roughly what the effect of these best practices are and who already has experience with these best practices.

1	**Tailor-made enforcement** In order to apply the available manpower for enforcement in the most efficient way, a strategy of so called tailor-made enforcement is formulated. Companies with good compliance records are checked only once a year, other companies more reguarlarly.
2	**Reduce emission from others sources** An operator may agree on a treaty that forces the operator to reduce emmissions from other sources, when a permit for a new installation is only possible under strict requirements.
3	**Administrative penalties for repeated non-compliance** When operators aren't fulfilling conditions in permits repeatedly, inspectors can impose higher fines or let the operator to reduce production until compliance.
4	**Check in pre-permit phase** In the pre-permit discussions between permitting authorities and companies are used to make sure that all requirements can be achieved. This leads to the prevention of non-compliance.
5	**Code of operation** Complaints about odour from agricultural air pollution sources has led to a code of operation, using a mutual agreements on reference techniques, reducing ammonium emissions.

Introduction

General context

Air pollution has long been recognized as posing a significant risk to human health and the environment. In 1996 the Air Quality Framework Directive was adopted which established a Community framework for the assessment and management of ambient air quality in the EU. The Framework Directive also provided a list of priority pollutants for which air quality objectives would be established in daughter legislation. There have subsequently been four daughter directives in respect of particular pollutants and a Council Decision on exchange of air quality monitoring information.

- The Council Directive 96/62/EC on ambient air quality assessment and management (“Framework Directive");
- Council Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air ("Second Daughter Directive");
- Directive 2000/69/EC of the European Parliament and of the Council relating to limit values for benzene and carbon monoxide in ambient air ("Second Daughter Directive");
- Directive 2002/3/EC of the European Parliament and of the Council relating to ozone in ambient air ("Third Daughter Directive");
- Council Decision 97/101/EC establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within the member States, ("Exchange of Information Decision");

In 2005 the EU directive on ambient air quality and cleaner air for Europe was proposed and approved later (2008/50/EC).

The air quality directive and its daughter directives have been implemented in EU member states over the past years. In 2007, an earlier IMPEL project (with Austria as lead partner) made it possible to exchange expertise in licensing of installations in ambient air polluted zones, based on an inquiry in some member states. A limited scope study in 2009 showed that directives have been implemented in practice in different ways in different IMPEL member states. Contacts between experts in these countries confirmed these differences, leading to different air quality management activities with respect to permitting and enforcement in sectors of industries, traffic and shipping. In this project only industrial emissions were taken into account. The goal of this programme is to learn form each other and find out which permitting, control or enforcement strategies can lead to the best air quality.

Objectives and scope

IMPEL aims are to improve implementation and enforcement of environmental legislation by Member States. Within this project Member States will intensively exchange information and will continue to develop their expertise and good practices on implementation (control and enforcement) of air quality directives in practice. To realize this aim the ‘Comparison Program on the implementation and enforcement of Air Quality standards in relation to industrial air emissions (PIAQ)’ has been established. The main objective of the project is:

Identify best practices in the application of (implementation, control and enforcement) EU Air Quality Directives in relation to industrial air emissions.

The objectives will be achieved by:

1. Exchange of information on implementation of the Air quality directives related to industrial air emissions by means of an questionnaire and a workshop.
2. Identify best practices in control and enforcement and its effects on emissions by main sectors of industry.
3. Assess the effectivity of the different practices, plans and programs on the ambient air quality.
4. Identify the common EU best practices.
5. Making available these best practices to all IMPEL member states.
6. Drafting of project report containing findings, conclusions and recommendations.

The research has only been conducted in within IMPEL Member countries with industrial zones. Which countries took part in the program is described in chapter 2.

To achieve the objectives the project is divided in to two phases:

Phase 1: Exchange of information and experiences on key regulatory issues

Phase 2: Identify best practices in inspection and enforcement of industries, performed at the local, regional and national level, improving environmental effects in IMPEL member countries.

DCMR Environmental Protection Agency has given DHV the task to make comparisons within the PIAQ project. How these comparisons are made and what the results and conclusions are, are described in this report.

Part 1 Project management

This part describes the project, the delivered products and the lessons learned.

1.1 Phase 1 (2010) and phase 2 (2011)

The PIAQ core team consists of members of DCMR Environmental Protection Agency, greater Rotterdam area, The Netherlands, Czech Environmental Inspectorate, Czech Republic and ARPA della Lombardia, Italy. As stated in the introduction, the PIAQ project consisted of two phases. The first phase focuses on the exchange of information and experiences on key regulatory issues. The second phase has as the objective to identify best practices in the inspection and enforcement of industries.

Phase 1
In this phase a questionnaire was sent to all the IMPEL Member States with industrial zones. The questionnaire was prepared in a core-team meeting in the Netherlands. The list of all the IMPEL members contacted can be found in Annex II. The questionnaire can be found in Annex III. In a workshop on 14 and 15 June 2010 in the Czech Republic the results of the questionnaires were discussed. The workshop was chaired by Jana Šestakova (Czech Republic) and Koen de Kruif (the Netherlands). The questionnaires and the conclusions of the workshop were processed in a benchmark report " EU benchmark air quality, Implementation of the air quality directives in industrialized areas" in 2010. A list of participants can be found in Annex IVa. The benchmark report can be found on the IMPEL-website, this benchmark report is the basis of this final report.

Phase 2
The second phase consisted mainly of a workshop, using the benchmark report, to assign 'Best practices' with regard to the implementation of air quality regulation. On the 11th and 12th of April 2011 a workshop was held in Como, Italy. This workshop was organised by the core team of the PIAQ project, the Czech Environmental Inspectorate and the Ministry of Environment (Czech Republic), ARPA Lombardia (Italy) and DCMR Environmental Protection Agency (the Netherlands). The workshop was chaired by Fabio Colonna (Italy) and Koen de Kruif (the Netherlands).

There where 18 delegates from 10 countries present at present. The participating countries were Czech Republic, Cyprus, Germany, Italy, Lithuania, the Netherlands, Portugal, Romania, Slovak Republic and Spain). In addition two countries (Denmark, England) contributed to the workshop by giving written input before the workshop itself. A complete list of participants is given in Annex IVb.

After the workshop a sensitivity analysis on the list of 'Best Practices' and the criteria was conducted. This sensitivity analysis resulted in the final list of 'Best Practices'.

1.2 Time schedule and budget

Time schedule.
The project was divided in to two phases. In phase 1 there was a core team meeting in February 2010 (Schiedam, the Netherlands), a workshop on a draft Benchmark-report in June2010 (Prague, Czech Republic) and a benchmark report delivered in September 2010. In phase 2 there was again a core team meeting in February 2011 a workshop on 'Best Practices' in April 2011 (Como, Italy) and a discussion on the sensitivity analysis on the best practices in September 2011. The draft report on the project was prepared in September 2011.

Planning
The project core team was responsible for the planning, the execution and the outcome of this project. This was done by steering the process, advising and giving feedback on the results based on their own experience. Further the members of the project team actively contributed to the preparation, organisation and execution of the workshops. The questionnaire and the benchmark report was written by the consultant, DHV.

Budget
The total Budget for phase 1 was € 36 750, of which € 28 028,19 was used.
The total Budget for phase 2 was € 27 050, of which € 22 725,76 was used.
The contribution from the leading Member State was € 25 000
The contribution from the Commission via IMPEL was € 25 753,95

	Budget	Actual spending	Contribution MS	Contribution IMPEL
Phase 1 (2010)	€ 36.750,00	€ 28.028,19	€ 15.000,00	€ 13.028,19
Phase 2 (2011)	€ 27.050,00	€ 22.725,76	€ 10.000,00	€ 12.725,76
Total	**€ 63.800,00**	**€ 50.753,95**	**€ 25.000,00**	**€ 25.753,95**

1.3 Products

The following products were delivered in phase 1:

1. A two-day expert core team meeting in Schiedam (the Kick-off): preparations for the first workshop and the questionnaire, with a total participation of 8 persons
2. A questionnaire, that was sent to all IMPEL co-ordinators
3. A benchmark report, written by DHV, with processed questionnaire details
4. A two day workshop in Prague on comparing best practices, with in total 26 participants from 10 countries
5. A workshop report with a comparison of best practices

The following products were delivered in phase 2:

6. A two-day core team meeting in Schiedam: preparations for the second workshop. In total participation of 7 persons.
7. A two-day workshop in Como, on selecting best practices, with in total 18 participants from 10 countries
8. A workshop report with a prioritisation of best practices
9. A final report on the best practices, delivered by the consultant
10. This final project report.

1.4 What have we learned from managing this project

During the two year project lessons were learned from both the successes and the areas that could potentially have been improved. The project team selected the following examples to share with the reader of this report.

Active contribution of the project team
The members of the project team actively contributed to all the workshops and training sessions. All project team members handed in their questionnaires and examples of best practices. The active contribution is essential to make a substantial benchmark comparison.

Annual approach and milestones

The project used clear milestones. This made it possible to complete each step stimulating motivation and involvement of all members and participants. The final phase of the project showed some delays and the project team members were involved in a much lower intensity, due to other activities.

Action plan
The Terms of Reference were translated into a action plan in which the objectives, responsibilities and tasks were clearly defined.

External Support (DHV)
For the development of materials and processing of data, external support was hired (on contract basis). This made it possible to deliver all the objectives and products defined by the Terms of Reference.

Reimbursement
The accommodation for the workshops and the catering was arranged by the 'home'-core team member, with divided tasks per workshop. The flights was arranged by a travel agency. These invoices were paid directly by the IMPEL-office. For some catering costs direct reimbursements were send in to the IMPEL-office. This meant that all the financial obligations were paid from one place.

IMPEL Cluster 1
During the project, progress was reported to Cluster 1, mostly by the Czech representative in the Cluster 1-meeting. In total 6 reports were written. The reports made it possible to get immediate feedback from the IMPEL-cluster meetings.

Communication plan
The project team didn't develop a communication plan at the start of the project. The results of this project will influence the interpretation of best practices in air quality policy. This message was not yet communicated.

Use of IT tools
During the project IT tools like electronic questionnaires and registration forms and project sites (like Viadesk and Basecamp) could have been used more extensively.

Part 2 Outcome

The aim of Part 2 of this report is to describe the main activities and the relevant products in detail.

2.1 The questionnaire

To gather information and identify best practices in permitting and enforcement and the effects on emissions by the main sectors of industry within a city/region or country a questionnaire was sent to all the IMPEL members who were interested in participating in the PIAQ project (Annex II). Besides gathering information on best practices the questionnaire was also useful to gain insight into how permitting and enforcement are practiced in the different regions and what differences there are in implementation and culture.

The questionnaire is on the implementation of the Air Quality Directive and followed the Directive's structure. The questionnaire was extended with some questions on permitting and enforcement. The complete questionnaire can be found in Annex II. The summary of results from the questionnaire can be found in table 1.

The main issues in the questionnaire are:
General facts. These questions were aimed at gathering information on the industrial area(s) and the air quality in the different Member States. The main pollutants of interest identified across all IMPEL Member States are:

- Particulate Matter (PM_{10}),
- Oxides of Nitrogen (NO_x),
- Ozone (O_3),
- Carbon monoxide (CO),
- Ammonia (NH_3).

The main sources for these pollutants as identified across all Member States are:

- traffic,
- domestic use (specifically for heating),
- industrial sources,
- livestock and
- natural sources.

Exceedances are noted to occur across many states/regions, however these are generally localized close to major roads or in the vicinity of industrial complexes. It is noted that there has been a general decrease in pollution concentrations over the past five years. More information on the questionnaires can be found in the benchmark report.

Responsibilities. This section contained questions on how the Air Quality Directive is implemented into national and/or regional legislation, how are emissions from industry regulated and who is responsible for the implementation and enforcement of the industrial emissions. The answers indicated that the EU air quality directives have been fully integrated and implemented in all Member States, some Member States/regions have adopted even stricter limit values. The Czech Republic has an additional set of limit values for poor meteorological conditions. At the permitting stage there is a check on consistency with the European BAT documents both for permits and direct working law. More information on the questionnaires can be found in the benchmark report.

Permitting and enforcement of air quality emissions. This part of the questionnaire looked in more detail into who controls the industries with regard to compliance with permit requirements, what do the (emission/air quality) reports look like, are there automatic measurements, are measures taken to reduce emission and are there consequences if the air quality limit values aren't met.

Local and national legislation in general require industries to do the monitoring themselves, and to report usually on an annual basis to the Local or National Environmental Protection Agencies. These reports usually contain flue gas information, along with specific requests when needed depending on the industry. Where industries require it, automatic monitoring systems are required or at least recommended, it is then up to the industry to ensure these systems are up and running and that an accredited laboratory is used.

When emissions exceed the concentrations given in the permit, most Member States will first provide assistance with rectification, before starting legal proceedings against the industry. It is up to the Member States to operate and manage monitoring stations, however many industries have their own measuring stations. Sometimes they are managed by the competent authorities. More information on the questionnaires can be found in the benchmark report.

Ambient Air Quality Assessments. This part of the questionnaire looked into how the air quality is monitored (e.g. by the industries or government) and whether ambient air quality levels have a direct effect on permits, how unfavourable meteorological conditions are dealt with etc.

The final section of the questionnaire is a benchmark scenario. This is to assist in the development of best practices and was used extensively in the workshop. In this benchmark section the IMPEL members are asked to describe issues like year of construction, process conditions, thermal input, feed streams, fuel type, load etc. as accurately as possible in order to characterize the installation and to make an indicative comparison between different Member States.

The Member States Cyprus, Czech Republic, Germany, Italy, Lithuania, the Netherlands (DCMR and VROM), Norway, Portugal, Romania and Slovak Republic Spain (Barque government and Extremadura) Ireland and Denmark returned their questionnaires. The table below gives a summary of the returned questionnaires. The main results of the questionnaires are listed below. More detailed information on the questionnaires can be found in the benchmark report.

Industries in general have monitoring stations which are used for self regulation. The majority of countries do not have permits which refer to or even require meeting limit values for ambient air quality, and rely on industrial permits to regulate the ambient air quality concentrations. Where authorities do have monitoring stations in industrial areas, these are maintained and managed by the authorities to determine exceedances. Very few Member States make real time forecasts or try to predict pollution spells. Industries very rarely have to act before unfavourable conditions occur. Sometimes however they have to take measures during a pollution episode.
More detailed information on air quality assessment from the questionnaires can be found in the benchmark report.

2.2 Workshop 1: Comparing practices (Prague, Czech Republic)

The countries who returned the questionnaire were invited to take part in a workshop held on 14 and 15 June 2010 in Prague. The objective of the workshop was to:

- Share good practices in the participating countries,
- Analyze the preliminary results of the questionnaire on completeness, missing information and quality of information
- Prepare a list of the practices in the different Member States; participating Member States have the task to identify their own best practices that could or may already been proven in their own countries.

To make the workshop more effective the members were divided in to different working groups. In total four working groups were appointed. Each working group had its own focus and received several questions to focus on during the discussions within the working group.

Working group a. Permitting

- How is the legislation implemented?
- Who is responsible? For what?
- What things are described in the permitting?
- For how long does the permit last?
- How are old plants dealt with?
- Benchmarking of limits

It depends on the Member State who drafts the permits and who enforces the permit. In most Member States the permitting and enforcement is done by different organizations and if not at least by different people within an organization. In Germany and Slovak Republic however the same person that drafts the permit enforces the permit. Their reason for working like this is that the person then has a lot of working knowledge on the industry and that this can be very beneficial.

In the Czech Republic permitting and enforcement is regulated at a different level. The regional authorities grant the permits and the national inspectorate does the enforcement. In Germany the level on which permitting and enforcement takes place depends on the Bundesländer. In some Bundesländer it is regulated at the municipal level, in others on a higher level. In Lithuania the permitting and enforcement are regulated at a national level but different departments are concerned. A downside is that often the knowledge on industrial processes of the people concerned etc is limited.

In most Member States there is no direct link between emissions and immissions (for instance in Germany, the Netherlands and Czech Republic). In Lithuania, however, there is a direct link and permits can be refused when air quality limit values are exceeded if no extra measures are taken. The Netherlands and Germany both work with a system that an emission is significant if it contributes 3% (1.2 µg/m^3) of the limit value or more. When an immission is significant an air quality study must be conducted in greater detail. As the emissions of industry are mostly from high stacks an immission of more than 3% is highly unlikely. This threshold of 3% does not count for nitrogen deposition with respect to specially protected areas (Natura2000 habitat).

In all countries an IPPC permit lasts indefinitely. However, the following rule applies: If there are significant changes in emissions or in legislation than industries have a certain time period to make sure that their installations comply with new legislation (BAT proof system). In both cases they need a new revision permit. In some Member States the industries can

ask for an extension period once. Furthermore, for new installations the requirements are stricter than for the older installations.
The escape clause in the IPPC directive with respect to fixed limit values (changing the limit values due to economy or other important reasons) caused some discussion. The 'corridor' in BREFs is too wide, this is not good for a level playing field. Germany wants these limit values fixed for new installations and for the old installations a certain time period to comply. Lithuania and the Slovak Republic do not foresee any problems with new installations but foresee problems with the old installations, they will need a lot of time to renew them. Probably certain installations will have to be shut down.

In the Czech Republic industries can, once BAT is used, try to compensate for their emission contributions to the ambient air quality by reducing the contribution of other sources with similar emissions (internally or externally).

When the government does not have enough power to withstand the pressure coming from the industry, public awareness and NGO's can be used to apply pressure to the companies. Public can be informed by for instance naming & shaming or by making the emissions (and other information) available to the public by putting the data on line.

Working group b. Inspection and enforcement

- Who enforces?
- Which tools are available to enforce? (Self monitoring, AutoMeasuring Systems)
- What happens if limit values are exceeded?
- What happens in the long term?

The level on which inspection and enforcement is carried out depends on the size of the installation/factory. In general there are two levels: the national EPA and the regional EPA. For Cyprus there is only one governmental level and in the Czech Republic there are also regional inspectorates, directed by MoE. For inspection it is important to have enough field knowledge.

In all countries the IPPC plants and other larger plants monitor the emissions themselves. This does not apply to smaller companies. The frequency of self monitoring (on stacks) differs per country. In Cyprus, Portugal, Czech Republic and Romania the frequency is twice a year, in Italy it is once a year.

When limit values are exceeded the governments can take the industry to court. Generally companies will have to pay a sanction. When serious problems occur or when no measures are taken by the industry in extreme cases the permit can be revoked.
In cases of exceedances or non-compliance with the permit fines can be imposed. In the workshop this led to the discussion on whether this should be an administrative fine for offence or a criminal fine for hinder. No preference was given to one of the options. In many cases however national laws don't allow to give criminal fines for hinder.

Working group c. Measures

- Steel industry,
- Power plant,
- chemical industry,
- transportation,
- domestic heating.
- Problems develop due to unfavourable whether systems and specific circumstances.
- Finances for implementation of the measures.

The r*esponsibility* for the implementation of measures lies with the industries. Regional or national authorities check if measures are implemented. In general the effectiveness of measures isn't monitored by the authorities themselves. This makes it in some cases difficult to enforce certain measures. When non-compliance with the implementation of measures is observed (e.g. not taking of badly taking measures) the authorities can penalise the company. This relates especially to periods of pollution spells.

In cases of *exceedances,* a short term measure could be to *reduce production* for some specific companies (this is for example the case in Rijnmond in the Netherlands and the Czech Republic) especially in relation to NO_x, SO_2, PM_{10} (the latter specifically in the Czech Republic). All measures implemented during these episodes have to be described in the action plans or in the permit to be legal, and this measure cannot be taken more than a few days per year.

For all countries except the Netherlands EU funds can be used to support companies to take measures. In the Netherlands the EU funds can only be used for consultant companies (e.g. for making assessment of measures of the companies).

The kind of 'measures' that can or will or must be taken differ significantly per country. In Cyprus and Lithuania for example a measure could be moving the people away from the industry so that there won't be any complaints about the company. In Lithuania the company which is responsible for the hinder has to pay for moving the neighbouring people. In the Netherlands this kind of measure is out of the question.
Another 'measure' for dealing with complaints from the public is giving free electricity to the hindered people (Lithuania) or for instance giving free access to the waste landfill.
In the Czech Republic there are still open coal mines. Because there is still enough space surrounding these mines a buffer zone around the mines can been seen as an air quality measure (no citizens living nearby so no complaints).

The DCMR in the Netherlands has got a lot of experience with a real time air quality monitoring systems. This system is used to inform the public, the public can then use this data to exert a kind of pressure on the company and so the company is sooner willing to take certain measures.

Working group d. Assessment

- Models (kind, … what to do with the results)
- dedication of the air quality network?
- What are positions of stations?
- What to do with the measurement data?

All the Member States have air quality networks that can be accessed by the public. Besides these networks there often are industrial stations as well. Unfortunately not all data is used efficiently or effectively. Normally the private measuring stations are at locations were the highest concentrations are expected. For the interest of the public these should be there where the people live as well.

All countries use models for calculating the air quality. These models are either national or regional models. In most cases models are used in the permitting process to demonstrate that the factory is in compliance with the air quality limit values, or that limit values aren't exceeded even when including the industrial emissions. The models are generally not used for short term forecasting (24-48-72 hours). Having a system with which it is possible to

predict the short term air quality was found to be interesting by the Member States. Besides advantages it also has its drawbacks. Air quality measuring stations related to industrial areas aren't designed for and used to forecast the air quality.

In all Member States the air quality network monitors the air quality in the vicinity of industrial sources (industrial stations) near busy roads (road stations) but also at urban background and at rural stations.

Discussion on the workshop results
The workshop was divided into working groups, and therefore the Member States could not join all the discussions and did not all contribute to each issue in detail. The discussion session gave the opportunity to add missing MS-perspectives.

Most Member States don't forecast the air quality for the coming days.However, the idea of doing so was regarded as interesting. Forecasting the short term air quality has as advantage that pollution spells can be foreseen and measures can be taken in advance. One of the measures that can be taken is shutting down factories during the periods of exceedance of the air quality limit values. For a short term (several days) and only once or twice a year shutting down seems acceptable. But when this measure is used frequently it will be questionable whether this measure is legally possible. Most likely the industry won't accept it anymore.

An issue that is related to pollution spells is that in most cases it is not possible to relate the air quality to a single operator. Therefore it is hard to improve the air quality by acting on a single source. To improve the air quality one can often only act on emissions in permits and not on the air quality itself. The authorities can't legally ask for more than BAT. In order to reduce the emissions further than BAT requires and so improve the air quality it is important to get the industry involved voluntarily. This can be achieved by starting the discussions with the industry at an early stage. It helps to get the industry involved in non-permitting ways in actions plans etc. In some cases the measures to reduce air pollution also can make it easier to compete with other industries or save energy. This will motivate the industry to take these kind of measures. When the industry isn't willing to cooperate voluntarily pressure form the NGO's and the public can help to mobilise the industry. Data from nearby air quality monitoring stations or short term forecast can be helpful in these discussions.
There isn't one way of getting the industry to cooperate voluntarily, each Member State has his own approach.

As discussed above it is hard to ask for more than BAT. But when a company wants to expand its process in an area where the air quality limit values have already been exceeded measures should be taken to improve the air quality. One of the options, besides BAT, is to identify other important sources of air pollution (like traffic and shipping) and try to reduce the contribution of these sources to the air pollution. This might give the industries extra opportunities to expand.

Conclusions
The overall conclusions of the questionnaire and workshop are:

- All Member States have fully implemented the EU directives.
- Industries need to comply with BAT and have to monitor air emissions themselves in all Member States The industries may choose an accredited laboratory to perform this monitoring.

- Most Member States do not have specific permits for ambient air quality. In order to improve the air quality it is better to focus on the emission of pollutants than on the air quality itself.
- When the authorities would like to improve the air quality, and therefore the industry has to do better than BAT, it is important to get the industry involved voluntarily because the authorities can't ask for more than BAT. To get the industry involved voluntarily the discussions with the industry (and public) should start in an early stage.
- Air quality is measured in all Member States. However the automated systems are different in each country.
- The measurements are used for enforcement. But not all Member States make optimal use of the measurement data.
- Air quality modelling is hardly used to forecast the short term ambient air quality.

Issues that should be further discussed are:

- To what extent is short term air quality forecasting interesting? And how is this related to taking measures during pollution spells (shutting down industries, how many times a year etc.)?
- To what extent is it possible to shut down industries in order to achieve ambient air qualities that meet the air quality limit values.
- What is the best way to penalize companies when they exceed the emission levels stated in the permits. Is this with an administrative fine for offence or a criminal fine for hinder.
- Can a permit be allowed even though the (national) emission ceilings are reached?
- Can NOx-emission market be a solution or not?
- The escape in the IPPC directive with respect to fixed limit values (changing the limit values due to economy or other reasons)

Table 1 Overview findings phase 1 PIAQ (questionnaire and workshop).

Country	Impel-contact	Responsible Authority	EU Directives Implemented	Stricter National Regulations	IPPC Regulation Implementation	Non-IPPC Regulation Implementation	Industrial Self Regulation	Industrial Ambient Monitoring	Government Ambient Monitoring	Ambient Air Quality in Permits	Best Available Technology (BAT)	Best Available Technology (BAT+)	Air Quality Modelling
Cyprus	Stelios Georghiades	Air Quality Section, Department of Labour Inspection	Yes	No	National Level	National Level	Yes	Yes	Yes	If Req.	N/A	N/A	Yes
Czech Republic	Lenka Nemcova	Czech Environmental Inspectorate	Yes	Yes	Regional Level	Municipal Level	Yes	Yes	Yes	N/A	Mid Range	N/A	No
Germany	Kristina Rabe	Federal Ministry of the Environment, Nature conservation and nuclear safety. National IMPEL coordinator	Yes	No	Regional Level	Municipal Level	Yes	Yes	Yes	No	N/A	N/A	No
Italy	Guido Lanzani	ARPA della Lombardia	Yes	Yes	Provinci al Level	Municipal Level	Yes	Yes	Yes	No	Improved	N/A	Yes
Lithuania	Audrius Želvys	Ministry for Environment. National IMPEL co-ordinator	Yes	Yes	Regional Level	Municipal Level	Yes	Yes	Yes	Yes	Upper	N/A	Yes
Netherlands - DCMR	Koen de Kruif	DCMR Environmental Protection Agency	Yes	No	Provinci al Level	Municipal Level	Yes	Yes	Yes	No	Upper	N/A	Yes
Netherlands - VROM	Jan Teekens	Ministry of Housing, Spatial Planning and the Environment	Yes	No	Provinci al Level	Municipal Level	Yes	Yes	Yes	Yes	Upper	Consi dered	Yes
Norway	Mr Erik Forberg	Norwegian Pollution Control Authority	Yes	No	National Level	Regional Level	Yes	Yes	Yes	Yes	Improved	N/A	Yes
Portugal	Isabel Santana	Ministry of environment and territorial planning. National IMPEL coordinator	Yes	No	Regional Level	Municipal Level	Yes	Yes	Yes	N/A	Upper	N/A	Yes
Romania	Michaela Beu	National Environmental Guard, general Commissariat Bucharest / Pollution Control Department. National IMPEL co-ordinator	Yes	No	National Level	National Level	Yes	Yes	Yes	No	Upper	Upper	Yes
Slovak Republic	Mr Daniel Geisbacher	Slovak Inspection of the Environment	Yes	No	National Level	District Level	Yes	Yes	Yes	No	N/A	N/A	Yes
Spain Basque Government	Ainhoa Inza	Basque Government	Yes	No	Regional Level	Local Level	Yes	Yes	Yes	No	N/A	N/A	Yes
Spain Extremadura	Oscar Basago Gonzalez	Regional government of Extremadura	Yes	No	Regional Level	Local Level	Yes	Yes	Yes	No	N/A	N/A	Yes
Ireland	Ian Marnane	Environmental Protection Agency	Yes	No	National	Local	Yes	Yes	Yes	No	N/A	N/A	Yes
Denmark	Karen Tamstof	Danish Protection Agency	Yes	No/ Yes	National Level	Local and Nat. level	Yes	Yes	Yes	No	Upper	N/A	Yes

2.3 Workshop 2: Best Practices (Como, Italy)

After finishing the report "EU benchmark air quality, Implementation of the air quality directives in industrialized areas" in 2010 (now chapters 2.1-2.2) a workshop was planned with the objective to use the information gathered in this report in the discussion to assign 'Best practices' with regard to the implementation of air quality regulation. This chapter describes the objective, the design and the outcome of the workshop.

Objective and scope workshop
On the 11th and the 12th of April 2011 a workshop was held in Como. This workshop was organised by the core team of the PIAQ project, the Czech Environmental Inspectorate and the Ministry of Environment (Czech Republic), ARPA Lombardia (Italy) and DCMR Environmental Protection Agency (the Netherlands). The workshop has been chaired by Fabio Colonna (Italy) and Koen de Kruif (the Netherlands).

There were18 delegates from 10 countries present at the workshop. The participating countries were the Czech Republic, Cyprus, Germany, Italy, Lithuania, the Netherlands, Portugal, Romania, the Slovak Republic and Spain). In addition two countries (Denmark, England) contributed to the workshop by giving written input before the workshop itself. A complete list of participants is given in Annex IVb.

The overall objective of the workshop was to compose a list with best practices with regard to the implementation of air quality regulation. In order to compose this list the two days of the workshop were used as followed:
Day 1: Discussing issues about the implementation of air quality regulation within the participating countries.
Day 2: Agree on the definition of 'Best Practice' and making criteria for the assessment of best practices.

After the workshop a sensitivity analysis on the list of 'Best Practices' and the criteria was conducted. This sensitivity analysis resulted in the final list of 'Best Practices'.

From good practices to best practices
Before the workshop the participants were asked to look into the practices in their own country and report on what they considered good practices to the organizing committee. This resulted in a list of 26 good practices (see Table 2). These good practices were discussed in working groups. Each working group had its own interest. The areas of interest were 'Public involvement', 'Technical aspects', 'Measures and economical aspects' and 'Enforcement and legislation'. The discussions per working group resulted in conclusions per area of interest. Table 3 shows the conclusions per area of interest.

Table 2. Discussed good practices.

Good practice nr.	Good Practice
1.A	Emphasize economic advantages
1.B	bio-filter installation or other abatement technique
2.A	Complaints and communication: voluntary agreements
2.B (2.B1, 2.B2. 2.B3, 2.C, 2.D)	Public involvement to pressure companies and informing public during episodes of high concentrations
3.A	To send to EU all industrial monitoring stations data
3.B	Applying same standards to industrial and national monitoring stations
4.A	Continuous emission monitoring systems
5.A	Stricter limit values to shift to cleaner techniques
5.B (5.C)	Implementing emission limits into national legislation resulting in stricter ELV
6.A	Reduce emission from others sources to increase the industrial emission
6.B	Emission 'bubbles' for an area with different operators together (a) or with the same operator (b)
7.A	Code of operation
7.B	United measurement technology
7.C	Review of the measurements and management
8.A	NOx emission trading system
9.A	collaboration permitting authority and inspection authorities
10.A	Higher pressure on companies to use money from the EU funds for installation of new technologies.
10.B	Tailor-made enforcement
10.C	Check in pre-permit phase
11.A	Increasing values of imposed fines
11.B	inspectors reduce production industry (final step)

Table 3. Conclusions discussions good practices per area of interest.

Area of interest	Conclusions	Remarks
Public involvement and Technical aspects	Costs of the good practices (measures) should be part of the 'best practice' discussion	
	Public pressure can help, depending on the location in Europe	In Southern countries public pressure is important but works less
	Measures that companies can take depend on the (financial) size of the company	
	Filing complaints can work when all complaints are really dealt with	There should be a system in which the complaints can be tracked
	Continuous emission monitoring system works. It is rather expensive but provides a lot of data	
	Stricter emission limit values (ELV) than BAT is a good idea. There was no agreement about the best way to achieve this	Stricter ELV's can only be achieved when there is a real air quality problem

Measures and economical aspects	Compensation measures (reduce the emission form other sources to enable (extra) emission from industrial sources) can work. The objective is to achieve a net reduction of emissions or immission and is are quality driven	Compensation measures can work for increasing present production or installing a new site or new plant in a particular area
	Working with a local emission ceiling (or emission bubble) can work in theory. The emission from a number of pollution sources can be reduced together.	The presented idea is not in practice in one of the countries present at the workshop.
	All monitoring stations operating according to the same ISO/CEN standard will improve the nation-wide quality of the air quality information and assessment.	This ISO/CEN standard should be applied to (private) industrial monitoring stations as well as the national air quality network.
	Unifying or close cooperation (as minimum) between public bodies (involved in permitting and inspection) improves efficiency of regulation	
	Calculation of projected capacities rather than actual capacities for IPPC permitting	
	Investment programmes for certain highly affected areas in order to improve the air quality can be successful.	The question however is where the money for these kind of programmes should come from. Maybe EU and national funds for innovation can provide the money

Enforcement and legislation	Escaping from IPPC is not a common problem in the EU.	The design specifications are used to decide whether an installation is IPPC regulated or not.
	Compliance enforcement is not paid by EU funds	
	Tailor-made enforcement can be a good way to achieve compliance	The idea is that companies who show non-compliance will be visited more frequently. This can be seen as a risk based approach.
	In the pre-permit phases discussions between the companies and the permitting authorities will provide a better basis that all requirements can be achieved. This will prevent non-compliance	
	Increasing fines when non-compliance is found can lead to environmental solutions but is not regarded as good solution	

Analysis from good to best

To bet to ‘Best Practices’ from ‘good practices’ the good practices presented and discussed in previous two paragraphs had to be further qualified. To qualify the good practices eight criteria were used. See table 4. The last criterion was added because some good practices were thought to be too obvious to be considered as a best practice. The criteria were assigned to the good practices with a minus (the criterion does not apply), zero (criterion is not good, but not bad either) and a plus (the criterion will apply).

Table 4. Scoring criteria to come from good practices to 'Best practices'

	Scoring Criteria
1	Can be implemented / applied in most MS's
2	Not location specific
3	Proven effect
4	Can be taken up in national legislation
5	Expected long lasting effect
6	Economically viable
7	Proportionate administrative burden
8	Too obvious

Conclusions of the workshop

In collaboration with all the participants the good practices were ranked using the scoring criteria and a plenary discussion. This resulted in the 13 Best Practices shown in table 5. The ranking order of this table was tested with a sensitivity analysis, but this did not result in big changes. The top 5 were considered the best practices.

Table 5. Overall Best Practices.

Rank	#	Best Practice
1	10.B	Tailor-made enforcement
2	6.A	Reduce emission from others sources to increase the industrial emission
3	11.B	inspectors reduce production industry (final step)
4	10.C	Check in pre-permit phase
5	7.A	Code of operation
6	9.A	collaboration permitting authority and inspection authorities
7	2.A	Complaints and communication: voluntary agreements
8	3.A	To send to EU all industrial monitoring stations data
9	3.B	Applying same standards to industrial and national monitoring stations
10	2.B	Public involvement to pressure companies and informing public during episodes of high concentrations
11	6.B	Emission 'bubbles' for an area with different operators together (a) or with the same operator (b)
12	5.A	Stricter limit values to shift to cleaner techniques
13	5.B	Implementing emission limits into national legislation resulting in stricter ELV

2.4 Project conclusions

The **5 top-ranking** best practices have been described in more detail. IMPEL members now have information on these best practices, what is needed to implement these best practices, roughly what the effect of these best practices are and who already has experience with these best practices.

1	**10b. Tailor-made enforcement** In order to apply the available manpower for enforcement in the most efficient way, a strategy of so called tailor-made enforcement is formulated. The agency that is responsible for the enforcement of environmental permits has a list of all the sites that have to be checked. For most of the sites the (potential) amount of environmental pollution and/or other risks for the surrounding territory is known, as well as the history of compliance. On the basis of this inventory a list can be made of the companies that have a good track record and the companies that perform less than average. The companies can be categorized in classes of frequency of regular control visits, ranging from once per month to once per two year. This list can then be used to prioritize the efforts of the personnel of the EPA. This approach results in a more efficient use of the available personnel, but it can also be considered by the companies as a reward for their efforts resulting in good compliance and therefore less attention from the government. ***Environmental pressure based approach*** In the Rotterdam Rijnmond region most of the large industries have such a good compliance record that they are checked only once a year. To determine the focus of these regular checks the companies are scored on the basis of the environmental pressure they cause. In this approach the environmental themes of air (including odour), noise, soil pollution, external safety and waste production are considered. At first the approach is applied on the level of sectors (refineries, chemical industry, storage of bulk products (dry or fluid), etc.). For each sector the two or three most important themes are characterised as “essentials” and the other themes are characterised as “aspects”. The essentials are checked every year, whereas the aspects are checked every four years.
2	**6a. Reduce emission from others sources to increase the industrial emission** How can we allow companies to expand but keep emission levels the same or less (cleaner). A traditional industrial area borders a NATURA 2000 area. Inside the industrial area a new LCP is planned. Additionally, an existing installation (chemical industry) wants to increase its capacity significantly. The problematic substance is NOX. In accordance with German law, the competent authority has to carry out an appropriate assessment of the implications of the drafted site in view of the site’s conservation objectives. Important in this context is the fact that the protected area is a raised bog. Its conservation status is categorised with “C”, which means bad condition. The existing entry has a quantity that any additional entries of NOX are not appropriate (critical load concept). **Best Practice** In this case a permit for a new installation or a material alteration of an existing installation is only possible under strict requirements. Industrial activity and expansion of existing sites in traditional industrial areas close to NATURA 2000 areas is possible. In this case the operator agrees on a treaty which forces him to buy or rent agricultural used areas inside the bog. With this contract he committed himself to take suitable measures to decrease the entry of NOx. **Effect** The result is that the bog faces a relief of 400 kg/yr NOx. Compared with the emissions of the new plant (90 kg/yr NOx) a relief (netto) realized. We must use the opportunity when a company wants to expand to reduce other emissions
3	**11b. Inspectors reduce production industry (final step)** Inspectors impose fines only with low values and then it is not educational for the operators. They rather pay one or two low fines like to do something useful for his installation (like install more modern air pollution clean technology, more frequent monitoring of pollutants). Our national legislation defines only the maximum limit of imposed fines. **Best Practice** When operators aren’t fulfilling conditions in permits again → inspectors can impose them fine up to double of maximum legal limit of fines. In case that operator isn´t fulfilling his obligations again (after two imposed fines), inspectors can reduce his production till he remove established imperfections. Also define minimum limit of imposed fines in legislation can be very effective and helpful.

	Effect We published annually the highest imposed fines (name of operator, name of installation, the high of imposed fine and the reason why he get the fine – what obligations wasn´t he fulfilling). Not to be on this list it's for operators prestige and good name. Money is the most powerful tool and the ensuing effect is educational. Operators after first imposed fine have motivation not to get another fine.
4	**10c. Check in pre-permit phase** There is a problem when an industry is already in non-compliance when permit is received and in execution. It is necessary to check in the pre-permit phase (having discussions between permitting authorities and companies in order to make sure that all requirements can be achieved). This leads to the prevention of non-compliance
5	**7a. Code of operation** Complaints about odour from agricultural air pollution sources. **Best Practice** Code of operation, using better reference techniques, reducing ammonium emissions with the support of EU funds. **Effect** In progress, reduction of the problem with odour near the agriculture sources.

Overall conclusions of the project are:

- The EU air quality directives have been fully integrated and implemented in all Member States, some Member States/regions have adopted even stricter limit values.
- Local and national legislation in general require industries to do the monitoring themselves, and to report usually on an annual basis to the Local or National Environmental Protection Agencies.
- When emissions exceed the concentrations given in the permit, most Member States will first provide assistance with the rectification before starting legal proceedings against the industry.
- It depends on the Member State who drafts the permits and who enforces the permit.
- In most Member States there is no direct link between emissions and immissions
- In most countries the following rule applies: If there are significant changes in emissions or in legislation than industries have a certain time period to make sure that their installations comply with new legislation (BAT proof system).
- When government does not have enough power to withstand the pressure coming from the industry, public awareness and NGO's can be used to pressure the companies.
- The r*esponsibility* for the implementation of measures lies with the industries. Regional or national authorities check if measures are implemented. In general the effectiveness of measures aren't monitored by the authorities.
- The kind of 'measures' that can or will be taken differ per country.
- All countries use models for calculating the air quality. These models are either national or regional models. In most cases models are used in the permitting process to demonstrate that the factory is in compliance with the air quality limit values, or that limit values aren't exceeded even when including the industrial emissions.

3. Follow up actions

3.1 Present developments

The air quality Directives have been fully implemented in al Member States. At the permitting stage there is a check on consistency with the European BAT documents both for permits an d direct working law. So far it seems that in industrialized areas is Europe we ca speak of a level playing field. Local and national legislation in general require industries to do the monitoring themselves and to report on an annual basis to the local or national Environmental Protection Agencies. When emissions exceed the concentrations stated in the permit, most Member States will first provide assistance before starting legal proceedings. There seems level playing field in regards to the implementation of the air quality directive. However in most Member States legislation used for permitting and enforcement had no link to the air quality directive. The same European legislation is used for permitting, and permitting is done in roughly the same way. On paper looking at permitting there seems to be a level playing field in the European industrialized areas. In general BAT is required everywhere for new installations. However looking at enforcement there a big differences can be seen. This is where the level playing field ends.

3.2 Recommendations for future work of IMPEL

We recommend the uptake:

- A future project could look more into enforcement and see what is necessary to get to a level playing field in Europe.
- In a follow up project some of the best practices need to be further defined for the individual Member States, so that Member States can judge more easily if this best practice can be used In their Member State. To be implemented in a Member State the best practices must be further defined, more information detailed is needed.
- The ‘corridor’ in BREFs is too wide, this is not good for a level playing field. More research can be done to see what can be done to create a level playing field.

Annexes

Annex I. Project Termis of Reference and agreement Letter

Terms of Reference

No	Name of project
	Comparison **P**rogramme on the **I**mplementation and enforcement of **A**ir **Q**uality standards in relation to industrial air emissions (PIAQ)

1. Scope

1.1. Background	**General context** Air pollution has long been recognised as posing a significant risk to human health and the environment. In 1996 the Air Quality Framework Directive was adopted which established a Community framework for the assessment and management of ambient air quality in the EU. The Framework Directive also provided a list of priority pollutants for which air quality objectives would be established in daughter legislation. There have subsequently been four daughter directives in respect of particular pollutants and a Council Decision on exchange of air quality monitoring information. • The Council Directive 96/62/EC on ambient air quality assessment and management (“Framework Directive"); • Council Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air ("Second Daughter Directive"); • Directive 2000/69/EC of the European Parliament and of the Council relating to limit values for benzene and carbon monoxide in ambient air ("Second Daughter Directive"); • Directive 2002/3/EC of the European Parliament and of the Council relating to ozone in ambient air ("Third Daughter Directive"); • Council Decision 97/101/EC establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within the member States, ("Exchange of Information Decision"); In 2005 the EU directive on ambient air quality and cleaner air for Europe was proposed and approved later (2008/50/EC). **Specific situation** The air quality directive and its daughter directives have been implemented in EU member states in the past years. In 2007, an earlier IMPEL project (with Austria as lead partner) made it possible to exchange expertise in licensing of installations in ambient air polluted zones, based on an inquiry in some member states. A limited scope study in 2009 showed that directives have been implemented in practice in different ways in different IMPEL member states. Contacts between experts in these countries confirmed differences, leading to different air quality management activities with respect to permitting and enforcement of sectors of industries, traffic and shipping. However, not much is known about these different activities and their effects on the air quality itself. We do know, of course, that ambient air quality is effected also by traffic and shipping. This project however is limited to industrial emissions, bearing in mind the core focus of IMPEL and limited time and resoures available. In general it is very difficult to relate the emissions of one single installation or site to the ambient air quality. Local air quality is often under pressure in areas with concentrations of large industry. This brings up the question

	whether an additional company in such areas will have an additional significant effect on the local air quality or on the national emission ceilings. And also what permitting, control or enforcement strategies would lead to the best air quality.
1.2. Link to MAWP and IMPEL's role and scope	Strategic Goal I – Capacity building Strategic Goal III – Development of good practices Strategic Goal VII – International enforcement collaboration
1.3. Objective (s)	**Main objective** IMPEL aims at improvement of implementation and enforcement of environmental legislation by Member States. Within this project Member States will intensify exchange of information and will continue to develop their expertise and good practices of implementation (control and enforcement) of air quality directives in practice. The main objective is: Identify best practices in the application of (implementation, control and enforcement) EU Air Quality Directives in relation to industrial air emissions. **Specific objectives** Phase 1: Exchange of information and experiences on key regulatory issues Phase 2: Identify best practices in the inspection and enforcement of industries, performed by the local, regional and national level, improving environmental effects in IMPEL member countries. **Limited scope** Emissions from industry, traffic and shipping do contribute to the air quality different in the EU countries. Within this PIAQ project we will focus on industrial sources in countries with larger zones of industrial activity **Limited amount of participating countries** The project focuses on the application of Air Quality standards in concentrated industrial zones. It is expected that in particular authorities of IMPEL Member countries with these zones will be interested to participate in the project.
1.4. Definition	The objectives will be achieved by: 7. Exchange of information on implementation of the Air quality directives related to industrial air emissions by means of an questionnaire and a workshop 8. Identify best practices in control and enforcement and its effects on emissions by main sectors of industry. ***Note:*** Emissions of traffic and shipping are not taken into account in this project 9. Assess the effectivity of the different practices, plans and programmes on the ambient air quality 10. Identify the common EU best practices 11. Making available these best practices to all IMPEL member states 12. Drafting of project report containing findings, conclusions and recommendations SEE project implementation plan
1.5. Product(s)	**Product 1:** A report gathering best practices from IMPEL Member States on the application of of air quality standards in relation to industrial air emissions (how do air quality standards influence permitting, inspection and enforcement of industrial installations) , on the basis of exchange of knowledge and information of partipating IMPEL members **Product 2:** Recommendations for IMPEL Member States on using these best practices.

2. Structure of the project

2.1. Participants	1) International Core Team: 3 experts from 3 IMPEL member countries

	(Netherlands – project-lead, Czech Republic – co-project-lead, Italy – co-project-lead 2) Workshop participants: max 30 participants from IMPEL member countries and European Commission, including core team members. Financial cost reimbursement for a maximum of max 15 participants to the workshops *NB: Participants to the workshops are environmental authorities (permittors, inspectors and/or enforcers), who are involved in implementation of the air quality directives in relation to industrial air emissions, and who participated in the inventory within this project*
2.2. Project team	Lead country: NL, DCMR Environmental Protection Agency Rijnmond, The following Project team members have been invited: - Koen de Kruif (NL), DCMR, project leader, koen.dekruif@dcmr.nl - Jana Sestakova (CR), Czech Ministry of environmental protection, co-project leader, jana.sestakova@mzp.cz - Sylke Davison (NL), DCMR department for Air quality, sylke.davison@dcmr.nl - Guido Lanzani, ARPA Lombarida, G.LANZANI@arpalombardia.it
2.3. Manager Executor	Koen de Kruif, DCMR Environmental Protection Agency, The Netherlands
2.4. Reporting arrangements	Start Project phase 1: jan. 2010 Progress reports to Cluster 1 (autumn 2010) and General Assembly (autumn 2010) When approved: Start Project phase 2: jan 2011 Draft final reports to Cluster 1 and General Assembly (autumn 2011)
2.5 Dissemination of results/main target groups	The report will be put on the IMPEL website and disseminated to the authorities in the Member States. The report will also be submitted to the EU institutions.

3. Resources required

3.1 Project costs	**TOTAL € 72.100,00** 2010: **€ 39.900,00** 2011: **€ 32.200,00**
3.2. Fin. from IMPEL budget.	**€ 52.100,00**
3.3. Fin. from MS (NL)	**€ 10.000,00 per year** **€ 20.000,00 in total**
3.4. Human from IMPEL Members Phase 1	Core team and workshops 36 days (excluding input consultant)
3.4. Human from IMPEL Members Phase 2	Core team and workshops 36 days (excluding input consultant)
3.5 Human from COM	Participation to the Project workshops by one COM-expert, 2 days each workshop: total 4 days

4. Quality review mechanisms

Quality review by Core Team and Cluster 1 - Discussion in Cluster 1 on progress reports. General Assembly-meeting will be informed - Discussion in Cluster 1 on final draft report. General Assembly-meeting will disscuss. - Approval by IMPEL General Assembly.

5. Legal base

5.1. Directive/Regulatio	- Air Quality framework directives - Recommendation on RMCEI

n/Decision	
5.2. Article and description	
5.3 Link to the 6th EAP	More effective implementation and enforcement of environmental legislation is one of the priorities of the 6th EAP.

6. Project planning

6.1. Approval	The ToR is presented for discussion at the Cluster 1 meeting (september 2009)
(6.2. Fin. Contributions) 3 core team members, of which 2 travelling; 15 workshop participants In total 2 workshops (1 in 2010, and 2011)	

Phase 1	**Information exchange**				
Core/PL team, 1 meetings	**units**		**costs**	**€**	**20.650,00**
accommodation	nights	4	€ 150,00	€	1.800,00
travel	flights	2	€ 500,00	€	3.000,00
per diem	days	4	€ 50,00	€	600,00
Additional costs	meets	1	€ 250,00	€	250,00
consultant	tot			€	15.000,00
Workshops, 1 meeting				**€**	**19.250,00**
accommodation	nights	2	€ 150,00	€	6.000,00
travel	flights	1	€ 500,00	€	10.000,00
per diem	days	2	€ 50,00	€	2.000,00
Additional costs	meets	1	€ 1.250,00	€	1.250,00
Total estimated costs :				**€**	**39.900,00**

Phase 2	**Best Practices**				
Core team, 1 meeting	**units**		**costs**	**€**	**12.950,00**
accommodation	nights	2	€ 150,00	€	900,00
travel	flights	1	€ 500,00	€	1.500,00
per diem	days	2	€ 50,00	€	300,00
Additional costs	meets	1	€ 250,00	€	250,00
consultant	tot			€	10.000,00
Workshops, 1 meetings				**€**	**19.250,00**
accommodation	nights	2	€ 150,00	€	6.000,00
travel	flights	1	€ 500,00	€	10.000,00
per diem	days	2	€ 50,00	€	2.000,00
Additional costs	meets	1	€ 1.250,00	€	1.250,00
Total estimated costs :				**€**	**32.200,00**
				€	**72.100,00**

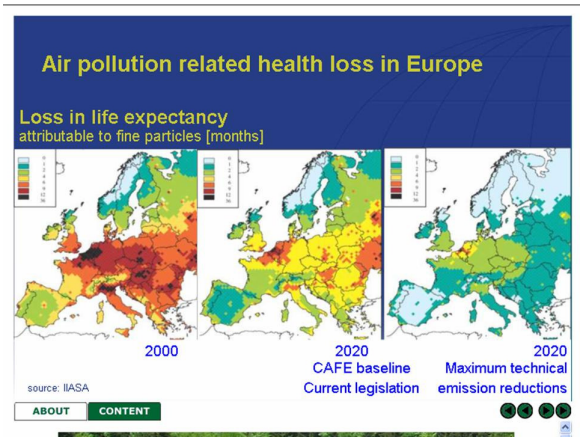
Proposed Contribution the Netherlands: €20.000 in total, €10.000 per year
From LIFE-plus: € 52.100,00

6.3. Start	February 2010
6.4 Milestones **Phase 1** **Information exchange** **Phase 2** **Best Practices**	1. February 2010: planned meeting of Core Team – defining and preparing 2. April 2010: second (virtual) meeting of Core Team – preparing questionnaire 3. June 2010: first workshop – sharing information 4. September 2010: third (virtual) meeting/first progress report to Cluster and General Assembly 5. Febr 2011: fourth (virtual) preperation second workshop 6. March 2011: second workshop –best practices/compiling recommendations 7. April 2011: last meeting of Core Team preparing progress report to Cluster 1 8. June 2011: virtual meeting of Project leaders/consultant – final report
6.5 Product	Final Report to Cluster 1 and General Assembly in autumn 2011
6.6 Adoption	By IMPEL-General Assembly, October 2011

Project Implementation plan

Comparison Programme on implementation and enforcement of I Air Quality Standards in relation to industrial air emissions

Many contacts between experts in EU countries identified large differences in implementation of Air Quality standards. Some countries has to be more aware of the air quality, since the air quality is already effecting environment and health quality (see graph). In previous projects some of these differences were already compared. EU countries however did not use best practices from each other to improve the effect of the set activies and measures. This PIAQ project will compare the different activities and identify best practices. It will lead to a report on the best practices on implementation of air quality standards and enforcement, and to recommendations for IMPEL Member States on using these best practices.



There are three main sources of emissions to air: industry, shipping and traffic. This project limits the scope by focusing on industrial sources.

Specific project objectives

- Exchange of information and experiences on key regulatory issues
- Identify best practices in the present work on inspection and enforcement at local, regional and national level, improving environmental effects in IMPEL member countries and recommend these to all EU countries

The planned activities will be divided in two phases. Phase 1 covers the information exchange, and will be finished in 2010. Phase 2 will identify the bestpractices and recommendations to all IMPEL countries. Phase 1 and 2 together will deliver the project products. The start of Phase 2 will be done only when thought relevant after phase 1.

Phase 1: exchange of information

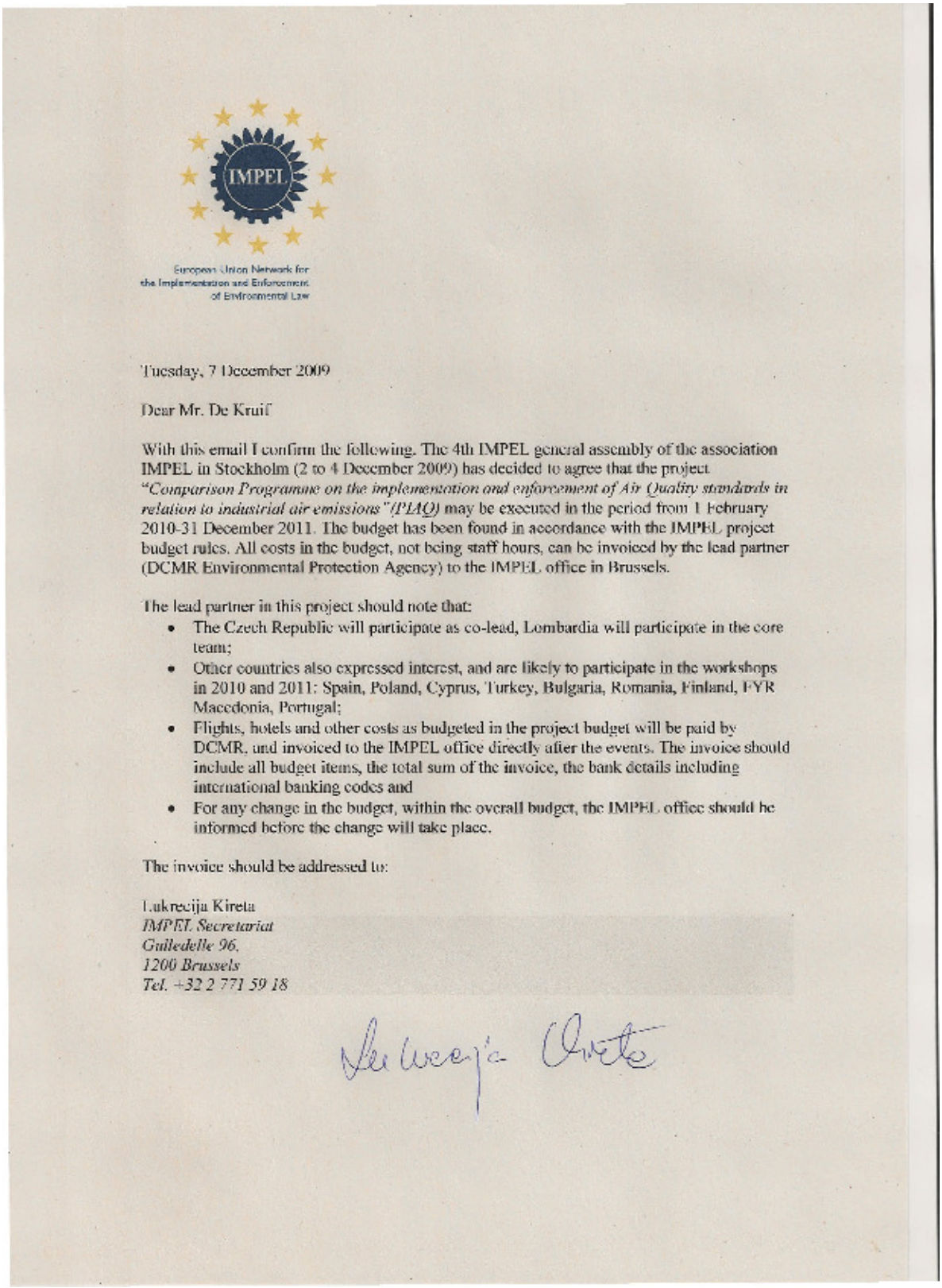
Jan. 2010	**Start of project**
1. Febr. 2010	**First meeting of Core Team (2 days, DCMR/Schiedam, the Netherlands)**
	- Kick-off - Exchange of information on implementation of the Air quality directives in the core team member countries - Preparing ToR for consultant/defining tender procedure - Defining the questionnaire; this questionnaire will be based on prelimenary work in Austria and the Netherlands. - Informing IMPEL contact persons about this new questionnaire - Preparation of the planned first workshop
2. April 2010	**Second (Virtual) meeting of core team (0,5 days)**
	- Finishing tender/Selection of the assisting consultant - Preparing the questionnaire
3. June 2010	**First workshop (2 days, location to be agreed)**
	- Sharing good practices in the participating countries - analysing the prelimenary results of the questionnaire: completeness, missing information, quality of information - preparing list of all practices in all countries; participating countries will have the task to identify from this list the practices that will or may work in their own countries; identification of the most effective practices per country

4. Sep. 2010	**Third (Virtual) meeting of the core team – progress report**
	- compare the best practices in implementation and its effects on emissions by main sectors of industry. - Assessing the information - Preparing a first progress report to the autumn cluster 1 meeting and General Assembly - Prepare the follow up, phase 2 of the project

Phase 2: identify best practices

5. Febr 2011	**Fourth (virtual core team meeting – preparing second workshop**
	- Start op of Phase 2 of the project - Preparing second workshop
6. March 2011	**Second workshop (2 days, location to be agreed)**
	- compare the best practices in implementation and its effects on emissions by main sectors of industry. - Assess the effectivity of the different practices, plans and programmes per country - Identify and discuss the common EU best practices - Define recommendations to IMPEL member states on the EU best practices - Preparing a second progress report for the autumn Cluster 1 meeting
7. April 2011	**Last meeting of the core team (2 days, DCMR/Schiedam, the Netherlands**
	- Making available the best practices to all IMPEL member states - Drafting of a project report containing findings, conclusions and recommendations to the IMPEL General Assembly meeting - Evaluation of the project - Finishing the formalities of the project phase 2.
9. July 2011	**Virtual meeting of the Project leaders**
	- In June 2011 the final report will be prepared, - The report will be sent out to the IMPEL secretariate for discussion in the Cluster 1 and IMPEL General Assembly - The report will be presented to Cluster 1 and IMPEL General Assembly

Agreement Letter



European Union Network for the Implementation and Enforcement of Environmental Law

Tuesday, 7 December 2009

Dear Mr. De Kruif

With this email I confirm the following. The 4th IMPEL general assembly of the association IMPEL in Stockholm (2 to 4 December 2009) has decided to agree that the project *"Comparison Programme on the implementation and enforcement of Air Quality standards in relation to industrial air emissions" (PIAQ)* may be executed in the period from 1 February 2010-31 December 2011. The budget has been found in accordance with the IMPEL project budget rules. All costs in the budget, not being staff hours, can be invoiced by the lead partner (DCMR Environmental Protection Agency) to the IMPEL office in Brussels.

The lead partner in this project should note that:

- The Czech Republic will participate as co-lead, Lombardia will participate in the core team;
- Other countries also expressed interest, and are likely to participate in the workshops in 2010 and 2011: Spain, Poland, Cyprus, Turkey, Bulgaria, Romania, Finland, FYR Macedonia, Portugal;
- Flights, hotels and other costs as budgeted in the project budget will be paid by DCMR, and invoiced to the IMPEL office directly after the events. The invoice should include all budget items, the total sum of the invoice, the bank details including international banking codes and
- For any change in the budget, within the overall budget, the IMPEL office should be informed before the change will take place.

The invoice should be addressed to:

Lukrecija Kireta
IMPEL Secretariat
Gulledelle 96,
1200 Brussels
Tel. +32 2 771 59 18

Annex II. Interested IMPEL-members addressed

Country	Impel-contact	Name/organisation (Air Quality Dir/MoE)
Interested member states		
Spain	Carmen Canales	Ministero de Medio Ambiente
Poland	Hanna Jastrzebska	Chief Inspectorate for the Environment
Cyprus	Stelios Georghiades	Savvas Kleanthous / Head of Air Quality Section, Department of Labour Inspection
Turkey	Kemal Unsal	Ministry of Environment and Forestry. General Directorate of Environmental Management
Bulgaria	Kalin Iliev	Ivan Angelov / Head directorate for Air Quality, Ministry of Environment and Water
Romania	Michaela Beu	National Environmental Guard, Commissariat Bucharest / Pollution Control Department
Finland	Markku Hetamaki	Ministry of the Environment
Portugal	Isabel Santana	Ministry of environment and territorial planning
Belgium/ Flanders	Jean Pierre Janssens	Brussels Institute for Environmental Management Division of Inspection and Surveillance
Lithuania	Audrius Želvys	Audrius Želvys / Ministry for Environment
Possible interested member states		
UK	Will Fawcett	Environment Agency
Germany	Kristina Rabe	Federal Ministry of the Environment, Nature conservation and nuclear safety
Greece	Epaminondas Toleris	Air Quality Department/Directorate for the Control of Air Pollution and Noise/Ministry for the Environment, Energy and Climate Change
DK	Ulla Ringbæk	Katja Asmussen, Ministry for Environment (Danish EPA)
Organising member states		
Czech Rep.	Lenka Nemcova	Czech Environmental Inspectorate
Italy	Guido Lanzani	ARPA Lombardia
Netherlands	Koen de Kruif	DCMR Environmental Protection Agency

Annex III. Questionnaire

IMPEL - PIAQ-project 2010-2011

To: IMPEL National Contact Members

Date: **22 April 2010**

Conc.: **Questionnaire on implementation of Air Quality Directives**

European Union Network for the Implementation and Enforcement of Environmental Law

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This questionnaire gives an overview as to the implementation of legislation on industrial activities in relation to meeting the EU Air Quality Directives by the city / region / country of ……..

Background
In general it is very difficult to relate the emissions of one single installation or site to the ambient air quality. Local air quality is often under pressure in areas with concentrations of emissions due to large industry. This brings up the question whether an additional company in such areas will have an additional significant effect on the local air quality, or on the national emission ceilings, as well as which permitting, control or enforcement strategies would lead to the best air quality.

Objective
This questionnaire's intent is to identify best practices in permitting and enforcement and its effects on emissions by the main sectors of industry within a city/region or country. It will also be useful to gain knowledge into how permitting and enforcement is practised in the different regions, what differences are there in implementation and culture.

Attached to this explanation you will find the questionnaire concerning the implementation of the Air Quality Directive. The questionnaire follows the Directive's structure and is extended with some questions about permitting and enforcement. The final section of this questionnaire includes a Benchmark scenario, to assist in the development of best practices and will be used extensively in the forthcoming workshops. We hope you are willing to cooperate with our study and fill in this questionnaire.

If you have any questions about this study or with respect to the content of the questionnaire, please contact one of the persons below.

Yours sincerely,

Stuart Thompson
Consultant: air quality

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+31(0)6 2244 4982
F +31(0)33 468 28 01
E stuart.thompson2@dhv.com

Sander Teeuwisse
Consultant: air quality

T +31(0)33 468 3081
+31(0)6 2909 8242
F +31(0)33 468 28 01
E sander.teeuwisse@dhv.com

Contact person IMPEL Member State

Name:	
Function:	
Employer:	
Telephone number:	
E-mail address:	

1. General facts:

1.1 Please give an overview of your city / region and of the main industries represented

(in picture or table format preferably)

1.2 What would you identify as your main air quality problems? Please give an overview of the ambient air quality levels within your city / region.

(in picture or table format preferably)

1.3 What would you identify as the main sources of emissions within your city / region? (not only industrial sources)

(in picture or table format preferably)

2. Responsibilities:

Emissions of pollutants can be regulated by national regulations other than regulations that come from the Air Quality Directive 2008/50/EC.

2.1 How and at what level are the European *air quality* directives implemented into your national regulation?

(National, Regional, Permitting, etc)

2.2 Are the limit values from the EU Air Quality directive the only objective targets set in you city/region/country, or are there more ambitious targets? If so, by whom are these set?

2.3 How are the emissions from industry regulated in your city/region/country? Please give short remarks by commenting on the following points, if applicable:

- role of EU-directives (LCP-D, WI-D, EU VOC , IPPC-D)
- role of the BREF documents (is the upper or lower limit used)
- national emission ceilings (site or regional level)
- national regulations
- relation between regulations and permits
- possibilities and experiences in applying BAT+ (go further than BAT)
-local considerations

2.4 Member States have designated various tasks to authorities and local bodies with regard to implementation and enforcement of industrial emissions. Please indicate which organizations are responsible for the tasks mentioned.

Task	Local (Regional/Provincial) organization / Local authority	National organization / National authority	Remarks
Implementation			
Controls \ Permitting - IPPC sites - Non-IPPC sites			
Enforcement			

3. Permitting and enforcement of air quality emissions

3.1 Do industries within your city/region/country control themselves with regard to compliance of permit requirements?

If so how? (measuring, modelling, continuous, occasionally)

3.2 If so to whom do they report?

3.3 What is provided in their reporting standards?

(tons/year, concentrations of emissions, etc.)

3.4 Are Automatic measuring systems prescribed?

3.5 If so, when are these prescribed?

3.6 What are the consequences when the permitted emission levels are exceeded?

penal / administrative sanctions?
is the permit revoked?
in which cases?

3.7 In what way do authorities support industry to take measures? Are these measures legally enforced and/or policy driven? Please provide examples of such?

measures (e.g. Voluntary +BAT)

3.8 Can the industry make use of subsidies, national funds for *implementation* of BAT?

3.9 Who is responsible for the implementation of these measures?

3.10 Is the introduction of these measures incorporated in local /national policies?

3.11 Are there special permit prescriptions, have industries special conditions for cases of high ambient air pollution during unfavourable meteorological conditions, if so please provide details?

3.12 What are the consequences when /if air quality limit values are exceeded?

(is some kind of production reduction required)

3.13 In which way are ambient air quality levels being monitored and by whom?

4. Ambient Air Quality Assessments

According to the Directive, Member States shall maintain the levels of those pollutants below the limit values and shall endeavour to preserve the best ambient air quality, compatible with sustainable development

4.1 Are ambient air quality levels being preserved through permits?

If differing methods exist between IPPC and non-IPPC industries, please provide details.

4.2 How is it determined if there is an exceedance of limit values?

4.3 To what extent are the agreed emission levels of the industry being monitored and enforced?

4.4 Are there air quality monitoring stations related to industrial activities and if so, who owns and maintains these stations?

4.5 If air quality monitoring stations are related to industrial activities, to what extent are the measurements of industrial air quality network used for assessing the ambient air quality?

4.6 How / for what is the output data of the (industrial) air quality modelling or data from the air quality monitoring stations used?

4.7 Is there a forecast alert system present based on modelling of industrial emissions?

4.8 Are there special air quality monitoring sites for cases with high ambient air pollution during unfavourable meteorological conditions?

5. Benchmarking

For the 9 typical industrial activities listed below, please give a representative example of 1 such activity in your region. Describe year of construction, process conditions, thermal input, feed streams, fuel type, load etc. as accurately as possible so that it is possible to characterise the installation and to make an indicative comparison between different Member States. The input will be used as part of the workshop discussions to be held in Prague in June.

Typical industrial Activities

1. *Power plant, GT + boiler, > 100 MW_{th}.*
2. *Power plant, coal fired, > 20 MW_{th}.*
3. *Municipal solid waste incineration plant*
4. *Cement kiln*
5. *Steelworks/ or: iron and steel installations*
6. *chemical installations (e.g. Crude oil refinery, production of organic substances, production of inorganic fertilizers, production of TiO_2)*
7. *glass production installations*
8. *wood processing installations (manufacturing OSB and MDF boards)*
9. *other types of plants with influence on air quality (ground emitting plants)*

For each representative example please address the following items:

- type of emissions for which emission limiting values (stricter or other than ELV's from the EU Directives) are set;
- emission limiting values (bubble approach, EL's for individual action, or both);
- monitoring requirements (frequency, quality assurance);
- emission reducing techniques applied;
- typical emissions based on measurements (concentrations with reference conditions);
- typical yearly mass emissions; and
- technical or organisational measures resulting in emission reduction and its effects.

This section is of importance for the determination of best practice discussions during the forthcoming workshop. The more information provided in this section, the more informative and beneficial the workshops, and their outcomes.

Annex IV. Participants to the workshops

IV a. Participants to the first workshop (Czech Republic)

	Ctry	Name	Email	Organisation
1	CY	Ioannis Christofides	ichristofides@dli.mlsi.gov.cy	Dept of labour inspection
2	CY	Michalis Hadjipetrou	mhadjipetrou@dli.mlsi.gov.cy	Dept of labour inspection
3	CZ	Jana Sestakova (chair)	Jana.sestakova@mzp.cz	Ministry of the Environment
4	CZ	Lenka Nemćova	nemcova@cizp.cz	Environmental inspectorate
5	DE	Andreas Wasielewski	Andreas.wasielewski@mlur.landsh.de	Min.Agr/Env. Schleswig-Holstein
6	IT	Fabio Colonna	f.colonna@arpalombardia.it	ARPA Lombardia
7	IT	Guido Lanzani	g.lanzani@arplalombardia.it	ARPA Lombardia
8	LT	Vaclovas Beržinskas	v.berzinskas@aaa.am.lt	EPA Lithuania
9	LT	Mindaugas Bernatonis	m.bernatonis@aaa.am.lt	EPA Lithuania
10	NL	Sylke Davison	Sylke.davison@dcmr.nl	DCMR
11	NL	Robert van Doorn	Robert.vandoorn@dcmr.nl	DCMR
12	NL	Koen de Kruif	Koen.dekruif@dcmr.nl	DCMR
13	RO	Madgalena Gheorghe	Magdalena.gheorghe@gnm.ro	National environmental guard
14	RO	Carmen Popescu	Carmen.popescu@anpm.ro	Nat. environm. Prot. agency
15	SK	Dominika Ocenasova	Dominika.ocenasova@sizp.sk	Inspectorate of the environm.
16	SK	Cyril Burda	burda@sizp.sk	Inspectorate of the environm.
17	PT	Bibiana Silva	Bsilva@igaot.pt	Environm. Gen. inspectorate
18	CZ	Eva Rychlikova	rychlikova@cizp.cz	Environmental inspectorate
19	CZ	Jitka Zagorová	zagorova@cizp.cz	Environmental inspectorate
20	CZ	Simona Dobisová	dobisova@cizp.cz	Environmental inspectorate
21	CZ	Jakub Achrer	Jakub.achrer@mzp.cz	Ministry of the Environment
22	CZ	Katerina Sukdolová	Katerina.sukdolova@mzp.cz	Ministry of the Environment
23	CZ	Lucie Holubová	Lucie.holubova@mzp.cz	Ministry of the Environment
24	CZ	Michala Krecková	Michala.kreckova@mzp.cz	Ministry of the Environment
25	CZ	Pavel Sremer	Pavel.sremer@mzp.cz	Ministry of the Environment
26	CZ	Petra Ptácková	Petra.ptackova@mzp.cz	Ministry of the Environment

IV b. Participants to the second workshop (Italy)

	Ctry	Name	Email	Organisation
1	CY	Michalis Hadjipetrou	mhadjipetrou@dli.mlsi.gov.cy	Dept of labour inspection
2	DE	Andreas Wasielewski	Andreas.wasielewski@mlur.landsh.de	Min.Agr/ Env. Schleswig-Holstein
3	IT	Fabio Colonna (chair)	f.colonna@arpalombardia.it	ARPA Lombardia
4	IT	Anna di Leo	A.DILEO@arpalombardia.it	ARPA Lombardia
5	IT	Antonella Masala (org)	a.masala@arpalombardia.it	ARPA Lombardia
6	LT	Vaclovas Beržinskas	v.berzinskas@aaa.am.lt	EPA Lithuania
7	LT	Mindaugas Bernatonis	m.bernatonis@aaa.am.lt	EPA Lithuania
8	NL	Johan Voerman	Johan.voerman@dcmr.nl	DCMR
9	NL	Koen de Kruif (chair)	Koen.dekruif@dcmr.nl	DCMR
10	RO	Adrian Nicolea	homorean@yahoo.com	Nat.Env.Guard, Reg. Valcea
11	SK	Dominika Ocenasova	Dominika.ocenasova@sizp.sk	Inspectorate of the environm.
12	SK	Cyril Burda	burda@sizp.sk	Inspectorate of the environm.
13	PT	Bibiana Silva	Bsilva@igaot.pt	Environm. Gen.Inspectorate
14	CZ	Jakub Achrer	Jakub.achrer@mzp.cz	Ministry of the Environment
15	CZ	Michala Krecková	Michala.kreckova@mzp.cz	Ministry of the Environment
16	ES	Ainhoa Inza	a-inza@ej-gv.es	Euskadi Governmt, MofEnv qual
17	ES	Óscar Basago González	oscar.basago@juntaextremadura.net	Extremadura Gov, MofEnv qual
18	NL	Sander Teeuwisse	Sander.teeuwisse@dhv.com	DHV [consultant]