Minutes 2nd Dioxin Workshop
Bratislava, 2-3 February 2004.

A. Participation

a) Present from Candidate Countries:

Bulgaria:	Eveline Nikolova
Cyprus:	Stelios Georghiades
Latvia:	Gunars Civjans
Poland:	Adam Grochowalski
Romania:	Corina Cristea
Slovakia:	Anton Kočan
Turkey:	Sönmez Dagli

b) Present from European Commission:

Scott Brockett	(EC, DG ENV)
Bostjan Paradiž	(EC, JRC)

c) Other invited experts present:

Anke Joas	(BiPRO GmbH)
Ansis Grantis	Latvia

d) Present members of the Project team:

Didier Delage (IOW), Herman Kok (TNO-MEP), Jana Matejovicova (SHMU), Tinus Pulles (TNO-MEP), Ulrich Quass (IUTA).

e) Information received from

Czech Republic	Jitka Hlavicova, unable to attend
Estonia	Natalya Kohv, unable to attend
Hungary	Jozef Kutas, data received
Lithuania	Inga Siktorova, unable to attend due to reorganisation of the Agency
Malta	Unable to attend

B. Agenda

1.	Opening	Scott Brockett
2.	Objectives of the workshop and overview of state-of-play	Tinus Pulles
3.	New results of JRCs Small Sources Project	Bostjan Paradiž
4.	Environmental levels in Candidate Countries (ELICC project)	Anke JOAS
5.	Emission measurement program	Ulrich Quass
6.	State of play of the Dioxin Inventory: First release	Tinus Pulles
7.	Emission inventory to water and land	Didier Delage
8.	POPs National Implementation Plan	Ansis Grantsis
9.	Evaluation of dioxin inventories in CCs	Herman Kok
10.	Discussion and agreements on how to continue	Tinus Pulles

All presentations are available on the project website.

C. Minutes

a) Opening by Scott Brockett

Scott welcomed everybody and explained the context and the objectives of the project and the relation to another DG-ENV funded project "*Dioxins & PCBs: Environmental levels and human exposure in Candidate Countries*". For this purpose Anke Joas from Germany has been invited to present first results of that project. He also emphasized the need for more information about emissions of dioxin to water and land.

b) Objectives of the workshop and overview of state of play by Tinus Pulles

Tinus shortly memorized what has been done so far. Phase 1 of the project has been completed and was aimed at the gathering of initial data for Candidate Countries (CC) that resulted in the discussion during the 1st workshop last year. Then phase 2 started with the planning and performing of emission measurements and a set up of preliminary emission inventories for the CCs. This phase will end with the results of this workshop. In phase 3 of the project the results of this workshop will be incorporated in the inventory together with the results of the measurements and will lead to a draft final report that will be presented and discussed in the 3rd workshop.
The goals of this (2nd) workshop were:

- the presentation and discussion of the progress in the project;
- to agree on the use of emission factors, obtained from the measurement campaigns;
- the definition of further steps to be made to improve the emission inventory.

The progress in the project has been laid down in a draft interim report that has been send to the representatives of the CCs together with country specific data on activity and emission factors for emission of dioxins to the air with a request for comments about these data. For dioxin emissions to land and water only first estimates are given, that have to be filled in further.

c) New results of JRCs Small Sources Project by Bostjan Paradiž

From national inventories and measurement campaigns in EU and CCs it can be concluded that for the residential sector the per capita coal combustion activity is 10 times higher in CCs and wood combustion activity is about 3 times higher in CCs than in Western EU countries. When comparing EU versus CC sectorial emissions it can be estimated that the residential sector might be dominant for dioxin emissions in CC.
DG-ENV acknowledges the importance of small combustion sources and gives within the Dioxin strategy the highest priority to coal combustion in the residential sector. Within the context of CAFE JRC started the small sources project and has chosen two different approaches:

- Direct emission measurement in a small facility test stand to derive parameters influencing the PCDD/F emissions, to assess possible areas of reduction measures and to derive emission factors for dioxins, PAHs and size fractioned PM emissions for different fuels/facility types .
- Indirect emission assessment from ambient air concentrations because of difficulties with emission measurements.

First results of the indirect assessment show the importance of the residential sector (inclusive illegal residential waste burning):

- Graz study showed good agreement of calculated emission factors (EFs) with those measured by Austrian UBA;
- Cracow case study showed up to 8 pg I-TEQ m³ in ambient air during winter period and a factor 100 lower during summer period (this leads to the conclusion that industrial sources can't have been responsible for the measured extreme dioxin levels in ambient air). With an EF of 100 µg I-TEQ/ton for domestic burning of coal and dispersion modelling this results in quite well agreement with measured ambient air concentration.
- Zakopane case study (no industry, small town high degree of stove heating): ca. 4 pg I-TEQ/m³ in ambient air in winter 2002 (even higher than in Cracow at the same time).

Future activities will be directed to an integrated study at Cracow involving emission measurements, emission inventories and scenarios, outdoor/indoor air quality measurements, exposure assessments, dispersion modelling, source apportionment, health effect assessment and reduction costs related to health effects.

Discussion:
There was a discussion about possible different EFs for combustion of hard coal from Poland and of Czech and German brown/hard coal. According to the report of the European Dioxin Emission Inventory, Stage II (2000) Polish coal could have an EF more than 10 times higher than other coal. Adam Grochowalski said that such differences have not been confirmed lately and can have been caused by unfavourable combustion conditions.

d) Environmental Levels In Candidate Countries (ELICC project) by Anke Joas

The projects name is: "Dioxins and PCBs: Environmental Levels and Human Exposure in Candidate Countries". The first objective of this project is making an overview on data available about monitoring research, environmental contamination, human exposure, legislation, expert laboratories and storage and destruction of dioxins and PCBs. In analysing these data the second objective is to identify knowledge gaps, to perform integral assessment and realise knowledge transfer and capacity building in CCs. She presented an overview of monitoring and research activities for dioxins and PCBs in CC in relation to air, water sediments, soils, vegetation, wildlife, food, feed, total diet, human milk, adipose tissue and blood. More about the scope and goals of this project can be found on web-site: www.eu-pops.org

Discussion: Anke presented a time trend for mean annual concentrations of PCBs in rivers in Poland between 1992 and 2001 that showed a light decrease in concentration in Vistula river in Krakow, no trends in Vistula river in Warszawa and Kiezmark and in the Oder in Chalupki but an increase in the Oder in Wroclaw. It was discussed whether the trends were statistically significant or not and it was concluded that it is not. So it seems that emissions to water haven't changed much during last ten years.

e) Emission measurement program by Ulrich Quass

The main objectives of the measurement campaigns are:
- getting better emission estimates for relevant sources;
- check of emission factors used in the inventory;
- support capacity building in CCs

The results of the 1st measurement campaign (cement work in Estonia and iron ore sintering, zinc recovery from scrap and waste, sintering of raw zinc oxide and electrolytic zinc melting furnace in Poland) show that generally there is a surprising good agreement with UNEP-Toolkit emission factors used in the inventory (in the results presented in the interim report a calculation error has been made for Zn-production EF that shall be corrected in the final report)
In the discussion in relation to this good agreement the question raised how to deal with results from next measurements that differ a lot from EF in the UNEP-Toolkit (application for particular plant only or general application to sector?).
For the 2nd campaign measurements will be done at a bark combustion plant in Slovakia, a steel plant in Latvia, a secondary aluminium plant in Turkey, a power plant in Bulgaria and iron ore sintering plants in Slovakia and Turkey. In most case the measurements will be done in cooperation with a subcontractor in the specific CC.
Ulrich proposed three options for further measurement work:

- 3rd campaign with plants already on the list;
- 3rd campaign only if more relevant plants can be found quickly;
- intercomparison study on PCDD/F sampling with experienced and newcomer teams

Discussion: First option appeared to be preferred by CC delegates. The 2nd option might reveal iron ore sintering in Turkey to be included, but uncertain. The 3rd option seemed to be interesting particularly to the more experienced institutes.

f) State of play with respect to the Dioxin Inventory: First release by Tinus Pulles

Tinus presented the state-of-play in the database structure and compilation. He stressed that this database is still developing towards the final one of this project. The activity data were copied from earlier projects (CEPMEIP) and linked to the NFR sources sector definitions. He also presented the methods implemented in the database to select alternative technologies (and hence emission factors!) for each of the activity in the countries. This mechanism also will allow to study the effect of the introduction of improved technologies in the countries and therefore will support some analyses on the past and future trends, as requested in the Terms of reference for this project.

It was concluded that for one sector ("open burning of agricultural residues") the interpretation by TNO of both the Toolkit and the agricultural statistics as used in the CEPMEIP project, leads to unrealistic high emission estimates. This source therefore will be recalculated and probably removed.
(TNO has, after the workshop, changed the assumption for this source in the final version. It now is assumed that no more than 5 % of the residues is burned)

Some countries already have sent additional data and information that will improve the quality of the inventory. These comments will be discussed by Herman Kok.

g) Emission inventory to water and land by Didier Delage

IOW tried to gather measured data from bibliographical search on international data banks, by inquiries at national environmental organisations and at IOW partners in some CCs.

It was concluded that data on water and land emissions are very scarce and difficult to obtain. Dioxin emissions to water for coke oven plants and to land for sinter plants are most complete and these results have been presented as examples.
The discussion revealed some additional possibilities for assessment of relevant emission pathways e.g. paper and pulp industry could be important.

h) Measurement facilities of the Tubitak institute by Sönmez Dagli (Turkey)

In this inserted presentation Sönmez presented the measurement facilities of the governmental Tubitak institute. Recently they invested in dioxin measurement equipment that they want to use in this project.
He also gave a survey on industrial sources in Turkey (e.g. 3 sinter plants, Sec. 100 Aluminium production sites, 100 iron foundries)

i) POPs National Implementation Plan by Ansis Grantsis (Latvia)

In order to implement the Stockholm Convention on POPs the Ministry of Environment of Latvia initiated the project funded by UNDP/GEF to create sustainable capacity and ownership in Latvia to meet its obligations. The project has three tasks:

- Legal assessment and awareness raising;
- Compilation of POPs initial inventories and capacity assessment;
- Evaluation and priority setting of POPs management options and drafting an implementation plan.

Interesting activities with regard to our dioxin project are:

- Emission concentration measurements at 3 facilities (cement works, hospital waste incinerator and hazardous waste incinerator) resulted in much lower concentration than used before (respectively < 0,1 ng/m^3, 35 ng/m^3 and 0,2 ng/m^3). The high emission from the hospital waste incinerator reveals an EF in good agreement with worst case EF of Toolkit.
- Result of re-calculation of dioxin emissions from uncontrolled combustion processes (household heating and cooking using biomass, uncontrolled waste burning and accidental fires) was that these sources emit about 50 times more dioxin than cement production in Latvia.

On the basis of these results a new inventory has been made for dioxin emission in Latvia.

j) Evaluation of dioxin inventories in CCs by Herman Kok (TNO-MEP)

Herman gave a country by country comparison of TNO inventory data in the draft interim report with external information provided by JRC and CC experts respectively.
Differences/questions occurred for:

- Cyprus: according to CC domestic burning involves only oil fired heating systems (coal combustion activity will be excluded from inventory); there are no sinter plants; there are no municipal or industrial waste incinerators (eliminate activity from inventory);
- Hungary: there are different activity rates regarding domestic combustion given by JRC and in the TNO database (must be updated by consulting the Chronos database), CC states that there is no agricultural waste burning.

- Estonia: question if no metal production and no municipal/industrial waste incineration exists.
- Czech Republic: Minor remarks.
- Poland: Although there is sinter production no activity rate has been given for steel or pig iron production and there is no activity data for secondary aluminium (to be included if present). The high emission factor of 300 µg TEQ/t only applies to stove heating (technological split to be improved in inventory). Actual EF for hospital waste was ca 20 µg I-TEQ/t (EF to be corrected in Inventory ?)
- Latvia: Hospital waste incineration activity is only 200 t/a (to be corrected in database).
- Bulgaria: Hospital waste incineration activity is only ca. 1000 t/a (to be corrected in database). Also other activity data has to be updated. According to national inventory most important sources are public and domestic heat production.

General problems discussed:

- Transport as potential source type is missing: CC experts have to deliver information on use of leaded gasoline for traffic and of diesel for road transport in their countries. There could be a potential of PCDD/F formation from road salt in winter (to be assessed: Hagenmayer 2001).
- Hospital waste activity rates: Current estimation using data from EU-Inventory not appropriate; Polish data might be better but per capita this even does not fit with Latvia for example (average of Polish and Latvia data could be used).
- Combustion of liquid waste fuels in petroleum refineries could be important (to be assessed).
- Open burning of domestic waste to be assessed by consideration of %-coverage with waste collection systems.
- Nomenclature problems: There is misunderstanding about what is meant by some descriptions e.g. open burning of agricultural waste, fires, preservation of wood, residential waste burning etc. (better definitions have to be given in final report).

k) Discussion and agreements on how to continue by Tinus Pulles

There has been a discussion about next steps in the project that resulted in the following agreements:

Project roadmap:

- CC experts do send additional comments on the inventory to TNO (deadline end of February 2004);
- TNO will implement comments into database (March/April 2004);
- Draft Final Inventory to be send to CC experts for final round of comments (May 2004);
- Draft Final report to Commission/JRC by late October/November 2004.

Measurements:

- 2nd campaign to be initiated as soon as possible;
- Decision on what measurements in 3rd campaign as soon as possible;
- All measurement results shall be available by September 2004;
- Besides sampling teams also CC experts will be notified in order to allow for particular activities (allowances by operators etc.).

General demands:

Inventory shall provide rationales in which cases and why Toolkit EFs could not be applied.

CC experts are asked to forward information on GEF projects to the project team.