TECHNICAL SPECIFICATION

27-08-2004

Feasibility study: Modelling environmental concentrations of chemicals from emission data

Invitation to tender: EEA/EAS/04/011

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1.1 Introduction

1.1.1 Background

Chemical substances that are present in the environment may cause negative impacts not only on environmental sectors but also in humans. Adequate knowledge about substance concentrations in environmental media is an absolute requirement for any reliable assessment of these impacts and risks.

Although monitoring is already conducted under several voluntary and legal schemes the process of risk assessment under the existing substances regulation 793/93 highlighted a general lack of knowledge on the exposure to the existing substances under review. To improve this situation EEA has given a high priority to the development of a monitoring framework to provide data to build the basis for better assessments that also allow following the effects of policies and measures.

However the high number of chemicals on the European market does not allow monitoring all of them**.** Modelling of their distributions could be used to supplement the picture.

The aim of this feasibility study is to explore the availability of suitable models to predict environmental concentration of chemicals from point source emission data such as the data reported to EPER and develop a strategy how these can be used to assess the chemical burden of Europes environment.

EPER is the European Pollutant Emission Register EPER http://www.eper.cec.eu.int/ – the first European-wide register of industrial emissions into air and water. It gives access to information on the annual emissions of 9376 industrial facilities in the 15 Member States of the EU as well as Norway and Hungary – mostly from the year 2001. The EPER database does contain release data on ca. 50 substances. Models might be applied to predict the distribution of these substances following their release. Available monitoring data may be used to verify model estimates.

1.1.2 Previous work

The EMEP-programme under the convention on Long range Transboundry Air pollution (LRTAP) http://www.emep.int regularly provides information on concentrations of POPs based on monitored and modelled data.

Several research programmes from public site and industry have been active in the development of models, e.g. GREATER. The Technical Guidance Document (TGD) on Risk assessment of chemical substances[1] provides information on exposure models used in the risk assessment process (e.g. the European Union system for the Evaluation of Substances EUSES, for details see http://ecb.jrc.it/existing-chemicals/). The OECD maintains a web based inventory on a number of models useful for chemicals assessments i.e. distribution models.

EEA is carrying out a specific project with the scope to identify, assess and map the areas that present soil contamination problems to be dealt with at the European level. The project is a direct contribution to the preparation of soil monitoring guidelines under the Soil Thematic Strategy (STS) and a support to EEA assessment and reporting activities. To this scope a risk-based approach has been adopted. The methodology developed makes use of Europe-wide geo-referenced databases such as EPER and DECHMINUE (mining waste data). The expected outcomes of the project are a EEA proposed method for the identification of areas under risk of soil contamination in Europe and a map and related assessment focusing on soil contamination risk areas, produced by applying the proposed method.

Activities of other international organisations in the development and application of modelling are also important and shall be considered in the investigation. This includes programmes of EU, WHO, UNECE, OECD.

1.2 Purpose of call for Tender

Develop a toolbox of available methodologies and a work plan for applying relevant models to substances reported under EPER in order to predict the concentrations, composition and distribution of these chemicals in the European environment.

[1] The Technical Guidance Document in support of Commission Directive 93/67/EEC on Risk Assessment for new notified substances, Commission Regulation (EC) No 1488/94 on Risk Assessment for existing substances and Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market

The main task in this feasibility study will be to

1) evaluate

- Which of the available methods to model environmental concentrations of chemicals in the different media are sufficiently validated and accepted to be used in a policy context.
- Which of the models are suitable for all or some of the substances listed under EPER and other types of compounds.

2) make a test run and

3) develop a strategic proposal how these models and derived data can be used to estimate and predict the concentrations, composition and distribution of chemicals in the European and wider environment based on European emission data.

1.3 Tasks

The tenderer will provide in his offer a proposal for a detailed work plan for each identified task.

The tasks to be performed are:

1. Identify available models on chemical substances concentrations in the different media and/or their impacts. The evaluation shall cover models to predict concentrations in air, water, sediment and soil as well as biota (excl. food). International and national developments should be considered as well as research activities especially those concerning persistent substances or substances with a potential for long-range transport, or activities covering large rivers or other areas which might be representive for particular European regions.
2. Verify their status of validation and general acceptance.
3. Evaluate available environmental models, preferably validated or widely accepted models, for their ability to provide information on spatial distribution of chemicals and resulting concentrations in different environmental media. Although the main target is Europe, regions outside Europe that will be impacted by European emissions should be included in the assessment.
4. Scan the models and provide information on the time and spatial scale they are able to cover. Provide expert judgement on the resolution needed for assessments of (pan)european, national, regional or local pollution. Describe model characteristics relevant for each of these levels.
5. Identify which of the above models are applicable to EPER substances.

6. Run one ore more selected readily available models for one or more test substances by using the reported release data in the EPER data base. In selection of the test substance(s) consider the availability of monitoring data on the compound(s) as a key requirement.
   - Map the concentrations
   - Identify hot spots of predicted high chemicals concentrations
   - Assess usefulness of EPER data format for this purpose. For substances already covered by EMEP: discuss the added value by using EPER data for high and smaller resolution assessments. Will EPER data increase the usefulness of existing models on (pan)european, regional, or local level?
   - Compare predicted levels with actual monitoring data on concentrations, if available.
7. Draft a workplan on how to extend task 6 to all the relevant models identified in task 5 and all substances reported in EPER. Define the minimum and optimum input parameters for the models needed to include further priority substances. Consider how substances could be grouped according to similar environmental effects, availability of monitoring data, expected releases (only point sources or many diffuse sources). Provide an estimate of the timeframe and required resources for executing the workplan.
8. Develop a strategic proposal on how these models and derived data can be used to estimate and predict the "chemical density" (concentrations, composition and distribution of chemical substances) in the European environment based on emission data. Give an estimate of the reliablility and level of uncertainty.
9. Summarise the findings of the feasibility study in a report.

Close co-ordination of work under the contract with other work at the EEA within the operation and the project needs to be ensured at all times.

It is expected that the execution of the above tasks will require about 70-90 working days. The precise division of work and budget within the contract will be agreed with the successful tenderer at the beginning of the contract.

1.4 Geographic coverage

The ultimate goal is to develop an approach that covers the 31 EEA Member States, the six collaborating countries (Albania, Bosnia-Herzegowina, Croatia, FYROM, Monaco, Serbia-Montenegro) and Switzerland. The current EPER data covers emission sources in EU15, Norway and Hungary. Within the frame of the feasibility

study however high quality models should not be excluded because the geographic coverage is not complete. There should however be a description of the prerequisites to extend their applicability. Areas outside Europe that are impacted by European emissions should also be included in the considerations.

1.5 Time schedule and organisation of work

The work should begin within two weeks of signing the contract and be executed in discussion with the respective EEA Project Manager over a period of 6 months. A detailed work plan must be elaborated at the start of the project and submitted at least one week before the start-up meeting for approval by the EEA Project Manager.

There are no special requirements regarding the location of work. It is envisaged that three meetings with the EEA Project Manager will be necessary:

- Start-up meeting to approve detailed work plan;
- 1st Interim meeting after the finalisation of the interim report to discuss the results and select the substances and models for a test run.
- Final meeting including the identification and invitation of relevant experts to discuss the completion of the final report.

1.6 Deliverables

The tenderer should submit the following deliverables:

1. Detailed work plan for the project, one week before the start-up meeting (three hard copies and one WORD file).

2. Interim report approximately two months into the project: overview on available distribution models, their status of validation, applicability and required input parameters (three hard copies and one WORD file).

3. A report with an analysis of the feasibility to use certain models to evaluate the geographic distribution and environmental concentrations of chemicals. The report shall provide an outline and detailed planning for such an assessment.

1.7 Payment

- 30 % within 45 days of signing of the contract;
- 20 % within 45 days of acceptance of deliverables 1, and 2; and,
- The balance within 45 days of acceptance of deliverables 3.

1.8 Contract

In drawing up the bid, the tenderer should bear in mind the provisions of the **standard contract** attached to this invitation to tender (Annex I)

This contract can be extended according to the original conditions. Such an extension has to be applied for at least one month before expiry of the original contract.

1.9 Submission of tenders

a) The tender must include:

- all the information and documents required by the authorising department for the appraisal of tender, on the basis of the selection and award criteria in Section 1.11;
- the filled-out identification sheet (Annex III to this technical specification)
- the price in accordance with Section 1.10.

b) Postal address: the European Environment Agency, Kongens Nytorv 6, DK-1050 Copenhagen K, Denmark, for the attention of Dr. Gabriele Schöning and marked "Reply to open call for tender EEA/EAS/04/011".

c) Languages in which they must be drawn up: 1 of 13 official languages of the European Environment Agency (the 11 official European Community languages plus Norwegian or Icelandic).

d) Deadline for submission: 52 days from dispatch of this notice.

e) Other requirements: Tenders must be submitted in three copies and placed inside two sealed envelopes. The inner envelope, addressed to the person indicated above, should be marked either: "Invitation to tender EEA/EAS/2004/011. Not to be opened by the internal mail department". If self-adhesive envelopes are used, they must be sealed with tape and the sender must sign across the tape.

1.10 Prices

Prices must be fixed amounts in EURO. Apart from a total offer for the services, rates per day should be given. In addition the tenderer is requested to detail the expected part of the budget allocated to each task.

Travel and subsistence expenses likely to be incurred in the course of execution of the contract are not covered by daily rates. Estimated travel and subsistence expenses must thus be indicated separately. (Travel and subsistence expenses will not be taken into account when deciding whom to award the contract to.)

Travel and subsistence expenses shall be reimbursed in accordance with the rules and conditions relating to the payment of missions expenses in force at the Agency (see Annex IV).

The estimate of costs should be based on Annexes I, II and IV of these specifications and include any travel required to meet representatives of the Agency. In any event it should include the maximum amount of travel and subsistence expenses payable for the services provided.

Tenders from **consortiums** of firms or groups of service providers, contractors or suppliers must specify the role, qualifications and experience of each member of each group.

1.11 Selection of contractors and award of contracts

The selection of contractors and the award of contracts will be based on the following steps:

1. a check whether certain contractors should be excluded based on ***grounds for exclusion***;
2. a check on contractors' financial and economic standing and technical and professional competence based on ***selection*** criteria;
3. a comparison of tenders on the basis of the ***award*** criteria

1.11.1 Grounds for exclusion

Irrespective of the award procedure used, any contractor may be excluded from participating in a contract if:

- he is bankrupt, being wound up or has suspended business activities, his affairs are being administered by the court, he has entered into an arrangement with creditors or similar measures or is the subject of any proceedings of that nature;
- he has been convicted of an offence concerning his professional conduct by a judgement which is not open to appeal;
- he has been guilty of grave professional misconduct;
- he has not fulfilled obligations relating to the payment of social security contributions or taxes;
- he is guilty of serious misrepresentation in supplying the information required by the authorising department.

Potential contractors must certify that they are not in one of the situations listed above by signing and including the attached Declaration on Exclusion Criteria (Annex VI).

1.11.2 Selection criteria

The selection criteria for contractors is based on financial and economic standing and technical and professional competence.

1.11.2.1 Financial and economic standing

Evidence of financial and economic standing may be furnished by one or more of the following references:

- statements from bankers
- balance sheets or extracts from balance sheets
- a statement of overall turnover and turnover relating to the relevant supplies, works or services.

1.11.2.2 Technical and professional competence

Evidence of technical and professional competence must be furnished by the following references:

- The educational and professional qualifications of the proposed consultants
- A list of relevant contracts provided in the last three years
- A statement of the service provider's average annual manpower and the number of managerial staff for the last three years
- A description of the service measures for ensuring quality
- An indication of the proportion of the contract, which the service provider may intend to sub-contract.

1.11.3 Award criteria

The contract will be awarded to the most advantageous offer taking into account:

- **Expertise** - the consultants' knowledge of chemicals and their impact on the environment, expertise in the field of environmental modelling of chemical substances as evident from their previous projects and publications/reports;
- **Methodology** - the degree to which the methodology and detail of the consultants' work plan shows the capacity to provide the required deliverables;
- **Project management** – based on the quality of the team organisation and project management procedures, which should be clearly outlined in the tender; and,

- **Understanding** – the degree to which tenderers have taken into consideration all the aspects of the tasks required by the contract, such as they appear above, as well as the contents of the deliverables.

- **Value for money** – total price and number of working days offered in comparison to overall project output.

1.11.4 Points system

A points system is used to choose the best tender. The distribution of maximum points to each criterion is as follows:

- 30 points to 'Expertise'
- 25 points to 'Methodology'
- 20 points to 'Project Management'
- 10 points to 'Understanding'
- 15 points to 'Value for money'

ANNEXES

Annex I: Model for EEA standard study contract

Annex II: General terms and conditions applicable to contracts awarded by the EEA

Annex III: Identification sheet

Annex IV: Reimbursement of travel expenses

Annex V: VAT and excise duty exemption form

Annex VI: Declaration on Exclusion Criteria

Annex VII: Procedure for submitting a tender