JRC Scientific and Technical Reports

Workshop Report
River Basin-Specific Pollutants

Identification and Monitoring

Henna Piha, Valeria Dulio and Georg Hanke

A collaboration between NORMAN and JRC in support of the Water Framework Directive

EUR 24613 EN - 2010

JRC EUROPEAN COMMISSION

ies Institute for Environment and Sustainability

norman

The mission of the JRC-IES is to provide scientific-technical support to the European Union's policies for the protection and sustainable development of the European and global environment.

European Commission
Joint Research Centre
Institute for Environment and Sustainability

Contact information
Address: Via Enrico Fermi 2749, 21027 Ispra (VA), Italy
E-mail: georg.hanke@jrc.ec.europa.eu
Tel.: +39 0332 785586
Fax: +39 0332 786351

http://ies.jrc.ec.europa.eu/
http://www.jrc.ec.europa.eu/

JRC 61421

EUR 24613 EN
ISBN 978-92-79-18471-0
ISSN 1831-9424
doi:10.2788/45790

Luxembourg: Publications Office of the European Union

Printed in Italy

Contents

LIST OF ABBREVIATIONS

ACH	Acetylcholine
AMPS	Analysis and Monitoring of Priority Substances
CALUX	Chemical-activated luciferase expression
CIRCA	European Commission Communication and Information Resource Centre Administrator
CIS	Common Implementation Strategy
CMA	Chemical Monitoring Activity
DG ENV	Directorate General Environment
EAC	Environmental assessment criteria
EC	European Commission
EC 10	Effect concentration
ECHA	European Chemicals Agency
EDA	Effect-directed analysis
EEA	The European Environment Agency
Eionet	European Environment Information and Observation Network
E-PRTR	The European Pollutant Release and Transfer Register
EQS	Environmental quality standard(s)
ER-CALUX	Estrogen receptor-mediated chemical activated luciferase gene expression
EROD	Ethoxyresorufin-*O*-deethylase
GC-MS	Gas chromatography-mass spectrometry
JRC IES	Joint Research Centre, Institute for Environment and Sustainability
LC-MS	Liquid chromatography-mass spectrometry
LOD	Limit of detection
LOQ	Limit of quantification
MEDPOL	The Programme for the Assessment and Control of Marine Pollution in the Mediterranean region
MS	EU Member State(s)
MSFD	The Marine Strategy Framework Directive 2008/56/EC
NORMAN	Network of Reference Laboratories for the Monitoring of Emerging Environmental Substances
OSPAR	The Convention for the Protection of the Marine Environment of the North-East Atlantic
PCB	Polychlorinated biphenyl(s)
PNEC	Predicted no effect concentration
POP	Persistent organic pollutant(s)
QA/QC Directive	Commission Directive 2009/90/EC on technical specifications for chemical analysis and monitoring of water, sediment and biota
QA/QC	Quality assurance/quality control
QSAR	Quantitative structure activity relationship
RBSP	River Basin-Specific Pollutants
REACH	EU regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals
SETAC	The Society of Environmental Toxicology and Chemistry
SPM	Suspended particulate matter

TEQ	Toxic equivalent
TU	Toxic unit(s)
WFD	The Water Framework Directive 2000/60/EC
WG	Working group
WISE	Water Information System for Europe

Country abbreviations

AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
MT	Malta
NL	the Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

1. INTRODUCTION

1.1. Background

Besides the set of Priority Substances laid down in Annex X of the Water Framework Directive 2000/60/EC (WFD), which are regulated and to be monitored at EU level, the EU Member States (MS) need to identify pollutants of regional or local importance (in particular substances listed in WFD, Annex VIII) and provide environmental quality standards (EQS), monitoring schemes, and regulatory measures for them. This means that MS need to decide which are the candidate substances for further investigation and which are the substances then to be declared as River Basin-Specific Pollutants (RBSP). This requires assessments of impacts as well as prioritisation efforts and strategic screening for substances possibly causing concern. While this is a matter of discretion for each of the MS of concern, there is as yet no harmonisation of the procedures involved.

1.2. Objective of the Workshop

The objective of the workshop was to provide a common forum for MS and interested groups for presenting, discussing and streamlining approaches for a harmonised selection and monitoring of RBSP in the WFD context. Particular attention was given to emerging contaminants, as their prioritisation and monitoring are particularly challenging. The workshop aimed to produce clear recommendations on how to proceed. The workshop was organised as a NORMAN (Network of Reference Laboratories for the Monitoring of Emerging Environmental Substances) annual workshop in collaboration with JRC IES (European Commission, Joint Research Centre, Institute for Environment and Sustainability).

The workshop was held in the same setting as the NORMAN–JRC Stresa workshop 'Emerging environmental pollutants: key issues and challenges' in 2006 - (JRC EU Workshop Report: http://publications.jrc.ec.europa.eu/repository/handle/111111111/846) and was a continuation of the very successful collaboration between NORMAN and JRC IES.

In order to allow a more interactive and constructive discussion during the workshop and in order to plan the workshop according to MS' needs, a questionnaire had been distributed to members of Working Group E on Chemical Aspects and the Chemical Monitoring group on 14.1.2010, both working under the umbrella of the Common Implementation Strategy (CIS) of the WFD. Additionally, MS had been asked to provide their (draft) RBSP lists. A set of working session questions largely based on MS questionnaire responses were also developed and sent to participants prior to the meeting.

2. CURRENT APPROACHES IN MEMBER STATES

2.1. Questionnaire

Responses to the questionnaire were received from 27 countries: 25 MS (except Latvia and Luxembourg), Norway and Switzerland. The following questions were asked:

1. Could you describe in brief (max. two pages to be enclosed with this questionnaire) the procedure applied in your country for the selection of RBSP?

2. Is there a reference document with the full description of the procedure? If yes, please attach it, even if in the national language.
3. What are the critical points/limitations of the procedure applied in your country that you think could be improved in the future? Please describe.
4. Have there been dedicated previous monitoring efforts in order to identify RBSP? If yes, please describe them (project title, duration) and attach/provide links to relevant reports if available.
5. Does your organisation intend to participate in this workshop? (Yes/No)
6. If yes, would you be available for a presentation about the experience in your country? (Yes/No)
7. Name, institution and contact details.

The main findings are set out below, in Sections 2.2 to 2.5. (The full MS responses are presented in Annex 1.)

2.2. Procedures applied by Member States for the selection of River Basin-Specific Pollutants

Although MS applied various procedures for the selection of RBSP, these could roughly be divided into 5 groups (Fig. 1). The majority of MS had used a two-tiered selection approach, in which the first tier involved the pre-selection of substances from the "universe of substances" according to existing legislation (such as the Dangerous Substances Directive 76/464/EEC and its "daughter directives" listed in Annex IX of the WFD, existing monitoring programmes, source identification, etc). The second tier involved the selection of specific substances from the candidate substances. This selection was based on the use of different approaches, the main ones being:

1. Comparisons with emission data, production volume/use
2. Comparisons with monitoring data (i.e. occurrence of contaminants) and toxicity data
3. Use of existing procedures, such as COMMPS (Combined Monitoring and Modelling Based Priority Setting Scheme)[1] or CIS Guidance no.3 Analyses of Pressures and Impacts[2].

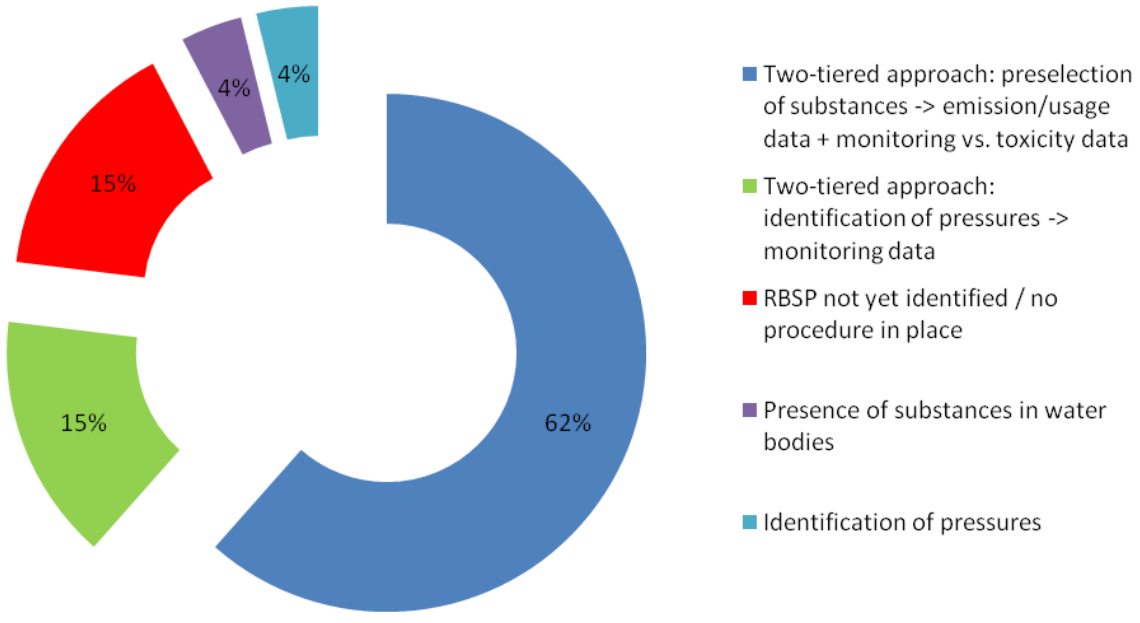

Figure 1. The main procedures applied by MS for the selection of RBSP.

[1] http://ec.europa.eu/environment/water/water-dangersub/lib_pri_substances.htm

[2] http://circa.europa.eu/Members/irc/env/wfd/library?l=/framework_directive/guidance_documents/guidancesnos3spressuress/_EN_1.0_&a=d

15% of MS had used another type of two-tiered approach, where the first step involved the identification of pressures and the use of inventories to produce a list of candidate substances (Fig. 1.). The second step included comparing this list to monitoring data followed by conservative selection of specific compounds.

Both those approaches are iterative, and include further adjustments to substance selections based on obtained results and new monitoring and/or ecotoxicological data.

In some cases, the selection of RBSP was based only on monitoring data (the presence of substances in water) or solely on pressure identification (Fig. 1.). In 15% of MS, RBSP had not yet been identified or there was no procedure yet in place.

2.2.1. Identification of River Basin-Specific Pollutants

From the questionnaire responses it was also possible to derive an estimation of the status of identification of RBSP in MS (additional update checks made with MS representatives in June–July 2010). Four types of situations occurred (Fig. 2.). In 21% of MS, RBSP had been selected, EQS had been developed for them, and they were already established as part of national legislation. In the majority of MS, the process of identifying RBSP or developing EQS was ongoing. In 32% of MS, RBSP had been identified and EQS had been developed/were being developed for them, but these proposals were still drafts or yet to be approved. Also in 29% of MS, only the RBSP had been identified but no EQS had yet been developed. For 18% of MS no RBSP had yet been identified.

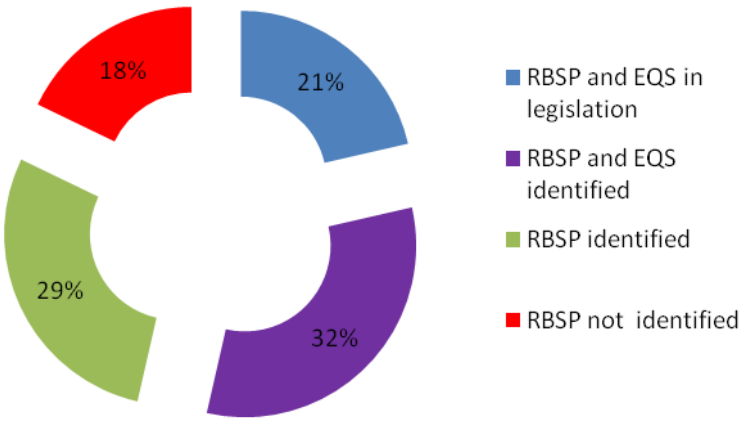

Figure 2. Status of RBSP identification in MS.

The number of substances for which national EQS had been derived ranged from 4 to 170. As requested by workshop participants, national RBSP lists have been compiled and made available to members on Circa:

(http://circa.europa.eu/Members/irc/env/wfd/library?l=/working_groups/priority_substances/specific_pollutants).
The content of the lists may differ between countries and they may include:

- A list of RBSP with corresponding EQS that are already included in the national legislation;
- A list of RBSP with corresponding EQS that are at draft/proposal stage;
- A list of RBSP without EQS;
- A list of substances that are currently monitored.

2.3. Reference documents for the selected procedures

The largest category of MS (37%) was those having referece documents describing the procedures used in identifying RBSP and in setting up EQS (Fig. 3.). For 30% of MS, documents were being drafted or at the

proposal stage, and were therefore still unofficial. For a third of MS the procedures had not been documented (Fig. 3.).

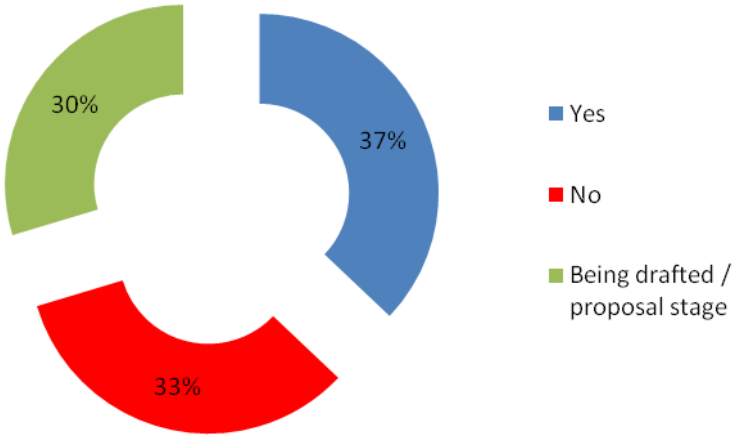

Figure 3. The availability of reference documents for RBSP selection procedures in MS.

The supporting documents received from MS as part of their response to the questionnaire are available via links provided in Annex 1, or as documents uploaded to CIRCA.

2.4. Critical points/limitations of the applied procedures and suggestions for improvements

Because MS identified a wide range of critical points and limitations, the reader is advised to read through the detailed MS responses presented in Annex 1. Some commonalities could, however, be found in the questionnaire responses, and they are grouped under the following themes: 1) general issues, 2) data quality and data gaps, and 3) emerging substances.

2.4.1. General issues

MS identified as a critical point the process of cutting down the potential candidate substances to a manageable number. Problems were also caused by a lack of consistency in the selection of RBSP, as different procedures were in some cases used for each river basin, and by insufficient co-operation between different authorities/stakeholders. The procedure was also seen as time-consuming and expensive. It was noted that a more precise definition of the criterion for the determination of "significant" quantities of pollutants discharged/released into water bodies would be needed.

2.4.2. Data quality and data gaps

The selection of RBSP was clearly affected by issues related to data quality and data gaps. Factors limiting the usability of data included the unreliability of monitoring results, and incomplete registers and databases. It was also seen that improvement of analytical methods is needed to achieve some of the EQS values established at EU level. There seems to be an overarching problem of uncertainty in the selection procedure caused by data gaps. These include:

- Lack of quality standards, emissions data, ecotoxicology and concentrations data
- Insufficient/inaccessible knowledge of sources and pathways (particularly diffuse sources)
- Use/production volumes and import data not available for all substance groups of concern, e.g. pharmaceuticals, cosmetics, pesticides.

2.4.3. Emerging substances

Many MS responses raised the issue of emerging substances receiving too little consideration. It was highlighted that the resources for setting up research programmes for emerging substances are often limited. Additionally, the use of screening methods is in many instances still rather limited.

2.5. Previous monitoring programmes for River Basin-Specific Pollutants

Overall, the pollutants were monitored in all MS under various programmes. It appeared, however, that there were seldom dedicated projects/programmes on the identification of RBSP. Sources used by MS in the identification of RBSP included national environmental monitoring programmes, specific projects and screening campaigns. Monitored matrices covered surface waters, biota, sediments and wastewaters.

3. RIVER BASIN-SPECIFIC POLLUTANTS WORKSHOP

3.1. Organisation

The workshop took place on 10–11 June 2010 in the Hotel La Palma in Stresa, Italy. As the main target group was the competent authorities in MS, invitations were issued through the relevant working groups in the WFD CIS (Chemical Monitoring Activity and Working Group E). The participation of high level scientists was ensured by also issuing invitations through the NORMAN network and by securing the presence of specific experts through direct invitation.

3.2. Working sessions

A main focus during the workshop was on interaction and direct information exchange between participants, achieved by a reduced number of longer presentations and the use of 5-minute flash presentations, introducing intense group work. The agenda of the workshop can be found in Annex 2.

Four different working sessions with specific topics were prepared:

- Data availability
- Identification of RBSP candidate substances
- Selection of RBSP
- Monitoring of RBSP

Workshop participants were divided into 6 working groups. Each of the groups tackled the same set of prepared questions and provided answers to them. In the following, the views of different groups are summarised by question. The answers received to the posed questions have been compiled here with editorial adjustments. They present a picture of the participants' views and are therefore a highly relevant compilation of opinions, needs and perceptions on the topic of RBSP across Europe, without interpretation by the authors of this report.

In Section 4, the key messages have been extracted from the group sessions and edited into a form where they can be transposed into a set of priorities for action within the WFD CIS.

3.2.1. Session 1 'Data availability'

Concentration data availability:

1. *Are data on concentrations of chemical compounds (conventional pollutants and less investigated / emerging contaminants) across Europe available and is the quality of the data sufficient for the purpose?*

    - It is not always easy to get access to data on specific pollutants from other countries, or from different regions within a country.
    - In general, the quality is sufficient but it depends on (the knowledge of) the single substance. Accepted rules are needed and these should be put into practice.

2. *Are databases accessible and practical to use (queries, interoperability, etc.)? If not, how could that be improved?*

   - An overview of existing databases (with links) is needed.
   - Often the screening data are not in databases; only the monitoring data are in databases but not always publicly available. For instance, SE has a specific database for screening data.
   - It would be nice to have easy access to screening data; NORMAN databases could be the way to handle the problem but then MS have to deliver their data to the databases.
   - In FI, for example, there is a central database containing various data, but there are also local databases. Now, these databases are being merged and the central database will be made available. The database is searchable upon request. In NL, a central monitoring database is in place. This database can be obtained upon request. However, in many MS no centralised databases exist.

3. *Are relevant metadata documented – e.g. information on data quality, general physico-chemical data of the water compartment, such as pH, DOC, hardness, etc.?*

   - No, metadata are not well documented. There is info on pH, DOC etc. available but it is often not connected to hazardous substances or not well documented and it is very difficult to link together physical and chemical info.
   - Habitat data are also missing.
   - It would be nice to have a common understanding on the description of the quality, and maybe a common format.
   - The minimum requirements should be added to reporting templates of WISE (Water Information System for Europe) and Eionet (European Environment Information and Observation Network), e.g. LOQ (limit of quantification), LOD (limit of detection), analytical method.

4. *Are reported limits of detection/quantification compatible with PNEC data?*

   - No, not necessarily. This depends on substance and the laboratory, and sometimes on how the LOD is calculated and how much effort there is put into this calculation. Sometimes this is due to insufficient performance of the analytical method. In some cases this can be solved by changing the matrix.
   - It is important to improve PNEC (predicted no effect concentration) first (more robust values) and then see whether a better method is needed.

5. *Is the spatial coverage of concentration data sufficient? Can neglected area types be identified (coastal zones, smaller river basins, etc.)?*

   - In general, there are quite a few measured data for certain systems like coastal waters, estuary data and seas. This again depends on the substance and on the country, and it should also be realised that open seas are marine systems and do not fall within the WFD.
   - MS identified data lacking from southern regions and small rivers (IT), sediment- biota- and small rivers (SK), coastal, biota and sediment (EL)
   - Spatial coverage of coastal zones is sufficient (MT, CY, AT, RO, LT).
   - Surveillance monitoring usually provides quite good coverage. Data are never enough but extrapolation is possible.

6. *Are data for the different environmental matrices available (according to the physical–chemical properties of the substances)?*

   - For some of the traditional pollutants like PCBs (polychlorinated biphenyls)this is not a problem as they have been measured in various matrices. For emerging substances, this is often not the case as most of the data are for water (and not for sediment and/or biota), despite the properties of the chemicals. On the other hand, MS have measurements in the relevant matrices, but water is a compartment that is easy to sample and analyse. In no country is “everything” measured.

- More high-quality monitoring data are needed. Many of the conventional substances are banned; monitoring has stopped for those that are no longer found and more effort is put into monitoring matrices other than water. The problem is that even at the EU level, the limits are set only for water, not for biota and sediment. Most of the data are on water, less on sediments, and least on biota.

7. *Do chemical concentration data need to be comparable at EU level?*

- The reporting should be comparable. Also, units need to be harmonized and laboratories need to participate in inter-laboratory comparisons/evaluations**.**
- It would be important to have comparable databases, and then we also need to have information about national EQS, since these might be different.
- Yes, data have to be comparable, in particular e.g. in the case of transboundary waters.

8. *Is the balance of efforts for monitoring of WFD Priority Substances versus non-listed compounds appropriate? If not, what are the consequences?*

- There is an obligation tomonitor priority substances but not clear obligations on specific pollutants, and for that reason there is an imbalance.
- Basic approach is “not on the list = not monitored on a regular basis”. For the other compounds, in reality there is less attention and only screening studies in combination with emission inventories are sometimes used to provide clues to the presence in the water basin: most attention goes to the regulated chemicals.
- Other compounds are mostly detected within EU projects or research (e.g. national or EU).
- Frequency of monitoring of old compounds could be reduced. Emerging compounds should be monitored more frequently.

9. *What are the major shortcomings in selection and prioritising compounds, caused by a lack of concentration data?*

- An obvious shortcoming is that possible relevant substances (as deduced by modelling on the basis of use and production) could be deselected/overlooked in the prioritisation process due to the absence of monitoring data. It can also work the other way round, in that a selected substance is not of relevance and does not pose a risk.
- Lack of fit-for-purpose monitoring data is also connected with high safety factors when setting EQS.
- Prioritisation based on monitoring requires more similar data for the different compounds.

Ecotoxicological data availability:

10. *Are ecotoxicological data for chemical compounds readily available? What are the sources of these data?*

- Not for most compounds; except for pesticides and biocides.
- There is a lack of chronic data.
- Sources are diverse: databases, general literature, grey literature, industry reports.
- An overview of databases needed: databases sometimes overlap and some databases are quality controlled (validated data), others are not.
- Ecotox data should be collected on a European level.
- An agreement (common quality assessment criteria) on the use of QSAR (quantitative structure activity relationship) data is needed.
- More support from the Commission is needed.

11. *Is the quality of the ecotoxicological data sufficient and documented? If not, what are the shortcomings?*

- Quality is often not sufficient, metadata missing, EC10 (effect concentration) values are needed.
- Not clear what databases can be trusted.

- It is inevitable to check the original publications when deriving EQS and make a Klimisch assessment of data validity. Especially whith respect to data on which the EQS are actually based.
- The main shortcoming is the lack of a standardised reporting format. It is recommended by the group to standardise the reporting of metadata as much as possible.

12. *Are ecotoxicological data for the different environmental matrices available according to needs?*

- No, most information is available for water, far less for benthic organisms. In deriving PNECs for sediment, it was for instance found that equilibrium partitioning had to be used most of the time to derive PNECs for sediment, as sediment data were lacking.
- Lack of bioassay data.
- The information should be provided by the producers via REACH (Regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals) registration. It might not be the situation for "old" substances, and then the input must come from research.

13. *What are the major shortcomings in selection and prioritising compounds caused by a lack of ecotoxicological data?*

- It is currently not possible to decide if there is a potential problem, no (legal) instrument to generate more data. This is also the problem for setting EQS.
- It can have implications for analyses and interpretation of findings. Owing to lack of ecotox data, some standards become very low because of high assessment factors (lower than LOD), causing water bodies to be reported as failing the water quality requirements.
- Difficulty in establishing connections between chemical, ecotox and ecological studies.

3.2.2. Session 2 'Identification of River Basin-Specific Pollutants candidate substances'

1. *What is meant by a substance being discharged in "significant quantities" under Annex V WFD?*

- "Discharged": it would be better to use the term "occurring" rather than "discharged"
- Should be related to:
  - the (risk of) exceedance of a toxicity threshold,
  - risk of changing the status of a water body from "good" to "moderate"
  - what is important is to relate "significant quantity" to risk.
- Quantity, effect and use pattern are relevant information. BUT in reality (pragmatic approach) most MS define a threshold value for "concentration" and for "amount released", above which the substance is identified as candidate RBSP and then exceedance of toxicity thresholds is checked (concentration > EQS or x% EQS).

2. *One important step in the identification of the candidate RBSP is the evaluation of the available monitoring data (comparison with benchmark/target values). How are the existing monitoring data being used when EQS / PNEC are not available? Have you got experience with approaches such as: Toxic Units (TU) / Toxic Equivalent (TEQ) values/Estimation of provisional PNEC (P-PNECs) based on QSAR? What do you need in order to apply them?*

- There is a legal obligation to have a strategy for assessing the data because it is linked to the programme of measures.
- Use of QSAR: it is not yet recognised as an official methodology.
- Nevertheless, QSAR are used by some MS to derive provisional EQS (with high safety factors):
  - useful to estimate a level of concern and warrant whether or not a substance can be deleted from the list of chemicals to be monitored or further investigated/need to look for more info, but should not substitute experimental testing data.
  - QSAR are often used for pesticides: effect-based approach for assessment of total loads of pesticides.
- What is needed in order to apply QSARs:
  - knowledge of the backgrounds of QSAR models
  - some data about the toxicity and the chemistry of the compound

    - experience
    - validation of the models.
- It would be nice to have an exchange at European level of QSAR data used in the prioritisation of substances at river basin level.
- TU/TEQ values are useful for substances with similar mode of action. Less experience with TU/TEQs.

3. *At which spatial scale should the selections of candidate substances be done: local, river basin or national?*

- River basin scale would be the best, in reality in most MS it is done at national level, but should be checked at river basin level.
- In some MS the list of candidate substances from different sources is derived at national level and then the selection of specific substances recommended at river basin level.
- But EQS should be defined at the national level. And for international River Basins consensus should be sought at the river basin level (in particular for substances shared among different countries).

4. *Does the use of target monitoring neglect potentially relevant contaminants, including emerging contaminants as e.g. metabolites and degradation products?*

- Yes.

5. *What should MS do in order to identify relevant candidate contaminants which are not on the monitoring lists? Some possible approaches are:*

   Effect-directed analysis (EDA), use of biological methods (e.g. batteries of bioassays in vitro, in vivo tests, biomarkers), and non-target screening: to complement knowledge of organic contaminants actually appearing in river basin systems, and to orient monitoring programmes.

   Have you got experience with these approaches? What do you need to apply them? How can they be implemented in the monitoring programmes of MS?

- EDA can be a helpful tool to identify/prioritise locations for measures, but EDA needs experience and knowledge improvement.
- Gas chromatography-mass spectrometry (GC-MS) or liquid chromatography-mass spectrometry (LC-MS) screening are already used as a first TIER.
- Biomarkers (such as e.g. EROD (ethoxyresorufin-O-deethylase) activity and vitellogenin in fish) are used for screening purposes and to identify specific pressures in aquatic ecosystems (to be combined with chemical analysis).
- Bio-tests may not really be more costly, since it would hopefully target monitoring to the relevant substances of concern and causing the effects. Normally not enough money for effect studies to search for “unknown” substances.
- Overall, there is some experience with effects studies, but mostly at the project level.
- If it is necessary to use effect studies then clear rules on how to interpret the results will be needed.
- MS are not ready to implement effect studies in their monitoring programmes. But these techniques are seen as promising approaches.
- A need for more research at EU-wide level: pilot cases in different countries for testing before spreading (COHIBA project as an example).
- Guidelines and training are needed for this kind of screening monitoring.

6. *What could be ways for cost effective screening of compounds at Member State or EU-wide level?*

- Non-targeted screening like in Kleve/Bimmen (D/NL) is very helpful.
- A guidance/list of what to remember in order to harmonise the screening studies so that the result can be used by other countries in the future.

- Pan-European screening studies to identify the most relevant substances/less-investigated substances. However, there should be more harmonisation in the sampling strategy (choice of sites), sampling protocols, etc.
- Non-target screening OK: GC-MS less expensive but limited to non-polar compounds. LC-MS with accurate mass is the best choice. It is an investment but it works.
- Systematically reporting of new peaks which appear in the chromatograms. NORMAN role: coordination and dissemination, exchange info. Spectral database for identification of unknown.

Inventory of emissions as a tool for identification of candidate RBSP:

7. *Is the current status of developed inventories of emissions and their update frequency sufficient to identify river basin pressures?*

    - Inventories are not implemented everywhere, apart from the European Pollutant Release and Transfer Register (E-PRTR) which is mandatory.
    - Each MS shall submit national emission inventory data to Centre on Emission Inventories and Projections-CEIP (http://www.ceip.at/emission-data-webdab/submissions-under-clrtap/2009-submissions.
    - In principle it should be possible to use these inventories to identify pressures. It is questionable, however, whether there is sufficient information on emissions to allow for use of the database for monitoring purposes.
    - Emissions inventories are not used and not sufficient today to identify (new) candidate substances because most of the compounds listed are already regulated. Permits focus on substances that are discharged in 'significant' amounts.
    - They could be a useful tool if there are enough data. But the collection of data for new substances is very time consuming and therefore expensive.
    - An update frequency of 6 years is sufficient. Some countries have problems in keeping up with this frequency.

8. *Are diffuse and point sources being taken into account in an appropriate balance?*

    - The situation is very different in the several MS – in general there is no appropriate balance.
    - Data from point sources are normally available depending on the industry obligation to report. Data on diffuse sources are scarce or not included at all (a key problem!), but could be (depending on the substance and other information needed) modelled using point source emissions and monitoring concentrations. New modelling approaches in this direction are being developed, and could be helpful.

9. *What is the most critical aspect in emission inventories that should be improved? And how should it be done?*

    - There have been improvements made – but you have to live with inherently inaccurate and incomplete data.
    - Harmonisation of emission factors at European level, especially for diffuse sources.
    - The list of compounds to be included in the inventories (from discharge permits) should be enlarged.
    - Data are not measured data but just estimated data. There is a need for more measured data and then feed the data into the models.
    - Small enterprises are also not included.
    - Lack of supporting information in emission inventories. The only parameters that are so far provided are: concentration and volume.
    - In some countries: difficulties in exchanging information between different authorities. E.g. industrial permits are released by local authorities whereas monitoring is done at regional level.
    - Clarity on definition of what are: "emission", "discharge" and "losses" is important for correct implementation of inventory.

3.2.3. Session 3 'Selection of River Basin-Specific Pollutants'

1. *Are harmonised approaches available and useful for the selection of RBSP? At which level (river basin, EU, other) should that harmonisation occur?*
    - For general principles, EU-wide seems the most appropriate; details have to be addressed at the national level, and even more at river basin level.
    - EU guidelines are appreciated; harmonisation is needed, but should not be mandatory.
    - In many cases harmonisation is done on a national level: national lists are established. Subsequently, cross-border issues with regard to selection of RBSP are dealt with, making sure that for instance EQS-values do not differ between the two sides of the border.
2. *Does the analytical performance (LOD/LOQ) for a given substance influence the prioritisation process?*
    - Yes of course. If ecotox effect data are lower than the LOD/LOQ the substances can get on the list anyway if their toxicity is very high. However, if the LOD/LOQ is not low enough to detect ecotoxicologically-relevant concentrations, it is not possible to state the relevance of a substance as specific pollutant. Nonetheless, as soon as the substances are on the list, efforts will be made to sufficiently lower the LOD/LOQ.
    - Not only the analytical performance but also the national/local lab capacities on the substances they can analyse may influence the prioritisation.
    - If the process is based on modelling, in theory no influence in the first selection. But if you use monitoring data approach, yes.
3. *Do historical pollutants play a role as candidate substances in the prioritisation process?*
    - Yes, especially pesticides, PCBs, heavy metals from historical mining, military areas, where contaminated areas are identified, but also for substances no longer used in the country but in bordering countries.
    - If there is a danger of the chemicals still being used despite being banned and if the chemicals are persistent in the environment, then they will play a role. There is the danger of accumulation in the food chain, which warrants biomonitoring of these chemicals.
    - In FI, in the first round of priority setting, only intentionally produced compounds are considered for pragmatic reasons and historical pollutants are likely to be included in the second round of prioritisation. In CZ on the other hand, historical pollutants are fully included in prioritisation/monitoring.
    - Overall, if a compound is persistent and if there is evidence that they are still in the environment, then they should be monitored at least at a low frequency to show the long-term trends in the concentrations of these "old" pollutants.
4. *Are there criteria which should be harmonised in all countries for prioritisation methodologies?*
    - An international river basin should be one river body for which there is full harmonisation. The existing guidance is enough (see Guidance Document No. 3 Analysis of Pressures and Impacts *Impress*) at the EU level; there is no need for further harmonisation. At best, updating of the EU-wide guidance could be done.
    - Countries are well qualified to set their own criteria for RBSP. Cross-border issues can be dealt with on a bilateral basis, making sure that EQS are similar across a border.
    - Some relevant criteria are already harmonised (EQS-guidance, Commission Directive 2009/90/EC on technical specifications for chemical analysis and monitoring of water, sediment and biota (QA/QC Directive)), but the definition of "discharge/significant discharge" is an open question, which should be harmonised.
    - Endocrine disrupter criteria needed.
    - Guidance for prioritisation-based monitoring is needed: containing possible criteria for exceedence of thresholds, frequency of exceedence and tools for trends interpretation.
    - Minimum criteria for PNEC and MS could be more restrictive.
    - Harmonisation on safety factors for all compounds: same safety factors for all compounds.

5. *Is the selection of candidate substances done by the same authority for inland and marine environments?*

   - For some MS by the same authority (e.g. DK, FI, FR, IE, NL, SE), but not for all (e.g. MT, PT).
   - The methodological approach for the selection of candidate substances in inland and marine waters can be different to some extent even if they are managed by the same authority, e.g. for hydrocarbon spill related pollutants

6. *How is the guidance from marine conventions taken into account in the prioritisation process?*

   - Guidance and substance lists from marine conventions are taken into account but the final decision is at national level.

7. *Are specific EQS based on marine toxicological data being developed for the marine coastal environment?*

   - EQS derivation is costly and some countries use EQS already derived by other countries after having checked that these can be applied to their own situation. Other MS have specific marine EQS, e.g. FI, NO, and Environmental Assessment Criteria (EAC) in OSPAR.
   - For priority setting there is a lack of marine data (either on the effect or on the exposure site) – so limnic data have more weight. However, since it can be assumed that the main load of marine pollutants derives from freshwater water bodies this approach seems to be protective enough.

8. *Does the robustness of the EQS for a given substance influence the proritisation process?*

   - It is important to assess robustness to have correctly backed EQS: without ecotox data, the robustness is questionable and should thus be taken into account in the prioritisation.
   - Even when the EQS is not sufficiently robust and below the LOQ, the chemical can still be monitored and then there is still the legal obligation to meet the EQS: if the chemical is present and can affect good ecological status, it should be monitored.
   - An important issue is the relationship between EQS and LOQ. Two scenarios are possible:
     1 – LOQ<EQS: no problem
     2 – LOQ>EQS: then further action is needed:
     - When the assessment factors in deriving the EQS are very high, the preliminary EQS might be below the LOQ and then further refinement is needed. Two approaches are possible in this case:
       - 1 – Make the EQS more robust (e.g. by collection of additional toxicity data, or by generation of new data). This would in any case reduce the assessment factors, but it does not rule out that the intrinsic toxicity of a chemical is high.
       - 2 – Lower the LOQ by using the best available methodologies. This might involve development of new analytical methods for the chemical.
     - Another solution is to set an EQS for another compartment (mostly sediment) and make sure that the EQS for this compartment is not exceeded.
   - Not for the prioritisation but for the implementation process.

9. *What is done when concentration data are not available? Use of calculated data based on mathematical models?*

   - Yes, calculated data based on models are used. However, only as a first step; for the next steps measurements have to be done.
   - E.g. in CZ, passive samplers are used to screen for chemicals for which no data are available and screening is done for wide categories of chemicals. FR puts in place additional monitoring campaigns in order to improve monitoring data for less-investigated substances. In FI, modelling is applied on the basis of use amounts and use patterns and resulting emissions. Modelled PECs are derived and ranking of chemicals is performed. This approach still requires screening monitoring in addition. After that, monitoring is put in place taking into account chemicals ranked in the highest classes, and chemicals identified on the basis of screening monitoring.

- In the near future, it will be necessary to investigate what information exists in the European Chemicals Agency (ECHA) database.

10. *What is done if ecotoxicological data are not available? Use of calculated data based on mathematical models? (QSAR, etc.)*

- No use of models but look at other countries' experience and ecotox data. Such models require a lot of data not only on toxicity but on other aspects – and these data are also not easy to obtain – and also expertise to assess the results: resulting uncertainty is to be compared to uncertainty of selecting data or results from other countries.
- Ideally research is started, but it often depends on budgets. Joint efforts could be a solution. Joint databases on research projects would be useful.
- We need in the near future to see what ECHA database will give us.

11. What are the main difficulties in performing the prioritisation?

- Lack of data (monitoring data, ecotox data, emission and use quantities) and resources.
- Suggest gathering at EU level of all existing approaches in Member States or river basins and establishment of general principles.
- Deciding the starting list from pressure and available concentration data.

3.2.4. Session 4 'Monitoring of River Basin-Specific Pollutants'

1. *Are analytical methodologies for the monitoring of relevant substances available? Do they need to be harmonised?*

- Analytical methodologies are often available as a starting point. However, some need to be developed for specific chemicals. This is the case even for some priority substances.
- Harmonisation is not wished for, as there are harmonised performance criteria in the QA/QC Directive.
- Harmonisation of analytical methodologies is required only when the methodology is insufficiently reliable despite availability of standards.
- NORMAN can be used as a platform for info exchange.

2. *Are harmonised strategies for monitoring available and needed?*

- Yes, they are available and needed, but they are not used stringently. Balance between harmonisation and flexibility has to be ensured.
- Sharing of experience on sampling could also be relevant, either nationally or for on-site trials.
- Additional guidance and additional harmonisation are needed. In some cases only widely approved methods are used in monitoring, despite their being out of date. Harmonisation would minimise this problem and make sure that methods are up to date.

3. *Are levels of detection/quantification of analytical techniques for relevant compounds appropriate (e.g. in relation to EQS)?*

- Examples of EQS below LOQ are available and there is no good way of solving this problem. Two approaches are possible: refine the EQS on the basis of additional data, or lower the LOQ by means of technical method improvement.

4. *Could cost effective screening for compounds be organised at EU level?*

- Yes, MS are eagerly anticipating this. The question is to what extent countries are willing to make a contribution, but it is the general impression that countries are willing to make a contribution. It would reduce costs, make data more comparable, and in general it would be more efficient. From a political point of view, it would also make sense. Good planning, good sampling strategy and assessment of the main aims of EU-wide sampling campaigns would be essential elements to be considered explicitly.

- It is important that the cooperation of countries is "mandatory". OSPAR experience was not successful.
- A test of lab performance should be included.

5. *Are Gas Chromatography/Mass Spectrometry and Liquid Chromatography/ Mass Spectrometry non-target screening methods in (routine) use?*

- They are in use in many but not all MS. However, not widely/routinely applied.

6. Are other screening methods in use?

- Biological screening methods are in use as research programmes, although at a lower frequency and aimed at specific biota and/or endpoints. One of the aims is to do some monitoring for chemicals with very low EQS. On the other hand, biological monitoring is applied for specific classes of compounds only.
- Another screening method in use is ecotoxicity testing of effluents.
- Some biomarkers such as the CALUX (chemical-activated luciferase expression) assay are adopted in the monitoring plans for screening and classification.
- In NL for sediment classification after dredging.
- Biomarkers: Hydroxy pyrene (NL), passive sampling.
- Biological tests: ER-CALUX (estrogen receptor-mediated chemical activated luciferase gene expression) – endocrine (e.g. surface water for drinking water, NL), ACH (acetylcholine) tests are not applied any more (sensitivity is not very high).
- Antibiotics test (NL) – in-between regular monitoring and research.

7. Which biological effect methods for screening are in (routine) use?

- Biological early warning systems (e.g. daphnids) for operational process but not yet reported in the databases.
- Biomarkers for specific pollutants are generally used, usually on a project basis. A limited number of early warning on-line continuous monitoring systems are in use (like an early warning system based on daphnids). In some wastewater treatment plants some biological early warning systems are applied, as well as in drinking water production.
- Biomarkers in use are quite diverse and vary across a wide range of endpoints.
- EROD, yeast assay, CALUX. In marine there is an official action in OSPAR for biological effects monitoring.
- See also responses to previous question.
- There are three conditions for using biological tools: 1) guidelines (how to do it), 2) quality criteria, and 3) assessment criteria. OSPAR is developing assessment criteria for a set of tests and when the three conditions are fulfilled the test is implemented in routine monitoring.
- Biological effects-based monitoring will be the future because this route allows mixture effects to be taken into account. But data assessment has not been straightforward up to now. Need for managing tools for biological effects data.

8. *Are monitoring results from scientific projects/campaigns being considered?*

- Yes, but information exchange could be improved. Usually the information comes at conferences (e.g. The Society of Environmental Toxicology and Chemistry (SETAC)) and scientific literature. The existing databases should be used.
- In some cases (e.g. in biological monitoring) most results are derived from scientific projects instead of routine monitoring, e.g. Austrian programme run by Environmental Agencies for pesticides in groundwater was triggered by literature screening and field measurements.

9. *Which promising techniques for future assessments need further development?*

- Molecular biology "OMICs" – as biomarkers
- *In situ* sensors

- Passive sampling, including aspects of calibration (passive sampling has the advantage of obtaining time-averaged concentrations of chemicals)
- Sampling of biota and sediment
- Use of suspended particulate matter (SPM) as sampling matrix. This is especially attractive as it may be more sensitive than other techniques
- GC/ and LC/MS screening
- EDA
- Automated screening methods integrated with biological effects. More software tools needed for automation of identification of compounds from screening results
- High throughput bioassays (batteries of tests)
- Cost-effectiveness models for decision-making on which methods should be further developed
- Database on information on partition coefficients will be valuable.

4. WORKSHOP CONCLUSIONS

During the workshop itself, participants were given preliminary feedback on the outcomes of the working session discussions. While the discussions identified key priority areas, this could only be a starting point for further communication, harmonisation and interaction between stakeholders in RBSP identification and monitoring.

4.1. Key messages

Some key messages are provided here as they were presented at the end of the workshop, based on an initial analysis of the outcomes of the thematic sessions:

4.1.1. Accessibility/availability of monitoring data

Exchange/consultation of concentration data at EU level wanted

- Shared monitoring data through a database at EU level, NORMAN database for emerging pollutants wanted, in order to improve overview of status of contamination.

Common data format (concentration + metadata) needed to improve interoperability of databases and enhance exploitation of available monitoring data

- A common DG ENV-EEA data collection template is already available, used during DG ENV EU-wide data collection, also adopted by NORMAN. Implementation is needed at MS level.

4.1.2. Accessibility/availability of ecotox data

Exchange of ecotoxicological data at EU level needed

- A common exchange platform at EU level is needed to improve interoperability.
- There is a wish to have a list of databases for ecotoxicological endpoints, including meta information on data quality, effect modifying parameters, compartment, internet links, etc.

Common quality criteria for ecotoxicological data assessment are needed for improved data exchange

- These are under development (multilateral exchange – MS level), but action is needed at EU level.

Ecotoxicological data (chronic) missing for a great number of substances and the quality of available ecotoxicological data is not ensured

- Prioritisation of efforts is needed: alternative tools (e.g. QSAR) can help orient priorities (i.e. identify potential problem chemicals).
- It is necessary to improve the availability of quality-describing metatada.

4.1.3. Selection of River Basin-Specific Pollutants

More resources needed for investigative monitoring of RBSP candidates

- Collaboration at EU–level is useful for efficient use of resources in investigative monitoring.
- EU-wide monitoring programmes: useful exercises to improve use of resources in investigative monitoring. MS should be directly involved in planning and in the setting-up of EU-wide monitoring programmes. More harmonisation in selection of waters to be sampled is considered useful to help investigative campaigns (stricter guidance on selection of the water types, background vs affected areas, etc.): increasing effort in more harmonised sampling strategies and approaches.

No further guidance with rigid criteria is needed for RBSP identification/selection

- Exchange of experiences at EU level in WFD CIS is most welcome and useful.

Harmonisation is only needed in specific cases

- QA/QC (quality assurance/quality control) criteria have been established and should be implemented; harmonsation in WFD CIS should apply for new analytical methods.

4.1.4. Monitoring of River Basin-Specific Pollutants

Analytical methods not readily available for some substances

- QA/QC criteria have been established and should be the basis for method selection.

Improved screening techniques needed

- An exchange of experiences at EU level is wished by MS (activity will be launched by JRC and NORMAN in WFD chemical monitoring group).

Few specific approaches for marine environment

- Availability and use of marine toxicological data should be ensured, experience from marine conventions should be used.

4.1.5. Additional suggestions provided by a final discussion round

- There is a need to finalise the process which would guarantee that EQS for a certain substance are established based on the same approach and quality assessment criteria.
- Suggestion of setting a “threshold EQS” that would apply to all MS.
- There is a need to set up criteria to decide when a substance not present in the environment (values < LOD) should no longer be part of routine monitoring programmes.
- Data which should be shared among all MS:
  - EQS
  - Methodologies
  - Ecotox methodologies (bioassays, biomarkers)
- Strong support for harmonisation in order to ensure comparability between MS. Implemented performance criteria would guarantee this.
- Support for a workshop on sampling procedures.

4.2. Workshop follow-up

MS agreed during the workshop to start exchanging their (draft) RBSP and national (draft) EQS lists within CIRCA. The contributions have been collected by JRC IES and have been forwarded to DG ENV for publication on

the WFD CIRCA site. The further completion and continuation of this information exchange is suggested, utilising the WFD CIRCA platform.

Analytical screening methods, their availability, harmonisation and information exchange on their use for the identification of RBSP received much attention during the workshop. JRC and NORMAN are therefore planning a dedicated action in order to provide a platform at European level for discussion and practical intercomparison exercises.

4.3. Links

The workshop presentations together with other relevant documents are available on the public part of CIRCA (http://circa.europa.eu/Members/irc/env/wfd/library?l=/framework_directive/implementation_conventio/workshop_pollutants&vm=detailed&sb=Title).

National RBSP lists have been compiled and they are available to members on CIRCA (http://circa.europa.eu/Members/irc/env/wfd/library?l=/working_groups/priority_substances/specific_pollutants).

5. PARTICIPANT LIST

Austria

Deutsch, Karin
Federal Ministry of Agriculture,Forestry,Environment
Marxergasse 2,1030 Wien (Austria), tel: +43 1 71100 7127, E-mail: karin.deutsch@lebensministerium.at

Rauchbuechl, Alfred
Bundesamt für Wasserwirtschaft
Marxergasse 2, 1030 Wien (Austria), tel: +43 1 2633474 17, E-mail: alfred.rauchbuechl@baw.at

Belgium

Baldoni-Andrey, Patrick
CONCAWE, Boulevard du Souverain 165, B-1160 Brussels (Belgium), tel: +32-2-566 91 60, E-mail: info@concawe.org

Regoli, Lidia
IMOA,33 Rue des Echevins, Brussels (Belgium), E-mail: lregoli@imoa.info

Roose, Patrick
OSPAR (MUMM-RBINS)
3e en 23e Linieregimentsplein, B-8400 Oostende (Belgium),tel: +3259242054, E-mail: patrick.roose@mumm.ac.be

Van Volsem, Sofie
Flemish Environment Agency
A. Van De Maelestraat 96, B- 9320 Erembodegem (Belgium), tel: 00 32 53 726 575, E-mail: s.vanvolsem@vmm.be

Cyprus

Neokleous, Natasa
Water Development Department
100 - 110 Kennenty Avenue, 1047 Lefkosia (Cyprus), tel: 0035722609355, E-mail: natneokleous@wdd.moa.gov.cy

Czech Republic

Kodes, Vit
Czech Hydrometeorological Institute
Na Sabatce 17, 14306 Prague (Czech rep.), tel: +420 244032314, E-mail: kodes@chmi.cz

Ocenásková, Vera
T.G.Masaryk Water Research Institute
Podbabská 2582/30, 160 00 Prague (Czech rep.), tel: +420 220 197 451, E-mail: vera_ocenaskova@vuv.cz

Tusil, Petr
WRI T.G.Masaryk Prague, Macharova 5, 702 00 Ostrava (Czech rep.), tel: +420595134176, E-mail: Petr_Tusil@vuv.cz

Denmark

Boutrup, Susanne
National Environmental Research Institute, Aarhus
Vejlsøvej 25, DK-8600 Silkeborg (Denmark), tel: +45 8920 1749, E-mail: sub@dmu.dk

Finland

Mehtonen, Jukka
Finnish Environment Institute
Mechelininkatu 34 A, FIN-00251 Helsinki (Finland), E-mail: jukka.mehtonen@ymparisto.fi

France

Amalric, Laurence
BRGM, 3 avenue Claude Guillemin, 45060 Orleans (France), tel: 33 2 38 64 34 92, E-mail: l.amalric@brgm.fr

Duclay, Edwige
MEEDDM, LA Grande Arche, 92055 La Défense Cedex (France)
tel: 0033140813441, E-mail: edwige.duclay@developpement-durable.gouv.fr

Dulio, Valeria
INERIS, BP2, 60550 Verneuil En Halatte (France), tel: +33 3 44 55 66 47, E-mail: valeria.dulio@ineris.fr

Fribourg-Blanc, Benoît
IOW : International Office for Water
15 rue Edouard Chamberland, 87065 Limoges Cedex (France), tel: 33.5.55.11.47.97, E-mail: b.fribourg-blanc@oieau.fr

Greaud, Lauriane
MEEDDM, La Grande Arche, 92055 La Défense Cedex (France)
tel: 0033140818611, E-mail: lauriane.greaud@developpement-durable.gouv.fr

Morin, Anne
INERIS
parc alata, 60550 Verneuil En Halatte (France), tel: 0033344556632, E-mail: anne.morin@ineris.fr

Germany

Zedler, Beate
Hessisches Ministerium für Umwelt, Energie,
Mainzer Strasse 80, 65189 Wiedbaden (Germany), E-mail: Beate.Zedler@hmuelv.hessen.de

Brack, Werner
Helmholtz Centre for Environmental Research UFZ
Permoserstraße 15, D-04318 Leipzig (Germany), tel: 0049/341/2351531, E-mail: werner.brack@ufz.de

Vietoris, Friederike
LANUV NRW, Leibnizstraße 10, 45659 Recklinghausen (Germany)
tel: 0049-211-1590-2518, E-mail: friederike.vietoris@lanuv.nrw.de

Hungary

Tóth, György István
Central Directorate for Water and Environment
Márvány u. 1/d., 1012 Budapest (Hungary), tel: +36-1-225-4473, E-mail: toth.gyorgy@vkki.hu

Ireland

Concannon, Colman
EPA, Richview, Clonskeagh Rd, 14 Dublin (Ireland), tel: 00 353 1 2680115, E-mail: c.concannon@epa.ie

Italy

Carere, Mario
Istituto Superiore di Sanità
Viale Regina Elena 299, 00161 Roma (Italy), tel: 00390649903527, E-mail: mcarere@iss.it

Polesello, Stefano
CNR-IRSA, Via Della Mornera 25, 20047 Brugherio (Italy), tel: +39-03921694211, E-mail: polesello@irsa.cnr.it

Lithuania

Dudutyte, Zita
Baltic Environmental Forum
Uzupio str. 9/2-17, 10202 Vilnius (Lithuania), tel: 370 5 2159288, E-mail: zita.dudutyte@bef.lt

Striupkuviene, Nijole
Environmental Protection Agency
A. Juozapaviciaus 9, Lt-09311 Vilnius (Lithuania), tel: +370 50 2662817, E-mail: n.striupkuviene@aaa.am.lt

Malta

Attard Baldacchino, Joanne
Malta Environment & Planning Authority
EPD, P.O. Box 200, MRS 1000 Marsa (Malta), tel: 00356 22907222, E-mail: oanne.attardbaldacchino@mepa.org.mt

Netherlands

Peijnenburg, Willie
RIVM - Laboratory for Ecological Risk Assessment
PO Box 1, 3720 BA Bilthoven (Netherlands), tel: +31-30-2743129, E-mail: willie.peijnenburg@rivm.nl

Smit, Els
RIVM, PO Box 1, 3720 BA Bilthoven (Netherlands), tel: +31-302743392, E-mail: els.smit@rivm.nl

Stoks, Peter
Association of Rhine Waterworks RIWA

Groenendael 6, 3439LV Nieuwegein (Netherlands), tel: +31306009036, E-mail: stoks@riwa.org

Stroomberg, Gerard
Rijkswaterstaat - Centre for Water Management
Zuiderwagenplein 2, 8224 AD Lelystad (Netherlands), tel: +31-320-298668, E-mail: gerard.stroomberg@rws.nl

Norway

Ranneklev, Sissel Brit
NIVA, Gaustadalleen 21, 0349 Oslo (Norway), E-mail: sra@niva.no

Poland

Bogdan, Fornal
Chief Inspectorate of Enfironmental Protection
Wawelska, 00-922 Warszawa (Poland), tel: +48225792242, E-mail: b.fornal@gios.gov.pl

Romania

Bobocea, Ruxandra
Joint Research Centre
Edgar Quinet No.6, 010018 Bucharest (Romania), tel: 004.021.3155535, E-mail: ruxandra.bobocea@rowater.ro

Marchidan, Elvira
Joint Research Centre
Edgar Quinet no. 6, 010018 Bucharest (Romania), tel: 004.021.3155535, E-mail: elvira.marchidan@rowater.ro

Slovakia

Ku Árová, Katarína
Ministry of environment
Námestie udovíta túra 1, 81235 Bratislava (Slovakia), tel: +421259343298, E-mail: 0905288090@orangemail.sk

Slobodnik, Jaroslav
Environmental Institute, Okruzna 784/42, 97241 Kos (Slovakia), tel: +421 46 5420719, E-mail: slobodnik@ei.sk

Tarabek, Peter
Water Research Institute, Nabr.arm.gen.L.Svobodu 5, 81249 Bratislava (Slovakia), E-mail: tarabek@vuvh.sk

Valuchova, Magdalena
Slovak Water Management Authority
Nam.L. Stura 1, 812 35 Bratislava (Slovakia), tel: 00421259806219, E-mail: Magdalena.Valuchova@svp.sk

Spain

Rodriguez-Mozaz, Sara
Catalan Institute of Water Research, ICRA
Emili Grahit 101, 17003 Girona (Spain), tel: +34 972 18 33 80, E-mail: srodriguez@icra.cat

Sweden

Brorström-Lundén, Eva
IVL, Swedish Environmental Research Institute, Box 5302, 40014 Göteborg (Sweden), E-mail: Eva.BL@ivl.se

Wernersson, Ann-Sofie
County Adm Board Västra Götaland
Södra Hamngatan 3, 403 40 Göteborg (Sweden), tel: +46 31 607140, E-mail: ann-sofie.wernersson@lansstyrelsen.se

Switzerland

Junghans, Marion
Oekotoxzentrum, Eawag, Ueberlandstrasse 133, 8600 Duebendorf (Switzerland)
tel: 0041448235401, E-mail: marion.junghans@oekotoxzentrum.ch

United Kingdom

Batty, John
DEFRA, Ergon House, Horseferry Road, SW1P2AL London (United Kingdom)
tel: +44 (0)207 2381535, E-mail: John.Batty@defra.gsi.gov.uk

Law, Robin
Cefas Lowestoft Laboratory, Pakefield Road, NR33 0HT Lowestoft (United Kingdom)
tel: +44 1502 524220, E-mail: robin.law@cefas.co.uk

European Commission

Burchardt, Alina
Joint Research Centre, Via Enrico Fermi, 2749, 21027 Ispra (Italy)
tel: + 39 0332 786589, E-mail: alina.burchardt@jrc.ec.europa.eu

David, Adina Madalina
European Commission, Rue Beaulieu, 1049 Brussels (Belgium)
tel: +32.2.29.920.89, E-mail: madalina.david@ec.europa.eu

Gawlik, Bernd
Joint Research Centre, Via Enrico Fermi, 2749, 21027 Ispra (Italy)
tel: + 39 0332 9487, E-mail: bernd.gawlik@jrc.ec.europa.eu

Hanke, Georg
Joint Research Centre, Via Enrico Fermi, 2749, 21027 Ispra (Italy)
tel: + 39 0332 5586, E-mail: georg.hanke@jrc.ec.europa.eu

Loos, Robert
Joint Research Centre, Via Enrico Fermi, 2749, 21027 Ispra (Italy),
E-mail: robert.loos@jrc.ec.europa.eu

Negrão De Carvalho, Raquel
Joint Research Centre, Via Enrico Fermi, 2749, 21027 Ispra (Italy)
tel: + 39 0332 789824, E-mail: raquel.carvalho@jrc.ec.europa.eu

Piha, Henna
Joint Research Centre, Via Enrico Fermi, 2749, 21027 Ispra (Italy)
tel: + 39 0332786247, E-mail: henna.piha@jrc.ec.europa.eu

Ricci, Marina
Joint Research Centre, Retieseweg 111, 2440 Geel (Belgium)
tel: 0032-14-571 962, E-mail: marina.ricci@ec.europa.eu

6. ACKNOWLEDGEMENTS

We would like to thank all the workshop participants and their institutions for their valuable input, the European spirit and the great collaboration. A special thank to the facilitators of the group discussions and participants giving presentations. Many thanks to Paul Crabb for proof reading of the report! The help of Gabriele Breitenbach in preparation of the workshop was invaluable.

ANNEX 1. QUESTIONNAIRE SUMMARY

Procedures applied by Member States for the selection of the River Basin-Specific Pollutants

Could you describe in brief the procedure applied in your country for the selection of the River Basin-Specific Pollutants (RBSP)?

AT

The Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management contracted the Federal Environment Agency (UBA) to draw up a list of the pollutants relevant for Austrian surface waters. These pollutants were selected as follows:

Selection of the relevant pollutants:

Pre-selection of a list of candidate substances from the following official lists and programmes:

- List of substances from the Communication from the EU Commission 1982
- List of the annex of Council Directive 76/464/EEC
- Priority substances pursuant to Decision No. 2455/2001/EC
- Substances from the emission inventory under Council Directive 96/61/EC
- Other individual substances from the annex of Council Directive 76/464/EEC
- Other substances which represent a potential danger to surface waters, selected by expert judgement
- Other dangerous substances with sufficient data from the Austrian Water Quality Survey ("Wassergüteerhebungsverordnung", WGEV) from 1995 onward.

This selection resulted in approximately 320 candidate substances. From these substances the subset of relevant substances was selected on the basis of the following rules. A substance was classified as relevant if it was identified as relevant either from emission data ("emission targeted relevance") or from ambient concentration data ("quality targeted relevance").

Assessment of emission targeted relevance:

Plant protection products

Plant protection products were selected if their annual use exceeded thresholds of 10 t/a (for herbicides and fungicides) or 1 t/a (for insecticides) and if the use of these pre-selected substances under worst-case scenarios would lead to a significant impact on the water quality (exceeding of the PNEC = predicted no-effect concentration).

Other pollutants

From among the other pollutants relevant substances were selected by the Institute for Industrial Ecology (as a subcontractor of the Austrian Federal Economic Chamber and the Federal Environment Agency). A substance was assessed as relevant if a local risk from point sources was identified on the basis of available information about the use of the substances in industry or trade. For this purpose a detailed assessment scheme was elaborated. For more information see study report.

Assessment of quality targeted relevance (ambient concentration targeted relevance):

For the purpose of testing the quality targeted relevance the data of the Austrian Water Quality Survey were assessed (including all data of the past five years). The assessment criterion was determined as follows:

- Where available, the PNEC (predicted no-effect concentration) from risk assessments was used.
- If no PNEC value from risk assessments was available, PNEC values were taken from the COMMPS study on the selection of priority substances.
- If no PNEC was available from the COMMPS study, the lowest value from a collection of national and international quality objectives was selected.
- The assessment criterion was reduced by a factor of ten for monitoring stations at the Danube River basin.
- If for a particular substance the assessment criterion was lower than the detection limit of the respective analytical method, the detection limit was used as the assessment criterion.

The assessment criterion was compared with the monitoring data as follows:

- For each monitoring site the arithmetic mean of all individual monitoring data was calculated. Values between the analytical detection limit and the limit of quantification (determination limit) were calculated with half of the limit of quantification. Measurements below the analytical detection limit were calculated with a value of 0.
- A substance was classified as relevant if the so-determined mean of the concentrations was above the assessment criterion at one monitoring site at least.

Individual substances for which no sufficient data were available to assess their relevance as described above, an expert judgement was carried out. More details on this assessment can be found in the final report of the study of the Austrian Environment Agency "Dangerous Substances in Surface Waters – technical basics in support of the Austrian programmes under article 7 of Council Directive 76/464/EEC" → see folder Austria on CIRCA**.**

BE **Setting EQS for specific pollutants**

Annex V of the WFD is asking member states to establish EQS for the specific pollutants, identified as being discharged in significant quantities into the waterbodies. Flanders, didn't actually make a selection of these substances but it established standards for a large amount of dangerous substances, still resulting from the Directive on Dangerous substances (76/464). This is also important because EQS for dangerous substances are relevant for the link with the permit system. So the situation in the Flemish Region is as follows: since 21st of May 2010 there exist official EQS for about 170 dangerous substances, covering the substances of the daughter directive 2008/105, but containing as well EQS for the so called "other pollutants". This was still necessary within the scope of the Directive on Dangerous Substances (76/464) for which Belgium underwent an infringement procedure at the Court of Justice in 1999, as a result of not adopting reduction programmes including EQS for the 99 listed dangerous substances.

In our reduction programme (2000) standards for about 170 dangerous substances were announced. This led to a decision by the European Commission that the Flemish Region was in line with Directive on Dangerous Substances. Implementation of this reduction programme leads now to this list of about 170 dangerous substances (41 of Directive 2008/105, 99 "black list substances" and the most important "grey list substances").

These EQS are set up as specified in Annex V (1.2.6) of the Water Framework Directive.

Within the next generation of River basin management plans, we will –based on this list of 170 substances - make a further selection of the relevant RBSP.

Screening for new substances

Besides this process of establishing standards, we are doing also some work on screening for new substances:

- pesticides

There is a screening programme for new pesticides on a limited number of locations and with a limited frequency. Based on these obtained measurements, sales figures, and PNEC- and MAC-values there 's decided which pesticides are relevant to be implemented in a larger monitoring programme, in order to obtain more information.

- endocrine disruptors

The Flemish Environment Agency measures in total a selection of about 40 substances from the EU-list that protruded from the EU-Strategy on Endocrine Disruptors, 1999.

A project is going on to monitor anti-androgenic substances because, from scientific literature, it is known that these compounds can play a role in the mechanism of endocrine disruption in surface water.

On the basis of these results the further approach and policy will be developed.

- ecotox

Effect based water quality tests are used to flag up effluents of concern (as a complementary tool to the substance- based approach). The whole effluent assessment includes tests for the determination of

persistency or biodegradability, acute and chronic ecotoxicity, genotoxicity/mutagenicity and endocrine disruption.

BG The process of identification of RBSP in Black sea basin area, West Aegean River Basin Directorate – Blagoevgrad, and East Aegean River Basin Directorate – centre Plovdiv has passed through two stages.

First stage was identification of possible specific pollutant within each river basin/water body by means of an overview of all possible sources of such substances. In this process was used information concerning point and diffuse source available within each basin/water body in particular:

- Information about types of industrial enterprises; raw products that are used; production processes and water purification processes;
- Information about enterprises connected to municipal waste water treatment plants/sewerage systems and information about water purification processes;
- Information about programs for elimination of old ecological damages;
- Information about substances that may be present due to widespread processes (like nonylphenols, octylphenols, PAHs);
- Information about substances that may present due to agricultural and forest management practices;
- Information about substances that may present due to influence of landfills.

The choice of substances is based on:

1. Methodological approach developed under SWIFT "**S**creening methods for **W**ater data **I**n**F**orma**T**ion in support of the implementation of the Water Framework Directive" guidance document;
2. Substances that are required to be monitored in the effluent water from IPPC and non-IPPC enterprises according to their permits;
3. Substances that are required to be monitored in the effluent water from WWTPs and sewerage systems according to their permits;
4. Information concerning applied pesticides and permitted for application pesticides within river basin district;
5. Substances that are detected in the effluent water and/or natural waters (river, lake) from previous monitoring programmes.

According to this approach applied during 2006 we have chosen the relevant pollutants to be included in the first monitoring programme under art. 8 of WFD.

Second stage is based on methodological approach developed and applied under topic 3 "Development of environmental quality standards for surface water", National project "Development of River Basin Management Plans" financed by Operational Programme "Environment 2007-2013".

A list with specific chemical pollutants for water environment is developed following the next steps:

1. Organic compounds identified as specific pollutants:

For identification of organic compounds was used Methodological approach COMMPS (Combined Monitoring-based and Modelling-based Priority setting Scheme) and EU IMPRESS (IMPacts and PRESSures)

After a review of:

- The used raw materials and products in industrial enterprises;
- A reference for published data for possible pollutants according to BREF;
- A choice of chemicals used in agricultural practice – on basis of permitted and banned products;

a combined approach is chosen for determination of organic compounds as specific substances, which include:

1. 1 Pollutants in relation with their environmental effects. For this aim Fraunhofer Institute data are used (represented as bioaccumulation, toxicity, carcinogenic / mutagenic effects). They are summed in order to get the total effect.

1.2. As a second step for the received values is prescribed a rank (as in IMPRESS) in order to be comparative with pollutants for which there are no data (the aim is to receive comparable data for all investigated pollutants).

1.3. In order to take into account the distribution of these pollutants and to use monitoring data a qualitative approach is used: value 1 is given to each positive result such as: a value at the method detection limit; usage; pollution etc. After a prioritization in the list are included all substances having a rank over 7,5.

A group of pesticides (nevertheless they are not classified according to the above mentioned approach) are included in the list of substances to be monitored in order to be assessed their presence in the water bodies:

- organophosphorous pesticides due to their big toxicity;
- triazin herbicides, MCPA, bentazon – due to their big solubility in water.

Some of them are already stopped from being offered at the market but still are persisting in water bodies and other media in the environment.

1. Metal ions identified as specific pollutants

A review of year reports made by the enterprises according to the IPPC permits is made. Data presented are reviewed and approach according to COMMPS is proposed as it is more suitable to rank toxic elements.

Thus the following elements were identified: Ag, Al, As, Co, Cr, Cu, Fe, Mn, Sb, Se, V, Zn.

In order these elements to be prioritized to those of them which cause carcinogenic, mutagenic and toxicity effects is given bigger weight, so at the end the following list was identified: Al, As, Cr, Cu, Fe, Mn, Zn (U, Ra).

For the Danube River Basin Directorate:

For a period of three years 2006-2009 a list of substances was monitored according to the programmeand schedule proposed from RBDR (river basin Danube region). The list of substances for this programmewas obtained taking into account main point sources for surface water pollution - industrial activities: small and medium enterprises discharging via waste water treatment plants, solid waste management, historical pollutions, stored banned products, large enterprises with their row materials, products, purification systems and degree of purification achieved, as well as the diffuse sources mainly agriculture activities, atmospheric depositions, transport and infrastucutre. The basic list under prioritization includes substances coming from List II of Dangerous Substances Directive, substances coming from permits for discharges, substances covered from existing legislation, widely used pesticides. In this way a kind of “Universe of chemicals” was defined. The process of prioritization was based on the method COMMPS (Combined Monitoring-based and Modelling-based Priority setting Scheme), Fraunhofer-Institut, Umweltchemie und Ökotoxikologie, Germany and ranking procedure used from UKTAG (UK). As it is recommended toxicity, persistence and bioaccumulation are main properties taken into account in ranking procedure. Positive results from monitoring programs, production quantities, well known historical pollutions were included with a kind of weight coefficients in ranking procedure. Additionally highly toxic pesticides (from the monitoring programs of Danube and other national projects) were included in the final list of substances.

CY For the selection of the RBSP in Cyprus, the analysis of anthropogenic pressures carried out for the WFD Art. 5 reporting was used. The pressures analyzed in this framework had been:

Surface waters:

- Urban waste water
- Industrial waste water
- Mines and quarries
- Storm water
- Solid waste (landfills)
- Agriculture runoff and infiltration
- Livestock waste

- Other types of pressures
  - hydromorphological pressures
  - aquaculture Climatic conditions

Groundwater:

- Saltwater intrusion
- Water abstractions (drinking water & agriculture)
- Agricultural activities (incl. livestock)
- Industrial activity
- Urban waste water (non-sewered)
- Solid wastes

Climatic conditions

The results of this analysis were reviewed for the WFD Art. 8 reporting, where a conservative approach was applied for the final selection of the substances to be monitored at each monitoring station. In addition, all available results of previous monitoring programmes were taken into account. The monitoring programme was reviewed in end-2009 and adjustments were made based on the knowledge and experience gained during 2007-2009 (substances systematically detected, etc.). The adjusted programme is in place since January 2010. It should also be kept in mind that heavy industries etc. do not exist in Cyprus, and therefore systematic releases of pollutants are very limited.

CZ There is no integrated procedure for selection of RBSP in the Czech Republic at this time.

DK Monitoring of hazardous substances is covered by the Danish national monitoring and assessment programme for the aquatic and terrestrial environment in the following subprogrammes:

- marine areas
- watercources
- lakes
- groundwater
- point sources.

The current monitoring programme, NOVANA is under revision, and the revised programme is scheduled to start 1 January 2011. The procedure described in the following has been used for selection of substances in the revision of the programme.

Surveillance monitoring

The selection of substances for surveillance monitoring is based on:

- obligations in directives, national legislation and international conventions (listed in prioritised order)
- knowledge about the occurrence of the substances from the monitoring up till now
- knowledge about the occurrence of the substances from screening studies
- availability of analyses of satisfactorily quality.

Initially, all substances which might be relevant for monitoring in each subprogramme/matrice have been listed (gross lists). The gross lists have besides the information mentioned above, also information on consumer pattern and the probable discharge. Weighting of the information have led to division of the gross list into three other lists:

- list of monitoring substances
- list of substances, which not will be monitored, because they have not been detected or been detected in very low concentrations with no environmental impact in previous monitoring, or due to an assessment that occurrence is not probable
- substances with insufficient data for the assessment of the relevance of monitoring. These substances are candidates for screening studies, which are a part of the monitoring programme. If the conclusion of the screening study is that monitoring of the concerned substance is relevant, the substance will be included in the monitoring programme.

The lists of monitoring substances are assessed across the subprogrammes in order the ensure

connection between the matrices. Besides, the lists are assessed in order to identify any substances of minor relevance with are not on the lists, and which without much effort (very cheap) can be included in the analysis, e.g. some pesticides or PAH.

Operational monitoring

In the operationel monitoring the lists of substances are based on the knowledge of potential source in the catchment areas which are responsible for the risk of failing to meet the environmental objective in each waterbody.

A list of substances which normally are relevant for specific sources, have been set up. The specific sources are:

- waste water treatment plants with advanced treatment
- waste water treatment plants with very simple treatment or sparsely built-up areas
- separate stormwater outfalls
- overflow from shared sewer
- factories
- fish farming
- maine dumping
- agriculture
- ship traffic
- soil pollution.

Locally other substances should be included due to knowledge about use in the catchment area, e.g. in a factory. The selection of pesticides is based on the growth of a certain crop.

EE For the selection of RBSPs inventories and investigative monitoring (screenings) activities are periodically carried out. In the frames of inventories mainly larger and most important wastewater and industrial wastewater discharges are chemically monitored. Investigative monitoring is focussed to the chemical quality of recipient waters and/or biota. Based on the results of those activities, the concentrations and pollution loads are clarified and relevant substances are introduced to the legislation and/or RB management plans.

FI **Selection of substances**

Substances covered in the selection were mainly intentionally produced substances.
The following substance groups were excluded:
- Process born substances
- Substances present only in imported articles (e.g. brominated flame retardants)
- Substances covered by other legislation than the Chemicals act and Pesticide act
Selection procedure consisted of three stages; initial candidate list, prioritisation of the initial list and final selection

1. Initial candidate list (279 substances)

1a. Previous work conducted in SYKE
- Johanna Peltola: "Proposal for Criteria for the Selection of Hazardous Substances for Environmental Monitoring"
- Sanna Koivisto: "Selection of hazardous substances for the risk management" (PBT-criteria, NSDB-database)
1b. International priority lists
- Water Framework Directive Annex X
- Dangerous Substances Directive (76/464) list I and II
- OSPAR and HELCOM
- EU candidate list of endocrine disrupters
- List of PBT & vPvB substances identified by QSAR-modelling
- Potential PBT & vPvB substances identifiend among HPV chemicals in IUCLID

2. Prioritisation of the initial list

- Use volumes (Finnish register of chemical products)
- Use pattern; Use Pattern Score, UPS = EF x number of activity sites

Substances that fulfilled the following criteria were selected for further assessment:
- Use volume > 100 tons or
- UPS > 500 and use volume > 10 tons or
- UPS > 6000

3. Final selection

- Evaluation of data
- Substances that fulfilled the following criteria are proposed:
  Toxic: (EC/LC50 $\leq$ 10 mg/l), and
  Persistent (degradation $\leq$ 70 % in ready test), and
  Bioaccumulable: (BCF $\geq$ 500 or logKow $\geq$ 4) and
  -very Toxic (EC/LC50 $\leq$ 1 mg/l) and Persistent or Bioaccumulable
- PESTICIDES; Expert Judgement and Pesticide Indicator
- METALS; monitoring data
- ORGANICS (excluding pesticides); risk assessment on aquatic environment (Finnish Environment Ministry 2005);
  - based on data on use volumes and use pattern type
  - modeling and measured data was utilized
  - information on relative importance of uses/sources $\rightarrow$ ranking into 3 categories

Nationally selected hazardous / harmful substances including industrial and consumer chemicals and pesticides in Finland are shown in Table 1. (see Annex and CIRCA)
The procedure for the nationally selected hazardous substances has been described in more detailed way in a separate SYKE publication (Londesborough 2003, in English).

EQS derivation

Environmental Quality Standards (EQS) were established for this set of substances in 2006. The EQS values were derived according to Annex V to the WFD, point 1.2.6. The methodology used is described in detail in the Fraunhofer report on EQS setting for Community Priority Substances (Lepper 2002) and the principals and methodology given in the Technical Guidance Document for the risk assessment of new and existing chemicals (TGD 2003). For pesticides the principles and methodology given under directive 91/414/EEC was taken into consideration. The EQS values are based on experimental ecotoxicological data. The derivation procedure has been reported in more detailed way in a separate SYKE publication (Londesborough 2005, in English).

FR Cf. 2.

DE The German list of the RBSP contains substances, which are not part of the Directive 2008/105/EC (EQSD) and which could contribute to pollution. The list contains substances which were part of the legislations of the federal states for the implementation of 2006/11/EG and WFD. For these substances national EQS will establish, in the last years in accordance to Annex V, No 1.2.6 WFD.The list of RBSP is regularly updated on the basis of new information.

With the next update new substances will be added, which were discharged in a significant amount in at least on German river basin in at least one year of 2005 – 2008. Before the inclusion there was a two-stage relevance check: First, an approximate assessment was done regarding REACH criteria on ecotoxicological and human toxicological relevance. This evaluation was done for substances, detected in surface waters. Only for substances, for which after these approximate assessment it will be probably, that these substances have concentrations about the expected EQS, a detailed EQS derivation in accordance to Annex V, No 1.2.6 WFD, was done. At least the “new” EQS were checked against actual monitoring data and relevant substances with low safety factors will go into the political and legislative process with the aim of adding these substances to the list of RBSP. For more information see background paper on CIRCA.

EL In the context of applying Water Framework Directive in Greece an extended National Monitoring Programme regarding chemical substances, has been conducted since 2006. This monitoring programme consists of sampling and analyzing for more than 155 chemical substances including all priority

substances (defined in EQS Directive 2008/105/EC) as well as 7 substances from List I and 115 substances from List II of Directive 76/464/EEC. According to the results of this survey for each river basin a specific pollutant catalogue has been determined that includes all substances that their annual concentrations exceed 20% of the respective National EQS. All these compounds have been considered as potential pressures and will be subjected to reevaluation after gathering more analytical results.

HU The complete territory of Hungary is within the Danube river basin, therefore the Hungarian principle for the selection of river basin-specific pollutants (RBSP) was the application of Danube river basin-specific pollutants. The "Convention on cooperation for the protection and sustainable use of the Danube River (Danube River Protection Convention)" specified a "Guiding list of hazardous substances and groups of substances" in Part 2 of Annex 2 of the Convention. Subsequently the Phare project "Strengthening sustainability of water quality management in the Danube basin" included a component (No. VI) on the identification of sources and amount of pollution for the substances on the EU list of priority chemicals.

The method used for identifying the list of hazardous substances which should be monitored in the surface waters of the Danube catchment to comply with the EU list of priority chemicals consisted the following activities:

- Review of the historical evolution of the EU Priority List and of the philosophy of the screening procedure.
- Assessment under the Initial Inventory of the quantity, quality and accessibility of the data on the priority substances presently available in the Danube Basin.
- Creation of the database.
- Compiling a preliminary list of substance of concern in the Danube Basin.
- Drawing up a strategic plan for developing a future ICPDR List of Priority Substances.

An output of the project was a proposed draft ICPDR list of hazardous substances harmonized with the EU WFD.

IE **Rationale**

In Ireland a National Expert group was established in 2003 to assist with developing candidate lists for specific pollutants in surface waters in Ireland and to design a substances screening monitoring programme as part of the implementation of the WFD. The starting point of the specific pollutant selection process entailed examination of the list of main pollutants as set out in Annex VIII of the WFD "universe of chemicals". Potentially all substances not identified as priority action substances (Annex IX & X) were to be considered as candidate pollutants. In the compilation of this list, the Dangerous Substances Directive was first looked at and substances previously identified as List I and II substances were added to the list as a starting point. The existing programmes were also identified for consideration in accordance with the IMPRESS guidance.

- Clean Technology Centre (CTC) project – 'Inventory and tracking of Dangerous Substances in Ireland and Development of Measures to Reduce their Emissions/Losses to the Environment'
- UNEP POPs –
- OSPAR -
- EPER - European Pollutant Emissions Register.

In addition to the main lists of substances identified by IMPRESS the expert group assessed the inclusion of other groups of pollutants associated with significant commercial activities in Ireland. These included substances associated with pesticides usage, aquaculture, forestry and weed control products. The expert group also considered findings of studies into endocrine disrupting substances. The expert group reviewed the datasets to screen the substances based on the output from existing registers and monitoring programmes in Ireland. The following rationale was applied:

• Substances which had been included in previous monitoring programmes and found to be consistently not detected at significant levels were dismissed from the candidate list.

• Substances which had been prohibited from distribution and use for over 10 years were also excluded from the candidate list.

• Alternatively, where there was no information from monitoring programmes or no ban on or lack of authorisation for the substance, a precautionary principle approach was adopted and substances remained on the candidate list.

The total number of substances on the candidate relevant pollutants list is **161.**

Summary of Substances added to Candidate Relevant Pollutants List	
DSD List II	91
CTC Project	3
UNEP POPs	2
OSPAR	3
EPER	2
Pesticides of possible relevance	42
Control Products Introduced to the Aquatic Environment	2
Endocrine disrupting substances - BKH report	8
Endocrine disrupting substances – usage reviews	8
Total Number of Substances /Groups	**161**

Survey and Screening

A water quality survey, to establish whether they were present in significant concentrations, was then carried out. A total of 23 Monitoring sites were selected downstream of areas where these substances were most likely to be found, comprising 17 surface water, 4 ground water one large waste water facility and a landfill effluent site.

Monthly samples were taken over a 12-month period, in 2005-06, allowing the calculation of annual average concentrations. Although at the time of the survey, no WFD compliant environmental quality standards were yet established for these substances, benchmark values were available for most substances from the scientific literature or from standards in use in other Member States (including a number of standards previously set at a national level under existing Irish legislation). A substance was judged to be present at a significant concentration where the **annual average concentration was found to exceed one quarter of the benchmark value used for that substance.**

Using these tests, 25 specific relevant pollutants were identified for inclusion in the national WFD monitoring programme for more widespread evaluation. The substances Toluene, Xylenes and Cyanide were added to this list on the basis that standards had already been established for these substances in the Irish Dangerous Substances Regulations (S.I. No. 12 of 2001) even though they were not detected in significant concentrations in the national screening survey for dangerous substances. The final list of 28 relevant pollutants included in the monitoring programme comprises 12 Metals, 11 Pesticides and 5 other substances.

Eleven additional specific relevant pollutants have been added to a Supplementary Monitoring List where information indicated that they might pose a risk to the aquatic environment due to particular uses or because they were of cross-border concern. It is proposed that these substances will initially come under the investigative monitoring programme. These include 7 Pesticides and 4 other substances.

Standards

EQS have been developed and are now included in National WFD Regulations for 16 of the above substances (including two chromium species), see folder Ireland on Circa. Standards will be brought forward for the other substances at a later stage, if deemed necessary, taking into account *inter alia* the findings of the national dangerous substances monitoring programme which is being undertaken by the EPA. Because of the complexity of the procedure for derivation of EQS for these substances, the process of identifying substances and developing environmental quality standards is ongoing, as in most other Member States, in keeping with the iterative approach of the Water Framework Directive.All proposed standards will be kept under review *inter alia* in the event of technical or scientific progress.

IT In Italy, with the publication of the ministerial decree n.56/2009, has been selected a list of national specific pollutants in support of the classification of the ecological status. For all the specific pollutants included in the DM have been derived EQS in the water column (51 substances included total pesticides) and in the sediment for transitional and marine coastal-waters (e.g. PCB and Dioxins).

The national list of specific pollutants included in the DM has been derived on the basis of the

monitoring data collected in different Italian regions, from data derived in the framework of a national monitoring programme of pesticides and, in particular for sediment, from data derived in the national programme of remediation of highly contaminated sites. Many of these substances are the same included in the list II of dangerous substances directive 76/464/EEC. The primary criterion for the inclusion in the list has been the presence of the substances in the waterbodies, in the case of pesticides also the production has been considered.

This list is provisional and will be amended (in terms of addiction or deletion of substances) on the basis of new recent monitoring data and on the analysis of pressures and impact.

In the national decree is clarified that the selection of specific pollutants (Annex VIII of WFD) should be based on the analysis of pressures and impacts, on the basis of the existing and new monitoring data (compared with EQS derived at national level) and on the basis of ecotoxicological effects on the ecosystem.

LT Inventory. Nacional legal act for wastewater „Nuotekų tvarkymo reglamentas“ („Wastewater Management Regulation “) MoE 2009 07 03 oder No. D1-386 requires an inventory of hazardous substances in the wastewater and effluent in the cases when operator (company, client) wishes to obtain an IPPC permit. Inventory schould be done not for all 74 (in our legal acts we have such list with 74) hazardous substances. Not for each operator. The operator must conduct an inventory of its industry-related hazardous substances. Only wastewater treatment plant must check all 74 hazardous substances in their effluents

---

MT In order to select River Basin-Specific Pollutants (RBSP) of relevance to Malta, it has been considered appropriate to assess other pollutants which are not included in Annex II of the Priority Substances Directive (2008/105/EC). In this process, the following groups of substances have been considered:

- List II families and group of substances included as Annex I of the Dangerous Substances Directive (2006/11/EC - Codified version); and
- Substances indicated as relevant for the Strategic Action Programme (SAP) to address pollution from Land-based Activities as per requirements under the revised Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities (LBS Protocol[3]).

During this assessment, the presence and nature of the point sources and diffuse sources of pollution in the local water bodies have been considered; the assessment also included a review of existing scientific data for local waters. The scientific data has been collected on an *ad hoc* basis through studies carried out principally as part of research work and as part of environment impact assessments.

Substances were identified on the basis of the level of importation of the chemicals or class of chemicals by the National Statistics Office for the period 2000-2004 and on the level of occurrence in local discharges and/or environment of the respective chemicals. All substances identified as having significant loads in the LBS Protocol National Baseline Budget (NBB) were also identified as RBSP.

NL Water management in the Netherlands and in Europe did not start with the coming of the WFD. Several basis lists of substances have been developed in the past based on monitoring results (what can be analysed in a practicable way) and based on information in terms of what kind of specific discharges of polluting substances result from which activities. (e.g. oil is discharged by crude oil refineries, heavy metals are discharged as a result of surface treatment of metals, PAH are discharged as a result of coke production etc.) In addition to that specific activities result is diffuse discharges such as agricultural activities (discharge of nutrients and plant production products, shipping result in the discharge (leaching) of anti fouling agents (e.g. TBT or Cu) etc.)

In the past iterations between “what can we monitor” and “what are significant discharges resulting

---

[3] As a contracting party to the Barcelona Convention, Malta signed and ratified the LBS Protocol and has submitted to the United Nations Environment Programme, Coordinating Unit for the Mediterranean Action Plan (MAP/UNEP) in 2004 a National Baseline Budget (NBB) of emissions and released of the SAP targeted pollutants.

from man made activities" resulted in "lists" of substances as a basis for our monitoring programme.

So in fact we followed the DPSIR-approach (in principle also applied when preparing the IMPRESS-guidance) which was fine tuned via the "monitoring cycle approach" (explain in advance what should be monitored (define the question to be answered); than execute the monitoring, check the monitoring results with standards or references, conclude whether the monitoring activity has resulted in "answering the question").

At international level cross seeding took place with activities in which production volumes of certain substances times a "toxicity of such a substance" (resulting in a potential toxicity equivalent) resulted in ranking lists. E.g. the International Rhine Commission prepared, many years ago, a list of approximately 70 substances of relevance for the catchment area of the river Rhine. A EU-wide equivalent is the well known list of 129 substances (in a later stage expanded to 132 substances) in connection with the implementation of Directive 76/464/EC (1976) (new number: 2006/11/EC).

At this moment our general list of substances, relevant for the WFD, is included in a ministerial decree (in preparation) comprising i.a. a general list of substances that may be relevant for our river 4 (international) basin districts. Taking account of this list it is decided at water body level which of these RBSP are not meeting the water chemical quality standard.

NO In Norway we have not yet included the RBSP in our legislation. However we (The Norwegian climate and pollution agency) are in short time proposing a list of substances to be included in our legislation as RBSP. The list includes substances on our national priority list. Norway's national targets are to eliminate or substantially reduce emissions of the substances on the list by 2010. The priority list includes about 30 substances and groups of substances (Prop. 1S 2009-2010, Ministry of the Environment). See http://www.environment.no/Tema/Kjemikalier/Kjemikalielister/Prioritetslisten/ for more information.

At first this national list was based on existing chemical list eg. OSPAR and other conventions. In later time the revisions of the list has been based on a list of criteria and monitoring data (mostly emerging substances).

Criteria for the selection of Priority Substances

Substances that fulfill one or more of the following five sets of criteria are included in the national target to achieve substantial reductions in emissions by the year 2010 (Prop. 1S 2009-2010, Ministry of the Environment). The criteria and the values that are presented below are mainly based on international work in the EU and OSPAR.

1	2	3	4
P+B+T	**vP+vB**	**Additional criterion**	**Additional criterion**
Substances that are persistent, bioaccumulative and have serious long-term effects on health (including carcinogenic, mutagenic or toxic for reproduction) or are highly toxic for the environment	Very persistent, and very bioaccumulative substances (documentation of toxicity is not required)	Substances that are detected in the food chain at levels which give rise to an eqvivalent reason for concern	Substances that give rise to an equivalent level of concern as substances that meet the criteria 1-3, such as certain metals and substances that have endocrine disrupting effects

For these sets of criteria the following definitions are used:

Criterion		Defined by

Persistent	**P**	**One of the following:** 1) Fresh water: half-life □ 40 days 2) Marine water: half-life □ 60 days 3) Sediment, fresh water: half-life □ 120 days 4) Sediment, marine: half-life □ 180 days 5) Soil: half-life □ 120 days Other relevant information may be used if test results are lacking.1)
Bioaccumulative	**B**	Bioconcentration factor (BCF) □ 2000 Other rele□ant information may b□ used if test results are lacking.1)
Serious long-term effects on health	**T**	**One of the following:** 1) Carcinogenic (Category 1 or 2 according to Directive 67/548/EEC), i.e. classified as T; R45 or T; R49 2) Mutagenic (Categori 1 or 2 according to Directive 67/548/EEC), i.e. classified as T; R46 3) Toxic for reproduction (Category 1, 2 or 3 according to Directive 67/548/EEC), i.e. classified as T; R60,T; R61, Xn; R62, Xn; R63 or R64. 2) 4) Chronic toxicity: i.e. classified as T; R48 or Xn; R48
Highly toxic for the environment	**T**	**One of the following:** 1) Very high chronic toxicity for aquatic organisms: NOEC (aquatic, chronic) □□0,01 mg/l 2) Very high chronic toxicity for terrestric organisms: NOEC (bird, chronic) □ 30 mg/kg 3) Substances that are sufficiently documented in internationally accepted tests as causing endocrine disrupting effects Other relevant information may be used if test results are lacking.1)
Very persistent	**vP**	**One of the following:** 1) Fresh water and marine water: half-life □□60 days 2) Sediment, fresh water or marine: half-life □ 180 days 3) Soil: half-life □ 180 days Other relevant information may be used if test results are lacking.1)
Very bioaccumulative	**vB**	Biocentration factor (BCF) □ 5000 Other relevant information m□y be used □f test results are lacking.1)
Additional critierion		**One of the following:** 1) Metals that may cause serious long-term effects. 2) Substances that are traced in the food chain or in mother's milk at levels that may represent a risk to health or the environment. 3) Substances that are sufficiently documented in internationally accepted tests as causing endocrine disrupting effects at low levels. 4) Other substances that are shown to represent risks to health or the environment at similar levels as PBT- or vPvB-substances.

1) Test results that show potential for persistency, toxicity and bioaccumulation may be used if tests of higher quality are lacking: a) potentially high persistency: does not fulfil the criteria for ready or inherent persistency (OECD 301,302 or 306), b) potentially high chronic aquatic toxicity: L(E)C50 in acute test £ 0,1 mg/l. This is most relevant with regard to persistency, as half-life test has recently been internationally accepted and little test data therefore exists today.

PL No specified procedure. The main research is screening and monitoring for sources of pollutions, used materials in technology, imported materials, etc.

PT

- The procedures that Portugal adopted to assess and select RBSP were:
- Assessment of substances used in the several activities (agriculture, trade and industrial) present in Portugal;

- Appraisal of types of activities presented in each region/basin;
- The drawn up of an inventory of installations (industrial and trade activities) that potentially used and/or produced dangerous and/or priority substances, based on the previous results. The installations were inventoried by region and basin;
- Selection of installations for specific characterization (selection criteria: IPPC installations, installations with voluntary environmental agreements, installations with a discharge permit and other installations that demonstrate interest to the region/basin);
- Development of:
    - Characterization studies from the selected facilities;
    - Other works related with specific pollutants for basin (e.g. studies that are being developed or had been prepared for Algarve basin: "Impact Assessment of Roads in Water Quality", "Definition of guidelines for water pollution prevention from chemical accidents with dangerous substances", "Prevention pollution control from dangerous substances by diffuse sources" and "Risk assessment related with the dangerous substances discharged into water resources").

RO The procedure has 3 components :

1. an inventory of the possible substances in discharges (based on some criteria, attached, in Romanian) – this procedure normally reveal substances not known up to that moment to be possible present in discharged. This procedure takes into consideration the data and declarations of point sources about the raw substances, used intermediary products and final products handled in their industrial unit. Also, new substances used for new technological process for new industries are included in the list of specific substances at basin level whe such a industry is licenced for the first time. Up to now, these procedures were not largely applied because of big quantity of collected data, necessary to be processed later.

2. analysis of emmisions (substances and quantities of discharged industrial waste waters from the licenced point sources); this analysis confirm or not certain substances which normally are present in the list of authorised substances to be discharged. It is an easier process and is dedicated mainly to revision of the water management licences and to the check of compliance with pollution reduction/elimination programs with dangerous/priority substances.

3. analysis of immisions – analysis of surface waters in the monitoring sections, established according to ''pressures'' criteria ; the analysis was developed based on the so-called ''screening'' of waters using the following criteria '' if a substance if found as having a concentration bigger than the national EQS is at risk ; if a substance is found as having a concentration of 80% from the national EQS is considered as being at a possible risk ; in both cases that substance is introduced in the monitoring of that water body. It is worth mentioning that this rule is applied at the so-called ''list II substances'' for which national EQS is established in national legislation (see folder Romania on CIRCA); it is not applicable at substances not present in national legislation

---

SK In 2004, 59 relevant substances were selected in the Slovak Republic. The basic selection criteria were production volume or use of substance and results of monitoring. Part of work was done by Twinning project SK02/IB/EN/01-"Implementation and enforcement of Council Directive on discharges of dangerous substances into the aquatic environment.

SI The procedure for selecting RBSP in Slovenia is described in research project (b) CRP: *Preparing environmental standards for chemical substances in water environment. November 2006.* In the first stage of project the list of substances relevant for water environment was gathered in such a way that the data from the previous project (a) were methodological assessed and supplemented on the basis of unified criteria (COMMPS procedure, based on the environmental concentrations, toxicity, bioaccumulation and long-term effects). In the second stage , the proposal for environmental quality standards as annual average and maximum admisable concentration for chemical substances from the list was prepared.

The proposal for environmental quality standards as annual average and maximum admisable concentration are based upon the toxicological data for water organisms. The toxicological data from several data bases were used (RIVM, EPA, database accessible in internet..). For overcoming the problem of unknown effects due to lack of data the safety factor was applied.Environmental quality

standards were proposed for water and sediment. For some naturaly occurring substances background concentrations were determined and take into consideration in determination of environmental quality standard.

ES At a river basin level there are two approaches to select the RBSP:

A) INVENTORY OF EMISSIONS: all the substances discharged in significant amounts are analysed. The inventories consulted are: IMPRESS analysis, PRTR inventory, register of discharge permissions, and declaration of hazardous substances discharged in the sewage system to obtain the urban wastewater discharge permission.

B) MONITORING RESULTS: all the substances detected in water bodies or in wastewater discharges, are included in the monitoring programs. An Investigative Monitoring is implemented, as part of the Monitoring Program, to detect new pollutants in the water bodies. The aim of the investigative monitoring is to detect new substances present in the water bodies but not included in the routine control. This new substances are detected using screening techniques applying mass spectrometry as main technique. By this way are selected new pesticides to be included in the Operational Monitoring Programs

---

SE Swedish Environmental Protection Agency has in a handbook from 2007 a suggestion in broad outline on how the Water Authorities (WA) could proceed in order to identify RBSP. The very short text is copied in italics below. In practice however the methods used have varied amongst WA and not always followed this suggestion. In general regional monitoring data was gathered and compared to the national list of potential specific pollutants (see response to question 2 below). In addition, as far as possible, the national candidate list was also checked against inventories of contaminated sites and emission data as well as substances handled/imported.

Status, potential and quality requirements for lakes, watercourses, coastal and transitional waters *- A handbook on how quality requirements in bodies of surface water can be determined and monitored, Swedish Environmental Protection Agency, Handbook 2007:4, Chapter 16.5*

Choice of specific pollutants

What is meant by a substance being discharged in significant quantities? In the EU Guidance no 3 (Analysis of pressures and impacts)[4] the concept of discharge is interpreted in a broad sense. It covers discharges from point sources in the river basin, leakage from diffuse sources and e.g. atmospheric deposition from other areas. One should therefore consider all the possible pathways by which the pollutant can reach the water body. The Swedish EPA interprets “significant quantity” as a quantity of a substance that can prevent the biological status/potential from being fulfilled by 2015.

The water authorities shall classify the specific pollutants discharged into the water body. Discharged substances are identified with the help of the supporting data produced when assessing impact (See the Handbook for Typology and Analysis). The EU Guidance describes the procedure for selecting the specific pollutants in each river basin and in particular water bodies. Here is a summary of the most important steps.

1. Starting-point

The indicative list of the main pollutants set out in Annex VIII of the WFD can be the starting-point of the selection process.

2. Screening of information

A screening of all available information on pollution sources, impacts of pollution and production and usage of pollutants in order to identify those pollutants that are being discharged into water bodies in the river basin district.

2a. Collation of data/information

Data from:

- Sources - Production, industrial processes, usage, treatment, emissions
- Impacts - Change in the occurrence of pollutants in the water body (water quality monitoring

---

[4] Common Implementation Strategy for the Water Framework Directive (2000/60/EC) Guidance no 3 Analysis of pressures and impacts, produced by working group 2.1 – IPRESS, 2003

data)
- Pollutants - Intrinsic properties of the pollutants affecting their likely pathways into the water environment.

Information from existing programmes/registers, e.g.:

- Swedish Pollutant Release and Transfer Register (PRTR)
- C-EMIR (emissions from point sources)
- MIFO (contaminated areas)

2b. List of pollutants

Assessment of information collated under Step 2a will result in a list of those pollutants identified as being discharged into water bodies in the river basin district. Pollutants for which there is adequate confidence that they are not being discharged into water bodies in the river basin district may be excluded from further considerations.

3. Assessment for relevance

All the pollutants being discharged in the river basin district have been identified in Step 2. Step 3 tests which of these are relevant. In other words, those pollutants that are likely to cause, or are already causing, harm to the water environment. This will depend on the intrinsic properties of the pollutants, their fate and behaviour in the environment and the magnitude and form of their discharges. Selection should ideally be based on an assessment of the ecological relevance of the concentrations estimated for the pollutant or its metabolites in the water body. However, effect data or a modelling of critical loads may also be relevant in the selection process.

3a. Data on concentrations and loads

Obtaining data through monitoring and/or modelling.

3b. Comparing concentrations with threshold values

Pollutants identified under Step 2 may be excluded where their concentrations are estimated to be lower than the most relevant critical value such as estimated LC_{50}, NOEC, PNEC, EQS or model estimations for e.g. critical load.

Natural background concentrations of non-synthetic pollutants (mostly metals) may exceed EQS without them necessarily being considered relevant.

Potential bioaccumulations of the pollutant in sediment or biota should be considered.

4. Safety net

A safety net is needed to ensure that pollutants that may be environmentally significant are not incorrectly excluded from the list of specific pollutants during Step 3. For example, the safety net should consider;

- whether a number of small (individually minor) pollution sources may be expected to have a significant combined effect,
- whether there is a trend indicating the increasing importance of a pollutant, even though the EQS is not currently exceeded, and
- whether pollutants are present that have similar toxic effects and hence via additive or synergetic effects may cause significant impacts.

5. Final outcome

The final outcome is a list of specific pollutants relevant to a river basin district or to particular water bodies within a river basin district. It is therefore the water authorities that select the relevant specific pollutants for each water body. Class boundaries should be established for these pollutants in accordance with Annex V of the WFD so that the status of the specific pollutants quality element can be established.

CH The procedure is work in progress. It is planned to apply a procedure that would be leaned on the one described in the following:

- The first step for the selection of organic substances was to develop a candidate substance list.

The candidate substance list of potential MCs was based on three criteria. The compounds (a) were listed in the EU WFD, (b) were listed in the list of relevant substances for the river Rhine, or (c) had been measured in Swiss surface waters (Götz et al 2010, see folder Switzerland on CIRCA).

- As a second step, the candidate substance list was categorized for prioritisation of mobile organic compounds that are mainly found in the water phase of surface waters. In total, seven exposure categories are distinguished: (I) highly persistent chemicals that are continuously released into surface waters, (II) highly persistent chemicals with a complex input dynamic, (III) moderately persistent chemicals with a continuous input, (IV) moderately persistent chemicals with a complex input dynamic, (V) volatile and strongly sorbing chemicals, (VI) rapidly degradable chemicals, and (VII) unclassifiable chemicals. The seven exposure categories are discussed in detail in the Results section. The categorization procedure is given in the Figure 1 in Götz et al 2010, folder Switzerland on CIRCA. The compounds are categorized using three filters: (a) distribution behaviour between different environmental media, (b) compound degradability, and (c) input dynamics. If the required chemical property data are not available, the selected compound properties are estimated with publicly available QSPRs, such as EPI SuiteTM (Götz et al. 2010, folder Switzerland on CIRCA).

For the first part of the work, which deals with compounds from urban areas, some compounds from the categorized candidate list were selected: So called “Swiss relevant compounds from urban systems”

The following additional criteria are planned to apply for the selection of the “Swiss relevant compounds from urban systems”:

- Substances have to be from exposure categories I - IV (mobile, persistent)
- Substances have to be approved by current legislation
- Substances have to fulfil one of the following criteria:
    - Widely detected in Switzerland (more than 20% of the investigated samples have to be positive)
    - Measured in high concentrations (more than 100 ng/L)
    - Substance is specifically toxic

UK Annex VIII of the Water Framework Directive (WFD) requires Member States to identify ‘Specific Pollutants’, ie those discharged to water in ‘significant quantities’, and derive Environmental Quality Standards (EQS) for these chemicals in order to help achieve the objective of Good Surface Water Status. A collaborative project between the Environment Agency and the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) was commissioned in 2004 to develop a robust and transparent methodology for identifying and prioritising Annex VIII chemicals in the UK, and to develop standards for the first tranche of Specific Pollutants. This report outlines the work that has been undertaken to meet the former objective. It details the development of a list of chemicals of concern and a prioritisation methodology, and summarises the results of the subsequent prioritisation exercise.

It was agreed by the UK Technical Advisory Group (TAG) Chemistry Team that the approach used to identify and prioritise chemicals should be consistent with the guidance produced by the EU IMPRESS (IMPacts and PRESSures) working group,which was set up to identify pressures and assess impacts on water bodies in relation to the WFD. The guidance outlined a generic approach that could be used to select a list of Specific Pollutants. In line with the IMPRESS guidance, candidate chemicals were identified from a range of existing drivers. These included existing monitoring and legislative requirements, e.g. the National Marine Monitoring Programme and the Dangerous Substance Directive (76/464/EEC) as well as national initiatives such as the UK pesticide usage surveys. The initial list was reviewed to remove duplicates, those chemicals already being considered by the EU under Annex X of the WFD and substances for which the prioritisation process is not appropriate, such as metals and other inorganic substances. This process resulted in a list of approximately 300 candidate chemicals which was termed the ‘Universe of Chemicals’.

The Environment Agency’s Chemicals Screening and Prioritisation method was chosen as the basis of the prioritisation approach, as it met the requirements of the IMPRESS guidance and was a method with which we already had some experience. The screening tool was developed to consider impacts on terrestrial and aquatic life as well as human health considerations. As the WFD standards only need to consider the protection of aquatic life, the tool was modified for this exercise, to only consider hazards related to the aquatic environment (water column, sediment and secondary poisoning).

The prioritisation process ranks substances based on their potential exposure in the aquatic environment and hazard to aquatic life. Exposure is assessed according to available monitoring and use

---

(tonnage and use scenario) data and hazard is assessed based on persistence, bioaccumulation and toxicity. A score is then assigned for both exposure and hazard based on the available data. These scores are combined to give an overall priority ranking of 1 to 5 with 1 indicating highest priority and 5 the lowest.

There are minimum data requirements for an assessment to be made and if these are not met the substance will be assigned a final ranking of 'Insufficient Information'. The prioritisation approach also incorporates a review of the priority rankings. This does not involve detailed discussion of the data used to determine the priority ranking, but:

- enables a check on the score assigned and flags any anomalies

Prioritising chemicals for standard derivation under Annex VIII of the WFD

- provides an opportunity for highlighting further data sources
- enables discussion about how particular substances should be dealt with, for example should they be taken forward for EQS development, should additional data be obtained, are other controls in place which reduce the need for an EQS.

Due to time constraints not all substances could be reviewed and therefore we focused attention on those substances assigned a priority ranking of either 1 or 2. The review exercise concluded that not all the substances identified as high priority (ranked 1 or 2) should be put forward for consideration for EQS development at this stage. This was for a number of reasons including a need for further information (such as additional data on use), existing controls (such as restrictions on use which may influence the need for an EQS) and on-going reviews (such as reviews under the Plant Protection Products Direcive the outcomes of which may affect the need for an EQS).

The latter, for example, may result in a pesticide not being approved for use in the EU. At this stage a total of 32 substances have been identified for EQS development as a result of the prioritisation exercise undertaken on the 'Universe of Chemicals' (including the List 2 chemicals) and the review of discharge permits. EQS are currently being derived for 30 of these chemicals. A number of other substances were identified as of high priority based on the prioritisation process but were not put forward for EQS development at this stage due to a need for further information. They will need to be reconsidered as additional data become available. In addition, due to time constraints, the review process focused on those substances that were ranked as Priority 1 or 2.

The other substances need to be reviewed before any decisions are made on these chemicals. The exercise has highlighted a number of issues that need consideration when using the prioritisation process. These include limited availability of usage data and the need to consider data on persistence and bioaccumulation more broadly. Many of these issues have been addressed at the review stage and this supports the need for inclusion of this within the overall prioritisation process. However others will need to be addressed before further prioritisation exercises. This includes use and interpretation of fugacity modelling. This was included as a tool to help assess potential exposure in the aquatic environment but due to data limitations it provided limited benefit during this particular exercise. The use of this approach in future exercises needs to be considered.

Reference documents of the selection procedures

Is there a reference document with the full description of the procedure? If yes, please attach, even if in the national language.

AT	„Gefährliche Stoffe in Oberflächengewässern – Fachgrundlagen für österreichische Programme nach Artikel 7 der RL 76/464/EWG“ (2002). Please see folder Austria on CIRCA or http://publikationen.lebensministerium.at/filemanager/download/21972
BE	*There is no reference document.*
BG	Methodological approach developed under SWIFT “**S**creening methods for **W**ater data **I**n**F**orma**T**ion in support of the implementation of the Water Framework Directive” (see folder Bulgaria on CIRCA) First Interim Report on topic 3 “Development of environmental quality standards for surface water”, National project “Development of River Basin Management Plans” financed by Operational Programme Environment 2007-2013” (see folder Bulgaria on CIRCA)
CY	*There is no reference document.* Attached the report on the pressure analysis (see folder Cyprus on CIRCA)
CZ	*There is no reference document. The proposal of this document is currently being drafted.*
DK	See folder Denmark on CIRCA. However, the procedure is not implemented yet. (Overordnet strategi for overvågning af miljøfremmede stoffer og tungmetaller af 7. maj 2009).
EE	*There is no reference document.*
FI	Please find the following documents in English: Selection of specific pollutants: see folder Finland on CIRCA or http://www.ymparisto.fi/default.asp?contentid=92296&lan=en Environmental Quality Standards: see folder Finland on CIRCA or http://www.ymparisto.fi/default.asp?contentid=143511&lan=en Finnish National Decree: see folder Finland on CIRCA or http://www.finlex.fi/fi/laki/kaannokset/2006/en20061022.pdf
FR	Please see folder France on CIRCA for a short description of the procedure. The document is validated by the French water director but can’t be considered as the French reference document. It can be completed by: • the 2005 national action plan against pollution caused by dangerous substances to the aquatic ecosystem[5] implementing the requirements of D76/464/CEE. • The French regulation fixing and implementing the national monitoring programmeunder the WFD (circulaire DCE 2006/16[6]).
DE	Yes, but only as a draft (see folder Germany on CIRCA).
EL	*There is no reference document.*
HU	The reference document of the description of the procedure mentioned in point 1 of the questionnaire is the project report “Strengthening sustainability of water quality management in the Danube basin. Component VI: Identification of sources and amount of pollution for the substances on the EU list of

[5] Arrêté du 30/06/05 relatif au programme national d'action contre la pollution des milieux aquatiques par certaines substances dangereuses

[6] Circulaire DCE 2006/16 : document de cadrage pour la constitution et la mise en œuvre du programme de surveillance (contrôle de surveillance, contrôles opérationnels, contrôles d’enquête et contrôles additionnels) pour les eaux douces de surface (cours d’eau, canaux et plans d’eau).

priority chemicals" Final report, October 2000, WRc Medmenham.

IE	This document best describes the procedure (see folder Ireland on CIRCA or http://www.wfdireland.ie/docs/19_DangerousSubstances/Dangerous_Substances_Summary_Screening_Programme_Final.pdf) Further background documents may be found using this link http://www.wfdireland.ie/docs/19_DangerousSubstances/
IT	In the National Decree "decreto 14 aprile 2009, n. 56 Regolamento recante «Criteri tecnici per il monitoraggio dei corpi idrici e l'identificazione delle condizioni di riferimento per la modifica delle norme tecniche del decreto legislativo 3 aprile 2006, n. 152, recante Norme in materia ambientale, predisposto ai sensi dell'articolo 75, comma 3, del decreto legislativo medesimo» is included briefly the procedure. **Selezione degli elementi di qualità** "La selezione delle sostanze chimiche da controllare nell'ambito del monitoraggio di sorveglianza si basa sulle conoscenze acquisite attraverso l'analisi delle pressioni e degli impatti. Inoltre la selezione è guidata anche da informazioni sullo stato ecologico laddove risultino effetti tossici o evidenze di effetti ecotossicologici. Quest'ultima ipotesi consente di identificare quelle situazioni in cui vengono introdotti nell'ambiente prodotti chimici non evidenziati dall'analisi degli impatti e per i quali è pertanto necessario un monitoraggio d'indagine. Anche i dati di monitoraggio pregressi costituiscono un supporto per la selezione delle sostanze chimiche da monitorare"
LT	IPPC permits; Regulation act "Nuotekų tvarkymo reglamentas" („Wastewater Management Regulation ") MoE 2009 07 03 oder No. D1-386; Lietuvos Respublikos vyriausybės nutarimas dėl valstybinės aplinkos monitoringo 2005-2010 metų programos patvirtinimo, 2005 m. vasario 7 Nr. 130 (Republic of Lithuania Government Resolution for approval on the state environmental monitoring programme for 2005-2010, 2005 m. February 7 No. 130).
MT	The national procedure adopted in selecting the RBSP has been based on unpublished expert assistance on the design of surveillance and operational monitoring networks for local surface waters. The preliminary list of national identified RBSP includes: Copper, Chromium, Manganese, Zinc, Barium, Beryllium, Boron, Cobalt and Fluorides. However, it is being envisaged that the finalised list will be made available during the implementation of the 1st Water Catchment Management Plan.
NL	*There is no reference document.* The process has been summarised under item 1 of this questionnaire.
NO	*There is no reference document.*
PL	*There is no reference document.*
PT	*There is no reference document.* The procedures were developed based on general guidance notes, therefore there is no document with the full description of them.
RO	No, there is not such a document; there are different pieces of articles in different national legislations, as mentioned in answer nr. 1 and some of them are present in folder Romania on CIRCA. The relevant pieces of legislation are: • Ministerial Order 31/2006 with the reorganisation of national integrated monitoring system of waters in Romania; • Ministerial Order nr. 662/2006 with inventory of industrial discharges and revision of water licences; • Governmental Decision 351/2005 with the national EQS for ''List I'' and ''List II'' substances.
SK	In 2004 approach for pollution reduction has been elaborated. At present updated version is under preparation, including substances relevant for the Slovak Republic (country´s specific substances). Reference to document: http://www.enviro.gov.sk/servlets/page/868?c_id=2348
SI	http://www.mop.gov.si/si/delovna_podrocja/direktorat_za_okolje/sektor_za_vode/ekolosko_stanje_pov

rsinskih_voda/

(a) (Kemijski inštitut, Identifikacija nevarnih snovi na področju RS z namenom priprave programov zmanjševanja onesnaževanja vodnega okolja, Ljubljana, september 2003)

(b) ZZV MB, Priprava okoljskih standardov kakovosti za kemijske snovi v vodnem okolju, CRP projekt, Maribor, september 2006: (linki na dokumente s temi imeni, ki so na I/SKUPNO/CRP_projekt_ZZVMB)

- Zaključno poročilo projekta
- Poročilo I faze projekta
- Poročilo II faze projekta
- Priloga 1
- Priloga 2
- Priloga 2a

ZZV MB, Nadgradnja predloga okoljskih standardov kakovosti za nekatere kemijske snovi v vodnem okolju, Maribor, januar 2009:

- kobalt in njegove spojine
- dibutilkositrove spojine
- S-metolaklor
- terbutilazin

ES	*There is no reference document.*The document is a draft not approved yet.
SE	To support the regional Water Authorities (WA) when performing the classification for specific pollutants the Swedish Chemical Agency, by order of the Swedish Environmental Protection Agency (Swedish EPA), has derived proposals for environmental quality standards (EQS) for a number of pollutants that may be problematic in certain parts of Sweden. This is done in a EPA-report no 5799 (see Attachement 16 on CIRCA or http://www.naturvardsverket.se/Documents/publikationer/620-5799-2.pdf). The report is in Swedish with only a very short summary (1/2 page) in English.
CH	As this work is still in progress, there is no official document available that shows the whole procedure. The applied prioritisation procedure is documented in the article of Götz et al 2010 (in folder Switzerland on CIRCA). The whole procedure is still subject to discussion with different stakeholders.
UK	The process has been documented in the UK Environment Agency Report SC040038/SR (see Attachemnt 17 on CIRCA). This report was in turn used as the basis for the modelling based approach for the review of Priority Substances.

Critical points / limitations of the applied procedures and suggestions for improvements

What are the critical points/limitations of the procedure applied in your country that you think could be improved in the future? Please, describe.

AT The most important critical points of the selection procedure were:

- restriction of the number of potential candidates out of the universe of chemicals to a manageable list,
- uncertainty in assessment due to data gaps

Regarding the list of potential candidates, Austria used existing EU-lists (e.g. List of substances from the Communication from the EU Commission 1982), existing monitoring data and expert judgement. For the future the use of ecotoxicological studies for the selection of hot spots where a detailed chemical analysis should follow could be an interesting possibility to identify RBSP.

BE Implementing the WFD-monitoring requirements on biological and chemical elements as well as other obligations use a large part of the available monitoring budget. Little financial room is left to set up research programmes concerning emerging substances. Since monitoring of new emerging pollutants is highly time- and money consuming, we believe that the work of the Commission in this area is very important.

Points to be improved in the procedure applied in Flanders:

- specific screening in effluent of waste water treatment plants
- improve the knowledge on sources of dangerous substances and the pathways in which pollution occurs
- which metabolites are being formed and how to treat them

BG The second procedure (First Interim Report on topic 3 “Development of environmental quality standards for surface water”, National project “Development of River Basin Management Plans” financed by Operational Programme Environment 2007-2013”) for determination of specific pollutants is newly developed. It was developed as response to the need of basin directorates in Bulgaria to improve methodology for identification of specific pollutants that has to be monitored: in order to be able make cost effective monitoring and to put efforts in substances that are relevant. This approach is based on a broad base: experiences of foreign countries, methodologies, scientific investigations and relevant legislations have been investigated, so the contemporary knowledge for the choice of specific pollutants is taken into account in the developed methodology.

We think that there is still need to get more experience in its practical application in order to assess all possible areas of further improvement. Nevertheless we think that there are at least these possible areas for improvement of the procedure:

1. A good practice would be the possibility to apply analytical screening (i.e. detection of emerging substances or substances that are released from unidentified sources) before final formulation of the list of substances to be monitored under regular monitoring.
2. Determination of a criterion for “significant” quantities of pollutants discharged/released into water bodies.
3. Assessment of the contribution of atmospheric pollution to the water pollution and to the list of specific pollutants
4. Development of a methodology for identification of a list of substances to be monitored in sediments.
5. Applied research projects.

The main disadvantage is that monitoring data were not well present and included in the developed procedure. That is way the list of specific pollutants achieved is relatively theoretical and quite long. However the main reason is unreliability of monitoring data. Additional information for the identified pollutants from industrial activities, solid wastes, atmospheric depositions is required in future prioritization process. Therefore future improvement of the procedure should include more representative, real positive results from monitoring as well as newly identified pollutants.

CY	Cyprus has used an extensive pressure analysis and all available data for the initial selection of RBSP, has reviewed this selection based on results of the WFD Art. 8 monitoring programme and adjusted the RBSP selection accordingly. We believe this approach worked and works well; however there is always room for improvement, like more detailed pressure analysis.
CZ	The critical point of the procedure is disunity for selection of the RBSP. The procedure is different in each river basin.
DK	In the procedure the selection of substances in operational monitoring is based on knowledge about sources in the catchment area which are responsible for failing to meet environmental objectives. It is a critical point if the knowledge about sources in the catchment area is insufficient or not accessible.
EE	Main problem - co-operation is insufficient between different authorities/stakeholders (eg shared databases). Incomplete registers or databases (eg on chemicals import, use, discharges) don't provide sufficient information for decision-making and/or water management activities. Possible improvments could be achieved if proceduers and duties or task of differents institutions would be more clear. Also, environmental permits of enterprises are too general and do not include all relevant substances. To improve the problem - the training of issuers of those permits is essential. Lack of finances breaks the monitoring of RBSPs, resulting in insufficient environmental data and basic information for the decision making, incl selecting RBSP. Also laboratorial measurement methods must be improved to fulfill the EQS and chemical monitoring directives requirements (2008/105/EU and 2009/90/EU respectively).
FI	The exposure estimation is largely based on use and production volumes that have been reported to the national product register. It covers data only on chemical products classified hazardous and imported or produced in Finland. Some substance groups, e.g. pharmaceuticals, chemicals in imported articles, cosmetics are not covered.
FR	• Quality of the monitoring results either in surface waters or discharges: at that time, the laboratories where not prepared to analyse such substances at low detection limits. • Availability of quality standards and quality of the data • Number of pesticides and need for a global standard.
DE	• Less availability of data, e.g. real application amount from pesticides • Procedure needs a lot of time and money, especially if you need toxicological data • Danger of less consideration of emerging substances
EL	Improvement of analytical methods: Although the limit of quantification has been reduced since 2008, it remains greater than the respective National EQS for some chemicals and some laboratories. This necessitates an additional improvement of analytical methods employed up to now (following requirements of Directive 2009/90/EC). Verification of the RBSP: A more thorough analysis of pressures at each river basin is required in order RBSP catalogues to be verified.
HU	In Hungary the critical limitation of the RBSP selection procedure is that the ICPDR list of RBSPs is not verified thoroughly by sufficient monitoring data of surface water bodies and data of point and diffuse sources of pollution.
IE	• Further guidance/information exchange would be useful. We do already maintain close links with our UK colleagues especially in view of cross-border issues. It would appear that this project is intended to improve co-operation etc. at a broader EU level • Further development of analytical methods to achieve the required EQS values, where needed, would be an advantage. We understand that some work is being undertaken at European level through CEN.
IT	We think that the procedure suggested by the national decree should be applied in Italy; at the moment the selection of specific pollutants has been based mainly on the bases of monitoring data. The new

	approach takes into account of the real situation that occur in the waterbodies and is not more based on a defined list of pollutants for which there is an obligation of monitoring.
LT	Inventory specific substances in wastewater and effluent. Source tracking of hazardous substances. We have no limit values for hazardous substances in sediments and sludge.
MT	The procedure that has been applied is based on chemicals importations data and on a review of the existing scientific literature. Limitations may be accounted to data gaps to some extent in the importations data and to the unknown uncertainties of the limited scientific studies, where in most cases have been carried out on an *ad hoc* basis. As a first step, the quantitative chemical monitoring of 2010 will be used to review the status of the water bodies. During this surveillance and operational monitoring programme it will be ensured that the methods employed in sampling and analysis will conform to standard methods. In the years to come, it is intended that the implementation of the Priority Substances Directive (2008/105/EC), requiring the establishment of an inventory of emissions, discharges and losses will be streamlined as much as possible with the current and planned processes related to environmental permitting.
NL	In a number of cases “pragmatic choices” had to be made. E.g. PCB’s. In principle, PCB’s are by definition a diverse mixture resulting from a “wild chlorination” of biphenyls in an industrial process. From an analytical point of view pragmatic choices have been made in focussing on e.g. 7 PCB’s which are easy to analyse, but may not necessarily reflect the correct set of PCB’s in an aquatic ecosystem. For PAH a more or less comparable discussion exist. In a number of cases the analytical level of quantification is not low enough to determine whether a toxicity level of a certain substance is met or not.
NO	The limitation in the procedure is lack in knowledge when it comes to substances of concern. Better data on properties, use, exposure and environmental monitoring, would increase the possibility to select the most hazardous substances.
PL	-
PT	The main limitations are: • The development and the updating of the inventories of the emissions and losses from point sources of pollution. Therefore, it would be helpful the development/implementation procedures or tools that allowed these actions, in particular for the non IPPC/PRTR installations; • The assessment of diffuse sources, including the pathways appraisal, in particular for non agriculture activities.
RO	It is necessary the procedure for identification of unknown substances in water resources to be improved; it is especially necessary new and more practical criteria for such identification to be developed; it is necessary to extend the attention to polar and very polar substances (medicines, anti-inflammatory products, endocrine disruptors, etc.), almost not known in Romania as polluters of waters. It should be also necessary to develop a project, maybe at European level, (including participation of Romania also) for setting up a common methodology for identification of relevant specific substances al basins level.
SK	Critical point is lack of data concerning substances in discharged wastewater, in surface water and sediments. Improvement : to manage appropriate monitoring.
SI	The greatest problem to define environmental quality standards for individual parts of water environment is lack of several ecotoxicology data. There is also lack of data on emissions.
ES	-

SE	Monitoring, including screening on a local level, and inspection needs to be integrated better in the future, for both active and contaminated sites.
CH	The accuracy of the prioritisation procedure is limited by a lack of data about organic chemicals: The procedure could be improved with better physical-chemical property data and specifically with ecotoxicological data. Available consumption data of organic chemicals would help too to identify potentially critical compounds.
UK	The principle problem encountered in the UK was a lack of data. Which in turn meant that a number of substances were effectively left “on hold” pending the acquisition of sufficient data to proceed.

Previous monitoring programmes for River Basin-Specific Pollutants identification

Have there been dedicated previous monitoring efforts in order to identify RBSP? If yes, please describe them (project title, duration) and attach/provide links to relevant reports if available.

AT	The procedure to identify RBSP (details see 1.) includes the evaluation of all previous monitoring programs since 1995. Since 1992 Austria runs a national network (WGEV, GZÜV) which includes different special programs concerning the detection of hazardous substances – please see details in folder Austria on Circa and http://publikationen.lebensministerium.at/filemanager/download/21973
BE	See 1.b
BG	• Project ”Bulgaria, Arda river basin, field survey“, 2003-2007; • “Support to the Black sea Basin Directorate for the implementation of the WFD concerning coastal water monitoring.” 2005-2007 • Topic 3 “Development of environmental quality standards for surface water”, National project “Development of River Basin Management Plans” financed by Operational Programme “Environment 2007-2013” – ongoing; 2009-2010.
CY	There were no such dedicated programmes.
CZ	VaV/650/3/00 Výskyt a pohyb nebezpečných látek v hydrosféře ČR (Occurrence of dangerous substances in hydrosphere of the Czech Republic – in Czech only) http://voda.chmi.cz/ojv2/htm/pdf/VaV650300.pdf Duration: august 2000 – February 2003 The main aim of this project were specification of dangerous substances with relevance for the Czech republic, survey of their possible occurrence in hydrosphere and specification of quality objectives for ground water and surface water which are affected by discharge of contaminated waters.
DK	Previous national monitoring programmes: NOVA-2003 and NOVANA, and screening studies on specific substances.
EE	In the frames of the state environmental monitoring programme the groundwater bodies were monitored in 2007-2009 with respect to directive 2006/118/EU annex 2 part B substances. The results of "Põhjavee tugivõrgu seire" (Monitoring of groundwater basic network) and other environmental monitoring activities are available only in Estonian on the website of the state environmental monitoring programme http://eelis.ic.envir.ee:88/seireveeb/. Based on former investigations and monitoring data the RBSP for groundwater bodies are given in the Regulation No 75 of the minister of the Environment. For surface waters several inventories have been carried out during last decade. However, RBSPs with respect to surface waters haven't been identified. Only phenols are well-known RBSPs in North-East Estonian oil-shale minig areas, falling into East-Estonian RB District. However, limit values and EQS's for phenols are set for whole territory of Estonia, ie they are not only river basin-specific.
FI	Not solely dedicated on this purpose, but both National and Nordic screening campaigns have been utilized in assessing the relevance of the selected specific pollutants. National screening: http://www.ymparisto.fi/default.asp?contentid=180531&lan=en http://www.ymparisto.fi/download.asp?contentid=82118&lan=en Nordic screening: www.nordicscreening.org

FR In 2005, France has carried out a special monitoring campaign of more than 200 hundred substances in surface waters, referred as "campagne exceptionnelle[7]" (2 monitoring campains in 2005 on 222 monitoring stations).

An inventory of 106 substances (from the D76/464/CEE list of dangerous substances and the 33 PS WFD) in more than 2800 urban and industrial discharges was also carried out from 2002 to 2007, referred as "action nationale de recherche et de réduction des rejets de substances dangereuses dans les eaux - RSDE[8]" (one monitoring campain at each site through one 24h sampling, when possible).

The results of these 2 inventories were combined in order to identify "relevant" substances to monitor in French surface waters, using criteria of presence in surface waters and/or discharges. These substances (91 substances from D76/464/CEE and 89 pesticides) were listed in the regulation 2006/16 implementing the monitoring programme under the WFD.

Those "national relevant" substances have been monitored at 25% of the WFD surveillance monitoring sites. Data collected through this monitoring gave material for the selection of RBSP.

DE There are a lot of activities from several federal states, e.g.:

Common Information, example NRW and Saxony-Anhalt

http://www.umwelt.nrw.de/ministerium/presse/presse_aktuell/presse091124.php
http://www.sachsen-anhalt.de/LPSA/index.php?id=39644
Workshop „ Monitoring priority substances and other pollutants, Northern Germany"

http://www.lung.mv-regierung.de/insite/cms/publikation_download_includes/publikation_download_gewaessersymp.htm
Real-time Monitoring of surface waters, example NRW

http://www.lanuv.nrw.de/veroeffentlichungen/fachberichte/fabe8/fabe8start.htm
http://www.lanuv.nrw.de/veroeffentlichungen/fachberichte/fabe13/fabe13start.htm
Bericht "Pflanzenschutz- und Arzneimittelbefunde in Oberflächengewässern und im Grundwasser M-V im Frühjahr 2008" Juli 2008 http://www.lung.mv-regierung.de//insite/cms/publikation_download_includes/publikation_download_wasser.htm
Example PFOA/ PFOS

http://www.lanuv.nrw.de/pft/pft-bewertung.htm
http://www.umweltbundesamt.de/wasser-und-gewaesserschutz/dokumente/fgpfc/gesamtueberblick_ueber_pfc-untersuchungen_in_nrw-bergmann.pdf
http://www.umweltbundesamt.de/wasser-und-gewaesserschutz/veranstaltungen.htm
http://www.lanuv.nrw.de/veroeffentlichungen/jahresberichte/jabe2007/jabe2007S25S33.pdf
Pharmaceuticals

http://www.blac.de/servlet/is/2255/
http://www.blac.de/servlet/is/2146/P-2b.pdf
http://www.lanuv.nrw.de/veroeffentlichungen/fachberichte/fabe2/fabe2.pdf
http://www.sachsen-anhalt.de/LPSA/fileadmin/Elementbibliothek/Master-Bibliothek/Landesbetriebe/LHW/neu_PDF/5.1/Dokumente_GLD/Bericht_2_Arznei_2004-2005.pdf
http://www.blac.de/servlet/is/2146/P-2c.pdf

EL Previous monitoring efforts have been dedicated. These are described as follows:

- Identification of the pollution status of the surface waters from substances belonging to Catalogue I of Directive 76/464/EEC. Duration: From February 1995 to May 1995.
- Identification of the pollution status of the surface waters from substances belonging to Catalogue II, candidates for Catalogue I of Directive 76/464/EEC and organization-function of

---

[7] INERIS - DRC - 06 - 66026 - CHEN - BLe - 06.0087 « Etat des lieux de la contamination des milieux aquatiques par les substances dangereuses, campagne exceptionnelle 2005 (2006) » (http://www.ineris.fr/)

[8] http://rsde.ineris.fr/

	Monitoring Network for the quality of surface waters according to the substances identified. Duration: From March 1998 to January 2000. • Evaluation of domestic and industrial wastewater discharges in the river basins that include Pagasitikos Golf and Vegoritida Lake from substances belonging to Catalogues I and II of Directive 76/464/EEC According to the above-mentioned Studies the substances for monitoring were selected as follows: • 7 substances belonging to Catalogue I of Directive 76/464/EEC • 115 substances belonging to Catalogue II of Directive 76/464/EEC • Furthermore, 33 priority substances defined in Directive 2008/105/EC
HU	References of considerable survey efforts: • Vom Rhein zur ungarischen Donau (1999). Booklet Vol. I-II. Ministry of Environment and Forestry Rhineland-Palatinate, Mainz, Germany • Joint Danube Survey. Technical Report of the International Commission for the Protection of the Danube River. September 2002, ICPDR Joint Danube Survey 2. Final Scientific Report. 2008, ICPDR
IE	Dangerous Substances Screening Programme 2005-6. Please see item 2 for references
IT	
LT	Case study (project) "Screening of dangerous substances in the aquatic environment of Lithuania" 2005-2007. The whole project report posted on our website: http://gamta.lt/cms/index?rubricId=3286b5eb-7eeB-413c-8f84-fc2d613de35a
MT	No previous dedicated monitoring efforts have been carried out to identify the national RBSP.
NL	No. We used the information as described under item 1 of this questionnaire (national level) and existing monitoring programmes agreed at international level for the river districts Rhine, Meuse, Scheldt and Ems.
NO	The Norwegian Climate and Pollution Agency conducts each year a screening exercise monitoring emerging substances in the Norwegian environment. This exercise has been and will be used in the revision of the national list.
PL	As I heard only small few projects, not only for identify RBSP. One of them was made by expert group here in Chief Inspectorate of Environmental Protection (GIOS), but basically for establishing system of chemical monitoring.
PT	1. In the last decade some monitoring efforts have been developed for surface waters and groundwaters, related with: • Implementation of the Directives 76/464/EEC and 80/68/EEC. The monitoring points were selected according the results of the inventory mentioned above and the existing discharge permits (wastewater); • Existent monitoring networks (metals and pesticides, according to the annual list reported by Ministry for Agriculture); New monitoring programmes that aim to establish the status of water bodies.
RO	No, there is not any relevant project at national level. Still, we can mention the JDS – 2 (Joint Danube Survey – 2) developed in 2007by ICPDR (International Commission for the Protection of Danube River). This project was a multinational project – an expedition on Danube - including all riparian countries and all main tributaries and was dedicated to identification and quantification of priority substances and other relevant pollutants in Danube catchment area. The main results are presented on site www.icpdr.org.

SK	Survey in years 2002-2004 focused on occurrence of dangerous substances in discharged wastewater, in surface water and sediments, eco-toxicological tests and screening had been done. During surveys 189 target compounds and screening analysis of unknown organic pollutants have been analysed by mass spectrometry techniques.
SI	Same of the NRS were included at selected sampling points in the frame of river quality monitoring in past (2006 and earlier)
ES	At a National level we already have a list of Relevant Substances approved by Royal decree since 2000. Each substance has a water EQS. Besides, it is obliged to monitor trends in sediments and biota. The selected substances are relevant for each River Basin District.
SE	Activities aiming to identify "new" or less known pollutants outside regular monitoring are in Sweden denoted as screening. Screening surveys are a first step in identifying chemical substances which may cause problems for the environment and/or human health. The screening programme, which was introduced on a small scale in 1996–97 and has increased in scope over time, is run nationally by the Swedish EPA. In recent years though, also the county administrative boards are able to enhance these surveys with regional sampling and analysis. Sometimes this can therefore be equal to identify so called RBSP. For a more detailed description of screening and how it is conducted; its purposes; how substances are chosen and also examples of substances that have been screened can be found in the following fact sheet (in English): http://www.naturvardsverket.se/Documents/publikationer/620-8322-9.pdf Also, individual screening reports are listed under the Swedish EPA´s web site at the following link http://www.naturvardsverket.se/sv/Tillstandet-i-miljon/Miljoovervakning/Rapporter-och-nyhetsbrev/Rapporter---Miljogiftssamordning/
CH	There are ongoing activities of monitoring relevant organic compound in natural water bodies. Currently a monitoring campaign in 14 wastewater treatment plants (WWTP) over whole Switzerland and downstream connected natural surface waters is going on. Data from cantonal authorities are gathered by the Swiss federal institute for the environment (FOEN) in a national database. This database can be used as a basis for an overview of measurements in Switzerland. In combination with a national mass flow model, measurements in WWTP and surface water have been conducted (in folder Switzerland on CIRCA).
UK	The Environment Agency has a Targeted Risk Based Monitoring Programme (TRBM) that has been used to identify the risks posed by a range of substances that have not been picked up under normal monitoring drivers. Unfortunately I do not believe that the findings from this programme has ever been published

Contact details

	Name, Institution and contact details	
AT	**Karin Deutsch** Federal Ministry of Agriculture, Forestry, Environment and Water Management, Subdivision VII 1, A-1030 Wien, Marxergasse 2, Austria Tel: +43/ 1/ 71100 - 7127 Email: karin.deutsch@lebensministerium.at	**Alfred Rauchbüchl** Institute for Water Quality/Federal Agency for Water Management A-1030 Wien, Marxergasse 2, Austria Tel: +43 1 2633474 17 Email: alfred.rauchbuechl@baw.at
BE	**Sofie Van Volsem** Flemish Environment Agency VMM - A. Van de Maelestraat 96, 9320 Erembodegem, Belgium Tel: 053/726622, Fax: 053/726630 Email: s.vanvolsem@vmm.be	
BG	**Ventsislav Stefanov Nikolov** – Director **Black Sea Basin Directorate** 33 "Al. Dyakovitch" str. Varna, Bulgaria Information provided by: Elitsa Hineva and eng. Kalinka Kamenova-Stajkova, "Monitoring, prognoses and information assuarance" department, BSBD. **Radoslav Georgiev** - Director **West Aegean River Basin Directorate** 66 Dimitar Solunskir str.; Blagoevgrad 2700, Bulgaria PB 441, Central Post Office, Blagoevgrad 2700 Email: bdblg@wabd.bg	**Danube River Basin Directorate** Pleven, Str."Tchatalga" number 60 Tel: +35964885-100 Email: dunavbd@bddr.org **Atanaska Tuntova** - Director **East Aegean River Basin Directorate** 26 Bulair str.; Plovdiv 4000, Bulgaria PB 307, Central Post Office, Plovdiv 4000 e-mail:bd_plovdiv@abv.bg
CY	**Gerald Dörflinger** Division of Hydrometry, Water Development Department, Cyprus Tel: +357 22609354, Fax: +357 22609353 Email: gdorflinger@wdd.moa.gov.cy	
CZ	**Věra Očenášková** T.G. Masaryk Water Research Institute, Public Research Institution, Podbabská 2582/30, 160 00 Prague 6, Czech Republic Tel: +420 220 197 451, Mobile: + 420 724 979 016, Fax: +420 224 310 759 Email: vera_ocenaskova@vuv.c	
DK	**Susanne Boutrup** National Environmental Research Institute, Aarhus University Email: sub@dmu.dk	
EE	**Enn Liive** Ministry of the Environment, Water Department Email : enn.liive@envir.ee	
FI	**Jukka Mehtonen** Contaminants Division, Finnish Environment Institute, P.O.Box 140, FIN-00251 Helsinki, Finland Tel: +358 400 148 598, Fax: +358 9 5490 2490 Email: jukka.mehtonen@ymparisto.fi	
FR	**Edwige Duclay, Lauriane Greaud** +33 (0)1 40 81 34 41, +33 (0)1 40 81 86 11 MEEDDM (Ministère de l'écologie, de l'énergie, du développement durable et de la mer - France), Direction de l'eau et de la biodiversité 92055 La Défense Cedex, France	
DE	**Friederike Vietoris** Landesamt für Natur, Umwelt und Verbraucherschutz NRW, Fachbereich 55, Leibnizstr. 10, 45659 Recklinghausen, Germany Email: Friederike.vietoris@lanuv.nrw.de	
EL	**Daniel Mamais** National Technical University of Athens, Department of Water Resources and Environmental Engineering,	

	School of Civil Engineering 5 Iroon Polytechniou st Tel : 210 7722901 Email: mamais@central.ntua.gr
HU	**Zsuzsanna Kerekesné Steindl** Email: steindl@mail.kvvm.hu
IE	**Colman Concannon** Environmental Protection Agency,McCumiskey House, Richview, Dublin 14 Tel: 00 353 1 2680115, Fax: 00 353 1 2680199
IT	**Caterina Sollazzo** (Responsible) Italian Ministry of the Environment, Viale Cristoforo Colombo 44, 00147 Roma, Italy **Mario Carere** (Contact point) Email: mcarere@iss.it
LT	**Nijole Striupkuviene** Environmental Protection Agency (EPA), Environment Status Assessment Department, Water Status Assessment Division Email: n.striupkuviene@aaa.am.lt
MT	**Joanne Attard Baldacchino** Marine & Water Policy Unit, Environment Protection Directorate, Malta Environment & Planning Authority Tel: +356 2290 7222 Email: joanne.attardbaldacchino@mepa.org.mt
NL	**Gerard Stroomberg** Ministry of Transport, Public Works and Water Management, Rijkswaterstaat, Centre for Water Management Tel: +31(0)6 - 51 68 19 43 Email: gerard.stroomberg@rws.nl
NO	**Bård Nordbø** Climate and Pollution Agency Email: bard.nordbo@klif.no
PL	**Bogdan Fornal** Chief Inspectorate of Environmental Protection (GIOS), ul. Wawelska 52/54, 00-922 Warszawa, Poland Email: b.fornal@gios.gov.pl
PT	**Anabela Rebelo** Administração da Região Hidrográfica do Algarve, IP (ARH do Algarve), Rua do Alportel, n.º 10, 8000-293 Faro, Portugal Tel: +351289889000, Mobile: +351966565791, Fax: +351289889099
RO	**Carmen Toader** Ministry of Environment and Forestry, General Department Water Management Tel: 0040 21 316 53 86, Mobile: 004 0745 56 19 79, Fax: 0040 21 316 02 82 Email: carmen.toader@mmediu.ro
SK	**Zdena Kelnarová** Ministry of Environment, Slovak Republic, Water Section Tel: +421 2 59804 219 Email : kelnarova.zdena@enviro.gov.sk
SI	**Špela Kozak Legiša** Environmental Agency of the Republic of Slovenia, Vojkova 1b, 1000 Ljubljana, Slovenia Tel: +386 1 478 40 27, Fax: +386 1 478 40 52 Email: spela.kozak-legisa@gov.si
ES	**Alejandra Puig Infante** Ministry of the Environment, and Rural Affairs and Marine Email: apinfante@mma.es
SE	**Mikaela Gönczi, Axel Hullberg** Swedish Environmental Protection Agency, Postal Address: SE-106 48 Stockholm Tel: +46 8 698 10 00 Email: mikaela.gonczi@naturvardsverket.se, axel.hullberg@naturvardsverket.se
CH	**Michael Schärer**

	Federal Office for the Environment, CH-3003 Berne Tel: +41 (0)31 324 79 43, Fax: +41 (0)31 323 03 71 Email: michael.schaerer@bafu.admin.ch
UK	**John Batty** Water Availability & Quality Programme, DEFRA, Area 2B, Ergon House, Horseferry Road, London SW1P 2AL Tel: 020 7238 1535, GTN: (7) 238 1535, Fax: 020 7238 3297 Email: John Batty@defra.gsi.gov.uk

ANNEX 2. WORKSHOP AGENDA

EUROPEAN COMMISSION
DIRECTORATE-GENERAL
Joint Research Centre
Institute for Environment and Sustainability
Rural, Water and Ecosystem Resources

JRC - NORMAN
Water Framework Directive
Workshop on
River Basin-Specific Pollutants
Selection and Monitoring
STRESA, ITALY
10-11 JUNE 2010

AGENDA

Workshop venue Hotel La Palma, Stresa, Italy

Thursday, 10.6.2010

Time	*Issue*
9:00	**Welcome** L. Hordijk, JRC IES Director
9:15	**Member States' reporting on water quality: focus on river basin-specific pollutants** M. David, DG ENV
9:35	**Emerging pollutants and river basin-specific pollutants – Scope of the workshop** V. Dulio NORMAN Association, G.Hanke JRC IES
10:00	**MS approaches – Questionnaire outcome overview** H. Piha JRC IES Presentation of overall results from the questionnaire addressed to the Member States, followed by questions from the floor.
10:15	**COFFEE BREAK**
10:45	**MS approaches – Questionnaire outcome** An overview on responses by Member States, with short presentations (15 min each) by selected MS on their particular experiences followed by questions from the floor. Alfred Rauchbüchl, Austria: Danube case Beate Zedler, Germany: Rhine case John Batty, United Kingdom: United Kingdom case Lauriane Greaud, France: France screening case
12:30	**LUNCH BREAK**
	Thematic working sessions on selected RBSP topics Each thematic working session will consist of short introductory presentations followed by a facilitated discussion in (table) groups on a prepared set of questions. Each table will collect the group's responses to the questions and an overall feedback on each topic will then be presented to all participants in a short wrap-up session.
14:00	***Thematic working session 'Data Availability'*** Availability and quality of data on environmental occurrence and (eco)toxicological properties of chemicals Flash presentations (5 min) : Benoit Fribourg –Blanc: EU Data collection exercise Jaroslav Slobodnik: NORMAN databases Bernd Gawlik: JRC FATE EU-wide campaigns Willie Peijnenbourg: Availability of ecotoxicological data
15:15	**COFFEE BREAK**

Time	*Issue*
15:45	***Thematic working session 'Identification of RBSP candidate substances'***
	Identification of 'candidate substances' for the selection of RBSP: Assessing pressures in the river basins and use of screening analysis Flash presentations (5 min) : Werner Brack: Field based approaches for identification of RBSP Robin Law: Identification and prioritisation of hazardous substances within OSPAR: the DYNAMEC process
17:00	**Wrap-up of thematic working sessions and proposed list of actions**
17:30	*End*

20:00 Workshop Dinner at Hotel La Palma, Invitation by JRC

Friday, 11.6.10

Time	*Issue*
9:00	**Thematic sessions on selected RBSP topics (continued)** ***Thematic working session 'Selection of RBSP'*** The process of prioritisation for the definition of the RBSP and compounds currently listed in Member States Flash presentations (5 min) : Madalina David: EU WFD Prioritisation process Willie Pejinenburg: Prioritisation of substances: tools in the light of general lack of data
10:30	**COFFEE BREAK**
11:00	***Thematic working session 'Monitoring of RBSP'*** Monitoring programs for RBSP and applied monitoring methodologies Flash presentations (5 min) : Mario Carere: WFD Chemical Monitoring Georg Hanke: JRC Chemical Monitoring on-site Stefano Polesello: Multiresidue analytical methods
12:30	**LUNCH BREAK**
13:45	**Wrap-up of thematic working sessions**
14:45	**COFFEE BREAK**
15:00	**Drafting of outcome – Identification of follow-up actions**
16:00	End

European Commission

EUR 24613 EN – Joint Research Centre – Institute for Environment and Sustainability

Title: Workshop Report: River Basin-Specific Pollutants - Identification and Monitoring

Author(s): Henna Piha, Valeria Dulio and Georg Hanke

Luxembourg: Publications Office of the European Union

2010 – 63 pp. – 21 x 29.7 cm

EUR – Scientific and Technical Research series – ISSN 1831-9424

ISBN 978-92-79-18471-0

doi:10.2788/45790

Abstract

Besides the set of Priority Substances laid down in Annex X of the Water Framework Directive 2000/60/EC (WFD), which are regulated and to be monitored at EU level, the EU Member States (MS) need to identify pollutants of regional or local importance (in particular substances listed in WFD, Annex VIII) and provide environmental quality standards (EQS), monitoring schemes, and regulatory measures for them. This means that MS need to decide which are the candidate substances for further investigation and which are the substances then to be declared as River Basin-Specific Pollutants (RBSP). This requires assessments of impacts as well as prioritisation efforts and strategic screening for substances possibly causing concern. While this is a matter of discretion for each of the MS of concern, there is as yet no harmonization of the procedures involved.

Therefore, JRC (European Commission, Joint Research Centre)and NORMAN (Network of Reference Laboratories for the Monitoring of Emerging Environmental Substances) organized a workshop in order to support MS. The objective of the workshop was to provide a common forum for MS and interested groups for presenting, discussing and streamlining approaches for a harmonised selection and monitoring of RBSP in the WFD context. Particular attention was given to emerging contaminants, as their prioritisation and monitoring are particularly challenging. The workshop aimed to produce clear recommendations on how to proceed.

How to obtain EU publications

Our priced publications are available from EU Bookshop (http://bookshop.europa.eu), where you can place an order with the sales agent of your choice.

The Publications Office has a worldwide network of sales agents. You can obtain their contact details by sending a fax to (352) 29 29-42758.

The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

LB-NA-24613-EN-N

JRC
EUROPEAN COMMISSION

ISBN 978-92-79-18471-0