



*Forum of European
Freshwater Research
Organisations*

5th EurAqua Technical Review

Conclusions and recommendations

Opening and welcome**Mr. H. Thaulow, managing director of NIVA**

Mr Thaulow states that the function and aim of the 5th EurAqua Scientific and Technical Review (STR5) is to provide a European overview of research needs related to diffuse pollution of inland waters by agriculture. STR5 focuses on two main aspects of agricultural pollution: nutrients and pesticides. Other pollutants may be considered if they are identified as being significant. The first priority of the Scientific and Technical review is to consider problems related to water management. Secondly, STR 5 focuses on issues that are expected to be of interest to most member countries, thus providing a European dimension to the problems under consideration. The purpose is to provide scientific support for water management practices, as well as providing a basis for scientific co-operation between institutes. STR 5 presents opportunities to identify and elaborate on potentially co-operative activities. Research recommendations have been presented to the 11th EurAqua Full Club Meeting. Furthermore, the recommendations from these proceedings will be brought to the attention of relevant European institutions

Throughout the whole of Europe it is necessary to comply with European regulations such as the Nitrate Directive. However, the subject of STR5, “farming without harming” recognises that sustainable agriculture has still not been achieved and that to do so will require input from the water sciences.

Special attention is paid to the findings of the European Consultative Forum on the Environment and Sustainable Development, chaired by Thorvald Stoltenberg (Agriculture and Sustainability, June 1998). The Forum came to five conclusions about the kinds of policies that will need to be pursued if sustainable agriculture is to be achieved. One of the conclusions is that knowledge-based approaches should be promoted as an important tool for integration. Better information, awareness, scientific understanding and the transfer of knowledge will need to be implemented across the whole food life-cycle and supply chain. This STR contributes to such a knowledge-based approach.

Since much research has already been carried out in the field of agriculture and ground/surface waters, the risk for duplicating initiatives is present. To this end two documents were circulated in advance to the authors of country papers: Freshwater - A challenge for Research and Innovation (the report of the Task Force Environment Water) and the draft EEA report on anthropogenic derived nutrients in European ecosystems. These two documents give a broad overview of the current position.

Differently from previous EurAqua STR's , and thanks to the help of the authors, it was possible to distribute the draft country papers in advance to all participants. This was to benefit the presentations and discussions and to help in the identification of research areas of mutual interest. In this STR special attention is to be paid to identifying such research areas in order to promote the presentation of proposals to the Fifth European Framework Programme on Research and Technological Development.

Outlines of the Fifth European Framework Programme on Research and Technological Development**Mr. M. Bousquet (Cemagref)**

A final decision from the European Council and Parliament on FP5 and its specific programmes is expected on 10 December 1998. A number of topics are still in discussion, such as the budget. In January 1999, decisions on the work programmes are expected. A separate working programme on freshwater is presently in preparation by the Commission. In November 1998, the draft working programme will be discussed with an external Expert Advisory Group. Importantly, the first call for tenders can be expected around March 1999. Mr. Bousquet expects that more attention will have to be paid to the involvement of end-users in projects. Specific criteria are being established by the Commission, including well-defined problem-orientation, scientific excellence, European value, and project management. The budget for water research is expected to amount to about 400 mln. ECU. STR5 is therefore well timed in relation to participating in FP5.

Tasks and activities of the European Environment Agency**Mr Kristensen (NERI, on behalf of the EEA)**

The main task is to provide the European Community and member states with objective, reliable and comparable information at the European level, enabling them to take measures to protect the environment and to assess the results of these measures. Furthermore, the EEA takes care that the public is properly informed about the state of the environment. EEA produces three-yearly reports (European assessments). The Topic Centres produce monographs and technical reports. The Topic Centre for Inland Waters (led by WRC, UK) produces monographs on European rivers and lakes, groundwater quality and quantity, eutrophication, water quality and health.

Mr Kristensen outlines the EEA approach on Driving Forces - Pressures - State - Impact - Responses. He also describes the situation regarding nitrogen surpluses in different member states.

Activities of the Oslo and Paris Commissions in the field of nutrients**Mr. Borgvang (NIVA)**

The Oslo and Paris Commissions (OSPAR) cover the Northeast Atlantic region. OSPAR includes consideration of nutrient and pesticide releases to surface waters within the Convention area. A major decision was to reduce nutrient losses by 50% (North Sea Conference).

Mr. Borgvang reviews current relevant OSPAR-issues:

- the difficult concept of “balanced fertilisation” which needs further definition in terms of indicators of effective agricultural practice;
- the evaluation of eutrophication status in problem areas, including criteria of definition;
- the effort to achieve harmonised reporting systems on diffuse pollution by agriculture (HARP).

Mr. Borgvang considers the role of the scientific community (such as EurAqua) in contributing to the OSPAR work in this field.

Constraints of Southern Europe

Chairman: E. Klaghofer, (BAW, Austria)

Rapporteur: U. S. Olesen, (VKI, Denmark)

Introductions by:

Mr. José R. García Vilches, CEDEX, Spain

Mr. M. Benedini, IRSA, Italy

Mrs. K. Nanou-Giannarou, NTUA, Greece

Mr. Ph. Jeannot, Ministry of Environment, France

Statistics on agriculture and its impact on water resources, including research needs are presented for Spain, France, Italy and Greece. A need for reliable measurements and modelling techniques is presented by IRSA. These tools will contribute to improved assessments of nutrient and pesticide transfers from agricultural land, their relative contributions to surface waters and extrapolation to full catchment areas (CEDEX, the French Ministry of the Environment, NTUA).

Specific problems of the Southern European countries are related to irrigation. CEDEX asks for more attention to water quality aspects in relation to water discharges, to prevent agricultural areas from salination. Also, research is needed for measures to improve the quality of effluents from irrigation areas.

IRSA identifies the need for scientific input into the reclamation of aquifers and the possibilities of restoring polluted groundwater resources. They also ask for a continuation of research into improving knowledge of the behaviour of chemicals in soils and water bodies.

NTUA identifies the need for a proper comparison between EU-countries of : monitoring, designation and management of vulnerable zones, codes of good agricultural practice and preventive measures.

The contribution of the French Ministry of the Environment, draws attention to optimising buffer processes, and investigating links between the spatial distribution of agricultural practices and water quality.

Constraints of Northern Europe

Chairman: E. Klaghofer, (BAW, Austria)
Rapporteur: U. S. Olesen, (VKI, Denmark)

Introductions by:

Mr. D. Berge, NIVA., Norway
Mr. A. Gustafson, IVL, Sweden
Mr. P. Ekholm, FEI, Finland
Mr. U.S. Olesen, VKI, Denmark

Specific Nordic scientific interest is presented for leaching processes under Nordic climatic conditions, the fate of pesticides in surface waters (NIVA), detailed knowledge on nitrogen-leaching applicable to individual farmers and linked to GIS (IVL) and identification of algal-available phosphorous in surface waters (FEI).

More generally, water research institutions could play a role in developing multisectoral abatement plans for water systems, based on cost/effectiveness (NIVA). NIVA also suggests developing run-off coefficients for different types of agricultural areas with respect to different pollutants.

VKI focuses on riparian bogs and wet meadows. What function could these have in the removal of nitrogen? What are the opportunities for redeveloping the natural state of these areas and improving their function as buffers between different ecosystems? Also, much more research is needed on the effects of pesticides (and their metabolites) on a wider range of water organisms and colloid transport. More and better field studies on transport, sorption and degradation are necessary to improve the relationship between laboratory and field results. FEI suggests increased scientific effort to improve tools for integrated catchment modelling.

Constraints of Central and Western Europe

Chairman: Mrs. L. Kauppi (FEI, Finland)
Rapporteur: Mr. W. Wagner (EAWAG, Switzerland)

Introductions by:

Mr. P. Larkin, EPA, Republic of Ireland
Mr. B. Wilkinson, CEH, United Kingdom
Mr. G. Verstappen, RIZA, the Netherlands
Mr. A. Tilmant, Université Catholique de Louvain,
Belgium
Mr. R. Laplana, Cemagref, France
Mr. J.J. Gril, Cemagref, France
Mr. Gildas le Bozec, Cemagref, France
Mr. M. Bach, Justus Liebig Universität Giessen,
Germany
Mr. W. Wagner, EAWAG, Switzerland
Mr. E. Klaghofer, BAW, Austria

In addition to previous sessions, attention is paid here to the fate of pesticides in the aquatic environment, including the role of particles and sediment (Irish EPA, CEH, RIZA, Cemagref). CEH also discusses that the role of macrophytes, benthic and algal in pesticide uptake is unclear. The representative of the University of Louvain focuses on the fate of pesticides in unsaturated soil, the representative of the University of Giessen discusses the uncertain impact of cracks and fractures in soils on pesticide behaviour.

Cemagref raises the problem of buffer zones in relation to erosion (mountainous areas, BAW). An under researched area is that of the combined effects of pesticides and nutrients (this subject also arose in STR4). The need for reliable, long-term and accessible databases is mentioned by the Universities of Louvain and Giessen, the latter also expresses a wish for long term survey programmes.

In the opinion of RIZA, scientific institutes could put more effort into investigating the still uncertain environmental impacts of European Directives such as the Nitrogen Directive and the Pesticide Directive.

Collaboration between institutes

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| Chairman: Mr. B. Wilkinson (CEH, United Kingdom) Rapporteur: Mr. R. Uijterlinde (RIZA, the Netherlands) |
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In parallel sessions, institute representatives discuss the outlines of possible joint projects:

- a systems approach to environmentally acceptable farming, using the EurAqua network as a basis for interdisciplinary research groups that could be set up in geographically different demonstration areas throughout Europe (Cemagref);
- fate and effects of pesticides under various climatic conditions, increasing knowledge of pesticide behaviour along North-South and East-West axes throughout Europe enabling regulations on the use of pesticides to be adjusted accordingly (NIVA);
- the 3P-project (Particles Phosphorous Pesticides) specifying and quantifying the importance of suspended particles for the transport and bio-availability of phosphorous and pesticides (FEI);
- comparison of integrated water quality indicators of EU-countries, contributing to the EU Framework Water Directive and the European Biodiversity Strategy (Irish EPA);
- advanced tools for integrated river catchment management, optimising water protection measures and supporting water management at the catchment scale (FEI).

Presenting project proposals within the first call of the 5th Framework Programme for Research and Technological Development will increase the chances of financial support of the EU.