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NORMAN

Network of reference laboratories and related organisations for monitoring and bio-monitoring of emerging environmental pollutants

Co-ordination action

Priority 6.3 – Global Change and Ecosystems

Joint Programme of Activities 2009-2010

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I.1.The need for action

Emerging pollutants are the object of increasing concern among scientists, regulators and the public.

Emerging substances can be defined as substances that are currently not included in routine monitoring programmes at the European level and which may be candidates for future regulation, depending on research on their (eco)toxicity, potential health effects, public perception and on monitoring data regarding their occurrence in the various environmental compartments. Emerging pollutants often originate from consumer products and by-products used every day in homes and farms, or by business and industry.

Government, regulatory bodies and industry need the most relevant and reliable scientific evidence when making policy decisions in the field of environmental protection.

I.2.The major objectives

Stakeholder needs will be better met if these three objectives are achieved:

1. Improve the exchange of information on the substances currently being identified as emerging pollutants, in order to identify what information is currently missing or required in terms of monitoring and assessment of their associated risks.

2. Harmonise the methods used for the analysis of their occurrence in the environment and for the assessment of their effects, in order to make it possible for the decision-making authorities to compare and interpret the data.

3. Ensure that, as soon as an emerging substance is identified as a pollutant of concern – thereby requiring regular monitoring – there should be sufficient capability across the EU for measuring it at the routine level.

I.3.The key actions

The major objectives will most efficiently be achieved by:

- Inventorying and assessing the quality of the available information on emerging substances (their occurrence, fate and transport and their effects) as a first step for prioritisation of the most relevant emerging contaminants;
- Assessing and further developing validated analytical procedures for characterisation of contaminated waters, soils, sediments and biota by emerging substances;
- Developing specific techniques for evaluating the mode of action, the effects and risks associated to emerging substances;
- Developing reference materials, standards and inter-laboratory studies;
- Providing guidance to laboratories and other bodies (planners, regulators, universities, etc);
- Organising events for exchange of information among scientists, managers and policy-makers and development of a common understanding on priority topics.

I.4.The role of the NORMAN network

NORMAN partners already provide a vast quantity of scientific results for the European research area and are involved in large European Integrated Projects, thereby providing new methodologies for time- and cost-effective Europe-wide assessment of environmental status.

NORMAN's purpose, rather than simply passively collating information, is to focus the efforts of all participants in this field, in Europe and in the wider world. Its ultimate aim is to increase their capabilities, responsiveness and efficiency to the point at which they become, collectively, the global one-stop shop for all issues raised by emerging substances.

The NORMAN partners have developed this first Joint Programme of Activities (JPA) for 2009-2011, which addresses some of the highest priority topics in the field of emerging substances and aims to meet the objectives listed above.

II. NORMAN JPA for 2009-2011

II.1.European priorities

The need to look beyond the traditional / conventional target pollutants, when assessing the risks of chemicals to human health and to ecosystems, is now generally recognised as a priority issue in all policy areas at both the European level and the national level in the various European countries.

As part of the implementation of the European Environment and Health Strategy and its Action Plan (COM(2004)416) national competent authorities in the various countries give increasingly higher priority to the need to look at emerging substances and improve the current systems for identifying and addressing new risks to health as they emerge.

In the water compartment, the Water Framework Directive plays a key role in the inclusion of emerging pollutants as future priority substances. The work on the revision of the first list of priority substances, which started in 2006 (and is still under way at the time of writing), and the negotiation around the Daughter Directive (EQS Directive), with the proposal from the European Parliament for the inclusion of 30 new substances (including various emerging pollutants) as priority substances, show on the one hand the constant pressure from the public for the inclusion of emerging substances as candidate priority substances, and, on the other hand, the importance of an efficient exchange of information about these substances (level of occurrence in the environment, fate and transport, effects, reliability and comparability of the data, etc.) in order to facilitate the risk assessment and prioritisation process by the European Commission.

Member States are currently in the process of identifying the substances that are relevant at river basin level (i.e. pollutants which are likely to cause a large number of water bodies within the river basin district to fail the objective of 'good ecological status'). The identification of these substances in the various countries is a hot topic at the moment (with many implications, including economic ones).

Besides the WFD, other programmes (e.g. OSPAR for the marine environment) are identifying new candidate emerging substances and regularly reviewing their priority lists as scientific knowledge advances.

Overall the main challenge is to implement tools and approaches to identify the likely causes of ecological impairment (i.e. impact at the level of populations and ecosystems) and in particular, to establish links between chemical and ecological status. A better understanding of these causal links and the implementation of early warning systems is the only way to apply effective corrective measures and predict potential impacts, thereby avoiding a waste of resources.

As regards the air compartment and in particular indoor air, research was focused on lead, asbestos and radon initially (in the 70s and 80s) and on volatile organic compounds (VOCs) in the 1990s. In the past few years, research has been focused on semi-volatile organic compounds (SVOCs), heavier compounds that can be measured both in the indoor air and in house dust. They include many types of compounds from a variety of indoor sources (insecticides, flame retardants, plasticisers…). Interest in the measurement of these compounds indoors is growing, since they are often detected in homes, they are persistent, their metabolites are measured in human blood and urine, and toxicology and epidemiology tend to prove that some of them may be toxic to the human reproductive system and human development. They are therefore considered as indoor emerging substances.

Chemicals are beyond any doubt one of the main stressors threatening the soil ecosystem. A proposal for a Soil Directive received insufficient support at first. But now preparations are underway for a modified proposal in which soil quality will be an important issue.

The new legislation on chemicals in Europe, REACH, requires producers and users of chemicals to show that their products are safe for human health and the environment. This requires, amongst others, that all information on chemicals should be made available and that a thorough risk assessment should be carried out according to the basic philosophy of REACH.

II.2.Objectives of the NORMAN JPA for 2009-2011

The NORMAN network is designed to meet the challenges now posed by emerging substances. It will operate via the organisation of a number of activities, including expert group meetings, workshops, databases and methods validation exercises.

The objectives in this Joint Programme of Activities reflect the current priorities at the European and MS level.

Our goal for 2009-2011 is to stimulate the discussion and build a more structured common approach for the identification of 'emerging' compounds and risk assessment of emerging substances, including all aspects related to the use of chemical and biological integrated approaches for the identification of 'relevant pollutants'. Today we still lack the capacity to capture those substances, which are really emerging in a European context and to distinguish them from those 'believed' to be emerging.

The selection of the proposed actions is made with the following criteria in mind:

- there is a need to keep the public authorities clearly informed about the state of progress of the research activity (i.e. what we have achieved and what more we can expect to achieve). This will entail bringing together experts to arrive to a common understanding on identified topics.
- there are synergies to be derived from a co-operative effort (e.g. interlaboratory studies on 'difficult matrices' where it would be asking too much of a single country and there is a need for international co-operation among laboratories).
- a topic is identified as emerging and Working Groups need to be set up at the earliest moment.

In the light of those considerations and the identified policy needs, we have set the following priorities for this 2009-2011 JPA.

Actions

1. Provide a system for prioritisation to identify which substances deserve higher priority for further investigations based on agreed criteria, such as their (eco)toxicity, persistence, bioaccumulation, spatial and temporal distribution, occurrence levels, use, etc.

A Working Group on **'Prioritisation of emerging substances'** will be organised for the development of a set of criteria allowing for prioritisation of emerging substances and their allocation to clearly pre-defined categories (e.g. substances for which info is not yet sufficient, substances for which there is evidence of hazard but analytical performance is not yet satisfactory) along with a yearly update of the NORMAN list of emerging substances in close cooperation with all NORMAN partners.

2. Closely follow the progress of research on identification of the toxicants that are causing the observed effects and bridge the gap between chemical and ecological status, and prepare a common position to be transferred to policy-makers and environmental managers.

A workshop on **'Emerging pollutants in the WFD: Support for identification of river basin specific pollutants through NORMAN – MS strategies and needs'** will be organised, addressing the MSs' needs in their strategies for the identification of the relevant pollutants of concern.

The metabolisation of the target substances (i.e. the metabolites / degradation products that should actually be monitored for the different categories of substances) is a hot topic when discussing emerging contaminants and their associated risks. Metabolites or degradation products may be more toxic or persistent than the parent compounds. **NORMAN will organise a workshop** on the topic of **metabolites**.

NORMAN will organise an **Expert Group meeting** on **"Toxicity profiling (*in vitro*, *in vivo* assays, and omics): the state of the art and the perspectives**" to define what is today the position of the leading experts on this specific topic, with publication of a final position paper. These tools can be used in combination with statistical clustering methods to provide specific information on toxicity profiles of environmental matrices to assess the risks of environmental pollution, and information on the modes of action of substances in samples. In combination with TIE/EDA approaches, it can allow the identification of the toxicants that are causing the observed effects. Toxicity profiles can also be transformed to hazard profiles by linking e.g. *in vitro* to *in vivo* and field effects OR "hot-spots" and reference locations.

3. Define and standardise the interpretation of the results of monitoring with bioassays. When using bioassays, what we can and cannot say about our water quality and how decision-makers can use the results of these tools (e.g. in future implementation under the WFD).

Closely linked with the above-mentioned Expert Group meeting, NORMAN will organise a **Working Group** on **"The use of bioassays in monitoring programmes: interpretation of results**" to organise, based on the experience of the different experts, common exercises to "calibrate / validate" the proposed bioassays / biomarkers in controlled semi-field experiments (e.g. in mesocosm and experimental ditch facilities) and get to the definition of a harmonised approach for the interpretation of the results.

4. Harmonise work in the area of passive sampling, and bring together the disparate research groups to develop sound validation procedures for all aspects of the use of passive sampling devices, including laboratory calibration, handling, field deployment, chemical analysis or toxicological analysis and data interpretation.

The application of passive samplers opens new perspectives in the design of monitoring programmes and ecotoxicological assessments. Passive samplers show a great potential in the identification of emerging pollutants (e.g. in combination with bioassays-directed chemical analysis), in the assessment of their bioavailability and bioaccumulation as well as in the in situ measurement of time-weighted average concentrations over extended periods. The state of the art and the performance achieved in the use of passive samplers for emerging chemicals, in particular for polar compounds,

will be the object of an **Expert Group meeting** and a science note in the **Scientific Watch Bulletin in 2009**, followed by the organisation of a common **interlaboratory study in 2010**.

5. Inform environmental managers and policy-makers about the possible benefits deriving from the implementation of environmental specimen banks (ESB) as tools for the retrospective monitoring of emerging pollutants.

This method involves collecting and storing biota samples from freshwater, marine and terrestrial environments.
The application of direct effects assessment on ESB samples is an ideal tool in identifying effects of emerging substances.
ESB also offers the following advantages for exposure assessment:

- Concentration trends can be identified by analyses of appropriate biota samples from different levels of the trophic system allowing the identification of emerging pollutants
- Even small temporal changes or slight regional differences of concentrations become obvious due to standardised samples
- The monitoring data can be used as a basis for the justification of political measures (e.g. banning of pollutants with accumulation potential)
- Monitoring results allow the assessment of results of political measures taken in the past (e.g. use restrictions for TBT)

The topic of **environmental specimen banks** will be the subject of regular science notes in the **Scientific Watch bulletin**.

6. Find synergies in collaboration, so as to reduce the use of resources for harmonisation and validation of analytical methods.

NORMAN has identified **pharmaceuticals** and **PFC** as two topics that are already at quite an advanced stage ('mature emerging substances') but that justify a collaborative effort. Depending on the resources available either one or two **interlaboratory exercises** will be organised in **2009**.

In the case of pharmaceuticals this means harmonising routine laboratory methods for handling substances identified as relevant, with a view to including these substances in future monitoring programmes.

In the case of PFC, matters are less advanced: the choice is determined by the need to have reliable data to support research results on the risks associated with these contaminants – the exposure, fate and availability of which are still poorly understood.

7. Address emerging issues at the earliest possible stage.

For **engineered nanoparticles (ENP)**: exposure, fate & availability are poorly understood. An important issue in ENP literature is that exposure is not known. Currently, no methods are available to quantitatively detect ENP levels in the environment. Further, there are currently no ENPs in the environment. So, the primary question is: What future ENP levels can be anticipated, based on production volumes & fate processes? The organisation of and **Expert Group meeting** on engineered nanoparticles is proposed for **2010**, to address, amongst others, behaviour of nanoparticles in the water environment, interaction with other chemicals, nanoparticles fate and exposure modelling.

II.3.Summary of the items of the 2009 JPA

II.3.1 ***Annual Workshops (AW)***

Proposal for two workshops

Task	**Workshop**				
Topic	**Emerging pollutants and implementation of the WFD**				
Code	AW-1				
Title	*The title is still to be confirmed.*				
Short description	*Emerging pollutants in the WFD: identification of river basin specific pollutants (with particular focus on emerging substances) – MS's strategies and needs. This workshop, organised as a follow-up of the Stresa conference in 2006 - 'Emerging environmental pollutants: key issues and challenges' - will be tailored to the needs of MS for a harmonised monitoring of emerging contaminants in the WFD context. It will provide a platform for presenting, discussing and streamlining approaches, taking into account also ongoing discussions about monitoring matrix selection and measurement technologies.*				
Date	Planned Autumn 2009				
Leader	JRC				
Participants for organisation	INERIS	RIVM	IVL	IVM	WUR
Contribution of NORMAN	Resources for the organisation of this event provided by JRC-IES (in-kind contribution). Institutes participating in the organisation of the event provide contribution as person-months (with their own resources).				

Task	**Workshop**
Topic	**Metabolisation of chemicals**
Code	AW-2
Title	*The title is still to be confirmed.*
Short description	*Release of chemicals in the environment often induces formation of (stable) metabolites which in turn may be more toxic than the parent compound. The aspect of possible increased toxicity over time is up till now insufficiently taken into account in chemical regulation and is also a topic of limited analytical awareness.* *The workshop will address various aspects of metabolites and degradation products of selected groups of substances in surface and groundwater:* - *Fate of emerging chemicals: methods for studying the transformation, metabolisation and bioavailability of chemicals and their application* - *Monitoring of metabolites and degradation products of selected groups of chemicals in surface and groundwater: recent developments in the analytical technology regarding the evaluation of emerging pollutants and metabolites/degradation products in environmental samples: adsorbents, columns, equipment, detection systems, etc.* - *Routine level validation (V3 level according to the NORMAN protocol) of methods to measure metabolites and degradation products of pesticides in surface and groundwater* - *Metabolite prediction and validation of the predictive models* - *Metabolite toxicity* - *Inclusion of information on metabolites in regulation: REACH*

Date	Planned Spring 2009				
Leader	RIVM				
Participant for organisation	IVM	IWW	BfG		
Contribution of NORMAN	Contribution from NORMAN association : planned 5000€ (for RIVM) + 5000€ (for IVM) as co-organisers of the event. The rest of the budget is provided by RIVM and IVM with their own resources. Additional institutes willing to participate in the organisation of the event provide contribution as person-months (with their own resources).				

II.3.2 Expert Group meetings (EG)

Expert Group meetings are intended as 2-3 days highly-focused meetings with participation limited to 10 -15 invited leading experts in the field. The results and conclusions of each Expert Group meeting will lead to a Position paper summarising the position of the NORMAN experts on the topic (dissemination via the web).

2 events will be organised in 2009 on the following topics selected by NORMAN members.

Task	**Expert Group Meeting**				
Topic	**Bioassays and integrated chemical and biomonitoring protocols for emerging substances**				
Code	EG-1				
Title	Toxicity profiling (in vitro, in vivo assays and omics): the state of the art and the perspectives				
Short description	*The application of batteries of bioassays / biomarkers (e.g. in vitro, in vivo bioassays, and omics) in combination with statistical clustering methods, is used to provide toxicity profiles of environmental matrices (e.g. sediments) to assess the risks of environmental pollution. This approach can provide specific information on the mode of actions of substances in samples (location specific toxicity profile), and toxicity profiles between locations can be compared and clustered (locations with same toxicity profiles). In combination with TIE/EDA approaches, it can allow the identification of the toxicants that are causing the observed effects. Toxicity profiles can also be transformed to hazard profiles by linking e.g. in vitro to in vivo and field effects OR between "hot-spots" and reference locations. The different approaches of toxicity profiling will provide information on the water quality of locations and is a useful tool for decision-makers to manage e.g. river systems. The interpretation of results of bioassays in monitoring programmes will be subject of discussion in a separate working group, see below (WG-2).* *An expert group meeting will be organised by IVM with the publication of a position paper.*				
Leader	IVM				
Participant for organisation	INERIS	RIVM			
Contribution of NORMAN	Contribution from NORMAN association : 4000€ (for IVM) as leader of the organisation of the event. The rest of the budget is provided by IVM with their own resources. Additional institutes willing to participate in the organisation of the event provide contribution as person-months (with their own resources).				

Task	**Expert Group Meeting**
Topic	**Passive Samplers**
Code	EG-2
Title	Passive sampling of emerging pollutants: state of the art and perspectives
Short description	*Passive samplers represent an innovative monitoring tool for the time-integrated measurement of bioavailable contaminants in water and sediment. Passive*

	sampling technology is proving to be a reliable, robust, and cost-effective tool that could be used in monitoring programmes across Europe. These devices are now being considered as a part of an emerging strategy for monitoring a range of priority and emerging pollutants. *However, a number of problems still need to be solved and there is an urgent need to harmonise work in this area, and to bring together the disparate research groups to develop sound validation procedures for all aspects of the use of passive sampling devices, including laboratory calibration, handling, field deployment, chemical or toxicological analysis and data interpretation.* *An Expert Group meeting will be organised in 2009 in order to tackle specifically the aspects of capabilities and limitations of various passive samplers, problems related to the calibration and validation, QA/QC, normalisation and applicability of the passive sampling technologies within a regulatory context.* *One of the outcome of this expert group meeting will be an agreement on interlaboratory calibration exercises for 2010 and 2011 (selection of samplers, target analytes, sampling sites).* *In May 2009, the 3rd International Passive Sampling Workshop and Symposium will take place in Prague, Czech Republic. Attendance of leading experts in the field of passive sampling is expected at this conference and this gives a great opportunity to hold an expert group meeting jointly organised with the conference.* *The Expert Group meeting will lead to a Position paper summarising the position of the NORMAN experts on the topic of passive sampling.*
Leader	VUVH
Participant for organisation	
Contribution of NORMAN	Contribution from NORMAN association: planned 6000€ – amount to be managed by VUVH as leader of the organisation of the event. Additional institutes willing to participate in the organisation of the event provide contribution as person-months (with their own resources).

II.3.3 Working groups (WG)

Task	**Working groups**
Topic	**Prioritisation of emerging substances**
Code	WG-1
Title	***Background:*** *The list of emerging substances defined by NORMAN is rather extensive and being regularly updated for new compounds. There is an obvious need to identify which substances deserve higher priority for further investigations based on agreed criteria, such as their (eco)toxicity, persistence, bioaccumulation, spatial and temporal widespread, occurrence levels, use, etc. Despite often missing data for proper risk assessment a rational strategy for prioritisation should be established.* ***Organisation:*** *The group would consist of a multidisciplinary team of experts nominated by the interested NORMAN partners. The WG would appoint their task leaders who would collect proposals and draft the final position paper of the group. Meetings of the WG can coincide with the regular meetings of the NORMAN network partners, but can also be organised on other dates depending on the decisions of the leader and the participants in the group. Communication via e-mail and teleconferences will also be encouraged to reduce travelling costs.* ***Scope of activities:***

	Among the main activities of the WG-1 would be: • *Development of a set of criteria allowing for prioritisation of the emerging substances and their allocation to clearly pre-defined categories (e.g. substances for which info is not yet sufficient, substances for which there evidence of hazard but analytical performance not yet satisfactory).* • *Yearly update of the NORMAN list of emerging substances in close cooperation with all NORMAN partners.* • *Maintaining links and information exchange with other relevant risk assessment initiatives either at national or international level (e.g. DG-ENV, JRC (IHCP)).* • *Regular identification and upgrade of the available and accessible ecotoxicological information on the NORMAN emerging substances with focus on the state-of-the-art approaches.* • *Regular evaluation of the occurrence data and ecotoxicological (bioassays, biomarkers) data collected in the NORMAN databases.* • *Collection of comments on the improvement of the NORMAN databases' format and data visualisation tools.*
Leader	INERIS
Participants in the WG	EI, EAWAG, IVL, RIVM, UFZ, UKEA
Contribution of NORMAN	Contribution from NORMAN association for the leader of the WG and task leaders in the core group: planned 5000€. Organisations participating in WG provide contribution as person-months (with their own resources).

Task	**Working groups**
Topic	**The use of bioassays in monitoring programmes: interpretation of results**
Code	WG-2
Title	***Background:*** *Besides sharing data and experience on the use of bioassays (via NORMAN databases and general workshops), there is an international need for definition and standardization of the interpretation of the results of monitoring with bioassays. When using bioassays, what can we say and not say about our water quality and how can decision-makers use the results of these tools (e.g. in future implementation within the WFD).* *Validation of the relationship between biological quality (as measured in the WFD on the basis of species lists) and effects measured with bioassays or biomarkers is crucial, as is standardization and scientifically underpinning our interpretation of these results and giving insight in the uncertainties of our conclusions. Validation of the relationships will also play a crucial role in the expert group on toxicity profiling (EG-1), which will link the working group on bioassays and the expert group on toxicity profiling.* *NORMAN can play an important role in this respect as the network is capable of underpinning (international databases) of bioassay results with expertise in the areas of the fate of (emerging) chemicals, ecology and ecotoxicology to allow for proper interpretation of bioassay testing results.* ***Organisation:*** *To facilitate this process, we propose to start a Working Group which will bring together experts from the different countries, willing to share their experience in the use of bioassays in water monitoring programmes and willing to get to a common position on the interpretation of results for decision-makers. Meetings of the WG can coincide with the regular meetings of the NORMAN network partners, but can also be organised on other dates depending on the decisions of the leader and the participants in the group. Communication via e-mail and teleconferences will also be encouraged to reduce travelling costs.* ***Scope of activities:***

	Among the main activities of the WG-2 would be: • *inventorying available bioassays and defining, given the specific information needs, which bioassays to use* • *discussing critical issues regarding the interpretation of bioassay results and needs/requirements to allow the operational use of these tools for decision-makers* • *based on the experience of the participants (results from previous experimental studies) propose a strategic plan for 2010-2011, including for example:* ○ *the organisation of a common validation study, in which different partners would measure chemical and biological parameters (as they would already do for the WFD) and in addition, measure water quality using bioassays on the same locations. Locations are to be chosen on the basis of known good or bad biological quality and suspicion of a chemical cause for this. The study will be suited to underpin the scientific value of bioassay results when used for monitoring.* ○ *the organisation of a workshop to present the results of this activity.* *As an outcome for 2009: A position paper is proposed to be written on the subject, describing the strengths and weaknesses of the chosen method(s), their added value for policy-makers, and and how decision-makers can use these results.*
Leader	RIVM / INERIS
Participants in WG	
Contribution of NORMAN	Contribution from NORMAN association for the leaders of the WG: planned 3000€ Organisations participating in WG provide contribution as person-months (with their own resources).

II.3.4 Interlaboratory tests (IL)

Topics	**Perfluorinated compounds**
Code	IL-2 (confirmed)
Title	PFC interlab on samples from water, fish and sewage treatment (i.e. sludge and effluent)
Short description	Proposal: - 1 surface water sample - 1 biota sample - 1 STP sludge (dried) sample - 1 STP effluent sample - 1 standard solution - target compounds: PF-acids from C4-C14, PF sulfonates C4, C6, C8, C10, PFOSA. Other compounds are also welcomed (but presumably less data will be submitted) - workshop Interest of this exercise: one single study with all environmental matrices of high interest in this moment for laboratories (water, fish, STP sludge and STP effluent) rather than making separate studies. Interest to include in this exercise the sludge sample and water effluent sample due to use of sludge in agriculture (possible contamination of drinking water). It is the first IL study in these matrices, which are very difficult matrices because of: - matrix effects - interferences present (natural hormone) disturbing the perfluor hexane-sulfonate MS/MS signal - possible presence of perfluorinated telomer alcohols (super volatile, losses

	easily occur).
Leader	IVM, QUASIMEME
Participants in the IL	UBA, INERIS, BfG
Contribution of NORMAN	Planned contribution of 3000€ from NORMAN association for the leader(s) of the IL. Participating labs will have to pay a participation fee (amount to be confirmed depending on number of participants).

II.3.5 Scientific Watch Bulletin (SWB)

This scientific watch aims to foster wider sharing of the results of scientific work and to improve the capacity of public authorities to manage risks caused by emerging pollutants by bringing to their attention the most innovative and significant scientific work in the field of emerging substances.

Each bulletin will bring together a number of 'Current science notes', compiled by teams in the NORMAN network.

Each 'Current science note' will run to 2–3 pages and will contain three sections:
- A list of the publications or reviews in the subject area
- A presentation bringing together the main points in the identified publications in a style easily understood by a non–specialist public
- A short conclusion to the note suggesting, where appropriate, possible implications of these new discoveries: preventive measures, precautionary steps, research needs.

Only one issue of this bulletin will be published the first year. Two issues can be envisaged the following years depending on the availability of resources.

The bulletin will be disseminated to the various interested parties - the scientific community, environment and health agencies and public authorities managing chemical contaminants - and will be made available on the NORMAN public website.

The topics selected for the Scientific Watch Bulletin in 2009 are listed below.

Task	**Scientific Watch Bulletin**
Topic	**Pharmaceuticals and hormones**
Code	SW-1
Title	*Title to be confirmed*: Pharmaceuticals and personnel care products in drinking and waste water: sources, occurrence, fate and removal
Leader	Silesian University of Technology-Poland
Topic	**Pharmaceuticals and hormones**
Code	SW-2
Title	Occurrence, relevance, and pathways of emerging pollutants, particularly pharmaceuticals, x-ray contrasting agents and hormones from waste water to water bodies used for drinking water production: methods and techniques to investigate their transport and diffusion from WWTP to drinking water supply.
Leader	IWW
Topics	**Perfluorinated compounds**
Code	SW-3
Title	Sources of human exposure to PFCs
Leader	ITM
Topic	**Perfluorinated compounds**

Code	SW-4
Title	Ecotoxicological effects of perfluorochemicals
Leader	To be decided RIVM?
Topic	**Passive samplers**
Code	SW-5
Title	Passive samplers for emerging chemicals: state of the art. Who is using them? What are the performances?
Leader	CEMAGREF (contribution AQUAREF / Cemagref)
Topics	**Environmental specimen banks**
Code	SW-6
Title	Environmental specimen banks as tools for the retrospective monitoring of emerging pollutants
Leader	Fraunhofer Institute
Contribution by NORMAN	Planned contribution of NORMAN in 2009 (one issue of the bulletin): 500 € for each topic / leader, but it can be part of the in-kind contribution, replacing part of the membership fee of the organisation.

II.3.6 Data collection - Monitoring campaigns

Monitoring campaigns organised by NORMAN will be planned during 2009 in agreement with JRC-IES and the results of the relevant working groups in 2009.

II.3.7 NORMAN Databases

a. Collection of data in the databases

Effort for 2009 should focus on an exhaustive gathering of the data produced (as part of their deliverables) by the various national and EU-funded research projects in the field of :

- PFC (Monitoring campaigns from Perforce, monitoring campaigns in different countries…)
- Pharmaceuticals and hormones (AQUATERRA, MODELKEY, KNAPPE, monitoring campaigns in various countries, national projects for which results are already published….)

b. Report notes - evaluation of the data from Norman databases + recent research studies

Evaluation of monitoring results for selected substance(s): benchmark values, location, quality of the data, data gaps, etc..

Proposal for 2009:

Task	**Evaluation of the data from NORMAN databases + recent studies**
Topics	**Organic phosphorous flame retardants**
Code	DB-1
Title	Organic phosphorous flame retardants: occurrence and effects
Leader	IVL
NORMAN contribution	Planned contribution of NORMAN in 2009: 500 € for the leader.

Task	Evaluation of the data from NORMAN databases + recent studies
Topics	**Siloxanes**
Code	DB-2
Title	Siloxanes: occurrence and effects
Leader	IVL
NORMAN contribution	Planned contribution of NORMAN in 2009: 500 € for the leader.

II.4. Summary of proposals for the JPA-2010 and JPA-2011

This section outlines the proposals for a programme 2010-2011. These proposals have been drafted following the discussion with the NORMAN members in the European project and they will be discussed and upgraded after the creation of the NORMAN network with the new Steering Committee (Founding Members of the association) in consultation with the General Assembly.

II.4.1 Annual workshop

REACH and emerging substances – proposal RIVM
Monitoring in exposure assessment in the context of REACH.
REACH will place much of the onus for chemical risk assessment in Europe on industry. Among the many changes, there will be increased requirements for industry to provide exposure assessment data. The workshop should address what new requirements and challenges that this will place on the different actors in the field of monitoring (both chemically and biochemically) environmental contaminants, including research laboratories developing methods, national reference laboratories, private laboratories, and government laboratories.

IAREN (Portugal) proposes to offer its facilities for the organisation of a workshop in 2010.

II.4.2 Expert Group meetings

Pesticides – proposal IWW
Pesticide analysis in the aquatic environment – Strategy and analytical considerations in order to cope with the ever increasing number of new compounds.

Metabolisation of chemicals
Follow-up to the workshop in 2009. Possible Expert Group meeting on a specific topic selected from the workshop in 2009.

Nanoparticles – proposal BfG
There is an interest of the partners to organise some activities in the field of nanoparticles (BfG, WUR, BRGM, INERIS, IVL, RIVM, KIWA, UBA). However, the first step will be to collect info in order to have a fuller picture of the research activities (present and completed) of the different partners in the field of nanoparticles before defining a programme of actions.
Proposal to organise an Expert Group meeting (leader BfG) in 2010, addressing, amongst others, issues related to behaviour of nanoparticles in the water compartment, interaction with other chemicals, nanoparticles fate and exposure modelling; analysis of nanoparticles in water.

Disinfection by-products
Haloacetic acids, MX, chloropicrine: their occurrence in drinking water depending on the water treatment protocol.

Siloxanes
Occurrence, fate, and analysis of siloxanes

Brominated flame retardants
Analysis of recent brominated flame retardants (HCBD, phosphate-based flame retardants)

Risk assessment of Perfluorinated compounds
How to assess risks of chemicals to which the 'classical' risk assessment procedures cannot be applied (moreover, current level of information on sources, exposure pathways, environmental fate and toxicity of PFCs other than PFOA and PFOS is not sufficient).

II.4.3 Interlaboratory studies

Passive sampling – proposal by VUVH (leader), JRC, EI, IVL, UBA, BRGM, Cemagref
The concerted actions (interlaboratory exercises) will be performed within and across three sub-areas with the aim of providing a set of harmonised passive sampling methods for monitoring selected pollutants of emerging concern. The organisation in three research sub-areas will increase the effective exploitation of the range of expertise of the individual participants (the latest developments and applications of the passive sampling technologies). The sub-areas are:

1. Passive sampling techniques for hydrophobic organic compounds, e.g. polybrominated diphenylethers (PBDE), polyfluorinated organic surfactants (PFOS) etc.
2. Passive samplers for the polar (hydrophilic) organic compounds such as pharmaceuticals, polar pesticides and illicit drugs.
3. Passive samplers for monitoring trace metals and organometallic compounds

The objectives of the trials are to:

- extend the validation of the use of passive samplers for monitoring emerging substances in water.
- transfer knowledge of the methods more widely within the NORMAN community and beyond
- to gain experience in the use of passive samplers
- estimate the contribution of the analytical component to total variability
- to compare the results of the spot sampling of water with the results obtained by passive sampling
- to assess the possibility of using this tool for compliance checking with the WFD

Pesticides – proposal by IWW
Routine level validation (V3 Norman level) for methods to measure metabolites and degradation products of pesticides in surface and ground water

Organic phosphorous flame retardants – proposal by IVM, BfG and Quasimeme
Validation of organic phosphorous flame retardants analysis at the level of expert laboratories (V2 level of validation according to the NORMAN validation protocol) in the environment. How well do we perform? What are the critical parameters?

Siloxanes
Methylcyclosiloxanes in air, sediment, biota. Their degradation products (silanols) in water
The number of participating laboratories may still be too small to justify a QA/QC activity, but within a short period of time it is foreseen a need for QA/QC activities in this area to ensure that the regulatory decisions are made on the basis of sound data.

Nanoparticles
Topic for analysis of nanoparticles in water.

Microcystins – proposal by IAREN

Survey of microcystins in river water

Disinfection by-products

II.4.4 Scientific Watch Bulletin

The same topics can be maintained from 2009 (see Section II.3.5). Furthermore new topics are proposed below for addition:

1. Occurrence and effects of drinking water disinfection byproducts (e.g. iodo acids, bromonitromethanes, iodo-THMs, brominated forms of MX (with MX = 3-chloro-4-(dichloromethyl)-5-hydroxy-2(5H)-furanone), haloaldehydes, haloamides and NDMA) - *Proposal by IAREN and IWW*
2. Nanoparticles
3. Natural vs. anthropogenic compounds: Occurrence, effects and environmental risk

II.4.5 Data collection - Monitoring campaigns

Possible molecules to be monitored are highlighted below. However, the final programme and monitoring strategy will be defined based on the results of the prioritisation work (WG) in 2009 and the outcomes of the other relevant working groups and expert group meetings in 2009.

- Nanoparticles: collection of data on exposure of consumers to nanoparticles (example, nanoparticles contained in make-up products, table salt, etc…

- Chemicals metabolites: monitoring campaign to collect data on metabolites and degradation products of pesticides in surface and ground water

- Disinfection by-products in drinking water

- Polybrominated dibenzo-p-dioxins in aquatic biota and sediments

- Algal toxins: survey of microcystins in river water

III. Planning for the JPA 2009

	J	F	M	A	M	J	J	A	S	O	N	D
Steering Committee meetings			X				X				X	
General Assembly annual meeting 2009										X		
Collection of the proposals for next JPA												
Draft for next JPA				X								
Circulation of the draft												
Final JPA 2010											**X**	
Scientific Watch Bulletin							X					
Annual workshops												
AW-1				**X**								
AW-2										**X**		
Expert Group Meeting												
EG-1 (meeting X; deliverable **X**)												
EG-2 (meeting X; deliverable **X**)					X				**X**			
Working Groups												
WG-1 (deliverable **X**)									**X**			
WG-2 (deliverable **X**)									**X**			
Interlaboratory tests												
IL-1 (not confirmed in the current budget)												
IL-2 (confirmed in the current budget)										**X**		

IV. Effort for the JPA 2009

The Steering Committee has approved a budget of 130 000 € for 2009, based on expected income from membership fees of the Founding and Ordinary members. These resources will be allocated for scientific activities, coordination (including website) and regular updating and maintenance of the databases.

The list of approved scientific activities for 2009 is as follows:

Databases:

- Regular updating and maintenance of NORMAN Databases

Scientific activities:

- SWB - Scientific Watch Bulletin (1 issue)
- EG-1 - Expert Group meeting N°1 (toxicity profiling - IVM)
- EG-2 - Expert Group meeting N°2 (passive sampling - VUVH)
- AW-1- Workshop1 (Emerging pollutants and implementation of the WFD - JRC)
- AW-2 - Workshop2 (Metabolites and degradation products - RIVM)
- WG-1 - Working group N°1 (Prioritisation of emerging substances - INERIS)
- WG-2 - Working group N°2 (Bioassays in monitoring programmes and interpretation of results – RIVM / INERIS)
- IL-2 - QA/QC activities (Organisation of IL study on PFC on water sample, biota + effluents & sludge – IVM / QUASIMEME)
- Preparation of a monitoring campaign to be conducted in 2010

The proposed budget will be revised by the Steering Committee in April 2009, after the formal membership of all interested organisations to the association.

All approved scientific activities will be implemented, independently of the revision of the budget.