



NORMAN Databases Workshop

German Federal Environment Agency, Bismarckplatz 1, 14193 Berlin
8 – 9 June 2017

Towards a harmonised approach for collection and interpretation of data on emerging substances in the environment in support of European environmental policies

General objectives

The main objective of the workshop, organised by the Environmental Institute (Slovak Republic) and hosted by the German Federal Environment Agency (UBA), is to provide a **common forum** for NORMAN Association members, EU Member States and other interested groups for presenting, discussing and streamlining approaches for **the harmonised collection and interpretation of data on emerging substances**.

Particular attention will be given to (i) **interlinking of numerous new modules of the NORMAN database system**, (ii) development of **automated tools for collection of occurrence and (eco)toxicity data and supporting metadata** needed for prioritisation of emerging substances at the EU scale (and beyond) and (iii) setting up a European network dealing with **'big data' provided by non-target screening (NTS) workflows**.

Discussion will also tackle questions related to (i) the use of the data in **support of European environmental policies** and data collection activities carried out by DG ENV, EEA, DG JRC and DG EUROSTAT and (ii) **presentation of the data to the public**.

Specific objectives

1. **General review of the structure of the NORMAN database system** in order to accommodate an increasing number of database modules;
2. **Interlinking** of the NORMAN EMPODAT database with modules associated with *'new types of data and monitoring techniques'*: **Ecotoxicology, Non-Target Screening, Suspect List Exchange, Passive Sampling, Bioassays monitoring, Antibiotic Resistance, Bacteria/Antibiotic Resistance Genes (ARBs/ARGs)** and *'new compartments'*: **Indoor environment**;
3. Agreement on **the formats of revised Data Collection Templates (DCTs; all modules)**;
4. Agreement on the list of **minimum quality-related information** to be provided with the datasets (all modules);
5. Agreement on the **statistical tools for definition of outliers** and follow-up actions - 'alert' and 'database cleaning' strategy for occurrence data;
6. **Prioritisation of actions/time plan** for implementation of the **new database modules**;
7. Mechanism for **streamlining/automating data input from NORMAN members** and other interested parties and **sharing NORMAN data within** the European Information Platform for Chemical Monitoring (IPCheM).

Participants

It is expected that the workshop will be attended by **data providers, regulators at the national and EU level, database managers and IT experts**.



Background

The NORMAN Workshop on Data Exchange, which took place in Berlin in April 2011, resulted in the drafting of a NORMAN Position Paper on the collection, exchange and interpretation of data on emerging substances (see attached). Since then the network has been striving to achieve **the vision** that:

NORMAN should become a global early-warning system for emerging pollutants and subsequent policy actions.

We have also been addressing management objectives (how to get there?). This covers: Data collection; Data quality, Establishment of a regular and automated data collection scheme; The use of the data in support of European environmental policies and data collection activities; Presentation of the data to the public, and; Possible contribution to the architecture of the European Chemical Data Centre (which is now IPChem; <https://ipchem.jrc.ec.europa.eu/RDSIdiscovery/ipchem/index.html>).

Six years later, we can justifiably claim that the situation with collection of data on occurrence of emerging substances at the European scale has improved, and that NORMAN EMPODAT – with more than 10 million data entries and growing rapidly – is the biggest European database specialising in emerging substances. The database has been extensively used by the European Commission in updating the WFD priority substances watch list, and by several Member States to aid them in the prioritisation of WFD River Basin-Specific Pollutants. Despite all the efforts, the database is still far from providing full coverage for all environmental matrices in all Member States and information needed for risk assessment of observed contaminants.

The NORMAN network of more than 70 environmental organisations and reference laboratories from Europe and North America (for details, see www.norman-network.net) is systematically collecting data on the occurrence of non-regulated substances in all environmental matrices and storing them in the EMPODAT database (see www.norman-network.net – Databases – EMPODAT; See also attached instructions for use). The interest of the network partners has enabled the database system to grow, and new modules for accommodation of passive sampling, indoor environment, bioassays monitoring and ARBs/ARGs data are at a more or less advanced stage of development and implementation. A huge effort has been put into the development of the ECOTOX module of the database (<http://www.normandata.eu/empodat/ecotoxV5/ecotoxIndex.php>) aiming at the transparent derivation of the toxicity threshold values for individual substances (Predicted No-Effect Concentrations (PNECs)) as a primary prerequisite for harmonised chemicals risk assessment at the European scale. The passive sampling, bioassays and ECOTOX modules are being developed in close cooperation with the EU FP 7 project SOLUTIONS (<http://www.solutions-project.eu>), whereas updates of the Data Collection Templates for waste water, sewage sludge, soil, terrestrial environment and ARBs/ARGs are being developed in collaboration with the H2020 project ANSWER (<http://www.answer-itn.eu/>).

The NORMAN network aims to address occurrence and associated risk of thousands of pollutants typically present in environmental samples. A specific database on Suspect List Exchange (SusDat; <http://www.norman-network.com/datatable/>) has been developed as a common effort of European and North American laboratories dealing with the NTS. SusDat is growing and harmonisation/curation of the collected information on unique identifiers, exact masses etc., and related interlinking with the other NORMAN database modules have to be addressed urgently. It is a part of the NORMAN's future vision that mass spectra of all these substances will end up in



the NORMAN MassBank (<http://massbank.eu/MassBank/>), which is becoming a recognised database at global scale.

'Big data' is becoming a priority issue that needs to be tackled when dealing with results from non-target screening analyses. A prototype of the 'Digital Sample Freezing Platform' has been developed, to host full scan liquid chromatography-mass spectrometry data, allowing for retrospective analysis of any environmental sample for a wide range (thousands) of pollutants. The concept of sharing the 'big data' at servers of institutes producing them has been recently tested among six NORMAN members from Norway, Sweden, Germany, Slovakia and Greece and it is now proposed to test it at the wider European scale.

Several tens of thousands of chemicals may enter the environment, many of them having potential toxic effects as either individual substances or mixtures. No single Member State is able to deal with these emerging threats alone and there is an obvious need to join existing know-how of all key environmental organisations in Europe and beyond. Exchange and sharing of all available data would be a first step in the process.

Programme of the workshop

8 June 2017 – Setting the scene

Time	Presentation/topic	Speaker
09:00-10:30	First hand experiences - meet the experts for NORMAN Databases EMPODAT/Ildiko Ipolyi (EI), ECOTOX Module/Peter von der Ohe (UBA) and MassBank/Tobias Schulze (UFZ)	
10:30 – 10:55	Registration and coffee	
10:55 – 11:00	Welcome	Jan Koschorreck , Federal Environment Agency, Germany
11:00 – 11:10	NORMAN network – overview of activities in support of European environmental policies	Valeria Dulio , INERIS, France
11:10 – 11:40	Overview of NORMAN database system and its use in the prioritisation of emerging substances; new modules	Jaroslav Slobodnik , Environmental Institute, Slovakia
11:40 – 11:55	EEA – Outline of planned report “Chemicals in Europe’s Surface Waters”	Volker Mohaupt , UBA Caroline Whalley , EEA (tbc)
11:55 – 12:10	EMPODAT - present status and options for improvement; overview of major problems / limitations encountered within the current database system; data quality and strategy for treatment of outlying values	Ildiko Ipolyi Environmental Institute, Slovakia
12:10 – 12:25	ECOTOX module - present status and results of the testing phase	Peter von der Ohe Federal Environment Agency, Germany
12:25 – 12:40	Bioassays Monitoring module - present status and results of the testing phase from the EDA-EMERGE project	Zuzana Tousova Masaryk University, RECETOX, Czech Republic
12:40 – 13:00	Discussion	
13:00 – 14:00	Lunch break	

14:00 – 14:15	Passive sampling - update and status report on the SOLUTIONS database Data Collection Template	Ian Allan NIVA, Norway
14:15 – 14:30	New module on Antibiotic Resistance Bacteria/Antibiotic Resistance Genes and update of DCTs for wastewater, sewage sludge, soil and terrestrial environment	Ivone Vaz Moreira Catholic University of Porto, Portugal
14:30 – 14:45	Indoor environment - present status of development of the Data Collection Templates	Eva Brorström-Lundén IVL, Sweden
14:45 – 15:00	Non-target Screening - NORMAN Suspect List Exchange - present status and future plans	Emma Schymanski Eawag, Switzerland
15:00 – 15:15	NORMAN MassBank - present status and future plans	Tobias Schulze UFZ, Germany
15:15 – 15:30	Non-target Screening - NORMAN Digital Sample Freezing Platform - present status and future plans	Jaroslav Slobodnik , Environmental Institute, Slovakia
15:30 – 16:00	Coffee break	
16:00 – 16:15	The FOR-IDENT platform	Manfred Sengl LfU, Germany
16:15 – 16:30	NORMAN Suspects meet the EPA CompTox Dashboard	Emma Schymanski , Eawag, Switzerland
16:30 – 16:50	IPChem - overview and potential for synergies with NORMAN Database system	Peter Korytar DG ENV
16:50 - 17:30	Discussion	
17:30	End of Day 1	
19:30	Dinner	

9 June 2017 – The way forward

Time	Presentation/topic	
09:00 – 09:05	Division of participants into discussion groups	Participants invited to discuss in groups
09:05 – 10:00	Discussion groups on (i) EMPODAT and new modules on passive sampling, indoor environment, ARBs/ARGs, ECOTOX, bioassays; sharing NORMAN data within the European Information Platform for Chemical Monitoring (IPChem); (ii) Non-target screening (SusDat) and Digital Sample Freezing Platform; and automated data exchange (IT experts)	
10:00 – 10:20	Coffee break	
10:20 – 12:00	Group discussion continues	
12:00 – 13:15	Lunch break	
13:15 – 13:45	Plenary discussion on the findings of the discussion groups	
13:45 – 14:15	Draft agreement on the structure of the new NORMAN database system, formats of revised Data Collection Templates, minimum quality-related information for all data modules and statistical tools for definition of outliers	
14:15– 14:30	Formulation of the conclusions of the workshop – Position paper	
14:30	End of the workshop	



Location of the workshop

Please visit:

<http://www.umweltbundesamt.de/sites/default/files/medien/377/dokumente/berlin-e.pdf>

for details of the venue and travel directions.

Registration and cost

Registration for the workshop (including coffee & lunch) is free of charge. A dinner will be organised, which will be chargeable. **Registration on the NORMAN website** <http://www.norman-network.com/?q=workshop>.

For further information, please contact:

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