8-10 October 2014
WHO Chemical Risk Assessment Network Meeting

Meeting Record

DAY 1

Opening, Welcome Address and Meeting Arrangements

1. The WHO Chemical Risk Assessment Network Meeting was held at ANSES (French Agency for Food, Environmental and Occupational Health & Safety) in Maisons-Alfort, Paris, France from 8 to 10 October 2014. The meeting was officially opened by Maria Neira, Director of the Department of Public Health, Environmental and Social Determinants of Health at WHO. Maria Neira recalled the high burden of disease attributed to exposure to chemicals and emphasized the importance of collaboration in the area of chemical risk assessment. Maria Neira noted the strong response from institutions in joining the Network, acknowledged the support of partners in providing resources for the meeting and thanked ANSES and its staff for hosting the meeting and their support in organizing the event.

2. Didier Houssin (Chair of the Board of Administrators of ANSES) welcomed participants on behalf of ANSES and noted the objectives of the meeting. He emphasized the importance of working in a collaborative effort to address the challenges posed by exposure to chemicals, in particular with respect to combined exposures, and indicated the willingness of ANSES to assist in meeting that challenge.

3. The meeting elected Raquel Duarte-Davidson and Chris Weis as co-chairs. The arrangements for co-chairing the meeting were that Chris Weis would chair the first day, Raquel Duarte-Davidson would chair the second day and the co-chairing task would be divided between them on the third day. Carolyn Vickers introduced the WHO Secretariat and summarized the meeting goals and expected outputs. The provisional meeting programme was adopted (reproduced in Annex 1). The list of participants is presented in Annex 2.

Presentations and discussion panel

4. Ken Olden delivered a keynote presentation on new directions in the science of risk assessment. He argued that the epigenome can be used as a "biosensor" to quantify the aggregate or cumulative effect of environmental exposure to multiple chemicals and non-chemical stressors (including social determinants of health). Epigenetic data can contribute to the study of complex relationships between disadvantaged neighbourhoods and health disparities. With epigenetic modifications being amenable to environmental or clinical interventions, epigenetic data provides concrete opportunities for policy makers to invest in a healthy environment – potentially just as important as other aspects of the health system and with the potential to exceed the impact of the Human Genome Project. In the following plenary discussion different issues were raised about heritability (some acquired characteristics will be inherited), the possible use of epigenetics as a preventative measure (proof of principle studies are needed first) and the need to standardise methods for tissue sampling and addressing confounders. The importance of making the case for environmental interventions as a contribution to public health was emphasised (noting that 25% of the global burden of diseases can be attributed to environmental factors).

5. Maria Neira, Ken Olden, Raquel Duarte-Davidson and Berendina van Wendel de Joode were members in a panel discussion, chaired by Jean-Nicolas Ormsby, about identification of emerging risks to human health from chemicals. Jean-Nicolas Ormsby introduced the topic and posed some open questions to the panel, including how to learn from past failures to identify risks and how to mutualize efforts to access data. Raquel Duarte-Davidson noted that risk perception differs between countries and suggested that the Network should decide on its focus among a large number of possible risks. Are there similar priorities for different countries? She also noted the need to balance public concerns against the priorities indicated by the science and define a way forward which is achievable. Berendina van Wendel de Joode emphasized the importance of applying the precautionary principle, the need for methods suitable for use in, and more peer reviewed data from, low- and middle-income countries (LMICs) and the use of an integrated, trans-disciplinary approach from the start. Maria Neira supported the need to harmonize and adopt common approaches, but without losing perspective by trying to tackle too many issues. She recommended a global perspective with clear priorities, and referenced a need for continuing engagement, bringing citizens and politicians to the table to ensure that the link is made between public health and environmental health, emphasising the benefits gained from previous successes (for example from removing lead from petrol). Ken Olden identified four focus areas: the development of objective and transparent decision tools, communicating uncertainty, integrating data from different evidence streams (animal data, epidemiology, social and environmental) and utilising expert judgement (obtaining examples of best practice). In the ensuing plenary discussion a number of suggestions were raised such as the need to develop case studies to communicate past successful intervention strategies (including showing the financial

benefits) to get the attention of policy makers, and the need to identify the consequences of either acting or not acting on issues raised as concerns.

6. Richard Brown delivered a presentation on the developments leading to the establishment of the WHO Chemical Risk Assessment Network and its objectives and activities. The input from many experts to the initial steering groups (for activities and business aspects) during the establishment of the Network was acknowledged. Follow up questions from meeting participants covered membership criteria (available in the Network Brochure), relationship to OECD activities (ongoing close cooperation with the OECD Secretariat) and the need to use the convening power of WHO to attract a wider membership from developing countries.

7. Bette Meek and Alan Boobis gave presentations on previous and ongoing WHO Chemical Risk Assessment activities. Bette Meek described WHO activities to develop and promote methodologies, including the IPCS Harmonization Project. The need for increased efficiency in chemical risk assessment to meet the requirements of evolving international mandates for chemicals was highlighted, emphasizing the role of problem formulation and tiered approaches. A range of publications was presented, including the WHO/IPCS Human Health Risk Assessment Toolkit, which provides road maps for conducting human health risk assessments and is widely used in capacity building activities. Follow up questions from meeting participants covered the importance of harmonizing terminology when describing methodologies and tiered approaches, and the value of descriptive definitions when different terms are in use. Alan Boobis described the joint FAO/WHO scientific panels which cover chemicals in food – the Joint Meeting on Pesticide Residues in Food (JMPR) and the Joint Expert Committee on Food Additives (JECFA), which addresses food additives and contaminants and also residues of veterinary drugs in food. It was noted that as well as providing advice to WHO and FAO, these scientific panels aim to meet the needs of various regulatory systems, but they are not bound by the requirements of any particular regulatory system.

Breakout Discussion Sessions

8. Following the plenary presentations, participants broke into three groups to discuss the following topics: "*Biomonitoring*" (Chair Naima Bradley, Rapporteur Salmaan Inayat-Hussain); "*Gaps and needs in internationally harmonized methodologies*" (Chair Djien Liem, Rapporteur Kathy Hughes) and "*What are the highest priorities for research and method development to improve risk assessment*" (Chair Martin Wilks, Rapporteur Virunya Bhat). The groups then presented the results of their discussions to plenary as summarised below.

9. Key issues identified in the discussion group on "Biomonitoring":-
    - Epigenetic methods have potential for assessing exposures to multiple chemicals combined with non-chemical stressors, but will require the refinement of existing tools, more holistic approaches and also proof of principle studies.
    - The interpretation of effect markers is difficult with mixed exposures.
    - Sampling methods could be harmonized to improve comparisons between countries and between studies, especially for short half-life substances, the biomonitoring of which should command collecting first morning voids when measuring them in urine.
    - Harmonized methods would assist the analysis of trends (caution has to be exercised when comparing older data with newer data if methods have changed with time).
    - How to communicate the results of biomonitoring studies to individuals and to communities is a significant ethical issue.
    - WHO could assist with harmonization of methods and sharing of best practices (including interpretation and communication).
    - Public health benefits often need to be clearly identified to get approval for conducting biomonitoring studies – economic analysis can also assist to gain financial support.
    - There is an increasing need for informational science/bioinformatics expertise to manage and interrogate large, and also historic, data sets.

10. Key issues identified in the discussion group on "Gaps and needs in internationally harmonized methodologies":-
    - More work is needed to encourage uptake of harmonized methodologies and tools.
    - Institutions should be encouraged to justify why they are not using harmonized methodologies and tools if they are available.
    - New advances will not be taken up if they are perceived as too complex – the Network needs to make advances simple to understand and incorporate.
    - There is a need to harmonize and improve communication of the terminology used in risk assessment, the expression of uncertainty and the understanding of what risk assessment is (for all parties, including risk managers).

- Links to health benefits, socioeconomic assessments and the requirements of risk managers should be taken into account at the problem formulation stage.
- Different institutions are engaged in different aspects of methodology development depending on their requirements, which can range from clean-up of contaminated sites to assessments of new materials or refinements to existing methodologies to incorporate new types of data.
- It is necessary to work with a wider range of scientific disciplines beyond toxicology (e.g. computational and exposure sciences)
- There should be greater sharing of success stories to encourage uptake (a repository?), dissemination strategies for new guidance and the Network should bring together institutions to identify best practices (which could be more easily shared through software tools).
- The role of the Network in developing, disseminating and/or evaluating the effectiveness of methodologies should be clearly defined.

11. Key issues identified in the discussion group on "What are the highest priorities for research and method development to improve risk assessment?":-
    - Access to all sources of existing data, methods for integrating large data sets (e.g. with appropriate meta data) and tools for analysis of complex and multi-dimensional data (bioinformatics) were identified as high priority for research needs.
    - Improved ways to express uncertainty, using new language which is common to both risk assessors and risk managers, are needed – drawing from research in both disciplines.
    - Realistic exposure data can be a key tool for prioritisation of (retrospective) risk assessments, but there are often data gaps on the exposure side, including for information on how chemicals are used.
    - New methods are likely to focus on relevant mixtures and sustainability/life cycle issues rather than isolated testing of individual chemicals.
    - The Network can assist the development and implementation of new methods by sharing case studies, encouraging continuous development of usable data on a global basis and guiding research towards addressing both global public health needs and local community needs.

Final presentation on Day 1

12. Carolyn Vickers ended the first day with a presentation on methods of working for the WHO Chemical Risk Assessment Network. She spoke about the terms of reference and Network's objectives, the participating institutions in the Network, the role of WHO in the Network, the Network Coordinating Group which will be set up after the meeting and possibilities on how Network members can contribute either financially or by sharing other resources. It was explained that Network projects could either be WHO-led or

institution-led, depending upon the output. For example, normative work leading to a WHO publication would need to be a WHO-led activity following WHO policies, especially with respect to conflicts of interest. On the other hand the organization of training activities or coordinating fora could be led by a Network participant institution, with a reduced role for WHO. It would also be possible (and desirable) for Network participants to engage in bilateral collaborations without WHO involvement: these would not be identified as Network projects, however the results may be of interest and shared among Network participants.

DAY 2

Presentations and discussion panel

13. After welcoming remarks by co-chair Raquel Duarte-Davidson, Theo Vermeire presented the new WHO guidance on "Evaluating and expressing uncertainty in hazard characterization". In his presentation, Theo Vermeire emphasized that this document, which is an extension of current approaches and not an alternative approach, is focused on the importance of communicating uncertainty – what is the overall uncertainty in the final outcome, and how to express that? This requires both the quantification of individual uncertainties in an assessment, and then how they can be combined to give an overall uncertainty of the final outcome. Risks should be expressed in terms of likely impacts and should correspond to the needs of risk managers. A move towards a probabilistic approach, as opposed to a deterministic approach, was advocated. An introduction to the APROBA tool, a spreadsheet to assist with uncertainty analysis, was presented. Discussion in plenary covered the concern that low uncertainty in results derived from animal studies could possibly lead to underestimation of the potential for more subtle effects in humans for endpoints where animal studies may not have been sufficiently sensitive. Another suggestion was to integrate uncertainty analysis into mode of action and other sources of variability within this system. It was noted that the underlying assumptions and criteria used in an uncertainty analysis were critical to the outcome, and that these should be transparently presented. It was also noted that risk managers should be fully informed that even where a detailed estimate of variability was provided, the outcome would still be greatly dependent on the choice of data which was used.

14. A panel discussion on combined exposures followed. The panel was chaired by Angelo Moretto and selected organizations provided an overview of their ongoing activities on combined exposures. Leon van der Wal (for OECD) described a forthcoming project to collate experiences and then develop guidance which will focus on several aspects – problem formulation, hazard characterization, co-exposure characterization and articulating uncertainties. Djien Liem (for EFSA) described past and ongoing activities (initially developed for pesticides and expanding into contaminants) and the priorities which had been identified, including – prioritizing which mixtures to address, collection of co-exposure data, development of models to predict interactions, harmonization of terminology with ecotoxicology. Alan Poole (for ECETOC) described a range of activities (task forces, workshops and symposia), including some which focussed on oestrogenic or anti-androgenic substances. Tiered approaches were advocated, noting that lower tier approaches were sufficient in most situations. Jean-Nicolas Ormsby (for ANSES) reported on ongoing work and the conference hosted by ANSES in 2013, at which it was established that most scientific studies in this area relate to ingestion of chemicals via the oral route, but that other routes of exposure are important as well. The use of biomarkers of exposure to identify the most important exposure routes was advocated, along with co-exposure data from total diet studies. Discussion in plenary raised the concern that there seemed to be a lack of progress in regulatory systems despite

multiple organizations being engaged with the topic for some time. It was suggested that there should be a focus on outcomes of the risk assessment process instead of outputs (with performance indicators), that better exposure information should be identified and that more dialogue with risk managers was needed.

15. Chris Portier presented on systematic review and evidence integration methods. He argued that currently many organizations are undertaking reviews of chemicals but there is a need to make these processes more efficient and to address some deficiencies, in particular in the areas of transparency and recording of decisions. Chris Portier outlined three requirements for systematic review methods in environmental health: 1) a framework to increase transparency and objectivity; 2) the need to address the breadth of relevant data (human studies, animal studies and mechanistic studies) and 3) a procedure to integrate evidence streams. Examples of approaches from NTP/NIEHS and IARC were presented, and it was highlighted that tools were lacking to systematically assess mechanistic studies. Chris Portier emphasized the benefits of establishing a common framework which would allow a database of reviewed literature to be shared by more than one organisation. In the ensuing plenary discussion, Ken Olden acknowledged the support provided by NTP to the EPA IRIS programme in developing systematic review methods. A number of questions and/ or suggestions were raised including the drawbacks of having to review every study (when some programmes are already required to review a large number of chemicals), a necessity to focus on the key question, difficulty of accessing raw data from published papers and accessing full text of papers with limited budgets. The use of read across when only limited data are available for a chemical was also discussed, but it was noted that, in most cases at this time, read across was not carried out in a systematic way.

16. Michael Ramsay, Registrar of the Pesticides Control Authority in Jamaica, presented on the needs of developing countries. Challenges included a small number of staff and the need to rely on external expertise, the lack of specific training in chemical risk assessment (for staff or local experts), the fact that available published data is often focused on climatic conditions of developed countries and sometimes data is not published in a form that all can access. There is no funding to study the effects of pesticides on human toxicity as affected by factors such as genetic disposition (including the general standard of health in the local population), ethnicity and environmental factors, nor on the fate of chemicals under tropical conditions or the risks to local ecosystems. The need for local (including regional) research was emphasized. In addition, risk assessment from developed countries are often based on best practices, but it was noted that these practices are not common in Jamaica (e.g. farmers often do not wear protective gear (due to the hot climate and expense) and due to low literacy pesticide users cannot adequately follow the pesticide application instructions). Michael Ramsay argued that a collaborative approach (with regional partners) and technical and financial support are all needed to address these information gaps. Participants from other developing countries recognized his message and emphasized the need for local exposure data and called for training and capacity building focused on local needs. Other challenges mentioned included the supply of poor

quality (and/or poorly labelled) pesticide products, and the high (actual or perceived) cost of introducing alternatives to problematic chemicals. It was noted that WHO is highly respected in many countries and that WHO could influence the training given to government staff. The advantages of networking locally to share ideas and local research and to have a louder collective voice were stressed. It was suggested that WHO could facilitate a sub-Network of developing country participants to enhance collaboration within this group.

Breakout Discussion Sessions

17. Prior to the meeting there had been a call for outline proposals for potential activities for the Network to take forward. Following that call, 17 proposals had been received, of which 15 were tabled for discussion at the meeting. The remaining two proposals had been referred to other WHO groups covering those particular subject areas. Five additional proposals for Network activities had been proposed during the course of the meeting (covering capacity building, biomonitoring, combined exposures, systematic reviews and informatics).

18. The proposals had been divided into three broad categories for the purposes of discussion and refinement by meeting participants. Participants were requested to discuss proposals in the context of the Network objectives, and the criteria which had been previously been developed for evaluating and prioritizing Network projects (as referenced in the Network Business Plan). The purpose of discussing the projects was to identify which activities were most suited to development through a Network, to refine the proposals (by modifications or merging of proposals) and to establish which proposals were of most interest. Participants were also asked to consider the resources which would be needed. Following a brief overview of the various proposals, participants broke into three groups to discuss the proposed activities. The categories were: “Capacity Building” (Chair Hanna Karlsson, Rapporteur Elsa Casimiro); “Methodologies” (Chair Peter Chan, Rapporteur George Fotakis) and “Specific Risks” (Chair Dimosthenis Sarigiannis, Rapporteur Henk van Loveren). In the final session of the day, the groups presented the results of their discussions to plenary, following which the Co-Chairs and the Secretariat undertook to present a summary of the discussions in the morning session of the following day.

DAY 3

Plenary discussions

19. After welcoming remarks by co-chair Chris Weis, Michelle Embry introduced the risk assessment training course database [www.risktraindb.org]. The purpose of the database is to provide access to information regarding human health chemical risk assessment training courses and resources worldwide. Michelle Embry discussed criteria for inclusion, the database status and follow up steps, including promotion of the database by Network Participants. It was clarified that the database is not a repository for course materials.

20. Mathuros Ruchirawat presented the Electronic Distance Learning Tool on Risk Assessment & Risk Management of Chemicals (e-DLT). This tool can be used to strengthen capacity to manage chemicals in developing countries. Suggestions from the plenary included translating the e-DLT into other languages than English, development of a downloadable/mobile device version and to consider reducing the fee for accessing the course.

21. A Co-chairs and Secretariat summary of the discussions from the previous day on the proposed collaborative activities was presented, along with an indication of the expected next steps for each proposal, and a preliminary assessment of whether each activity was likely to be an institution-led project or would need to be a WHO-managed project (e.g. in the case where a WHO publication is the desired output). It was noted that it would not be possible to undertake all of the proposed WHO-managed activities at the same time due to finite capacity in the WHO Secretariat. It was clarified that existing WHO chemical risk assessment activities such as work on mode of action would also be continuing alongside new Network activities.

22. In some cases it was proposed that an activity would proceed as originally proposed. A few projects generated less support for varying reasons e.g. insufficient experience yet to develop a framework. In the majority of cases the next step would be for the proponent(s) to refine the proposal following the meeting and proposals could later be circulated amongst the Network to invite interest from other participants. Following questions from the floor and discussion, the meeting concurred with the summary and proposed next steps as presented in the slides. The text from the slides of this key presentation are shown in Annex 3.

23. In a plenary session two topics were discussed: Network Resource Mobilization and Network Communications. The following issues were identified:

Network Resource Mobilization

- Develop a map of unions and societies which could contribute. There is a need to involve other agencies, including governments, and perhaps Network capacity building activities could be coordinated with industry activities which are currently fragmented.
- A need to find a mechanism to share work programmes and upcoming evaluations, so if there is a substance in common this can be shared work. The collaborative EZCollab web site can work as a platform for information exchange or as a discussion forum (subject to the availability of resources to moderate a forum).
- Multiple participants mentioned the possibility of having graduate students/interns working on Network activities from their institutions as a contribution in-kind. Identifying exposure scenarios specific to less developed countries was given as an example of a task suitable for an internship. Opportunities for loan of staff to WHO were also described.
- There is a need to highlight the Network's success stories to funding bodies (perhaps a resource mobilization flyer) and also to develop distinct goals which would be attractive to funding bodies rather than the broad objective of "improving public health". EU funding opportunities which partner EU countries with non-European countries were highlighted. The importance of evaluating the effectiveness of activities was also emphasised.

Network Communications

- The need to advertise the Network beyond the existing communication tools (web site, Newsletter, brochure). This could involve participants putting a report about the meeting on their own website. Also providing contributions to the newsletters of other organizations (e.g. professional societies for toxicologists) which could raise the profile of the Network with universities and government departments. Short videos as an alternative to documents should be considered, along with using social networking web sites and translation of promotional material into other languages.
- The need to plan the expansion of the Network without over-extending. The importance of not over-committing and focusing on a few activities which could be successfully delivered and promoted was emphasized. It was important to be able to demonstrate to institutions that Network activities delivered added value in order to ensure continued support and the release of staff. If measures of success were developed and publicised, it was then easier to communicate successes.
- The Network could aim to communicate to developing countries the availability of guidance and methods which could assist with chemical risk

assessment, perhaps through databases or distribution lists. The high standing of WHO with countries should assist in getting tools developed through the Network noticed and accepted.

24. In summing up, the Secretariat described the follow up steps:

- A meeting report would be circulated for review and then published on the Network web site.
- All the meeting papers, institution posters, breakout group reports and speaker presentations would be made available to participants via the EZCollab site.
- Participants who submitted proposals for activities would be contacted and invited to re-shape their proposals based on feedback received during the meeting. Participants were also invited to establish collaborations within the Network and to keep the WHO Secretariat informed.
- A Network Coordinating Group would be convened once it had been determined which institutions would be leading activities.
- The next face to face meeting of the Network would provisionally be planned for mid-2017. Participants were invited to submit their ideas for the format and content of that meeting to WHO.

25. After the customary exchange of courtesies, the meeting was closed at 12:30

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ANNEX 1

CHEMICAL RISK ASSESSMENT NETWORK MEETING

8-10 October 2014, Paris, France

Meeting Programme

Meeting Venue: ANSES (French Agency for Food, Environmental and Occupational Health & Safety),
27-31 avenue du Général Leclerc, 94701 Maisons-Alfort, France

Background

The WHO Chemical Risk Assessment Network was launched in July 2013. The overall goal of the Network is to improve chemical risk assessment globally through facilitating sustainable interaction between institutions on chemical risk assessment issues and activities. Details of the Network can be found at http://www.who.int/ipcs/network/en/.

The **first WHO Chemical Risk Assessment Network Meeting** is open to all Network Participants, and will provide an opportunity for Network Participants to discuss current activities, share information and experiences and plan future collaborative activities.

Meeting Goals

- Provide a forum for Network Participants to meet, exchange information and enable bilateral collaboration on topics of mutual interest.
- Share experience from recent Network activities and identify any follow-up.
- Discuss, refine and identify interest in, a range of new collaborative projects leading to tools for the Network to achieve its objectives, for the period to the next Network meeting and beyond.
- Operationalize the Network, including revising the Business Plan and developing communication and resource mobilization strategies
- To inform Participants of the governance arrangements for the Network.
- To advise on Network arrangements such as the collaborative web workspace, growing the Network, etc.

Meeting Outputs

A report of the meeting will be published by WHO on the public Network web site. Following the meeting, a new Business Plan will be published, working groups for the new activities will be convened, and the Network Coordinating Group (including individuals leading Network activities) will be established.

Meeting Schedule

DAY 1	*Wednesday 8 October 2014*
From 09:00	*Registration and coffee*
09:30	Meeting Opening · The meeting will be officially opened and participants welcomed by WHO and ANSES o Dr Maria Neira § *Director of the Department of Public Health, Environmental and Social Determinants of Health, WHO* o Professor Didier Houssin § *Chair of the Board of Administrators of ANSES* · Announcements from the host institution · Election of Co-Chairs · Adoption of Meeting Programme *Document 1 – Meeting Programme*
09:45	Meeting goals and expected outputs
10:00	Directions in the science of risk assessment Keynote Presentation – *Ken Olden*
10:40	*Coffee*
11:00	Identification of emerging risks to human health from chemicals Panel discussion Panel Chair – *Jean-Nicolas Ormsby* Panel Members – *Raquel Duarte-Davidson, Maria Neira, Ken Olden, Berendina van Wendel de Joode*
11:40	About the WHO Chemical Risk Assessment Network
12:00	WHO Chemical Risk Assessment Activities Presentation – *Bette Meek, Alan Boobis* *Document 4 – WHO Chemical Risk Assessment Activities*
12:30–13:30	*Lunch*

13:30	Introduction to first breakout group discussions
13:45	Breakout group discussions (in parallel) · **Biomonitoring** o Breakout Group Chair – *Naima Bradley* · **Gaps and needs in internationally harmonized methodologies** o Breakout Group Chair – *Djien Liem* · **What are the highest priorities for research and method development to improve risk assessment?** o Breakout Group Chair – *Martin Wilks* *Document 9 – Discussion questions*
15:30	*Coffee*
16:00	Breakout group reports
17:00	Methods of working for the WHO Chemical Risk Assessment Network
17:30	*End of Day 1*

Following the close of the meeting at 17:30	*Cocktail reception hosted by ANSES*

DAY 2	*Thursday 9 October 2014*
09:00	*Day 2 announcements*
09:05	Evaluating and expressing uncertainty in hazard characterization Presentation – *Theo Vermeire*
09:35	Combined exposures – stock take of initiatives Panel discussion Panel Chair – *Angelo Moretto* Panel Members – *Djien Liem, Jean-Nicolas Ormsby, Alan Poole, Leon Van der Wal*
10:15	Systematic review and evidence integration methods Presentation – *Christopher Portier*
10:40	*Coffee*
11:00	Risk assessment in Developing Countries Presentation – *Michael Ramsay*
11:30	Proposed collaborative Network activities Overview of the proposals *Document 5 – Project Proposals*
13:00-14:00	*Lunch*
14:00	Introduction to breakout groups to discuss proposed activities
14:10	Breakout group discussions of proposed activities (in parallel)
15:30	*Coffee*
16:00	Breakout group reports and plenary discussion on proposed activities
17:20	Introduction to programme for Day 3
17:30	End of Day 2

DAY 3	*Friday 10 October 2014*
09:00	*Day 3 announcements*
09:05	Capacity building resources · Risk Assessment Training Course Database o Presentation – *Michelle Embry* · Electronic Distance Learning Tool (e-DLT) o Presentation – *Mathuros Ruchirawat*
09:35	Breakout group discussions on: · Capacity Building *Document 6 – Capacity Building* · Network Communications *Document 7 – Network Communications* · Network Resource Mobilization *Document 8 – Network Resource Mobilization*
10:40	*Coffee*
11:00	Breakout group reports
12:00	Review of proposed collaborative activities – plenary discussion
12:30-13:30	*Lunch*
13:30	Next steps for collaborative activities, planning of future Network events and agreement on conclusions of the meeting
14:45	Wrap up
15:00	Close of meeting

ANNEX 2

First meeting of the WHO Chemical Risk Assessment Network
Paris, France

8-10 October 2014

List of participants

Sam ADU-KUMI, Environmental Protection Agency, Ghana

Virunya BHAT, WHO Collaborating Centre on Water and Indoor Air Quality and Food Safety at NSF International, USA

Alan BOOBIS, Imperial College London, United Kingdom

Martine BOURQUI-PITTET, Federal Office of Public Health, Switzerland

Naima BRADLEY, Public Health England, United Kingdom

Elsa CASIMIRO, Portuguese Toxicology Association, Portugal

Peter CHAN, Pest Management Regulatory Agency, Canada

Pavel CUPR, RECETOX, Masaryk University, Czech Republic

Amaia de ARINO, ELIKA-Basque Foundation for Agrofood Safety, Spain

Jules de KOM, Ministry of Health, Suriname

Raquel DUARTE-DAVIDSON, Public Health England, United Kingdom

Salma ELREEDY, ANSES – French Agency for Food, Environmental and Occupational Health & Safety, France

Elaine FAUSTMAN, IRARC, University of Washington, USA

Philippe GLORENNEC, French Society for Environmental Health (SFSE), France

Mary GULUMIAN, WHO Collaborating Centre for Occupational Health at the National Institute for Occupational Health, South Africa

Kathy HUGHES, Health Canada, Canada

Salmaan H. INAYAT-HUSSAIN, Malaysian Society of Toxicology, Universiti Kebangsaan Malaysia, Malaysia

Allan ASTRUP JENSEN, Nordic Institute of Product Sustainability, Denmark (representing Society of Environmental Toxicology and Chemistry - SETAC)

Hanna KARLSSON, Karolinska Institutet, Sweden

Dinara KENESSARY, Kazakh National Medical University, Kazakhstan

Kyu-Bong KIM, Dankook University, Republic of Korea

Djien LIEM, European Food Safety Authority, Italy

Ligia LINDNER SCHREINER, ANVISA- Brazilian National Health Surveillance Agency, Brazil

Mieke LUMENS, Utrecht University, Netherlands

Bette MEEK, University of Ottawa, Canada

Angelo MORETTO, International Centre for Pesticides and Health Risk Prevention, Italy

Mattias OBERG, Swedish Toxicology Sciences Research Center (Swetox) , Sweden

Kumiko OGAWA, National Institute of Health Sciences, Japan

Kenneth OLDEN, National Centre for Environmental Assessment, US EPA, USA

Jean-Nicolas ORMSBY, ANSES- French Agency for Food, Environmental and Occupational Health & Safety, France

Ralph PIROW, Federal Institute for Risk Assessment (BfR), Germany

Christopher PORTIER, Representing the National Toxicology Program within NIEHS, USA

Michael RAMSAY, Pesticides Control Authority, Jamaica

Alisa RICH, University of North Texas Health Science Center, USA

Federico RUBINO, WHO Collaborating Centre for Occupational Health, International Centre for Rural Health, Italy

Mathuros RUCHIRAWAT, WHO Collaborating Centre for Capacity Building and Research in Environmental Health Science and Toxicology at the Chulabhorn Research Institute (CRI), Thailand

Hans SANDERSON, Aarhus University, Denmark

Tiina SANTONEN, WHO Collaborating Centre for Occupational Health, Finnish Institute of Occupational Health (FIOH), Finland

Dimosthenis SARIGIANNIS, Aristotle University of Thessaloniki, Greece

Jeffrey Allen STEEVENS, Representing US Department of Defense, Science and Technology Directorate, US Army Corps of Engineers, USA

Robert STEWART, Oak Ridge National Laboratory (ORNL), USA

João Paula TEIXEIRA, National Institute of Health - Environmental Health Unit, Portugal

Mathieu VALCKE, Institut national de santé publique du Québec, Canada

Henk VAN LOVEREN, WHO Collaborating Centre for Immunotoxicology and Allergic Hypersensitivity at RIVM, Netherlands

Berendina VAN WENDEL DE JOODE, WHO Collaborating Centre for Occupational and Environmental Epidemiology and Toxicology, Central American Institute for Studies on Toxic Substances (IRET), Costa Rica

Theo VERMEIRE, National Institute for Public Health and the Environment (RIVM), Netherlands

Christopher WEIS, National Institute of Environmental Health Sciences (NIEHS), USA

Martin WILKS, Swiss Centre for Applied Human Toxicology, Switzerland

Hae Jung YOON, Ministry of Food and Drug Safety Evaluation, Republic of Korea

Marina ZEMLIANOVA, Federal Scientific Center for Medical and Preventive Health Risk Management Technologies, Russian Federation

Kyriakoula ZIEGLER-SKYLAKAKIS, Secretariat of the Commission for the Investigation Of Health Hazards of Chemical Compounds in the Workplace Area (MAK Commission), Germany

NON- GOVERNMENTAL ORGANISATIONS IN OFFICIAL RELATIONS WITH WHO

Alan POOLE, European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC), Belgium

Michelle EMBRY, International Life Sciences Institute, USA

Elaine FAUSTMAN, International Union of Toxicology, USA

OBSERVERS

Karin ASCHBERGER, European Commission Joint Research Centre, Italy

George FOTAKIS, European Chemicals Agency, Finland

Tuomo KALLE KARJALAINEN, DG Research and Innovation, European Commission, Belgium

Leon VAN DER WAL, Organisation for Economic Co-operation and Development (OECD) Secretariat, France

SECRETARIAT

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ANNEX 3

Project proposals overview – Presentation by Carolyn Vickers (WHO Secretariat)

Introduction

- Commenced with 15 projects
- 5 new topics were specifically added, a few were merged
- We shouldn't forget some ideas raised in the group discussions on Day 1 (e.g. for a developing country subgroup, update the WHO HHRA Toolkit)
- Only a few generated less support, for varying reasons, e.g. not enough experience yet to develop a framework
  = a significant body of work proposed

How to share the work?

- Volunteer institution to lead (e.g. database development which requires capacity and ongoing resources).
- WHO CCs or NGOs in official relations lead (where it fits in the agreement they have with WHO)
- Production of WHO documents or meetings etc need to be led by WHO

Project/product/proposed lead institution

- (1) Principles + methods for immunotox multiwalled carbon nanotubules/EHC or toolkit tbc/WHO CC (RIVM) but as the product is "normative" WHO needs to be involved.
- (3) Framework for prioritization of unregulated chemicals/products need to be clarified/received lesser support in the group discussion, do the 2 proponents want to collaborate and invite any others interested?
- (4) Update of IPCS CSAF guidance/WHO/IPCS guidance/WHO
- (5) Impact of Occ and Env Chemical Exposure on Drug Metabolism in Exposed Populations/database or technical report/proponent was not able to participate and discussion was not conclusive = WHO to discuss with proponent if they want to do further work on their proposal and circulate to see if there are interested collaborators.
- (6) Unconventional shale gas extraction etc/database/collaboration between U Nth Texas and Kazakhstan?, see if others are interested to join
- (8) Childhood obesity/data sharing/NTP to share the results of their project currently underway
- (9) Framework for integrating measurements at molecular level/framework document/group 2 thought more experience needed = defer
- (10) Tiered framework for exposure/framework to be published by ECETOC or WHO (tbd)/NGO in official relations (ECETOC) or WHO (tbd)
- (11) Global capacity building in RA through use of an electronic distance learning tool/ training + capacity building/ WHO CC (CRI Thailand)
- (12) Post-graduate training course on RA/training + capacity building (WHO CC NIOH South Africa)
- (New project, includes 13, 14, 15) Working Group on Capacity Building for Risk Assessment/capacity building, some products proposed but the Group needs to define/NGO in official relations (ILSI – HESI)

- Another CB activity needs to be a Network subgroup for developing country collaboration/products to be defined by the institutions/WHO to convene
- (16) Emerging and newly identified risks/products need further scoping/needs further discussion but sounds like WHO involvement expected
- (17) Uncertainty in risk characterization and communication/WHO guidance, but the exact topic needs further discussion/WHO
- (New project) Biomonitoring/WHO guidance, needs further scoping/WHO
- (New project) Combined exposures/coordinating forum for institutions leading methods development projects/WHO convene but support of a volunteer to help organize would be very welcome (rotated?)
- (New Project) Systematic Reviews/collaborative event (could be a meeting) to share experience, case studies, strengths and weaknesses of different approaches/to be decided, WHO would like to be involved, needs more discussion with the interested institutions
- (New project) Informatics – separate project or an approach to be implemented in other projects?

A note on the projects where WHO is expected to lead

- There are too many for us to manage at once, so we need to further scope and prioritize, in consultation with the proponent and Network participants.
