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Workshop Report: OECD Workshop on the Best Practices in Assessing the Social Costs of Selected Chemicals

30-31 August 2017, Ottawa, Canada

Series on Risk Management
No. 42

An Annex document containing the Presentations from this event is available with the cote ENV/JM/MONO(2018)22/ANN1

This document is also available as a Working Document of the Working Party on Integrating Environmental and Economic Policies coded ENV/EPOC/WPIEEP/JM(2017)7/REV1

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Workshop Report: OECD Workshop on the Best Practices in Assessing the Social Costs of Selected Chemicals

30-31 August 2017, Ottawa, Canada

IOMC
INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS
A cooperative agreement among FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO, World Bank and OECD

Environment Directorate
ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT
Paris 2018

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Note from the secretariat

This document presents a report on the workshop on Best Practices in Assessing the Social Costs of Selected Chemicals that was held in Ottawa, Canada on 30-31 August 2017. The workshop was organised in co-operation between the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology and the Working Party on Integrating Environment and Economic Policies, under the Environment Policy Committee, and was hosted by Health Canada.

The corresponding annex containing the presentations from the workshop is available with the cote: ENV/JM/MONO(2018)22/ANN1

The OECD gratefully acknowledges financial support for this project from the European Commission.

Workshop Report: Best Practices in Assessing the Social Costs of Selected Chemicals

Date: 30-31 August 2017

Location: Ottawa, Canada

Introduction and purpose of workshop

In the context of chemicals management, both in terms of establishing and maintaining government chemicals management programmes, and in terms of enacting risk management measures on specific chemicals, there remains a need to assess the socioeconomic impacts of these activities and the costs of inaction.

OECD's Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology and the Working Party on Integrating Environment and Economic Policies under OECD's Environment Policy Committee are co-operating on a project to develop better methods for quantification and monetisation of morbidity and environmental impacts of chemicals, and to make estimates of the social costs of these impacts of selected chemicals. This work contributes to an EU-financed project on "Supporting the socio-economic analysis of chemicals by allowing a better quantification and monetisation of morbidity and environmental impacts" – SACAME.

As part of this project, a first workshop was held in Helsinki on 6-8 July 2016. The workshop aimed to identify the current status of practice and methodologies for cost benefit analysis of risk management measures and frameworks addressing the human health and environmental impacts of chemicals in OECD Member Countries. It focused on the methods currently used across jurisdictions and intergovernmental organisations. Information regarding this workshop, including published background papers, is available on the OECD website at: http://oe.cd/sacame.

One of the recommendations of the workshop was that a follow-up workshop should be held to compare cases, drawing upon experience from chemicals already undergoing risk management activity in more than one country in order to help compare approaches, apply methodologies and learn lessons.

Through the sharing and analysis of concrete case studies, this workshop had the objective to discuss best practices in assessing the social costs of management of selected chemicals. Social costs include both private costs (such as costs to business) and externalities (such as the cost to society of environmental pollution). The workshop focused mainly on valuation of the benefits to society of managing chemicals but also included discussion of the valuation of the costs to business in the context of the case studies.

Discussion included: summary of the main endpoints of concern (human and/or ecological); summary of the uses targeted by the risk management activity; if it was possible to value the endpoints of concern; what were the data gaps or methodological gaps in the economic assessment(s); what were differences in the endpoints or methods used in the valuation

between countries; how can the economic valuation be improved; how did the economic assessment inform the regulatory decision-making?

The workshop also identified future work and activities in this area and the general format for an on-going forum for risk management discussions, including on socioeconomic analysis, at the OECD.

Participants

The workshop was attended by experts nominated by Australia, Belgium, Canada, Denmark, Germany, Korea, Netherlands, Norway, Switzerland, United Kingdom, United States, the European Commission, representatives of the Business and Industry Advisory Committee (BIAC), United Nations Environment Programme (UNEP), United Nations Institute for Training and Research (UNITAR) and NGOs. It was also attended by a number of academics and the OECD Secretariat. The list of the participants is attached to this document as Appendix 1.

Format of the workshop

The workshop focused on the discussion of case studies, supported through the development of background papers prepared for the workshop, and consisted of presentations from member countries, industry and academics (Agenda attached as Appendix 2, and presentations attached as ANNEX 1). Five cases were discussed (mercury containing compounds, formaldehyde, phthalates, PFOA and salts, NMP) along with a separate paper discussing horizontal learnings. Each case study discussion began with examples of risk management measures taken, or being developed, in a country and the socioeconomic assessment that informed regulatory decision-making. This was followed by the presentation of a background paper providing a broader overview of valuation approaches that had been taken across available examples for the particular case. This included highlighting which endpoints were targeted for risk management, which endpoints were valued, any variation in valuation between approaches and opportunities for improving valuations. This presentation of the background research was followed by the intervention of discussants and an open discussion with the workshop participants. The six background papers prepared for the workshop are expected to be published as OECD environment working papers.

Selection of the five case studies

In order to select case studies for discussion at the Ottawa workshop, substances which have been risk managed in different countries, with available supporting economic analysis, were considered. It was aimed to select substances which would provide insights into different health and ecological endpoints, various types of regulated uses, and where possible to have an economic analysis supporting regulation from one or more countries. The selection also provided an opportunity to have cases which are retrospective for some countries and others which are prospective for other countries.

Highlights from sessions

Opening session

Eeva Leinala (OECD), Nils Axel Braathen (OECD) and Andrew Beck (Health Canada) welcomed the participants. This was followed by a keynote address by James Hammitt (Harvard University) which provided an overview on assessing the social costs of chemicals and highlighted the challenges of applying conventional economic approaches to the valuation of health risks of chemicals.

Mercury-containing compounds case study

(Chaired by Hugo Waeterschoot, Eurometaux)

Mercury was chosen as a case study as it provides an opportunity for comparative analysis of valuation approaches between jurisdictions within a more data-rich environment than possible with other chemicals.

To begin the session, Joe Devlin (Environment and Climate Change Canada) presented Canada's approach for regulating products that contain mercury and the associated cost-benefit analysis that informed the regulation. An approach was also presented by Christoph Rheinberger (European Chemicals Agency) in regards to the EU's experience in restricting mercury in certain products.

Following the regulatory examples, Richard Dubourg, a consulting economist from The Economics Interface presented a background paper comparing approaches that had been applied for regulating mercury and the associated economic analysis. James Hammitt (Harvard University) and Vic Adamowicz (University of Alberta) presented prepared comments priority to an open discussion with workshop participants.

Summary points from the mercury-containing compounds case study discussion:

- Although this is a relatively data-rich case study, the mercury impact pathway is complicated and differs between uses:
  - Only 3 (older) dose-response studies are driving the quantification for IQ impacts.
  - Almost every valuation used the same study on impact of IQ on US market wages as a proxy, usually without any kind of application of benefit transfer corrections.
- Other approaches can be used in regulatory contexts, such as cost-effectiveness approaches, in order to rank regulatory approaches, but such analyses cannot tell if new regulation is better than status quo.
- Environmental impacts could have not been valued.
- Uncertainties discussed include:
  - Likelihood of being able to accurately value the impact of 1 IQ point drop.
  - Use of earnings for valuation (If everyone's IQ goes up, do we all get better jobs and better pay? Can a marginal IQ loss be linked to a marginal reduction in lifetime earnings?).

- Should WTP to avoid an IQ loss be used instead of earnings losses, even if there is uncertainty as to why the few available WTP estimates are lower than estimates earnings losses?
- Should new valuation studies move away from valuation of IQ losses to valuing cognitive impacts more broadly?
- Inclusion of cardiovascular effects – there is uncertainty regarding possible confounding factors, but if such effects are included, they would tend to dominate valuation estimates, due to the large social costs of the mortalities caused by cardiovascular diseases.
- Often ecosystem lag was not included or the assumptions used were not clear.
- Distributional impacts were not always accounted for.

Formaldehyde case study

(Chaired by Michael Donohue, Health Canada)

This substance was chosen as the United States is implementing regulations on emission standards for formaldehyde and composite wood products, informed by a socioeconomic assessment (SEA), and also because this substance has been risk managed in other countries or a risk assessment activity is on-going. Therefore, the US learnings and experience in conducting a SEA for this particular regulation could be prospectively transferred to other countries.

Cody Rice (US EPA) began the session by introducing the experience of the United States in setting emission standards for composite wood products. This was followed by the presentation of the background paper on formaldehyde and valuation by Alistair Hunt (University of Bath) with prepared comments by Maureen Cropper (University of Maryland) and Rana Roy a consulting economist.

Summary points from the formaldehyde case study discussion:

- A key observation from the discussion on formaldehyde was that although this is a well-studied substance, with relatively large amounts of documented health effects data and concentration-response relationships, it is still difficult to actually measure benefits and carry out a CBA.
- Communication of the importance of effects whose benefits cannot be quantified is a critical issue. As the "numbers" tend to drive decision-making, how can communication of unquantifiable benefits be improved to reduce perception of the precision of the quantifiable benefits?
- Consider conducting break-even analysis as additional approach.
- Uncertainties discussed include:
  - Lack of coverage of breadth of health endpoints in the valuations and no data on environmental impacts.
  - There was uncertainty in asthma dose-response relationships and in how to do benefits transfer of WTP from adults to children for asthma. However, if valuation for this endpoint was included, it drove the quantitative estimates. When asthma was not quantified the resulting quantifiable net benefits were negative and led to known underestimation in benefits that still drove decision-making.

- How to do benefit-transfer between different types of cancers and the lack of WTP studies on some types of cancers.
- Consideration of correct discount rate (3% vs 7%); from a social cost perspective, 7% is very high.
- It was noted that it is difficult to measure the impact of administrative requirements – how does reducing these requirements change the benefits and effectiveness of a risk management rule?
- Relying on self-reported costs to industry stemming from a regulation can introduce a bias.

Phthalates case study

(Chaired by Stavros Georgiou, Health and Safety Executive, United Kingdom)

Phthalates were chosen to be part of the project due to regulatory activity on this group of substances in a number of countries. In particular, SEAs are available for the development of restrictions in the European Union for DEHP, BBP, DBP and DIBP for various uses, including toys and childcare articles. There are also applications for authorisation of the continued use of various phthalates which contain SEAs conducted by the industry. Finally, there are studies examining certain economic benefits of regulating phthalates in the public literature.

Regulatory experience with this case was introduced by Evgenia Sotyanova (ECHA), who described their experience developing SEA supporting restricting phthalates in the EU. Mike Holland (Ecometrics Research and Consulting) then presented the background paper describing the various approaching taken to value the benefits of regulating phthalates and other endocrine disrupting compounds. This was followed by prepared comments from Anna Alberini (University of Maryland) and Leo Trasande (New York University).

Summary points from the phthalates case study discussion

- There have been number of studies on EDC's valuation undertaken in last decade based on top down (e.g. attributable fraction) and bottom up (e.g. impact pathway) approaches.
- Problem of attribution of disease burden to specific phthalates is common and the quality of association between specific phthalates is variable – hence what is the share eliminated if exposure is reduced consequent on a specific phthalate regulation?
- A focus on the effects for which there is good data may mean omission of important effects for valuation.
- In the REACH example of restrictions on 4 phthalates in articles, the main challenges for impact assessment related to the valuation of benefits, including issues related to the robustness of disease burden estimation, lack of strong evidence on causality, and questions over timing (latency) of effects.
- The REACH example demonstrated an approach for "break even" analysis also using data from industry on costs and an approach to incorporate uncertainty analysis.
- There have been attempts to incorporate probability of causation as well as multidisciplinary expertise in assessing benefits.
- Other elements discussed:
  - The broad range of WTP values for same/similar endpoints.

- There is a need for better incorporation and measurement of "utility" losses (current studies are largely based on Cost-of-Illness and do not include disutility and discomfort of illness).
- Additional dose-response functions are needed for more of the effects and also for a greater number of the phthalates.
- Improvements are needed in the presentation of uncertainty as the meaning and validity of uncertainty ranges is not always clear.

PFOA and salts case study

(Chaired by Cody Rice, US EPA)

PFOA was chosen as a case study in particular because of its persistence, bioaccumulative and toxic (PBT) properties and the challenge in assigning economic values to regulatory actions stemming from environmental concerns. In addition, this group of substances was chosen due to a regulation in the EU (Restriction under REACH for all uses) and the availability of the accompanying SEA. Also, PFOA and its salts have been regulated in numerous other jurisdictions and leading industry has already completed the shift away from their manufacture and use voluntarily, and there is an on-going proposal to list this substance on the Stockholm Convention, therefore subject to worldwide risk management action. SEA information is being collected for the listing purposes and will information actions.

Karen Thiele (Federal Environment Agency, Germany) introduced the EU approach to restricting PFOA and its salts and the associated SEA. Following this, Silke Gabbert (Wageningen University & Research) presented the background paper and potential approaches for improving valuation for PBT substances. This was complemented by prepared comments from Anthony Footitt (Risk & Policy Analysts) and Kai Schubert (FluoroCouncil).

Summary points from the PFOA and salts case study discussion

- There are only few quantitative cost assessments for use and non-use scenarios of PFOA and its salts. For those cases where quantitative assessments are available, the external costs and benefits of technical and regulatory measures to emission reduction are usually ignored. If external cost components are considered, they are expressed in non-monetary terms.
- The REACH restriction proposal was primarily based on PBT concern of PFOA and the environment and human health impacts were not quantified due to the broad scope of the proposed restriction and large data gaps. A cost-effectiveness analysis based on emission volumes eliminated under a phase-out or ban yielded estimates in the same order of magnitude as other restrictions on PBT(-like) substances under REACH.
- There are opportunities for improving impact assessment and impact valuations, which require focusing attention on the stock pollution patterns of PFOA. Specific attention should be given to strengthening trans-disciplinary collaboration to enhance integrated modelling.
- In addition, collecting comprehensive quantitative cost data along the entire value chain to determine social cost in a more comprehensive manner was identified as an additional SEA improvement opportunity.

- There is an opportunity for possible enhancements of cost-effectiveness analysis in these challenging PBT cases that involve wide-dispersive use, long-range transport, global fate, and large data gaps related to quantitative damage costs and benefits. One suggestion was to compare the cost-effectiveness of restrictions imposed on different sectors that may have different release volumes and cost profiles, or to compare the cost-effectiveness of different restriction implementation schedules.

NMP case study

(Chaired by Thea Marcelia Sletten, Norwegian Environment Agency)

1-Methyl-2-pyrrolidone (NMP) was chosen as a case study as a restriction is being developed for NMP in terms of occupational exposure limits within the EU and also the US EPA has published a proposed rule for regulations of methylene chloride and NMP in paint and coating removal. Both of these risk management activities are in progress and include economic analysis as supporting information. Therefore, this case study gave an opportunity to share learnings to date.

Rob Jongeneel, National Institute for Public Health and the Environment, the Netherlands introduced the case study with experience in restricting NMP and its salts under REACH. This was followed by a presentation by Cody Rice of the US EPA regarding the approach taken for the US proposed rule. The background paper, examining approaches used for economic valuation of risk management measures related to NMP was presented by Alistair Hunt, University of Bath, with prepared comments following from Milan Ščasný, Charles University and Roy Brouwer, University of Waterloo.

Summary points from the NMP case study discussion

- NMP is an example of a data-poor substance for which the risks related to the different health outcomes were highly uncertain, and the dose-response functions have not been quantified at present time.
- Both cases identified risks from NMP, but the number of cases of illness suspected to be caused by NMP has not been quantified. The US EPA chose a break-even analysis using specific health outcomes linked to the identified risks or endpoints, while the EU chose a cost-effectiveness approach. Both approaches are useful, however, cost-effectiveness studies can only be used to rank risk management options.
- A break-even analysis can be used to evaluate the likelihood of a regulation yielding net benefits. However, it is difficult to reach a robust conclusion unless the percentage of the population at risk having to experience adverse health effects to offset the costs is very high or very low.
- The disutility part of the valuation factor is, in many cases, the dominant part of the valuation factor. Using only COI and/or productivity loss as a valuation factor should thus be avoided where possible, as it is not a good indicator for the social value of avoiding an adverse health effect.
- If only a small part of the benefits/health impacts is quantified, this can give a highly skewed picture of the net benefits. In light of this, a few participants indicated that it might be preferable with no quantification instead of a partial one, if the main contributors to the benefits are missing.
- Experience from other fields, like climate change, could be utilised, for example probabilistic modelling and using confidence indicators.

Horizontal learnings, general discussions on conclusions

(Chaired by Matti Vainio, ECHA)

These two sessions were combined and began with a presentation of a horizontal analysis of the five cases by Ståle Navrud (Norwegian University of Life Sciences). This was followed by prepared comments on horizontal learnings by Alan Krupnick (Resources for the Future) and Lisa Robinson (Harvard University). Then Rana Roy (Consulting Economist) presented thoughts on general conclusions to open the discussion on conclusions from the discussion of the case studies.

Summary points from the horizontal learnings and general discussions on conclusions

Following the presentations, there was a wide-ranging general discussion on learnings and key uncertainties, and also future areas of work. The following highlights are organised across these themes.

Learnings and key uncertainties

- There is a lack of quantified information on health and environmental impacts of regulation. The evidence-base for valuations and the information on the impacts of chemicals is incomplete and both factors impede the conduct of the CBA. However, the lack of exposure data and dose-response functions are often the major uncertainty.
- Environmental impacts and endpoints are typically not quantified or valued. There are estimates of economic values for some environmental goods but these need to be translated to values of ecosystem services.
- Health impacts and endpoints: A variety of approaches are used but valuations are likely underestimates as typically pain and suffering (disutility) costs are not included.
- An impact-pathway approach or a damage-function approach is used in most case studies, but often in a simplified form with the use of expert assessments and break-even analysis.
- Both break-even analyses and cost-effectiveness analyses are helpful approaches, as you can circumvent the need for a dose-response function.
- Value transfers and other extrapolations are often done without proper adjusting (different geographical areas, between adults and children, across "similar" types of effects, across different time periods).
- For some critical reference data sets there is reliance on outdated studies.
- In a regulatory context, the approach used needs to be fit for purpose, focus on the decision context, be proportional and relevant, while taking into account the type of information that is available to do the analysis.
- Trans-border life-cycle effects of chemicals and the global versus domestic benefits are not considered.
- Communication of uncertainties needs improvement in order to reduce over-confident assertions of typically incomplete valuations.

- It is very helpful to share case studies and approaches used in different regulatory contexts in order to learn from other practitioners and improve application of approaches and methods.

Future opportunities

- Identify the potentially most important health and environmental impacts in terms of aggregate economic benefits with a focus to improve the quantification of these impacts.
- Carry out new economic valuation studies across different countries.
  - Health endpoints: Focus on stated preference studies of WTP to avoid disutility from quantified acute and chronic morbidity impacts; including disutility of non-fatal cancer types and their treatments.
  - Environmental endpoints: Focus on effects on ecosystem services; non-use (passive use) values could be potentially large (due to large population affected).
- Improve guidance for benefit transfer including how to better communicate uncertainty.
- Conduct retrospective analysis to better understand sources of under- or over-statement and improve analytical approaches and reporting requirements within regulations.
- There is an opportunity to take advantage of quality-of-life measures used in public health and medicine as proxy information and over the longer term develop a valuation function to better approximate proxies for WTP for avoiding various diseases from these values.
- Develop methodology to ensure consistency in estimating costs for industry
- Improve treatment and communication of uncertainties, especially how to best present the non-quantified or non-monetised impacts and how to describe assumptions and other uncertainties to decision-makers.
- There is a need for a specific space to share best practices among authorities, including continuing to improve quantification of the benefits of regulation and to improve the understanding of costs of regulation. This should also link to work on analysis of alternatives.
- Consolidation of valuation databases and resources would be helpful.
- Probability-based risk assessments would provide a better basis for socioeconomic assessments than many approaches currently being used.
- Reassessments of the appropriateness of discount rates currently in use could be useful.

Discussion on a future on-going forum for risk management discussions at OECD

(Chaired by Eeva Leinala, OECD)

Recommendations for further work

At the previous workshop in Helsinki, one outcome was the recommendation to establish a regular, on-going forum to share risk management case studies, including risk management approaches and associated socioeconomic impact assessment, to inform decision-making. This forum would allow to:

- Share experience in chemicals management, including identification and documentation of best practices and practical approaches. Also, possible identification of opportunities for prospective collaborative work.
- Share case studies, to derive "lessons learned". Case studies could be developed from activities in countries and address:
- Health and/or environmental impacts of regulation, including valuation of impacts;
- Cost of regulating substances, including the technical and economic feasibility in the analysis of alternatives;
- Possible learnings for similar regulatory activities in other countries or with similar substances.
- Identify common challenges leading to joint information or methodology development.

Following the Helsinki workshop, it was agreed by the Joint Meeting that the Ottawa workshop could be a first step towards establishing such a forum and that the structure of an on-going forum could then be established.

At the Ottawa workshop, the OECD Secretariat proposed what such a forum could be and workshop participants generally agreed that a forum for regulators with the standard OECD composition (country representatives, industry (BIAC), NGOs coordinated through EEB and invited experts, depending on topic) which would meet face-to-face periodically (e.g. a yearly basis) under the scope outlined above (paragraph 25) would be useful. Topical workshops could also be identified for broader participation.

It was noted that the measure of the success of such a forum would be the increased number and quality of CBAs to inform regulatory decision-making.

It is recognised that there are other activities underway at the OECD related to risk management, including the conduct of a coordinated valuation study and the forum for regulators under the Ad hoc Group for Substitution of Harmful Chemicals. As these activities move forward, it will be necessary to build on cross-linkages between the groups.

APPENDIX 1: PARTICIPANTS LIST
OECD Workshop on Best Practices in Assessing the Social Costs of Selected Chemicals

Ottawa, Canada, 30 August – 1 September 2017

All Sessions

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Mr. Muhannad MALAS	*Toxics Program Manager*

Harvard University

Professor James K HAMMITT	*Professor of Economics*
Ms. Lisa ROBINSON	*Center for Risk Analysis and Center for Health Decision Science*

Maryland University

Professor Maureen CROPPER	*Professor Department of Economics*

Norwegian University of Life Sciences (NMBU)

Professor Ståle NAVRUD	*Professor of Environmental and Resource Economics* *School of Economics and Business*

NYU School of Medicine

Mr. Leonardo TRASANDE	*Associate Professor of Pediatrics & Environmental Medicine, NYU School of Medicine Pediatrics*

Resources for the Future

Professor Alan KRUPNICK	*Senior Fellow and Director Quality of the Environment Division, Centre for Energy Economics & Policy*

Risk & Policy Analysts Limited

Mr. Anthony FOOTITT

The Economics Interface Limited

Mr. Richard DUBOURG

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Mr. Vic ADAMOWICZ	*Professor; Vice-Dean* *Department of Resource Economics and Environmental Sociology*

University of Bath

Dr. Alistair HUNT	*Research Fellow in Environmental Economics* *Department of Economics and International Development*

University of Maryland and FEEM, Italy

Dr. Anna ALBERINI	*Department of Agricultural and Resource Economics*

University of Ottawa, Telfer School of Management

Professor Kevin BRAND

University of Waterloo, Canada

Professor Roy BROUWER	*Executive Director* *Water Institute*

Wageningen University

Dr. Silke GABBERT	*Associate Professor* *Social Sciences*	

OECD/OCDE

Mr. Nils Axel BRAATHEN	*Principal Administrator* *ENV/EPI*	
Ms. Eeva LEINALA	*Principal administrator* *ENV/EHS*	

Other/Autre

Dr. Rana ROY	*Consulting*	*Economist*

APPENDIX 2: Workshop Agenda

OECD Workshop: Best Practices in Assessing the Social Costs of Selected Chemicals -- AGENDA

Date: 30-31 August 2017[1]

Location: **Ottawa, Canada**

Background:

OECD's Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology and the Working Party on Integrating Environment and Economic Policies under OECD's Environment Policy Committee are co-operating on a project to develop better methods for quantification and monetisation of morbidity and environmental impacts of chemicals, and to make estimates of the social costs of these impacts of selected chemicals. This work contributes to an EU-financed project on "Supporting the socio-economic analysis of chemicals by allowing a better quantification and monetisation of morbidity and environmental impacts" – SACAME.

As part of this project, a workshop was held in Helsinki on 6-8 July 2016, hosted and co-financed by the European Chemicals Agency, ECHA, and with additional financing provided by the American Chemistry Council. Information regarding this workshop is available on the OECD website at: http://www.oecd.org/environment/tools-evaluation/sacame.htm.

One of the recommendations of the workshop was that a follow-up workshop should be held to compare cases drawing upon experience from chemicals already undergoing risk management activity in more than one country in order to help compare approaches, apply methodologies and learn lessons.

Objective:

Through the sharing and analysis of concrete case studies, this workshop has the objective to discuss best practices in assessing the social costs of management of selected chemicals. Social costs include both private costs (such as costs to business) and externalities (such as the cost to society of environmental pollution). The workshop will focus mainly on valuation of the benefits to society of managing chemicals but also include discussion of the valuation of the costs to business in the context of the case studies.

Discussion will include: summary of the main endpoints of concern (human and/or ecological); summary of the uses targeted by the risk management activity; if it was possible to value the endpoints of concern; what were the data gaps or methodological gaps in the economic assessment(s); what were differences in the endpoints or methods used in the valuation between different the economic assessments between countries; how can the economic valuation be improved; how did the economic assessment inform the regulatory decision-making?

[1] NOTE: The workshop will be followed by a ½ day meeting on the morning of Friday 1 September on the OECD project on conducting a coordinated valuation study for endpoints related to chemicals. Please contact the Secretariat for more information if you wish to participate in that meeting.

Wednesday 30 August 2017		
Opening Session		
8:30 - 9:00	Arrival and registration	
9:00 – 9:15	Welcome and introduction by OECD and Canada	
9:15 – 9:45	Keynote presentation – **James Hammitt**, Harvard University	
Mercury-containing Compounds Case Study Chaired by **Hugo Waeterschoot**, Eurometaux		
9:45 – 10:00	• Introduction to the case study by Canada, based on their experiences o What did the regulation target and why; experience in conducting the associated SEA; particular challenges	**Joe Devlin**, Environment Canada
10:00 – 10:15	• EU presentation on experience in restricting mercury under REACH	**Christoph Rheinberger**, European Chemicals Agency
10:15 – 10:25	• Q&A and open discussion	
10: 25 – 10:45	**Coffee break**	
10:45 – 11:05	• Presentation of a background paper comparing approaches for mercury o Which endpoints were targeted, which endpoints were valued, variation in valuation between approaches, opportunities for improving valuations.	**Richard Dubourg**, The Economics Interface
11:05 – 11:35	• Prepared comments	**James Hammitt,** Harvard University and **Vic Adamowicz**, University of Alberta
	• Q&A and open discussion	
12:00 – 13:15	**Lunch**	
Formaldehyde Case Study Chaired by **Michael Donohue**, Health Canada		
13:15 – 13:35	• Introduction to case study by the United States based on their experience in setting emission standards for composite wood products. o What did the regulation target and why; experience in conducting the associated SEA; particular challenges	**Cody Rice**, US EPA
13:35 – 13:45	• Q&A and open discussion	
13:45 – 14:05	• Presentation of a background paper regarding approaches for formaldehyde	**Alistair Hunt,** University of Bath

	○ Which endpoints were targeted, which endpoints were valued, variation in valuation between approaches, opportunities for improving valuations.	
14:05 – 14:35	• Prepared comments	**Maureen Cropper**, University of Maryland and **Rana Roy,** Consulting Economist
14:35 – 15:00	• Q&A and open discussion	
15:00 – 15:30	**Coffee Break**	
Phthalates Case Study Chaired by **Stavros Georgiou**, Health and Safety Executive, United Kingdom		
15:30 – 15:50	• Introduction to case study by ECHA, based on their experience in restricting phthalates under REACH ○ What did the restrictions target and why; experience in conducting the associated SEA; particular challenges	**Evgenia Stoyanova**, European Chemicals Agency
15:50 – 16:00	• Q&A and open discussion	
16:00 – 16:20	• Presentation of a background paper regarding approaches for phthalates ○ Variation in valuation between approaches, opportunities for improving valuations	**Mike Holland**, Ecometrics Research and Consulting – EMRC
16:20 – 16:50	• Prepared comments	**Anna Alberini**, University of Maryland and **Leo Trasande**, New York University
16:50 – 17:30	• Q&A and open discussion	

Thursday 31 August 2017		
PFOA and Salts Case Study Chaired by **Cody Rice**, US EPA		
9:00 – 9:20	• Introduction to case study by Germany based on their experience in restricting PFOA and its salts under REACH. ○ What did the restrictions target and why; experience in conducting the associated SEA; particular challenges	**Karen Thiele**, Federal Environment Agency, Germany
9:20 – 9:30	• Q&A and open discussion	
9:30 – 9:50	• Presentation of a background paper examining approaches for PFOA and its salts ○ Variation in valuation between approaches, opportunities for improving valuation(s)	**Silke Gabbert**, Wageningen University
9:50 – 10:20	• Prepared comments	**Anthony Footitt**, Risk & Policy Analysts, RPA and **Kai Schubert**, FluoroCouncil
10:20 – 10:40	• Q&A and open discussion	
10:40 – 11:00	**Coffee Break**	
NMP Case Study Chaired by **Thea Marcelia Sletten**, Norwegian Environment Agency		
11:00 – 11:15	• Introduction to the case study by the Netherlands based on their experience in restricting NMP and its salts under REACH. ○ What do the restrictions target and why; experience in conducting the associated SEA; particular challenges	**Rob Jongeneel**, National Institute for Public Health and the Environment, the Netherlands
11:15 – 11:30	• US experience in drafting a proposed rule for NMP	**Cody Rice**, US EPA
11:30 – 11:45	• Q&A and open discussion	
11:45 – 12:05	• Presentation of a background paper regarding approaches for NMP ○ Variation in valuation between approaches, opportunities for improving valuations	**Alistair Hunt**, University of Bath
12:05 – 12:35	• Prepared comments	**Milan Ščasný**, Charles University and **Roy Brouwer**, University of Waterloo
12:35 – 13:00	• Q&A and open discussion	
13:00 – 14:00	**Lunch**	

Horizontal Learnings Chaired by **Matti Vainio**, European Chemicals Agency		
14:00 – 14:20	• Presentation of a horizontal analysis of the 5 cases, comparing and contrasting the valuation that was conducted for similar endpoints and/or similar regulated uses to identify opportunities for further harmonisation of approaches.	**Ståle Navrud**, Norwegian University of Life Sciences
14:20 – 14:40	• Prepared comments	**Alan Krupnick,** Resources for the Future, RFF, and **Lisa Robinson**, Harvard University
14:40 – 15:00	Discussion on the extent to which estimated costs could be "representative" for the social costs of other chemicals or groups of chemicals.	
General Discussion on Conclusions Chaired by **Nils Axel Braathen**, OECD		
15:00 – 15:15	Building on the preceding sessions, this session will start with a comment on the cross-cutting conclusions that can be drawn, on any emerging policy implications, and on suggestions for further work.	**Rana Roy,** Consulting Economist
15:15 – 15:45	Open discussion	
15:45 – 16:15	**Coffee break**	
Discussion on a future on-going forum for Risk Management Discussions at OECD Chaired by **Eeva Leinala**, OECD		
16:15 – 17:00	Discussion of potential models for an on-going forum to learn from approaches, share best practices and further advance the practical application of socioeconomic impact assessment of chemicals.	
Closing Session		
17:00 – 17:30	Closing remarks from the host and from OECD.	

ANNEX 1: Workshop Presentations available as ENV/JM/MONO(2018)22/ANN1