

OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic  
Meeting of the Hazardous Substances and Eutrophication Committee (HASEC)  
Hybrid meeting from Madrid (Spain): 28 March – 1 April 2022

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## Terms of Reference for a Study Group on developing new guidelines for the monitoring of biological EFFects of contaminants (SGEFF)

### **The issue and outcomes**

1. The objective of SGEFF is to carry out a revision of guidelines covering general and specific biological effects in the monitoring and assessment of chemical contamination in the marine environment. The revised guidelines will provide a reference point for national monitoring programmes and is relevant for supporting the implementation of harmonised monitoring and assessment methods across the OSPAR and HELCOM regions. The revised guidelines – a common document applicable both for OSPAR and HELCOM regions – will be presented to OSPAR HASEC and HELCOM State and Conservation for approval and incorporation into the relevant monitoring and assessment manuals.

### **Relevance to OSPAR and HELCOM processes**

2. The work will provide an updated suite of methods based on solid scientific basis for the harmonised monitoring and assessment of biological effects. Recommendations in the latest ICES Viewpoint background document (Hylland et al., 2021) are adopted as the scientific framework of SGEFF. The challenge of rapid methodological developments in chemical risk assessment and the application of biological effects methodologies (e.g., resolutions of the NORMAN European network group, updating of the WFD and MSFD, the new EU Chemicals Strategy) requires new efforts to develop and assert also the OSPAR and HELCOM monitoring and assessment strategies (i.e., new biomarkers, bioassays, thresholds, integrated approaches).

3. Under HELCOM this work will feed into the upcoming holistic assessment (HOLAS III), where a review of available biological effects data and test cases is being developed. This will also help to set the scene for addressing the new Baltic Sea Action Plan (BSAP 2021) action HL13 (“By 2028 develop further relevant monitoring for the biological effects of hazardous substances in order to facilitate a reliable ecosystem health assessment”), and to support the broadened role of the Expert Group for Hazardous Substances (EG HAZ).

4. OSPAR initiated the first short- and long-term monitoring methodological developments with selected biological effects methods (biomarkers and bioassays) by producing the first biological effect thresholds (BAC, EAC) at the international level (JAMP, 2007, 2008-09, 2009; SGIMC, 2009; Davies & Vethaak, 2012). Regarding the recent developments in chemical risk assessment, especially concerning so-called emerging contaminants and the effects of mixtures, it is important to update and implement new tools. To achieve methodological harmonization, an efficient utilisation of all the available expertise and bridging the gaps in developments between the different European sea areas is of vital importance; the combination of OSPAR and HELCOM competences in the new SGEFF will tackle efficiently this common challenge.

- a. To establish a time-limited (2022-2024) joint Study Group (ICES/OSPAR) /Drafting Group (HELCOM) to revise guidelines for the monitoring of biological effects of contaminants.
- b. To nominate two co-chairs and 15-20 dedicated experts from OSPAR and HELCOM regions (ca. 10 per region) to carry out the work. The HELCOM EG HAZ Biological Effects sub-group, OSPAR MIME and ICES Working Group on Biological Effects of Contaminants (WGBEC) will be informed to support in the nomination of members.
- c. To draft the new guidelines taking especially into account the new challenges posed by the multi-chemical environment, with recommendations on (i) the application of new biomarkers, bioassays, and sentinel species, (ii) improved guidelines for integrated monitoring, and (iii) drafting of the technical annexes according to the last OSPAR JAMP guidelines (contaminant-specific biological effects, OSPAR Agreement 2008-09, and JAMP 2012).
- d. To strengthen cooperation on the development and implementation of the methodologies between the regions and to ensure the best possible harmonisation taking carefully into account regional specificities, and to provide the outcomes publicly through OSPAR and HELCOM.

## **Background**

5. A large body of publications already exists related to this issue, from basic research to monitoring and assessments reports. These have also been part of the process involved in developing the current OSPAR guidelines, with WGBEC reviewing and periodically revising them (e.g., JAMP guidelines 1997, 2008-09, 2012, Hylland et al., 2021). HELCOM currently does not have a designated monitoring and assessment guideline for this/these methodologies as part of its programme. Reviewing of these methods at regular periods is critical to ensure that all the measured parameters and their threshold values as well as the integration methodologies remain updated and adhere to the latest and best available scientific knowledge applicable at each regional level.

## **Organisation of SGEFF**

6. SGEFF will work through correspondence, video/and telephone conferences and occasional face-to face-workshops, or their hybrid models. Where possible, the group will also link their meetings to existing HELCOM or OSPAR processes (e.g., back-to-back or integrated with EG HAZ or MIME meetings), as well as WGBEC. The expected frequency of the meetings is three per year. The work of the group will also be presented for review at the relevant WG and EG levels in OSPAR and HELCOM. It is emphasized that the majority of the SGEFF members belong also to the above-mentioned WGs and EGs and the planned outcomes of the group are made more achievable by introducing some of the work items to the agendas of the meetings of these groups. The work within SGEFF is therefore seen as truly integrative as it deals with issues that have already received attention at the regional level, this giving significant added value to the group.

## **Delivery of results**

7. An annual short report providing updates of the work completed during the period concerning the terms of reference and the work plan established by the co-chairs. A final, complete report and the new guidelines developed are delivered to both Regional Commissions at the end of the project to be further distributed to the Contracting Parties and other key end-users.

8. The plan for the latest new guidelines (JAMP 2008-2009 and 2012) will be used with the general reminders on the different biomarkers and bioassays of the last JAMP version and the new. A technical annex will be produced for each biomarker.

### Workplan

9. The new guidelines will be completed using reviews of the existing methodological applications and new developments in Europe. An update of the old guidelines can be made if necessary but especially from the existing guidelines, new guidelines will be drafted with new biomarkers, bioassays, new sentinel species, new data integration methodologies based on OSPAR and HELCOM expertise

10. The workplan will follow a stepwise approach, reporting the progress of the work to the relevant WGs and EGs in 2022-2024.

Step 1: To review and list (update) a “core set” of relevant parameters

- To consider the existing guidelines as the fundamental basis of the new guidelines in sediment, water and biota
- To reassess the existing biomarkers and bioassay protocols already published in ICES TIMES series and suggest new developments (analyses, EAC/BAC, new supporting parameters)

Step 2: To update the sampling strategy

- To review the current sentinel species and to consider new ones
- To review current sampling recommendations regarding, e.g., spatial coverage and frequency

Step 3: To optimize the current integrated biological effects approaches in use and to propose new ones

- To consider the new developments in ecological risk assessment (e.g., effect-based methods [EBM] and effect-directed-analysis [EDA]) for potential integrated chemical-biological monitoring application at the regional and sub-regional levels

Step 4: To review the current spatiotemporal assessment procedures in each country and to elaborate these according to different monitoring scenarios

Step 5: To consider a new quality assurance programme (after the BEQUALM)

Step 6: Finalising the new guidelines and their evaluation by the Regional Commissions

11. SGEFF will list its priorities for the implementation of these six steps planned for its period of activity and contributes to the developments by adding new suggestions if it deems it useful.

12. During the process SGEFF also investigates funding opportunities for joint projects among HELCOM and OSPAR partners targeted at further developments within the topic.

### Potential participants identified based on experts involved in current work

13. Potential list of participants dominantly from OSPAR MIME, ICES/WGBEC and HELCOM EG HAZ (targeting circa 20 participants to maintain efficient working procedures). Additional national nominations or alterations are invited. The SGEFF expert group will thus be able to make new proposals if it deems it necessary.

<b>OSPAR MIME &amp; ICES- WGBEC (13)</b>	<b>HELCOM/ EN-HZ- BE WG (9)</b>
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<p><b>Co-Chair: Ketil Hylland</b></p> <p>Ketil Hylland (University of Oslo, Norway)</p> <p>Aourell Mauffret (MIME Vice-Chair, Ifremer, France)**#,</p> <p>Steven Brooks (WGBEC Co-Chairman, NIVA, Norway),</p> <p>Juan Bellas Bereijo, (WGBEC Co-Chairman, IEO, Spain)#,</p> <p>John Bignell (Cefas, United Kingdom)</p> <p>Marta Assunção (Cefas, United Kingdom)</p> <p>Jörn Scharsack (Thünen Institute, Germany)*</p> <p>Michelle Giltrap (Technological University Dublin, Ireland)</p> <p>Hannah Anderson (Marine Scotland Science, United Kingdom)</p> <p>Halldor Palmar Halldorsson (Reykjavik University, Iceland)</p> <p>Dick Vethaak (DELTAIRES, Netherland)</p> <p>Concepción Martínez-Gómez (IEO, Spain)#</p> <p>Susana Galante-Oliveira (University of Aveiro, Portugal)**</p>	<p><b>Co-Chair: Kari Lehtonen</b></p> <p>Kari Lehtonen (Marine Research Centre of the Finnish Environment Institute, Finland)*</p> <p>Raisa Turja (Marine Research Centre of the Finnish Environment Institute, Finland)</p> <p>Nadezhda Berezina (Zoological Institute of Russian Academy of Sciences, Russian Federation)</p> <p>Ulrike Kammann (Thünen Institute, Germany)*</p> <p>Natalja Kolesova (Tallinn University of Technology, Estonia)</p> <p>Ivan Kuprijanov (Tallinn University of Technology, Estonia)</p> <p>Joachim Sturve (Gothenburg University, Sweden)*</p> <p>Elena Gorokhova (S SU ACES Sweden)</p> <p>Zhanna Tairova (Aarhus University, Denmark)*</p>
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