

88

REPORTS AND STUDIES



GESAMP

Joint Group of Experts on the
Scientific Aspects of Marine
Environmental Protection

**REPORT OF THE FORTIETH
SESSION OF GESAMP
Vienna, 9-13 September, 2013**



IMO



FAO



UNESCO



IOC



WMO



UNIDO



IAEA



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UNDP

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Notes:

GESAMP is an advisory body consisting of specialised experts nominated by the Sponsoring Agencies (IMO, FAO, UNESCO-IOC, UNIDO, WMO, IAEA, UN, UNEP, UNDP). Its principal task is to provide scientific advice concerning the prevention, reduction and control of the degradation of the marine environment to the Sponsoring Agencies.

This study is available in English only from any of the Sponsoring Agencies, with the executive summary available in all UN languages.

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Report of the 40th session of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), held at the Vienna International Center, Vienna, Austria, 9 to 13 September 2013.

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Report of the 40th session of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), held at the Vienna International Center, Vienna, 9 to 13 September 2013

0. EXECUTIVE SUMMARY

0.1 **Introduction:** The Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) held its 40th session hosted by the United Nations Industrial Development Organization (UNIDO), in Vienna, from 9 to 13 September 2013. GESAMP was established in 1969 by a number of United Nations organizations as a Joint Group to encourage the independent, interdisciplinary consideration of marine pollution and environmental protection problems with a view to avoiding duplication of efforts within the United Nations system. The main topics considered at this session are described below. GESAMP continues to function with high levels of activity in its working groups which can be sponsored directly by the UN agencies in answer to their science needs. Alternatively, attention for topical and urgent issues is raised through GESAMP's New and Emerging Issues programme with mixed or outside funding; the most recent example being the micro-plastics working group. Nevertheless, sustained and predictable core funding is required and securing this remains a concern for GESAMP and its Executive Committee.

0.2 **Evaluation of the hazards of harmful substances carried by ships (WG 1):** This working group (WG) evaluates, at the request of IMO, the hazards to the environment and human health of bulk liquid chemicals carried by ships, with around 900 hazard profiles currently on record. The hazard profile contains a unique fingerprint of each substance, providing information on 13 separate human health, environmental, and physico-chemical hazard criteria. WG 1 met twice since GESAMP 39,

evaluating 14 new substances to assign full GESAMP Hazard Profiles. GESAMP reviewed and approved the final manuscript of the 2nd edition of GESAMP Reports & Studies No. 64 "*The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships*". GESAMP also reiterated the decision taken at its 32nd session (2001) that the hazard profiles developed by WG 1 should be transmitted by the WG directly to IMO.

0.3 **Review of applications for 'active substances' to be used in ballast water management systems (WG 34):** WG 34 met three times since GESAMP 39, evaluating 14 ballast water treatment systems and reporting its recommendations to IMO's Marine Environment Protection Committee (MEPC). Six of these systems received a recommendation for Basic Approval and five received a recommendation for Final Approval, while two systems were denied a recommendation for Final Approval. Also, the fourth and fifth annual stocktaking workshops were held to review the methodology for evaluation of applications received from industry. In the coming period, WG 34 will prepare the GESAMP approved Methodology for publication in GESAMP Reports & Studies series. It was agreed that the publication should be subject to a GESAMP peer review, supplemented by a limited external peer review.

0.4 **Metals (formerly mercury) Working Group (WG 37):** There has been no activity with this WG since GESAMP 38, the preliminary report of the WG 37 to UNEP, entitled Mercury in the

Aquatic Environment: Sources, Releases, Transport and Monitoring, was completed in 2011. It was agreed that GESAMP will add to, edit and publish the report as a GESAMP/UNEP report. UNEP was prepared to publish the report during the previous session however with the time lapse the funding possibilities have declined. However, an electronic version of a GESAMP/UNEP report will be published. It was also noted that the report has enhanced the Mercury agenda of UNEP towards a legally binding treaty.

0.5 Atmospheric input of chemicals to the ocean (WG 38): A workshop on The Atmospheric Deposition of Nitrogen and Its Impact on Marine Biogeochemistry, which was held at the University of East Anglia in Norwich, United Kingdom, in February 2013, led to the establishment of sub-groups that began the development of nine different scientific papers, covering the latest tasks identified. GESAMP noted that the focus of the WG will be to complete these papers in the period leading up to the next session in 2014. However, the WG also submitted a list of potential further topics for its work, to be considered at GESAMP 41.

0.6 Establishment of trends in global pollution in coastal environments (WG 39): The purpose of this WG is to contribute to the reduction of stress in the coastal ecosystem by providing stakeholders, scientists and society with an objective and global assessment of pollution trends during the last century in sensitive coastal ecosystems. The WG has continued its work on the literature survey and compilation of a bibliographic records database. In addition, a pilot web platform has been developed with the assistance of UNINMAR at the Institute of Marine Sciences and Limnology, National Autonomous University of Mexico (ICMyL-UNAM) with the aim to host and manage the information contained in the database.

0.7 Global assessment of micro-plastics (WG 40): GESAMP 38 established this new WG on inputs, levels, distribution and fate of micro-plastics in the ocean, and potentially the role of micro-

plastics as a pathway for persistent, bio-accumulating and toxic substances entering marine food-webs. WG 40 has attracted wide support from industry, in addition to support from the UN Agencies UNESCO-IOC (as lead), IMO, UNIDO and UNEP. Since GESAMP 39, the WG has held two meetings, and has produced an internal interim report, covering all of the agreed Terms of Reference. The next workshop is planned to take place in the International Conference Centre Seoul, from 22 to 25 July 2014, and the final assessment report will be prepared and launched at the IOC-sponsored 2nd International Ocean Research Conference, Barcelona, Spain, in November 2014. GESAMP also noted the links to other initiatives, including the GEF Transboundary Water Assessment full-sized project, the work of the International Whaling Commission, as well as the Global Partnership on Marine Litter.

0.8 Contribution to the United Nations 'Regular Process' (UNRP): GESAMP received an overview of the developments concerning the UN Regular Process that had occurred since GESAMP 39. In particular, institutional arrangements, funding, past and future work of the Regular Process, its methods of work, as well as the outline of the first World Ocean Assessment (WOA) due in 2014, were presented by the Technical Secretaries of UNESCO-IOC and UNEP. GESAMP noted that progress was being made in regard to the regional workshops and arrangements for the preparation of the assessment itself. There have been adjustments to the timeline of the WOA, and the draft report will be presented in December 2014 and published in 2015. Although GESAMP has no direct input into the WOA, the Group will continue to follow the process with interest. UNEP and IOC continue to provide technical and scientific support to the WOA.

0.9 Contribution to the GEF Transboundary Waters Assessment Programme: This GEF full-size project (FSP) was initiated in January 2013 and is due to run until December 2014. A number of UN Agencies and other organizations are involved, with

UNESCO-IOC having overall responsibility for the Large Marine Ecosystem (LME) and Open Ocean components. GESAMP assisted in the method development, including providing suggestions for indicators of pollution, and is providing direct input to both the LME and Open Ocean components. Since GESAMP 39, the inception meeting for the partners of LME and Open Ocean components has been held (March 2013). GESAMP has undertaken to carry out three elements of the TWA: an assessment of the pollution status of the Open Ocean based on expert-knowledge; an analysis of selected PBTs in plastic resin pellets collected from beaches; and the development of gridded data on floating litter, in LMEs and the open ocean. In addition, GESAMP has contributed to a proposal being considered by the Bay of Bengal Large Marine Ecosystem Project, covering atmospheric inputs of nutrients and dust, linked to WG 38, representing a 'Level 2' assessment in the TWA terminology.

0.10 To support the TWA Project, GESAMP has established a Task Team on Pollution of the Open Ocean, building on the team that produced the 2009 GESAMP Reports & Studies No. 79. GESAMP reviewed the work plan and terms of reference for the Task Team, and noted that the GEF funds available for the Task Team were limited, urging the Sponsoring Organizations to provide additional support, if possible. GESAMP also further revised the table of contents and contributors for the Task Team.

0.11 **Side event on 'Discharge of mine tailings and coastal run-off in the marine environment: effects and impacts', 11 September 2013:** GESAMP and UNIDO organised and UNIDO hosted a special side event entitled "Discharge of mine tailings and coastal run-off in the marine environment: effects and impacts". It was attended by approximately 30 people, with five panelists giving presentations on various aspects of mine tailings in the marine environment.

0.12 **Identification of new and emerging issues regarding the degradation of the marine environment:** several possible issues were discussed. As a result of the discussion during the Side Event, GESAMP agreed to establish a Correspondence Group to develop a scoping paper and possible plan for taking this issue forward, as it was of interest to several sponsoring organizations. It was further agreed that the Correspondence Group would, if possible, try to convene a workshop on this topic before reporting back to GESAMP 41. It was also noted that several of the Sponsoring Organizations would be able to provide some limited financial and in-kind support to this scoping process.

0.13 **Scoping issues:** GESAMP agreed to continue its exploration of the issue of bio-magnification in top predators and its ecological and social implications, including the possibility to organize a GESAMP workshop on bio-magnification, subject to interest from the Sponsoring Organizations. A scoping paper on the relevance of the production of disinfection by-products (DBP) against other inputs of DBPs in the aquatic environment was presented, and an inter-session correspondence group was established to look at developing terms of reference for a possible future working group, as well as potential funding sources and identification of a chair.

الدورة الأربعون (40) للمجموعة المشتركة من فريق الخبراء المعني بالجوانب العلمية لحماية البيئة البحرية والتي عقدت في مركز فيينا الدولي، فيينا، النمسا، من 9 إلى 13 سبتمبر/ ايلول 2013

0. لخص تنفيذي

والمترقب بأن موجز الأخطار الذي قام بوضعه فريق عمل رقم 1 يجب أن ينقل مباشرة من قبل مجموعة العمل إلى المنظمة البحرية الدولية.

3.0 استعراض الطلبات المتعلقة 'بالمواد الفعالة' التي سستخدم في أنظمة إدارة مياه الصابورة (الفريق العامل 34): عقد الفريق العامل 34 ثلاثاً اجتماعات منذ الدورة 39 لفريق الخبراء المشترك، وقام بتقييم 14 نظاماً لمعالجة مياه الصابورة وأبلغ توصياته إلى لجنة حماية البيئة البحرية التابعة للمنظمة البحرية الدولية. وحصلت ستة من هذه الأنظمة على توصية بموافقة مبدئية كما حصلت خمسة أنظمة أخرى على توصية بموافقة نهائية بينما تم رفض حصول اثنتين من هذه التوصيات على الموافقة النهائية. كذلك عُقدت حلقة العمل التقييمية السنوية الرابعة والخامسة لاستعراض منهجية تقييم الطلبات التي تم استلامها من الصناعات، وخلال الفترة المقبلة، سيعمل الفريق العامل 34 على إعداد منهجية النشر في سلسلة التقارير والدراسات التابعة لفريق الخبراء المشترك. هذا وتم الاتفاق على أن يخضع النشر للمراجعة من قبل فريق الخبراء المشترك، علاوة على قيام مجموعة أخرى من الخبراء المستقلين من ذوي الخبرة بالمراجعة أيضاً.

4.0 الفريق العامل المعني بالفلزات (بالزئبق سابقاً) (الفريق العامل 37): لم يكن هناك أي نشاط لمجموعة العمل هذه منذ اجتماع فريق الخبراء المشترك 38. وكان التقرير الأولي لمجموعة عمل 37 المقدم إلى برنامج الأمم المتحدة للبيئة، تحت عنوان الزئبق في البيئة المائية: المصادر والاطلاق والنقل والرصد قد اكتمل في عام 2011. وتم الاتفاق على أن فريق الخبراء المشترك سوف يضيف، ويحرر وينشر التقرير على أنه تقرير لفريق الخبراء المشترك / برنامج الأمم المتحدة للبيئة. وكان برنامج الأمم المتحدة للبيئة قد أبدى إستعداده لنشر التقرير خلال الدورة السابقة إلا أنه مع مرور الوقت انخفضت إمكانيات التمويل. لكن ومع ذلك، فسوف يتم نشر نسخة إلكترونية من هذا التقرير. وقد لوحظ أيضاً أن هذا التقرير قد عزز اجندة برنامج الأمم المتحدة للبيئة الخاصة بالزئبق و المتعلقة بوجود معاهدة ملزمة قانونياً.

1.0 مقدمة: عقد فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية دورته الأربعون 40 التي استضافها برنامج الأمم المتحدة للتنمية الصناعية في فيينا، النمسا خلال الفترة 9 إلى 13 سبتمبر/ايلول 2013. تأسس فريق الخبراء المشترك في عام 1969 من قبل عدد من منظمات الأمم المتحدة كفريق مشترك لتشجيع الدراسات المستقلة متعددة التخصصات لمشاكل التلوث البحري والبيئة البحرية، بغية تجنب تكرار الجهود ضمن منظومة الأمم المتحدة. ويرد أدناه وصف للموضوعات الرئيسية التي بحثت فيها هذه الدورة. ويواصل فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية القيام بوظائفه على مستوى عالي من النشاط وبصفة رئيسية، عبر فرقه العاملة والتي يمكن أن تعمل برعاية مباشرة من وكالات الأمم المتحدة لتلبية احتياجاتها العلمية. وعلى نحو بديل، بوسع فريق الخبراء المشترك إيلاء الاهتمام للفضايا المواضيعية والملحة من خلال برنامج القضايا الجديدة والناشئة التابع له والذي يعتمد على تمويل مختلط أو تمويل خارجي؛ ومن بين الأمثلة الأخيرة على ذلك الفريق العامل المعني باللدائن الدقيقة. وفي كلتا الحالتين، ومع ذلك، يُعتبر التمويل الاساسي المستدام المتوقع أمراً ضرورياً، وتظل مسألة ضمان هذا التمويل من الشواغل الرئيسية لفريق الخبراء المشترك ولجنته التنفيذية.

2.0 تقييم مخاطر المواد الضارة التي تحملها السفن (مجموعة عمل 1): تقوم مجموعة العمل هذه، وبناء على طلب المنظمة البحرية الدولية، بتقييم المخاطر الواقعة على البيئة، وصحة الإنسان من جراء الكميات الكبيرة من المواد الكيميائية السائلة التي تحملها السفن. هذا وقد تم حتى الآن تسجيل موجز مخاطر لقرابة 900 مادة من هذه المواد. ويحتوي موجز المخاطر على السمات الفريدة لأثار كل مادة، مما يوفر معلومات بشأن 13 معياراً منفصلاً للمخاطر المتعلقة بصحة الإنسان والبيئة والعوامل الفيزيائية-الكيميائية لكل مادة. هذا واجتمعت مجموعة العمل 1 مرتين منذ دورة فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية 39، قامت خلالهما بتقييم 14 مادة من المواد الجديدة من أجل معرفة موجز المخاطر لهذه المواد. و قام فريق الخبراء المشترك أيضاً بمراجعته النص النهائي للطبعة الثانية من تقارير ودراسات فريق الخبراء المشترك رقم 64 "مراجعة فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية لإجراءات تقييم المخاطر للمواد الكيميائية المحمولة التي تحملها السفن"، والموافقة على هذا التقرير. كما أكد فريق الخبراء المشترك القرار الذي اتخذ في الدورة 32 (2001) والمترقب بأن موجز الأخطار الذي قام بوضعه فريق عمل رقم 1 يجب أن ينقل مباشرة من قبل مجموعة العمل إلى المنظمة البحرية الدولية.

5.0 السقطة الجوية من المواد الكيماوية في المحيطات (الفريق العامل 38): اسفرت حلقة عمل حول الترسيب الجوي للنيتروجين وأثر ذلك على النواحي الحيوية/جيولوجية/كيميائية (حيويوكيميائية) البحرية، والذي عقد في جامعة إيست أنجليا في نورويتش، المملكة المتحدة، في فبراير/شباط عام 2013، إلى إنشاء مجموعات فرعية بدأت في تطوير تسعة أبحاث علمية مختلفة، تغطي أحدث المهام التي تم تحديدها. أشار فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية إلى أن تركيز الفريق العامل سوف يكون لإستكمال هذه الأبحاث خلال الفترة المؤدية إلى الدورة المقبلة في عام 2014. علاوة على ذلك فقد قدم فريق العمل أيضا قائمة بالموضوعات الإضافية المحتملة لأنشطته، والتي سوف ينظر فيها فريق الخبراء المشترك 41.

6.0 تحديد التوجهات في التلوث العالمي في البيئات الساحلية (الفريق العامل 39): الغرض من هذا الفريق العامل هو المساهمة في الحد من الضغط على النظم الإيكولوجية الساحلية من خلال تزويد الجهات صاحبة المصلحة والعلماء والمجتمع بتقييمات موضوعية وعالمية حول توجهات التلوث أثناء القرن الماضي في النظم الإيكولوجية الساحلية الحساسة. وقد استكملت مجموعة العمل عملها حول حصر ما تم من أبحاث، التي جانب تجميع قاعدة بيانات خاصة بالمراجع. إضافة إلى ذلك، فقد تم تطوير قاعدة إسترشادية على شبكة المعلومات (الإنترنت) بمساعدة الخدمات البحرية العالمية UNIMAR المتواجدة في الجامعة الوطنية لعلوم البحار و البحيرات، المكسيك وذلك بهدف احتواء وإدارة المعلومات الواردة في قاعدة البيانات.

7.0 تقييم عالمي لللدائن الدقيقة (الفريق العامل 40): أسست الدورة 38 لفريق الخبراء المشترك هذا الفريق العامل الجديد المعني بمدخلات اللدائن الدقيقة في المحيطات ومستواها وتوزيعها ومصيرها، ومن المحتمل أيضاً أن يبحث في دور اللدائن الدقيقة كمسار لتواصل دخول المواد السامة والتراكم الأحيائي في شبكات الغذاء البحرية. وقد اجتذبت مجموعة عمل 40 دعماً واسعاً من الصناعة بالإضافة إلى دعم من وكالات الأمم المتحدة، والتي تشمل هيئة اليونسكو- الوكالة الدولية عبر الحكومية للمحيطات (كمنظمة قائدة)، والمنظمة البحرية الدولية، ومنظمة الأمم المتحدة للتنمية الصناعية، وبرنامج الأمم المتحدة للبيئة. ومنذ دورة فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية 39، فقد عقدت مجموعة العمل اجتماعين كما أنها أنتجت تقريراً داخلياً مؤقتاً، يغطي كافة الشروط المرجعية المتفق عليها. ومن المقرر عقد حلقة العمل المقبلة في مركز المؤتمرات الدولي في سيول، في الفترة من 22-25 يوليو عام 2014، علي أن يتم إعداد وإعلان تقرير التقييم النهائي من خلال المؤتمر الدولي الثاني لأبحاث المحيطات الذي سوف يعقد في برشلونه، نوفمبر 2014، والذي يقام برعاية الوكالة الدولية للمحيطات. علاوة على ذلك فقد أشار فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية إلى الصلة بمجموعة أخرى من المبادرات، بما في ذلك المشروع الكامل لمرفق البيئة العالمي لتقييم المياه العابرة للحدود، وأنشطة الوكالة الدولية لصيد الحيتان، فضلاً عن الشراكة العالمية بشأن المخلفات البحرية.

8.0- المساهمة في 'العملية المنتظمة' للإبلاغ التابعة للأمم المتحدة: تمت إحاطة فريق الخبراء المشترك بلمحة عامة عن التطورات المتعلقة بالعملية المنتظمة للإبلاغ التي حدثت منذ الدورة الـ 38 لفريق الخبراء المشترك التي عقدت في مايو/أيار 2011. وبصفة محددة، قام المنسق المشترك للفريق العامل المخصص الجامع المعني بالعملية المنتظمة للإبلاغ عن حالة البيئة البحرية وتقييمها على الصعيد العالمي، بما في ذلك الجوانب الاجتماعية والاقتصادية، قام بعرض الترتيبات المؤسسية، والتمويل، والعمل السابق والمستقبلي للعملية المنتظمة وأساليب عملها كما عرض المخطط العام للتقييم المتكامل العالمي الأول لحالة البيئة البحرية المفترض إنجازه بحلول عام 2014 قد تم عرضها عن طريق السكرتارية الفنية للوكالة الدولية للمحيطات- هيئة اليونسكو وبرنامج الأمم المتحدة للبيئة.

وأشار فريق الخبراء المشترك الي ما تم من إنجازات تتعلق بحلقات العمل الإقليمية والترتيبات اللازمة لإعداد التقييم. وكانت هناك بعض التعديلات على الجدول الزمني للتقييم المتكامل العالمي الأول لحالة البيئة البحرية. وسوف يتم تقديم مسودة التقرير في ديسمبر كانون الأول عام 2014 علي أن يتم نشرها في عام 2015. وعلى الرغم من أن فريق الخبراء المشترك لم تكن له اي مساهمة مباشرة في التقييم العالمي للمحيطات، إلا ان الفريق سوف يواصل متابعة هذه العملية بكل اهتمام. كما يواصل برنامج الأمم المتحدة للبيئة والوكالة عبر الحكومية للمحيطات تقديم الدعم الفني والعلمي للتقييم العالمي للمحيطات

9.0 المساهمة في برنامج مرفق البيئة العالمي لتقييم المياه العابرة للحدود: بدأ مشروع مرفق البيئة العالمي الكامل في يناير 2013 ومن المقرر أن يستمر حتى ديسمبر 2014. ويشارك فيه عدداً من وكالات الأمم المتحدة والمنظمات الأخرى المعنية، ويتولى اليونسكو - الوكالة عبر الحكومية للمحيطات المسؤولية الشاملة عن النظم البيئية البحرية الكبيرة ومكونات المحيط المفتوح. ساهم فريق الخبراء المشترك المعني في الجوانب العلمية لحماية البيئة البحرية في تطوير الأساليب، بما في ذلك تقديم اقتراحات تتعلق بمؤشرات التلوث، التي جانب بعض المساهمات الأخرى المتعلقة بنظم البيئة البحرية الكبيرة وايضا مكونات المحيط المفتوح. ومنذ دورة فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية 39 فقد عقد الاجتماع الأول لكل الشركاء في دراسة النظم البيئية البحرية الكبيرة، ومكونات المحيط المفتوح في (مارس) 2013. وقد تم اتخاذ عدة خطوات من قبل فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية من أجل تنفيذ ثلاثة عناصر تتعلق بمشروع تقييم المياه العابرة للحدود، وهي: تقييم لحالة تلوث المحيط المفتوح على أساس الخبرة المعرفية؛ وتحليل بعض المركبات المختارة من تيريفتالات متعدد البيوتيلين في الكريات الراتنجية البلاستيكية التي تم جمعها من الشواطئ؛ وتطوير شبكة البيانات المتعلقة بالنفائيات العائمة في كل من النظم البيئية البحرية الكبيرة والمحيطات المفتوحة. بالإضافة إلى ذلك، ساهم فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية في اقتراح بجرى النظر فيه من قبل مشروع النظم البيئية البحرية الكبيرة لخليج البنغال، ويشمل مصادر الغلاف الجوي من المواد المغذية والغبار، والمرتبطة بمجموعة عمل 38، وهو ما يمثل تقييم "المستوى 2"، أحد مستويات التقييم في مشروع تقييم المياه العابرة للحدود.

10.0- أنشأ فريق الخبراء المشترك مجموعة عمل معنية بتلوث المحيط المفتوح لدعم مشروع المياه العابرة للحدود، تعتمد على فريق العمل الذي قدم تقارير ودراسات رقم 79 لعام 2009. واستعرض فريق الخبراء المشترك خطة العمل والشروط المرجعية لفريق العمل، وأشار إلى أن الدعم المادي المتاح لفريق العمل من مرفق البيئة العالمي كان محدوداً، وحث المنظمات الراعية لتقديم دعم إضافي إن أمكن. كما نصح أيضاً جدول المحتويات والمساهمين في فريق العمل.

11.0 فعالية جانبية حول صرف مخلفات المناجم و ماء الغسيل السطحي الساحلي في البيئة البحرية: التأثير والآثار "

نظم فريق الخبراء المشترك بالإشتراك مع منظمة الأمم المتحدة للتنمية الصناعية المنظمة فعالية جانبية تحت عنوان "صرف مخلفات المناجم وماء الغسيل السطحي الساحلي في البيئة المائية، التأثير والآثار". قامت منظمة الأمم المتحدة للتنمية الصناعية بإستضافة الفعالية في 11 سبتمبر 2013، و حضر اللقاء ما يقرب من 30 شخصاً، مع خمسة خبراء قاموا بتقديم عروض حول مختلف جوانب مخلفات المناجم في البيئة البحرية.

12.0- تحديد القضايا الجديدة والناشئة المتعلقة بتدهور البيئة البحرية: تمت مناقشة العديد من القضايا ونتيجة لهذه المناقشات فقد وافق فريق الخبراء المشترك خلال هذه الفاعلية على إنشاء فريق مراسل من أجل إعداد ورقة علمية شاملة، وعلي إمكانية عمل خطة لدفع هذه القضية إلى الأمام، وهوما يتوافق مع رغبة العديد من المنظمات الراعية. كما تم الإتفاق على أن يقوم الفريق المراسل، إن أمكن، بعقد حلقة عمل حول هذا الموضوع قبل تقديم تقرير إلى فريق الخبراء المشترك 41. وقد لوحظ أيضاً إن العديد من المنظمات الراعية ستكون قادرة على توفير بعض الدعم المالي والعيني لهذه العملية.

13-0 قضايا للفحص : اتفق فريق الخبراء المشترك المعني بالجوانب العلمية لحماية البيئة البحرية على مواصلة البحث في مسألة التضخم الحيوي في الحيوانات المفترسة التي تتواجد في قمم السلاسل الغذائية، واثر هذه التضخم الحيوي من الناحية البيئية والاجتماعية، بما في ذلك إمكانية تنظيم حلقة عمل لفريق الخبراء المشترك حول التضخم الحيوي، في حال أبدت المنظمات الراعية رغبتها في ذلك. وقدمت ورقة بحثية شاملة عن علاقة تكون المركبات الثانوية لعملية التطهير، في مقابل الإسهامات الأخرى لهذه المركبات الثانوية في البيئة المائية. علاوة على ذلك فقد تكون فريق مراسل فيما بين الدورات للنظر في وضع شروط مرجعية لمجموعة عمل مستقبلية، فضلاً عن مصادر التمويل المحتملة، الي جانب تحديد الرئيس.

0. 内容提要

0.1 介绍: 2013年9月9日至13日, 联合国工业发展组织 (UNIDO) 在维也纳主持召开了海洋环境保护的科学方面联合专家组 (GESAMP) 第四十次会议。1969年, 数个联合国组织共同建立了GESAMP以鼓励对海洋污染和环境保护问题进行独立的跨领域的考量, 从而避免联合国系统内重复性的工作。以下详述了会议上所讨论的主要议题。GESAMP 继续主要通过工作组发挥作用。联合国各机构直接资助他们,以回应他们的科学需求。另外, GESAMP的新兴问题项目通过综合及外部资金提醒关注热带及新兴问题。最近的一个例子是微塑料工作组。在任何一种情况下,持续的及可预测的资金是必需的,但是确保资金仍是GESAMP及其执行委员会所要面对的问题。

0.2 评估船只携带的有害物质(WG 1):
在 IMO的要求下, 这个工作组评估船只携带的大量液体化学物质对环境和人类健康造成的伤害, 目前大约有900种有害物质被记录在案。档案里包含每一种物质的独特记号, 提供13种人类健康、环境和理化的有害标准。自GESAMP 39以来, WG 1 碰过两次头, 评估14种新的化学物质和记录它们的独特记号, GESAMP 评审与核准了第64号报告和研究 (2002)的第二版。GESAMP 再度强调在第三十二次 (2001) 会议中的决定: 工作组评估的有害物质档案应该直接交给 IMO.

0.3 审查在压载水管理系统中使用“活性物质”的申请(BWMS) (WG 34):
自GESAMP 39以来, WG34有过三次会晤,

评估14个治水系统并将他们的建议报告给 IMO 的海洋环境保护委员会(MEPC)。其中六个系统获得了初步批准的建议, 五个获得了最终批准的建议, 两个被拒绝最终批准的建议。第四和五届年度盘点研讨会审查了业界实践的评估方法。在接下来的阶段中, WG 34 将准备发布GESAMP 批准的方法作为GESAMP报告和研究系列的一部分, 工作组同意将报告交给GESAMP 同行评审, 再补充一轮有限制的外部同行评审。

0.4 金属 (前水银) 工作组 (WG 37): 自GESAMP 38 以来, 这个工作组并没有任何活动。工作组给UNEP 的初步报告, 标题为海洋环境中的水银: 来源, 释放, 传送和监测, 已经在2011完成。GESAMP 同意以 GESAMP及 UNEP 的名义修改和发布这份报告, UNEP 原在上一次会议时就有准备资金可以发布, 但现已资金不足, 所以电子版的报告将先发布, 这份报告有特别讨论到UNEP 的水银议程和具有约束力的国际条约。

0.5 大气向海洋输入的化学物质 (WG 38): 在2月2013年英国西英吉利大学主办的大气氮沉降及其对海洋生物化学的影响的研讨会导致了这个工作组的建立。该工作组现在主要是在发展研究九个不一样的科学论文, 希望2014年能够完成。工作组也提交了进一步有潜力性的主体列表, 希望在GESAMP 41 受到考虑。

0.6 确定沿海环境中的全球污染趋势 (WG 39): 该工作组的目的是减少沿海生态系统的压力,为利益攸关方、科学家和社会提供一个目标以及对上世纪敏感沿海生态系统

统污染趋势的全球评估。工作组持续在文献调查，书目数据库上花下大量时间。另外，在墨西哥国立自治大学UNINMAR海洋科学和湖沼学研究所 (ICMyL-UNAM) 的协助下，一个实验性质的网路平台已被研发出来托管和整理数据库的资料。

0.7 对(微)塑料的全球评估(WG 40):

GESAMP 38 设立这个新的工作组以评估海洋中微塑料的含量、水平、分布和命运，以及微塑料作为进入海洋食物网的带有持久性、生物积累性和毒性的物质的可能性。WG 40 吸引了来自工商界的广泛支持，还获得了联合国机构如联合国教科文组织-海洋学委员会(带头)、海事组织、工发组织和环境署的支持。自GESAMP 39 以来，工作组已开了两次会议，也已产出职权范围内部中期报告。下一次会议将在7月22至25日韩国首尔举行。最终评估报告将在今年十一月年巴塞罗纳海洋学委员会的第二届海洋研究会议上发表。此外，GESAMP 也注意到与其他相关倡议的连接，包括GEF 的跨界水资源评估大型项目，国际捕鲸委员会的大型活动，还有海洋垃圾全球伙伴关系。

0.8 对联合国“经常性程序”的贡献：

GESAMP得到了自2012年4月的GESAMP 39以来联合国经常性程序进展的概述。联合国教科文组织-海洋学委员会和UNEP联合发表了制度安排、资金、经常性程序过去及未来的工作、工作方法及第一次全球海洋综合评估的大纲(2014年到期)。GESAMP 注意到区域研讨会以及准备评估的进展。全球海洋综合评估的时间表有异动，报告草案将于今年12月发表，明年发布。虽然 GESAMP 对全球海洋综合评估并

没有直接的意见，但还是会持续追踪它的流程，UNEP 和海洋学委员会也会继续提供技术和科学的支持。

0.9 对跨界水域评估项目的贡献

(TWAP):

全球环境基金(GEF)大型项目在一月2013年已开始执行，预期12月2014年结束，目前有好几个联合国机构和其他组织有参与，联合国教科文组织，海洋学委员会是大型海洋生态系统和开放式海洋部分的负责人。GESAMP 对开发方法上有协助，包括提供对于污染指标的建议，还有直接对大型海洋生态系统和开放式海洋的部分提出意见。GESAMP 39 以来，大型海洋生态系统和开放式海洋部分的启动会议已举行(3月2013)，GESAMP 负责跨界水资源评估的三个部分：基于专家知识对开放式海洋的污染状况进行评估；分析从海滩上收集到的塑料树脂颗粒(据对苯二甲酸丁二酯)；浮动垃圾栅格数据在大型海洋生态系统及开放式海洋的发展。此外，GESAMP 也参与了一个现被孟加拉大型海洋生态系统项目考虑的相关提案，关于营养物质和灰尘的大气输入，正好和工作组38相连接，在跨界水资源的术语里，代表第二层次的评估。

0.10 为帮助跨界水资源评估项目，GESAMP 用2009年完成79号报告的小组，成立了一个开放式海洋污染工作组。

GESAMP审查了工作组的工作计划和职权范围，发现全球环境基金并不足够，所以GESAMP鼓励别的赞助机构能有更多的支持。此外，GESAMP也修订了工作组的内容及贡献者名单。

0.11 GESAMP 和UNIDO 在9月11日 2013 联合主办了一个特别的边会，主题是尾矿和沿海的排放：效果和影响，当时有5个演讲者，大约30个参加者。

0.12 有关海洋环境退化的新问题已被讨论，从边会讨论结果上，GESAMP 同意成立一个回应通信小组来发展一个范围规划文件，一些赞助机构也有相同的想法，大家同意让通信小组在GESAMP 41 前办一个研讨会，几个赞助机构已声明他们能在规划过程中提供一些财力和实物的支持。

0.13 规划事宜：GESAMP同意继续探索在顶级捕食者上的生物放大作用， 还有其生态和社会的影响，如果赞助机构有兴趣，也可以安排一次生物放大作用的研讨会。还有，一份讨论消毒副产物的生产和对抗其他消毒副产物在海洋环境的排放的规划文章发表以后，在闭会期间成立的通信小组已在探讨潜在的资金来源，制定职权范围，物色主席的候选人，和评估以后成为工作组的可能性。

0. RÉSUMÉ DU RAPPORT

0.1 **Introduction** : le Groupe mixte d'experts chargé d'étudier les aspects scientifiques de la protection de l'environnement marin (GESAMP) a tenu du 9 au 13 septembre 2013 à Vienne sa 40^e session organisée par l'Organisation des Nations Unies pour le Développement Industriel (ONUDI). Créé en 1969 par plusieurs organisations des Nations Unies, le GESAMP est un groupe mixte chargé de promouvoir l'examen indépendant et interdisciplinaire des problèmes de pollution marine et de protection de l'environnement dans le but d'éviter les doubles emplois au sein du système des Nations Unies. Les principaux points abordés lors de cette session sont présentés ci-après. Le GESAMP continue de fonctionner largement par l'intermédiaire de ses Groupes de travail, qui peuvent être directement financés par des agences des Nations Unies en vue de répondre à leurs besoins dans le domaine scientifique. Par ailleurs, les travaux sur les questions d'actualité de nature urgente sont menés dans le cadre du programme *New and Emerging Issues* [Nouveaux sujets de préoccupation] du GESAMP à l'aide de financements mixtes ou extérieurs. L'exemple le plus récent est le Groupe de travail sur les microplastiques. Néanmoins, des financements de base stables et prévisibles s'avèrent nécessaires, ce qui demeure une source de préoccupation pour le GESAMP et son Comité exécutif.

0.2 **Évaluation des risques liés aux substances nocives transportées par les navires (Groupe de travail 1)** : ce Groupe de travail (GT) évalue, à la demande de l'OMI, les risques pour l'environnement et la santé humaine présentés par les substances chimiques transportées en vrac par voie maritime. À ce jour, près de 900 profils de risque ont été établis. Chaque profil de risque contient une fiche signalétique de la substance à laquelle il se rapporte, fournissant des informations sur 13 critères de danger d'ordre sanitaire, environnemental et physico-chimique. Depuis la

39^{ème} session du GESAMP, ce Groupe de travail s'est réuni deux fois, pour évaluer l'ajout de 14 nouvelles substances aux Profils de Risque du GESAMP. Le GESAMP a examiné puis approuvé le manuscrit final de la 2^{nde} édition du numéro 64 de la *Collection Rapports et études* du GESAMP sur la *Procédure révisée d'évaluation des dangers liés aux substances chimiques transportées par navires du GESAMP*. LE GESAMP a aussi confirmé la décision prise lors de la 32^{ème} session (2001) qui demandait à ce que les profils de risque développés par le Groupe de travail 1 soient directement transmis par ledit Groupe à l'OMI.

0.3 **Examen des demandes concernant les « substances actives » à utiliser dans les systèmes de gestion des eaux de ballast (Groupe de travail 34)** : le Groupe de travail s'est réuni à trois reprises depuis la 39^{ème} session du GESAMP pour évaluer 14 systèmes de gestion des eaux de ballast utilisant des substances actives et transmettre ses recommandations au Comité de la protection du milieu marin de l'OMI. Six de ces systèmes ont fait l'objet d'une recommandation pour approbation initiale et cinq d'une recommandation pour approbation définitive, tandis que deux systèmes se sont vus refuser une recommandation pour approbation définitive. Pour les troisième et quatrième années, des ateliers « d'établissement de bilan » ont été organisés afin d'examiner la méthode d'évaluation des propositions soumises par l'industrie. Au cours de la période à venir, le Groupe de travail 34 préparera la méthodologie approuvée pour publication dans la *Collection Rapports et études* du GESAMP. Il a été convenu que la publication devra être soumise à un examen par les experts du GESAMP, complétée par un examen limité conduit par des experts extérieurs.

0.4 **Groupe de travail sur les métaux (anciennement Groupe de travail sur le mercure) (Groupe de travail 37)** : il n'y a eu aucune activité

avec ce Groupe de travail depuis la 38^{ème} session du GESAMP. Le rapport préliminaire de ce Groupe au PNUE, intitulé *Le mercure dans les environnements aquatiques : sources, rejets, transport et contrôle* a été achevé en 2011. Il a été convenu que le GESAMP contribuera à ce rapport, l'éditera et le publiera en tant que rapport conjoint du GESAMP et du PNUE. Le PNUE devait publier le rapport pendant la précédente session, mais dans le laps de temps, les possibilités de financement ont été refusées. Toutefois, une version électronique de ce rapport GESAMP/PNUE sera publiée. Il a été également noté que le rapport a aidé l'agenda du PNUE sur le mercure vers un nouveau traité juridiquement contraignant.

0.5 Apports atmosphériques de produits chimiques dans l'océan (Groupe de travail 38) : un atelier sur le dépôt atmosphérique d'azote et ses impacts sur la biogéochimie marine s'est tenu à l'Université d'East Anglia à Norwich au Royaume-Uni en février 2013. Il a mené à l'établissement de sous-groupes qui ont commencé le développement de neuf documents scientifiques différents qui couvrent les dernières tâches identifiées. Le GESAMP a constaté que le Groupe de travail devra concentrer son attention pour achever ces documents durant la période précédant la prochaine session qui se tiendra en 2014. Toutefois, le Groupe de travail a aussi soumis une liste de plusieurs sujets potentiels pour son travail qui devront être examinés lors de la 41^{ème} session du GESAMP.

0.6 Évolution mondiale de la pollution des écosystèmes côtiers (Groupe de travail 39) : l'objectif de ce Groupe de travail est de contribuer à la réduction des pressions sur les écosystèmes côtiers en fournissant aux parties prenantes, aux scientifiques et à la société civile une évaluation objective et globale de l'évolution de la pollution des écosystèmes côtiers vulnérables au cours du siècle passé. Le Groupe de travail a continué ses études sur le sujet ainsi que la compilation d'une base de données de notices bibliographiques. En outre, une plate-forme internet pilote a été développée avec

l'aide de l'UNInMAR à l'Institut de Sciences Marines et de Limnologie-Université Autonome Nationale de Mexico (ICMyL-UNAM) dans l'objectif d'accueillir et de contrôler les informations contenues dans cette base de données.

0.7 Évaluation globale des micro-plastiques (Groupe de travail 40) : ce Groupe de travail sur les apports, les niveaux, la répartition et le destin des micro-plastiques dans les océans, ainsi que le rôle potentiel des micro-plastiques en tant que vecteurs de substances polluantes, persistantes, bio-accumulables et toxiques dans la chaîne alimentaire marine, a été mis en place lors de la 38^{ème} session du GESAMP. Il bénéficie d'un large soutien de la part de l'industrie, ainsi que du soutien des agences des Nations Unies telles que l'UNESCO-CIO (organisation chef de file), l'OMI, l'ONUDI et le PNUE. Depuis la 39^{ème} session du GESAMP, ce Groupe de travail s'est rencontré deux fois et a produit un rapport interne intérimaire couvrant la totalité des Termes de Référence convenus. Il est prévu que le prochain atelier ait lieu au Centre International de Conférences de Séoul, du 22 au 25 juillet 2014. Le rapport final d'évaluation sera préparé et lancé lors de la deuxième Conférence Internationale sur la Recherche Océanique, sponsorisée par le CIO, à Barcelone en Espagne en novembre 2014. Le GESAMP a également constaté le lien vers d'autres initiatives comme l'ensemble du projet du FEM sur l'évaluation des eaux transfrontalières, le travail de la Commission Internationale sur la pêche à la baleine, tout autant que vers le Partenariat Mondial sur les déchets marins.

0.8 Contributions dans le cadre du « Mécanisme régulier des Nations Unies » (UNRP) : le GESAMP a été informé des évolutions qui sont intervenues dans le Mécanisme régulier des Nations Unies depuis sa 39^{ème} session, qui a eu lieu en avril 2012. Les dispositifs institutionnels, les financements, les travaux passés et futurs du Processus, ses méthodes de travail ainsi que les grandes lignes de la première Évaluation Mondiale

sur les Océans, prévue pour 2014, ont été présentés par les secrétaires techniques de l'UNESCO-CIO et du PNUE. Le GESAMP a constaté que des progrès ont été réalisés concernant les ateliers régionaux et les dispositifs pour la préparation à l'évaluation en elle-même. Il y a eu quelques modifications dans la chronologie de l'Évaluation Mondiale sur les Océans, et l'ébauche du rapport sera présentée en décembre 2014 et publiée en 2015. Bien que le GESAMP ne contribue directement à aucun apport pour cette Évaluation, le Groupe continuera à suivre le processus avec intérêt. Le PNUE et le CIO continuent à fournir à cette Évaluation un soutien technique et scientifique.

0.9 Contribution au Programme d'évaluation des eaux transfrontalières porté par le FEM :

l'ensemble du projet du FEM a été amorcé en janvier 2013 et doit se poursuivre jusqu'en décembre 2014. Plusieurs agences des Nations Unies et d'autres organisations sont impliquées, dont l'UNESCO-CIO qui est chef de file pour les composantes relatives aux grands écosystèmes marins et à la haute mer. Le GESAMP a aidé au développement de la méthode, notamment en apportant des suggestions pour les indicateurs de pollution et en fournissant des apports directs pour les composantes relatives aux grands écosystèmes marins et à la haute mer. Depuis la 39^{ème} session du GESAMP, la réunion de lancement pour les partenaires des composants relatifs aux grands écosystèmes marins et à la haute mer a eu lieu en mars 2013. Le GESAMP a entrepris de réaliser trois éléments d'évaluation des eaux transfrontalières : une évaluation des statuts de pollution en haute mer fondée sur des expertises scientifiques, une analyse de PBT sélectionnés dans des granules de résines de plastique collectées sur des plages et le développement de données quadrillées sur les déchets flottants dans les grands écosystèmes marins et en haute mer. De surcroît, le GESAMP a contribué à une proposition examinée par le Projet de Grand écosystème marin du Golfe du Bengale, qui couvre les apports atmosphériques de

nutriments et de poussière, reliée au Groupe de travail 38 et représentant un "niveau 2" sur la terminologie d'évaluation de ce Programme.

0.10 Afin de soutenir ce projet d'évaluation des eaux transfrontalières, le GESAMP a mis en place une équipe de travail sur la Pollution en haute mer, sur le même modèle que l'équipe qui a produit le numéro 79 de la *Collection Rapports et Études* du GESAMP en 2009. Le GESAMP a revu le programme de travail et le mandat pour l'équipe et a notifié que les fonds alloués par le FEM à cette équipe de travail étaient limités ; ce qui rend urgent, dans la mesure du possible, que les organisations parrainantes fournissent une aide supplémentaire. Le GESAMP a aussi revu de façon approfondie la table des matières et des donateurs pour l'équipe de travail.

0.11 **Événement parallèle sur les effets et les impacts des décharges de résidus miniers et des écoulements côtiers dans l'environnement maritime du 11 septembre 2013 :** le GESAMP et l'ONUDI ont organisé en parallèle, dans les locaux de l'ONUDI, cet événement spécial intitulé " Effets et impacts des décharges de résidus miniers et des écoulements côtiers dans l'environnement maritime". Il a été suivi par à peu près 30 personnes. Cinq membres de la commission ont présenté différents aspects des résidus miniers dans l'environnement maritime.

0.12 **Identification de problèmes nouveaux relatifs à la dégradation du milieu marin :** plusieurs problèmes possibles ont été soulevés. Les discussions pendant l'événement parallèle ont donné lieu à l'accord du GESAMP pour qu'il mette en place un Groupe de Correspondance afin de développer un document préparatoire et un plan possible, et ce dans l'objectif de faire avancer cette question relevant de l'intérêt de plusieurs organisations parrainantes. Plus précisément, le Groupe de Correspondance s'est mis d'accord pour essayer, si possible, de convenir d'un atelier sur ce sujet avant que ce dernier ne soit rapporté lors de la

41^{ème} session du GESAMP. Il a également été entendu que plusieurs organisations parrainantes seraient capables de fournir des aides financières et en nature, quoique limitées, pour ce processus de cadrage.

0.13 **Portée des enjeux** : le GESAMP a donné son accord pour continuer l'exploration du problème de la bioamplification en tant que problème majeur. Il accepte également de poursuivre ses implications écologiques et sociales, y compris la possibilité d'organiser un atelier de travail du GESAMP sur la bioamplification, sous réserve de l'intérêt des organisations parrainantes. Un document préliminaire sur la pertinence de la production de sous-produits de désinfection (DBP) contre d'autres apports de DBP dans les milieux aquatiques a été présenté et un groupe de correspondance inter-sessions a été mis en place pour regarder l'élaboration des Termes de Référence pour créer, à l'avenir, un potentiel groupe de travail aussi bien que pour trouver de potentielles sources de fonds et l'identification d'un Comité.

0. РЕЗЮМЕ

0.1 **Введение:** С 9 по 13 Сентября 2013 года в Вене в рамках Организации Объединённых Наций по промышленному развитию (ЮНИДО) была проведена сороковая сессия Объединенной группы экспертов по научным аспектам защиты окружающей среды (ГЕСАМП). ГЕСАМП была создана в 1969 году рядом учреждений Организации Объединенных Наций в качестве Объединенной группы для содействия независимому и комплексному исследованию проблем загрязнения морей и охраны окружающей среды, с тем чтобы избежать дублирования действий в рамках системы учреждений Организации Объединенных Наций. Ниже приведено описание основных тем, обсуждавшихся на сессии. Деятельность ГЕСАМП по-прежнему осуществляется в основном через ее рабочие группы, которые могут получать финансирование для удовлетворения своих связанных с научной работой потребностей. Что касается тематических и неотложных вопросов, то они изучаются в рамках Программы новых и возникающих вопросов ГЕСАМП, которая получает смешанное или внешнее финансирование; одним из недавних примеров является рабочая группа по микропластикам. В любом случае необходимо стабильное и предсказуемое финансирование, обеспечение которого остается одной

из основных задач ГЕСАМП и ее Исполнительного комитета.

0.2 **Оценка рисков, связанных с перевозом вредных веществ на судах (РГ 1).** Данная рабочая группа (РГ) занимается по запросу ИМО оценкой рисков для окружающей среды и здоровья человека, связанной с перевозкой жидких химикатов на судах. К настоящему времени зарегистрированы около 900 профилей рисков. Профиль риска содержит уникальные характерные признаки каждого вещества, предоставляя информацию о 13 отдельных критериях рисков для здоровья человека и окружающей среды, а также физико-химического риска. РГ 1 собиралась дважды со времени проведения тридцать девятой сессии ГЕСАМП, классифицировав 14 новых веществ для пополнения существующих Профилей Риска ГЕСАМП. Итоговая публикация 2го издания Отчетов и Исследований ГЕСАМП 64 по "Пересмотренной процедуре оценки рисков ГЕСАМП для химических веществ перевозимых на судах" была рассмотрена и утверждена ГЕСАМП. ГЕСАМП также повторно утвердила решение, принятое на 32ой сессии ГЕСАМП в 2011 году, о непосредственной передаче профилей риска выявленных РГ1 в ИМО.

0.3 **Анализ заявок на использование "активных веществ" в системах управления балластными водами (РГ**

34). В период после тридцать девятой сессии ГЕСАМП РГ 34 провела три совещания, на которых были изучены 14 систем управления балластными водами, и представила свои рекомендации Комитету по защите морской среды ИМО (КЗМС). Шесть из указанных систем были рекомендованы к общему утверждению, другие пять систем – к окончательному утверждению, тогда как другие две не получили рекомендаций к окончательному утверждению. Кроме того, были проведены четвертый и пятый ежегодные семинары для рассмотрения методологии оценки заявок, полученных от предприятий отрасли. В предстоящий период РГ 34 подготовит утвержденную ГЕСАМП Методологию для опубликования материалов в серии Отчеты и исследования ГЕСАМП. Также было принято решение о необходимости коллегиального рассмотрения данной публикации, с возможностью дополнительного ограниченного внешнего коллегиального рассмотрения.

0.4 Рабочая группа по металлам (ранее ртути) (РГ 37). РГ 37 не проводила совещаний в период после тридцать восьмой сессии ГЕСАМП, а предварительный отчет РГ 37 - "Ртуть в водной среде: источники, выбросы, перевозки и мониторинг" - был завершен и направлен в ЮНЕП в 2011 году. Также было принято решение о внесении дополнений и редактирование отчета ГЕСАМП и последующей его публикации

совместно с ЮНЕП. ЮНЕП планировал и был готов издать отчет в течении предыдущей сессии, но с прошествием времени возможности финансирования были утрачены. Тем не менее, электронная версия совместного отчета ГЕСАМП/ЮНЕП будет опубликованна. Также было отмечено, что благодаря этому отчету программа деятельности ЮНЕП в области ртути приняла юридически обязывающий характер.

0.5 Поступление химических веществ в океан из атмосферы (РГ 38).

Семинар по "Атмосферному осаждению азота и его влиянии на морскую биогеохимию," проведенный в феврале 2013 года в Университете Восточной Англии, в городе Норвич, Беликобритания, послужил образованию подгрупп, начавших написание девяти исследовательских работ на обозначенные темы. ГЕСАМП отметил, что РГ 37 следует завершить исследовательские работы к следующей сессии в 2014 году. РГ 37 предоставила список тем для дальнейших исследований для обсуждения на 41ой сессии ГЕСАМП.

0.6 Выявление тенденции в глобальном загрязнении прибрежных районов (РГ 39).

Целью данной РГ является оказание содействия в уменьшении стресса, которому подвергаются прибрежные экосистемы, посредством предоставления заинтересованным сторонам, ученым и обществу в целом объективной и глобальной оценки тенденций в загрязнении, наблюдавшихся за последнее столетие в уязвимых

прибрежных экосистемах. РГ 39 продолжала литературное исследование и создание библиографической базы данных. Также в сотрудничестве с УНИНМАР (UNINMAR) в Институте Морских Наук и Лимнологии при Автономном Национальном Университете Мексики (ICMyL-UNAM), РГ 39 создала пилотную Интернет-платформу с целью поддержания и развития информационной базы.

0.7 Глобальная оценка (микро)пластиков (РГ 40). Эта новая РГ была создана на тридцать восьмой сессии ГЕСАМП для изучения вопросов, связанных с попаданием, уровнями, распределением и пребыванием микропластиков в океане, а также потенциальной роли микропластиков в качестве способа проникновения стойких, биологически накапливающихся и токсических веществ в морскую пищевую сеть. Деятельность РГ 40 получила широкую поддержку со стороны предприятий отрасли, а также таких организаций ООН, как ЮНЕСКО-МОК (Межправительственная океанографическая комиссия), ИМО, ЮНИДО и ЮНЕП. В период после тридцать девятой сессии ГЕСАМП РГ 40 провела два совещания и выпустила внутренний промежуточный доклад, покрывающий все оговоренные Технические задания. Следующий семинар планируется провести в Международном Центре Конференций в Сеуле (International Conference Center Seoul) с 22 по 25 июля 2014 года, в то

время как заключительный оценочный отчет будет подготовлен и выпущен во время 2й Международной конференции по Океанографии в Барселоне, Испания в ноябре 2014 года. ГЕСАМП также отметил связь с рядом другой деятельности, в том числе полномасштабный проект ГЭФ по оценке трансграничных вод, деятельность Международного Комитета по китобойному промыслу, и Глобальное партнерство по проблеме морского мусора.

0.8 Вклад в "регулярный процесс" Организации Объединенных Наций (РПООН): ГЕСАМП получила обзорный отчет о событиях, связанных с Регулярным процессом Организации Объединенных Наций, которые имели место с момента проведения тридцать девятой сессии ГЕСАМП в апреле 2012 года. В частности, информация об институциональных механизмах, финансировании, прошлой и будущей работе в рамках Регулярного процесса, его методах работы, а также краткий обзор первой Оценки мирового океана, намеченной на 2014 год, были представлены исполнительными секретарями МОК/ЮНЕСКО и ЮНЕП. ГЕСАМП отметил достижение определенного прогресса в организации региональных семинаров и подготовки к оценке в целом. Временный рамки Оценки мирового океана подверглись некоторым изменениям: проект отчета будет представлен в декабре 2014 года и опубликован в 2015. Хотя деятельность ГЕСАМП не связана напрямую с

Оценкой мирового океана, ГЕСАМП продолжит наблюдение за исследовательским процессом. В то время как ЮНЕП и МОК будут продолжать научное и техническое сотрудничество с Оценкой.

0.9 Вклад в программу "Оценка трансграничных вод" (ПОТВ).

Полномасштабный проект ГЭФ по "Оценке трансграничных вод" (ПОТВ) был запущен в январе 2013 года и рассчитан на срок до декабря 2014 года. Ряд организаций ООН и других организаций примут участие, притом что полная ответственность за разделы "Крупные морские системы" и "Открытый океан" возляжет на МОК/ЮНЕСКО. ГЕСАМП принял непосредственное участие в разработке методологии, в том числе по предоставлению рекомендаций для показателей загрязнения, дополняя разделы "Крупные морские системы" и "Открытый океан." В период после тридцать девятой сессии ГЕСАМП, первое заседание партнеров по "Крупным морским системам" и "Открытому океану" было проведено в марте 2013 года. ГЕСАМП приняла решение о выполнении трех элементов ПОТВ: оценка степени загрязнения Открытого океана основываясь на доступной экспертизе; анализ избранных полибутадиентерефталатов (РВТ) в виде пластмассовых, смолянистых гранул собранных на пляжах; и создание географической сетки для плавающего мусора в крупных морских системах и открытом океане. Также, ГЕСАМП внесла свои

комментарии в предложение находящееся на рассмотрении в Бенгальском заливе об атмосферном воздействии биогенных веществ и пыли, что в соответствии с РГ 38 сопоставимо с Уровнем 2 по оценке и терминологии ПОТВ.

0.10 В поддержку ПОТВ, ГЕСАМП учредила Целевую группу по загрязнению открытого океана, опираясь на команду, которая составила и выпустила в 2009 году выпуск Отчетов и Исследований ГЕСАМП No. 79. ГЕСАМП рассмотрела план работы и Техническое задание Целевой группы и отметила, что средства ГЭФ, доступные для целевой группы были недостаточны, призывая организаций-спонсоров при возможности обеспечить дополнительную финансовую поддержку. ГЕСАМП также внес дополнительные поправки в содержание и список участников для целевой группы.

0.11 Параллельное мероприятие на тему "сброс шахтных отходов и прибрежных стоков в морскую среду: воздействия и последствия."

Параллельное мероприятие на тему "сброс шахтных отходов и прибрежных стоков в морскую среду: воздействия и последствия," 11 сентября 2013 года: ЮНИДО выступило в роли принимающей стороны, при поддержке ГЕСАМП в организации, специального параллельного мероприятия под названием "сброс шахтных отходов и прибрежных стоков в морскую среду: воздействия и последствия". В нем

приняли участие около 30 человек, при этом пять участников дискуссионной группы представили различные аспекты выбросов шахтных отходов в морскую среду.

0.12 Выявление новых и возникающих проблем, касающихся деградации морской среды: был освещен ряд возможных проблем. В результате обсуждения во время параллельного мероприятия, ГЕСАМП договорилась создать корреспондентскую группу по подготовке предварительного доклада и возможного плана действий по решению этого вопроса в будущем, в ответ на проявленный интерес к вопросу со стороны многих организаций-спонсоров. Было также принято решение о проведении семинара на данную тему корреспондентской группой по возможности до представления результатов ГЕСАМП 41. Было также отмечено, что ряд организаций-спонсоров готов предоставить некоторую ограниченную финансовую и иную поддержку деятельности в подготовке предварительного обзорного доклада.

0.13 Предварительный аналитический анализ проблем: ГЕСАМП приняла решение продолжить изучение вопроса о биологическом накоплении загрязняющих веществ в крупных морских хищниках и его о вытекающих из этого экологических и социальных последствий, не исключая

возможность организовать семинар ГЕСАМП на тему биологических накоплений, при условии интереса со стороны организаций-спонсоров. Также был представлен обзорный доклад на тему производства побочных продуктов обеззараживания (включая общие остаточные окисляющие вещества (ОООВ) и их попадания в морскую среду. В межсессионный период была создана корреспондентская группа, с целью подготовки Технического задания для возможного создания Рабочей группы, определения потенциальных источников финансирования и назначения председателя РГ.

0. RESUMEN EJECUTIVO

0.1 **Introducción:** El Grupo Mixto de Expertos sobre los Aspectos Científicos de la Protección del Medio Marino (GESAMP) celebró su 40º período de sesiones, organizado por la Organización de Naciones Unidas para el Desarrollo Industrial (ONUUDI), en Viena, del 9 al 13 de septiembre de 2013. Varias organizaciones de las Naciones Unidas establecieron el GESAMP en 1969 como grupo mixto para alentar el examen independiente e interdisciplinario de los problemas de la contaminación marina y la protección del medio ambiente con miras a evitar la duplicación de esfuerzos en el sistema de las Naciones Unidas. Los principales temas examinados en este período de sesiones se describen a continuación. El GESAMP sigue funcionando principalmente por conducto de sus grupos de trabajo, que los organismos de las Naciones Unidas pueden patrocinar directamente en respuesta a sus necesidades científicas. También puede plantearse el trato de cuestiones temáticas y urgentes por conducto del Programa de cuestiones nuevas e incipientes del GESAMP con financiación mixta o externa; el ejemplo más reciente es el del grupo de trabajo sobre microplásticos. No obstante, se requiere financiación de base que sea sostenida y previsible; garantizar esto es una preocupación del GESAMP y de su Comité Ejecutivo.

0.2 **Evaluación de los peligros de las sustancias perjudiciales transportadas por buques (Grupo de trabajo 1):** Este Grupo de trabajo evalúa, a petición de la Organización Marítima Internacional (OMI), los peligros para el medio ambiente y la salud humana de los productos químicos líquidos a granel transportados por buques, y actualmente se dispone de unos 900 perfiles de riesgo. Dichos perfiles contienen una huella singular de cada sustancia, que suministra información sobre 13 criterios distintos de peligro ambiental, fisicoquímico y sobre la salud humana. El Grupo de trabajo 1 se ha reunido en dos

oportunidades desde el 39º período de sesiones del GESAMP, y ha evaluado 14 nuevas sustancias a las que asignar un perfil de riesgo. GESAMP revisó y aprobó el texto final de la 2da edición de *GESAMP Reports & Studies* No. 64, "The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships" (El procedimiento revisado de evaluación de riesgos del GESAMP para sustancias químicas transportadas por buques). Asimismo, GESAMP reiteró la decisión adoptada en su 32ª sesión (2001), por la que los perfiles de riesgo desarrollados por el Grupo de trabajo 1 debían ser transmitidos por el Grupo directamente a la OMI.

0.3 **Examen de solicitudes de aprobación de "sustancias activas" para su utilización en los sistemas de gestión de aguas de lastre (Grupo de trabajo 34):** El Grupo de trabajo se reunió tres veces desde el 39º período de sesiones del GESAMP, evaluó 14 sistemas de gestión de aguas de lastre y presentó sus recomendaciones al Comité de Protección del Medio Marino de la OMI. Seis de esos sistemas recibieron una recomendación de aprobación inicial, cinco una recomendación de aprobación definitiva, y a dos se les negó la recomendación de aprobación definitiva. Además, se celebraron el cuarto y quinto taller anual de evaluación en el que se examinó la metodología de evaluación de las aplicaciones recibidas del sector. Próximamente, el Grupo de trabajo 34 preparará la metodología aprobada del GESAMP para la publicación en la serie *GESAMP Reports and Studies*. Se acordó que la publicación sea objeto de una revisión por pares llevada a cabo por GESAMP, completada con una revisión externa.

0.4 **Grupo de trabajo sobre metales (anteriormente mercurio) (Grupo de trabajo 37):** No ha habido ninguna actividad con respecto a este grupo desde el período de sesiones No. 38. El informe preliminar del Grupo de trabajo 37 para el

PNUD, titulado "Mercurio en el Medio Marino: Fuentes, Descargas, Transporte y Vigilancia" fue completado en 2011. Se acordó que GESAMP añadirá, editará y publicará el informe como uno conjunto entre GESAMP y el PNUD. El PNUD ya estaba preparado para publicar el informe en la sesión anterior, sin embargo, por cuestiones de tiempo se declinó su financiación. No obstante, se publicará una versión electrónica de dicho informe. También se destacó que el informe ha mejorado la agenda del PNUD hacia la consecución de un tratado legalmente vinculante.

0.5 Aportación atmosférica de sustancias químicas a los océanos (Grupo de trabajo 38): un taller sobre la Deposición Atmosférica de Nitrógeno y sus Impactos en la Biogeoquímica Marina, el cual fue llevado a cabo en la Universidad de East Anglia, en Norwich, Reino Unido, en Febrero de 2013, conllevó el establecimiento de sub-grupos que comenzaron a desarrollar nueve informes científicos diferentes, los cuales cubren las últimas metas identificadas. GESAMP remarcó que el objetivo de este grupo de trabajo será el de completar estos informes de cara al próximo período de sesiones en 2014. No obstante, el grupo también presentó una lista de potenciales asuntos de trabajo, para su consideración en el período de sesiones No. 41 del GESAMP.

0.6 Determinación de tendencias en la contaminación del medio ambiente costero a nivel mundial (Grupo de trabajo 39): La finalidad de este Grupo de trabajo es contribuir a mitigar las presiones sobre el ecosistema costero suministrando a los interesados, los científicos y la sociedad una evaluación objetiva a nivel mundial de las tendencias en materia de contaminación en el último siglo en los ecosistemas costeros sensibles. El grupo de trabajo ha continuado su trabajo de revisión de la literatura y compilación de una base de datos de registros bibliográficos. Además, se ha desarrollado una plataforma web piloto con el apoyo de UNINMAR, en el Instituto de Ciencias Marinas y Limnología, de la Universidad Nacional Autónoma

de México (ICMyL-UNAM), con el objetivo de albergar y gestionar la información contenida en la base de datos.

0.7 Evaluación mundial de los microplásticos (Grupo de trabajo 40): En el 38º período de sesiones del GESAMP se estableció este nuevo Grupo de trabajo sobre deposiciones, niveles, distribución y destino de los microplásticos en el océano, y el posible papel de estos como vector en el transporte de sustancias tóxicas, persistentes y bioacumulables que ingresan en las redes alimentarias marinas. Este grupo de trabajo ha sabido atraer el apoyo de la industria, así como de las agencias de la ONU, UNESCO-CIO (agencia líder), OMI, ONUDI y el PNUD. Desde el 39º período de sesiones del GESAMP, el grupo ha mantenido dos reuniones y ha producido un informe provisional interno, cubriendo todos los términos de referencia acordados. El próximo taller está planeado que se celebre en el Centro Internacional de Conferencias de Seúl, del 22 al 25 de julio de 2014, y el informe final de evaluación será preparado y presentado en la Conferencia Internacional sobre Investigación del Océano, la cual tendrá lugar en Barcelona, España, en noviembre de 2014, y que será patrocinada por el CIO. GESAMP también resaltó el vínculo con otras iniciativas, incluido el proyecto de Evaluación de Aguas Transfronterizas del Fondo para el Medio Ambiente Mundial (FMAM), el trabajo de la Comisión Internacional para la Pesca de la Ballena, así como la Iniciativa Mundial sobre Desechos Marinos.

0.8 Contribución al "proceso ordinario" de las Naciones Unidas: El GESAMP recibió una sinopsis de la evolución del proceso ordinario de las Naciones Unidas que había tenido lugar desde el 39º período de sesiones del GESAMP celebrado en abril de 2012. En particular, las Secretarías Técnicas de UNESCO-CIO y el PNUD presentaron las disposiciones institucionales, la financiación, la labor anterior y futura del proceso ordinario, sus métodos de trabajo y una síntesis de la primera

Evaluación integrada del estado del medio marino a escala mundial (WOA, por sus siglas en inglés) prevista en 2014. El GESAMP observó que se han obtenido progresos respecto a los talleres regionales y a los preparativos para la propia evaluación. Se han producido ajustes en el calendario del WOA, de forma que el borrador del informe será presentado en Diciembre de 2014 y publicado en 2015. A pesar de que GESAMP no realiza ningún aporte directo en el WOA, el Grupo seguirá el proceso con interés. El PNUD y el CIO continúan dando apoyo técnico y científico al WOA.

0.9 Contribución al Programa para la evaluación de las aguas transfronterizas (PEAT): este proyecto de gran tamaño del FMAM fue iniciado en enero de 2013 y está previsto que se desarrolle hasta diciembre de 2014. Un grupo de agencias de Naciones Unidas y otras organizaciones están involucradas, aunque es la UNESCO-CIO quien tiene una responsabilidad en los módulos de los grandes ecosistemas marinos (GEM) y de alta mar. GESAMP dio asistencia en la metodología, incluyendo recomendaciones para los indicadores de contaminación a utilizar y dando su aporte directo tanto al módulo GEM como al de alta mar. Desde la celebración de la 39ª reunión de GESAMP, se ha llevado a cabo una reunión preliminar por parte de los colaboradores de estos dos módulos, en marzo de 2013. GESAMP quiere poner en marcha tres elementos del PEAT: una evaluación de la situación de la contaminación en alta mar, basado en el conocimiento de los expertos; un análisis de los PBT seleccionados en los pellets de plástico recogidos de las playas; y el desarrollo de una cuadrícula de datos sobre basura flotante, tanto en GEM como en alta mar. Además, GESAMP ha contribuido a una propuesta para su consideración por parte del Proyecto del ecosistema marino del Golfo de Bengala, que cubre los aportes atmosféricos de nutrientes y polvo, relacionado con el grupo de trabajo 38, y representando una evaluación de "Nivel 2" en la terminología del PEAT.

0.10 Para dar apoyo a este proyecto de evaluación de aguas transfronterizas, el GESAMP ha establecido un equipo de trabajo sobre la contaminación en alta mar, sobre el mismo modelo que el equipo que produjo en 2009 el *GESAMP Reports & Studies No. 79*. GESAMP revisó el plan de trabajo y los términos de referencia del equipo de trabajo, y observó que los fondos del FMAM disponibles para este equipo eran limitados, por lo que solicitó a las organizaciones patrocinadoras un apoyo adicional, siempre que fuera posible. GESAMP también revisó la tabla de contenidos y de donantes para el equipo de trabajo.

0.11 GESAMP y UNIDO, organizaron el 11 de septiembre de 2013 un evento paralelo sobre los efectos e impactos de las descargas de residuos mineros y las escorrentías costeras en el medio marino, en la sede de UNIDO. A él asistieron aproximadamente 30 personas, y 5 panelistas dieron sendas presentaciones en cuanto a varios aspectos ligados a los residuos mineros en el medio marino.

0.12 Identificación de aspectos nuevos respecto a la degradación del medio marino: un gran número de aspectos fueron discutidos. Como resultado de las discusiones durante el evento paralelo, GESAMP acordó establecer un Grupo de correspondencia entre sesiones para desarrollar un estudio preliminar y un posible plan para impulsar esta identificación, en la medida en que era del interés de varios patrocinadores. Más tarde se acordó que el grupo de correspondencia tratara, siempre que fuera posible, de convenir la realización de un taller sobre esta cuestión antes de la presentación del informe correspondiente en la reunión 41ª del GESAMP. Se dejó constancia de que varios patrocinadores estarían dispuestos a dar un apoyo financiero y en especies limitado, para este proceso de identificación.

0.13 Cuestiones relacionadas con este estudio: GESAMP acordó continuar su exploración sobre la cuestión de la biomagnificación en los

depredadores más importantes, así como sus implicaciones ecológicas y sociales, incluyendo la posibilidad de organizar un taller GESAMP sobre esta cuestión, la cual es de interés para las organizaciones patrocinadoras. Se presentó un estudio preliminar sobre la importancia de la producción de sub-productos de desinfección en contraste con el impacto de otros subproductos en el medio marino, y se estableció un grupo de correspondencia para la revisión entre sesiones de los términos de referencia de cara a un posible grupo de trabajo, así como de las fuentes potenciales de financiación para estas acciones y la identificación de un Comité.

1 INTRODUCTION

1.1 The Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) held its 40th session from 9 to 13 September 2013 in Vienna, hosted by the United Nations Industrial Development Organization (UNIDO). The session was held under the Chairmanship of Dr. Tim Bowmer, with Dr. Peter Kershaw and Dr. Manmohan Sarin serving as Vice-Chairmen. The session was preceded by the GESAMP Executive Committee (ExCom) meeting and GESAMP Members' informal meeting both held on 9 September 2013.

Adoption of the agenda

1.2 The meeting approved the provisional agenda. The agenda for the 40th session is attached as Annex I to this report. The list of documents submitted to this session is shown in Annex II to this report and the list of participants in Annex III.

2 REPORT OF THE CHAIRMAN OF GESAMP

2.1 The Chairman expressed his thanks to UNIDO, the host of the 40th session of GESAMP, for their hospitality and in particular Mr. Ludovic Bernaudat for the organization of the session.

2.2 As customary at each session, the Chairman summarized the activities of GESAMP in the intersessional period. In his summary, the Chairman noted that despite the financial climate, with many of the Sponsoring Organizations suffering budgetary cutbacks, the working groups (WG) of GESAMP had been very active, and attracted significant interest – from regulators, industry and the scientific community - and even managed to draw substantial financial support for their activities.

2.3 In this vein, and in line with the decision of ExCom at GESAMP's 38th session in principle to charge fees for the peer review of assessment reports, GESAMP had continued to charge a fee for the peer reviewing of WG 34's (BWWG) frequent reports to MEPC. This cost recovery strategy ensures that GESAMP has available some limited

funding for operational use.

2.4 The Chairman also noted that himself, the Vice Chairmen and the Technical Secretaries had represented GESAMP at a limited number of meetings and conferences during the year. However, as indicated above, the main focus in the past intersessional period had been on the work of the WG.

3 REPORT OF THE ADMINISTRATIVE SECRETARY OF GESAMP

Outcome of the meeting of the Executive Committee of GESAMP (ExCom)

3.1 GESAMP noted that ExCom had met on Monday, 9 September 2013. The main points of discussion are shown in paragraphs 3.2 to 3.5 below.

Funding

3.2 ExCom discussed an overview of the financial and in-kind support, which the nine UN Sponsoring Organizations of GESAMP committed to support the activities of GESAMP in 2013-2014. ExCom noted that all Sponsoring Organizations would continue their support to the level of the previous years. It was also noted that GESAMP could expand its peer reviewing services, as an additional source of income.

3.3 It was noted that sector-based funding, such as in the case of WG 40 on microplastics, could provide additional possibilities to fund WG activities. In relation to this, ExCom also noted that in these cases there may be a need to address potential conflicts of interest in a structured manner, and that it would be useful to develop guidance on this matter to ensure that the full independence and autonomy of the WG is safeguarded. The GESAMP Office agreed to pursue this with the Legal Division of IMO.

Governance

3.4 ExCom agreed that the topic of the Memorandum of Understanding (MoU) between the

Sponsoring Organizations, will be discussed at an intersessional ExCom meeting.

3.5 ExCom noted that IMO had offered to host GESAMP 41 in 2014.

Activities and achievements of the Sponsoring Organizations of GESAMP since 2012

3.6 GESAMP considered the Administrative Secretary's report (GESAMP 40/3), and in particular IMO's continued commitment to supporting the GESAMP Office, commensurate with its needs.

3.7 The Administrative Secretary also presented an overview of the activities and achievements of the Sponsoring Organizations of GESAMP, in particular, the activities of IMO, with the aim of providing a context of their involvement and interest in the activities GESAMP undertakes. The highlights of these achievements are reported in detail in Annex IV to this report. The Group also discussed if it would be possible to make better use of the information provided by the Sponsoring Organizations, for example through a matrix where the various Organizations' activities in the intersessional period are categorized into issues under the mandate of GESAMP.

3.8 GESAMP agreed that it would expand its peer reviewing activities, and decided to produce a short leaflet to promote its expertise and capabilities in this area, which could be circulated to e.g. the Large Marine Ecosystem (LME) projects, through International Waters (IW) Learn.

4 GESAMP OFFICE MATTERS

4.1 The Technical Secretary for IMO informed the meeting of the latest developments in the GESAMP Office, which was established at IMO as a co-sponsoring arrangement between the current sponsors of GESAMP. It was noted that the Office has not been fully staffed since the support arrangement with the Swedish Agency for Development Cooperation (Sida) expired on

31 December 2010. However, IMO has since advertised the position as an Associated Professional Officer assigned to the GESAMP Office, and is currently awaiting the response from the successful candidate.

4.2 The main activities of the GESAMP Office were reported and GESAMP took note of these developments.

5 PLANNING OF GESAMP ACTIVITIES*

5.1. *Evaluation of the hazards of harmful substances carried by ships (WG 1)*

5.1.1. A report of the activities of WG 1 was given by Dr. Tim Bowmer, Chairman of the Working Group (WG). It was noted that since the last session of GESAMP, WG 1 has met on two occasions (EHS 49 and EHS 50). At these sessions 14 new substances were reviewed in order to assign full GESAMP Hazard Profiles.

5.1.2 The GESAMP hazard profile provides the basis for the pollution categorization of over 900 substances. MARPOL Annex II and the International Bulk Chemical Code utilise these profiles to define the pollution category, ship type and carriage conditions associated with each chemical.

5.1.3 These hazard profiles contain a unique fingerprint for each substance, providing information on fourteen separate, human health, environmental and physico-chemical, hazard

criteria. The profiles are compatible with the UN Globally Harmonised System (GHS) for chemicals classification and consist of an alphanumerical notation designed to communicate hazard, while maintaining confidentiality of the data. The hazard profiles are peer reviewed by an international expert group based on data provided by industry and are backed up by a well-maintained electronic database and hard copy documentation. IMO publishes the hazard profiles annually as the GESAMP Composite list and they are placed on the IMO website for the use of maritime Administrations, the shipping industry and chemicals manufacturers.

5.1.4 The hazard profiles are assigned based on the GESAMP Reports and Studies No.64, "*The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships*", which sets out the methodology and criteria employed by WG 1 for assigning hazard profiles.

5.1.5 Noting that the Reports and Studies (R&S) No. 64 had been out of print for some time, though still available in electronic format, and that the methodology and criteria were established

* The Terms of Reference for each Working Group are reproduced at Annex V.

ahead of the finalization of the GHS and that it had since undergone several revisions, it was agreed that a revision of the publication was needed. Whilst it was not the intention to change either the basis of the GESAMP hazard profile or the rating procedures, it was recognized that some additional guidance and interpretation would be beneficial in relation to certain aspects of the GHS. It was noted that this was especially true for column D3 on long-term toxic effects that, as a result, would need particular consideration during the revision.

5.1.6 In revising the R & S No.64, the following specific elements were taken into particular account:

- .1 incorporation of the 2002 addenda into R&S No. 64;
- .2 inclusion of the rationale for the estimation of inhalation toxicity in the text for column C3;
- .3 the provision of additional guidance on the interpretation of the long-term toxicity criteria under column D3, in particular for; carcinogenicity (C), target organ systemic toxicity (T) and sensitization (S), including respiratory sensitization (in the light of recent requests from industry for clarification on this point);
- .4 consolidation of the text and Annex VI on column E2 (floaters & sinkers), including a review of the examples used; and
- .5 an update of Annex IV on all test guidelines and references to technical guidance, in the light of recent developments and publications.

5.1.7 The revision of the GESAMP R & S No.64 is now complete and a draft has been circulated as document GESAMP 40/5/4, for the consideration and approval of GESAMP at this session.

5.1.8 In addition to the evaluation of new substances, there is an ongoing review and consolidation of information held in the WG 1 database that has resulted in a series of updates and amendments to existing profiles. This review exercise, currently being undertaken by the GESAMP Secretariat, with any new information then submitted to WG 1 for appropriate assessment, will continue until all the historical files have been duly reviewed and the hazard profiles verified and/or amended.

5.1.9 The Group was also informed of the intention of WG 1 to bring to the attention of Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS Sub-Committee), the methodology it had developed for defining the characteristics of floating substances, given that this was now embodied in many national and European regulations and also given that this would also be included in the revision to the GESAMP R & S No. 64, which was nearing completion and would be published shortly.

5.1.10 In addition to this work, WG 1 also addressed previously identified difficulties in applying the full GHS criteria with separate ratings for vapours, mists and dusts, as much of the older data available on file does not allow such a distinction to be made, had agreed that for inhalation test results based on a pure mist/aerosol with no vapour exposure at all, e.g. with substances of very low vapour pressure, the GHS classification criteria may be applied.

5.1.11 WG 1 also reported that its scientific paper describing the methodology developed for the estimation of inhalation toxicity (Column C3), which included details of a validation study undertaken in support of the approach, had been

finalized and published in the Journal of Alternatives to Laboratory Animals (ref: ATLA 39, 541-556, 2011). The Group also noted that a paper on “Offshore experiments on styrene spillage in marine waters for risk assessment” had been prepared and accepted for publication as a Marine Pollution Bulletin (ref: MPB-D-11-00775R1), which had introduced a link to the activities of WG 1, specifically in relation to the assignment of E ratings within the hazard profile (describing interference effects), reflecting the value of GESAMP Hazard Profiles when used in incident situations.

5.1.12 GESAMP also noted that in considering further possibilities for publications to promote its work, the WG had decided that an appropriate topic for consideration could be “Read across in chemical hazard evaluation” and a draft text outlining possible topics and ideas would be prepared for further discussion and development. The WG had also agreed that opportunities for promoting the activities of WG 1 at appropriate conferences would be investigated.

5.1.13 As a final point, it was noted that the WG continues to encounter difficulties in recruiting a senior toxicologist to effectively sustain the expertise levels in this field within the Group. Attempts are ongoing to involve experts from developing countries, with varying degrees of success.

Final manuscript of Reports & Studies No. 64, 2nd edition

5.1.14 GESAMP reviewed the final manuscript of the 2nd edition of GESAMP R & S No. 64 “*The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships*” (document GESAMP 40/5/4).

5.1.15 GESAMP noted that this is the second edition of a report already approved by GESAMP in 2002 and that the revised GESAMP hazard

evaluation procedure has not changed. For that reason it has not been subject to an external peer review. Its update is to bring it in line with the GHS, to update the references and the guidance offered, as well as to include the GESAMP inhalation estimation method, also already approved by GESAMP.

5.1.16 The Group suggested a number of possible editorial improvements, including:

- .1 the need to improve the list of abbreviations, in terms of completeness and consistency;
- .2 adding a preface to the second edition, for clarifying the differences between the two editions, and expanding on this topic in section 2; and
- .3 deletion of the reference to the national guidelines in the first paragraph of Box 1.

Action taken by GESAMP

5.1.17 Following these discussions, GESAMP approved the final manuscript of the 2nd edition of GESAMP R & S No. 64 “*The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships*” for publication, following final edits and layout by IMO.

5.1.18 GESAMP also reiterated the decision taken at its 32nd session (2001) that the hazard profiles developed by WG 1 should be transmitted directly to IMO.

5.2 *Review of applications for ‘active substances’ to be used in Ballast Water Management systems (WG 34)*

5.2.1 A report of the activities of WG 34 was given by Dr. Jan Linders, Chairman of the WG.

5.2.2 It was noted that the International Convention for the Control and Management of Ships' Ballast Water and Sediments, (BWM Convention) was adopted at IMO on 13 February 2004, in response to the increasing concern of the international community with regard to the transfer of invasive species in ships' ballast water. To date, 30 June 2013, 37 countries have ratified the BWM Convention, the required minimum is 30. These countries represent 30.32% of the required 35% of the world's tonnage, therefore, the second criterion has not yet been met. Nevertheless, there is good hope that the Convention will enter into force soon.

5.2.3 Within this framework, an approval procedure has been set up for those ballast water management systems which make use of an Active Substance or Preparation to comply with the Convention. The procedure consists of a two-step approach for granting Basic Approval and Final Approval. The approval is granted by the Marine Environment Protection Committee (MEPC) based on the advice provided by the WG 34. There is a third step, the Type Approval, but that is outside the remit of WG 34.

5.2.4 The more general outline, scope and aim of the BWM Convention was addressed in the report to GESAMP 35 (see document GESAMP 35/5/1).

5.2.5 The report of the WG Chairman focused on the main activities of WG 34, which consists of the evaluation of several Ballast Water Management Systems (hereafter BWMS) and the further development of the Methodology of the Group, which has been accepted as a 'living' document. This means that the Methodology will be a discussion item at (almost) each meeting of the Group and changes and improvements are made, as appropriate.

'Active Substances'

5.2.6 'Active Substances' are defined by the Convention as "substances or organisms, including a virus or a fungus that have a general or specific action on or against harmful aquatic organisms and pathogens" and the approval of systems using such substances is described in resolution MEPC.169(57) adopted in 2008. However, not only 'Active Substances' are evaluated by WG 34. Also all other substances considered relevant are taken into account in the evaluation report. The Procedure for approval of ballast water management systems that make use of Active Substances (G9) contained in resolution MEPC.169(57) under the BWM Convention distinguishes also 'Relevant Chemicals' and 'Other Chemicals'.

5.2.7 Therefore, WG 34's task is to evaluate the risks for the crew, the ships' safety, the risk for the public at large and the environmental safety of the BWMS. It is furthermore the intention of WG 34 to perform these evaluations in a consistent and transparent manner, which helps Administrations to prepare a concise dossier, containing all the necessary data. The Methodology, as developed by WG 34 in the course of its work process, serves as guidance in the evaluation.

5.2.8 WG 34 convened three times since GESAMP 39 to evaluate proposed BWMS, and also held two stocktaking workshops to discuss items related to the Methodology. However, GESAMP 39 was held in the same week as the 22nd meeting of WG 34 and therefore was not yet reported to GESAMP. During these meetings, 14 BWMS were discussed and evaluated. Of these BWMS, six received a recommendation for Basic Approval (BA) and five received a recommendation for Final Approval (FA). Two systems were denied a recommendation for BA and also one system was denied a recommendation for FA. Both systems that were denied a recommendation for BA were considered not well enough developed. The working, control and monitoring of the neutralization

process could not guarantee a safe and successful operation for the system that was denied FA. During its meetings in October 2012 and May 2013, MEPC endorsed the pending recommendations of WG 34 in all cases and granted the approvals accordingly.

5.2.9 MEPC 65 was the first time WG 34 was able to clear the whole stock of BWMS submitted for evaluation mainly due to the fact that the last meeting of WG 34 was extended to six days, to include a Saturday, instead of scheduling another meeting.

Methodology for information gathering and the conduct of work of WG 34

5.2.10 The evaluation Methodology of WG 34 has been determined to be a living document based on increasing experience in the evaluation of BWMS. During three Stock-Taking Workshops (STW) WG 34 further developed the Methodology by adding:

- .1 quantitative methods for the evaluation of human risk assessment including exposure assessment for professionals and the general public;
- .2 quantitative assessment of the environmental effects by using a specific ballast water model, MAMPEC 3.0 BW¹; and
- .3 finalization of the first version of the database for 17 specific disinfection by-products (DBP) in which the physic-chemical data, the toxicological data and the environmental fate and effect data are included.

¹ <http://www.deltares.nl/nl/software/1039844/mampec/1232321>

5.2.11 During MEPC 64, held from 1 to 5 October 2012 at IMO Headquarters, the corrosion issue, the final part of the Methodology, was discussed but no consensus could be reached with the partners on this topic, The Corrosion Society (NACE International²) and the International Paint and Printing Ink Association (PPIC³). The final text will be decided upon and offered for adoption at MEPC 66, to be held from 31 March to 4 April 2014.

5.2.12 According to the proposal of GESAMP to hold a STW each year, which was endorsed by MEPC 62, WG 34 held its 4th STW from 14 to 17 August 2012 in Busan (Republic of Korea). GESAMP was represented at the workshop by Dr. Mike Huber who informed the participants of the wish of GESAMP for more consistency and transparency in the evaluations of BWMSs. At the request of GESAMP, WG 34 developed a glossary of terms and abbreviations for the evaluations of BWMS.

5.2.13 GESAMP also noted the outcomes of the 5th STW, which was held from 4 to 6 September 2013, at IMO Headquarters in London. At this workshop, GESAMP was once again represented by Dr. Mike Huber.

5.2.14 Although the deadline for the submission of BWMSs to MEPC 66 has not yet passed, WG 34 have already scheduled two meetings to accommodate future applications: BWWG 26 from 28 October to 1 November 2013 and BWWG 27 from 9 to 13 December 2013. It should be noted that the number of meetings depends on the number of submissions. Both meetings will be held at IMO Headquarters in London.

5.2.15 The Chairman of WG 34 expressed his sincere thanks to all the members of GESAMP that took the time to critically review the work of WG 34. The quality of the work has been improved as a result from this peer review process, and the

² <http://www.nace.org/>
³ <http://www.ippic.org/>

comments made were brought to the attention of the consultants involved in the drafting of the reports.

Action taken by GESAMP

5.2.16 GESAMP noted with satisfaction the intention of the WG to publish the WG methodology in the GESAMP Reports and Studies series within the next 16 to 18 months. It was also noted that it was the WG's intention to include the MAMPEC model, the human exposure scenarios, and the WG database in this publication. It was agreed that the publication should be subject to a GESAMP peer review, supplemented by a limited external peer review.

5.3 Expanded scientific review of mercury and its compounds and threats to the marine environment (WG 37)

5.3.1 There has been no activity with this WG since GESAMP 38, the preliminary report of the WG 37 to UNEP, entitled *Mercury in the Aquatic Environment: Sources, Releases, Transport and Monitoring*, was completed in 2011. During the session it was agreed that GESAMP will add to, edit and publish the report as a GESAMP/UNEP report. UNEP was prepared to publish the report during the previous session however with the time lapse the funding possibilities have dwindled. The report has enhanced the Mercury agenda of UNEP towards a legally binding treaty.

Action taken by GESAMP

5.3.2 The WG Chair will be contacted to finalize the report, in accordance with decisions made at GESAMP 39 and have it edited by GESAMP. An electronic version of a GESAMP/UNEP report will be published.

5.4 Atmospheric Input of Chemicals to the Ocean (WG 38)

5.4.1 The Chairman of WG 38, Dr. Robert Duce, presented information on the activities of WG 38, Atmospheric Input of Chemicals to the Ocean. He gave an historic overview of previous GESAMP activities related to atmospheric-ocean interactions that led to the creation of WG 38 in 2008, and he shared its current membership and progress on the tasks identified by the 38th and 39th sessions of GESAMP.

5.4.2 Dr. Duce described how the workshop on The Atmospheric Deposition of Nitrogen and Its Impact on Marine Biogeochemistry, which was held at the University of East Anglia in Norwich, United Kingdom, from 11 to 14 February 2013, led to the establishment of sub-groups that began the development of nine different scientific papers, covering the latest tasks identified.

5.4.3 Dr. Duce continued by giving an overview of each of the nine papers, indicated their lead authors and the core science and research issues involved, as well as the expected timeline for their submission to peer-reviewed journals. The preliminary titles of these nine papers are as follows:

- a) The magnitude and impact of atmospheric deposition of nitrogen to the oceans
- b) Atmospheric nitrogen deposition to the oceans: observation- and model-based estimates
- c) Impact of atmospheric deposition on ocean productivity of the South China Sea
- d) Modeling the ocean biogeochemical response to increasing atmospheric nitrogen deposition

- e) Riverine delivery of nutrients and carbon to the oceans (submitted to Nature Geosciences)
- f) Recent developments in the marine nitrogen cycle
- g) N₂O emissions from the Northern Indian Ocean: the role of atmospheric and riverine inputs
- h) How nitrogen fertilization may decrease the ocean's nitrogen inventory
- i) Model grid resolution influence on the simulation of marine biogeochemistry

5.4.4 The meeting was informed that these papers are now in the process of being written and most should be completed within the next several months, with all being submitted for publication from the fall of 2013 to the summer of 2014. The meeting was also informed that the WG has arranged for a dedicated session at the European Geophysical Union (EGU) in Vienna in April 2014. An ad hoc meeting of those members present will be held to consider progress and emerging issues.

5.4.5 Members of GESAMP expressed its appreciation to the WG for its work and the considerable output towards peer-reviewed articles that is advancing scientific understanding of issues of prime interest to the sponsoring agencies.

Action taken by GESAMP

5.4.6 The meeting decided that, as far as future activities of WG 38 in the period up to GESAMP 41 in 2014 are concerned, the focus should be on getting all of the papers referred to above completed and submitted over the next year. However, the WG was requested to consider the relative importance and its potential contribution on the following matters, in addition to any other issues

that it might identify, for consideration at GESAMP 41:

- a) Acidification of the oceans and its potential impact on solubilization of trace elements entering the ocean from the atmosphere, the cycling of marine nitrogen, and the oceanic production and emission of dimethyl sulfide.
- b) Short-lived climate forcings including methane and black carbon and their role specifically in Polar Regions, also considering the needs of the WMO WWRP and WCRP Polar Prediction Initiatives.
- c) The evolving sources of NO_x, including emissions from ships, and its regional impacts on the ocean.
- d) Atmosphere – ocean interaction related to mercury and other heavy metals (in consultation with WG 37), as well as fertilizers, pesticides, etc.
- e) The transport and deposition of POPs and their potential impact in Polar Regions.
- f) The emission of light halocarbons from the ocean and their impact on atmospheric chemical processes.
- g) The potential effects of changing ocean stratification on nitrogen cycling in the ocean.

5.5 *Establishment of trends in global pollution in coastal environments (WG 39)*

5.5.1 The Chairman of WG 39, Dr. Ana Carolina Ruiz Fernandez, presented the Group's latest progress. The WG 39 was formally created during the 37th session of GESAMP (Bangkok, 15 -19 February 2010). Terms of Reference (ToR) included five main tasks

(described below). ToR 1 and 2 are already approved by GESAMP, but points 3 to 5 are pending the approval from the UN agencies involved.

5.5.2 Main tasks of WG 39 are:

1. Revise existing methodologies on suitable environmental archives, dating methods, pollution indicators, analytical techniques and trend analysis. Sedimentary environments not deeper than 200 meters would be considered in the analysis, thus including all the ocean borderlands as well as main Islands.
2. Review existing data, including data quality, on a regional basis. Records of pollution in coastal environments will be used as background information.
3. Design, implement and maintain, with the help of the leading organization, a database of global trends of pollution.
4. Disseminate the WG activities through the GESAMP website, press releases, preparation of educational materials and presentation at stakeholder meetings. Publish results in scientific journals and at international conferences.
5. Report to GESAMP on all WG activities once per year.

5.5.3 WG 39 met for the first time back to back on the occasion of the International Symposium on Isotopes in Hydrology, Marine Ecosystems, and Climate Change Studies in Monaco from 3 to 5 April, 2011. The report of this meeting was submitted to the GESAMP 38 meeting in May 2011.

ToR 1 and 2 were provided and members agreed on the methodology of work and distribution of tasks. The main activities assigned were related with ToR 1, i.e. to conduct literature surveys on temporal trends of pollution of coastal ecosystems following a list of priority substances, and to classify the information according to the geographical definitions of the Large Marine Ecosystems (LME). The bibliographic record of the documents collected would be incorporated in a MS Excel data base created for each LME; and each data file, together with the original documents collected, will be exchanged and archived through a file-sharing website (DropBox). Members have worked on the tasks assigned and exchange information by electronic means. Part of the literature survey has been done; currently 314 scientific papers have been compiled, and the bibliographic records have been introduced in the MS Excel data base, and all the information has been stored in folders by using DropBox. The information gathered corresponds to 32 of the 64 LMEs. Some of the LMEs may have no records because no studies have been performed in that region. The compilation is periodically reviewed and backed up, and it is available from Dr. Ruiz Fernandez.

5.5.4 In addition, a pilot web platform has been developed with the assistance of UNINMAR at the Institute of Marine Sciences and Limnology, National Autonomous University of Mexico (ICMyL-UNAM) with the aim to host and manage the information contained in the WG 39 database (ToR 3). An example of the current functions and capabilities is shown at http://132.248.15.44:8080/uninmar_3/. Financial support for further development and maintenance of the WebData base is needed and the Sponsoring Organizations will investigate the possibility of financial support.

5.5.5 Three new members will be invited to join WG 39 (Mr. Mark Baskaran from the United States, Mr. José Marcus de Oliveira Godoy from Brazil, and Mr. Henk Heijnis from Australia) with the purpose to

strengthen WG 39 and to work on those LMEs that have no records so far. IAEA and UNIDO will provide funding for a second meeting of WG 39 to be held in the first quarter of 2014, with the objective to work on Task 2 of the terms of reference (providing that Task 1 is completed). This meeting will be possibly held in Italy (ENEA facilities) or at EL-IAEA in Monaco.

5.6 Sources, fate and effects of microplastics in the environment – a global assessment (WG 40)

Activities of the Working Group

5.6.1. The Chairman of the WG, Dr. Peter Kershaw, informed the meeting that the report of the inception meeting, held prior to GESAMP 39, was completed and distributed to the meeting participants, following an internal review. Discussions took place with the Sponsoring Organizations, NOAA and Plastics Europe and the American Chemistry Council over the extent and nature of the support being offered. All parties agreed that the results of the assessment would be made freely available in the public domain. A sub-contract was arranged with University of Plymouth to allow a post-graduate student to carry out a literature review, focusing on the biological effects of microplastics, under the supervision of Dr. Richard Thompson. The planned timing of the second meeting, in December 2012, was postponed until July 2013. This was due to a combination of factors including unavoidable delays in setting up the sub-contract, budget uncertainties within some of the Sponsoring Organizations and the availability of key WG members.

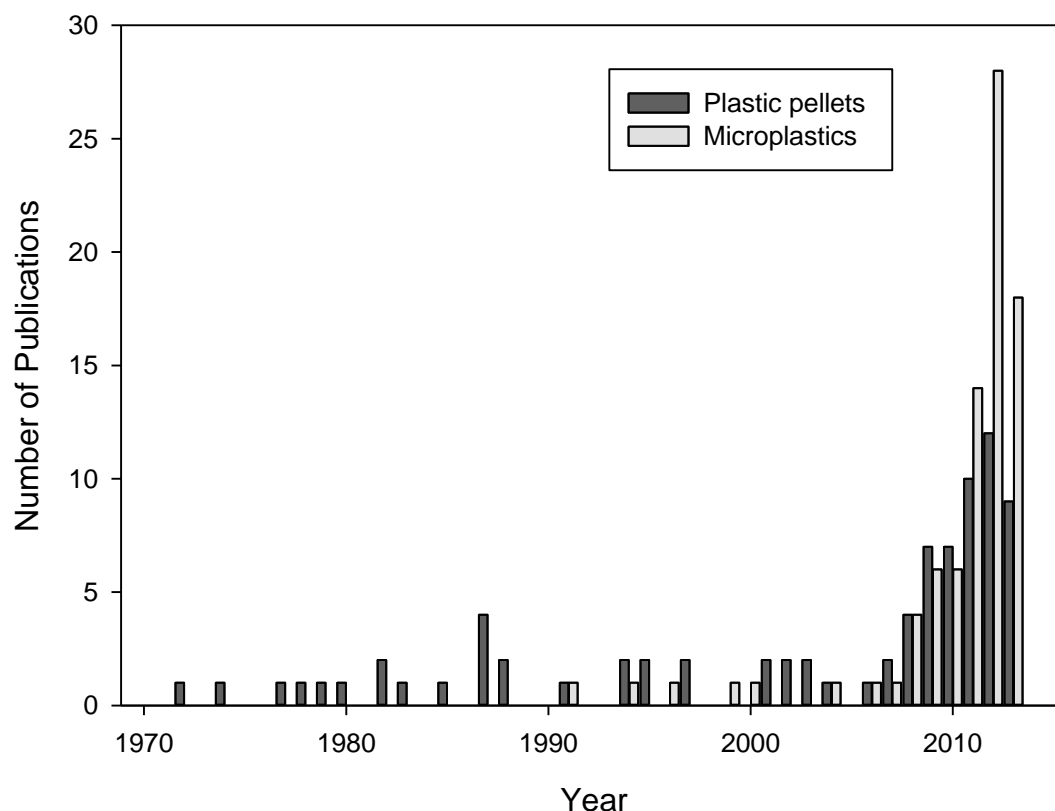
5.6.2 The second WG meeting took the form of a four-day intensive workshop, from 23 to 27 July 2013, hosted by IMO in London, attended by 13 WG members, Mr. Luis Valdes (UNESCO-IOC Technical Secretary), three

Observers and three IMO staff. In the preceding months, a shared office space was created in Basecamp™, to provide WG members with information about the assessment and a secure environment for drafting text. A library of publications about microplastics and related topics was created using the Mendeley™ reference manager, which is free for invited members. This was populated by the post-graduate student, and others. Miss Courtney Arthur of NOAA acted as the Basecamp™ and Mendeley™ administrator.

5.6.3 The purpose of the Workshop was to produce a draft interim assessment, covering all of the agreed Terms of Reference. The work programme was structured into a number of plenary and parallel sessions. Three sub-groups dealt with: input, distribution and fate, including physical properties of plastics; biological effects; and, social aspects, including public perceptions of litter and microplastics. These three sections form the basis of the interim assessment. In addition to using Basecamp™ and Mendeley™, several sub-groups used Google Docs™ to allow simultaneous editing of text during the workshop. A participant from India was unable to attend in person but was able to contribute via the Basecamp™ site and using Voice over IP (VoIP).

5.6.4 It was noted that there has been a surge of interest in microplastics in the past five years, from the scientific community, intergovernmental organizations (IGOs), non-governmental organizations (NGOs), national and regional organizations, decision-makers and the general public. This is despite reports of plastic micro-litter being published in the early 1970s, accompanied by calls for an assessment of the potential consequences. The term 'microplastics' came into common use in the mid-2000s, although it was used in unpublished cruise reports of the Sea Education Association (United States) from 1991 onwards. With the increased interest there has been a realization that there remains considerable uncertainty about inputs, fate and effects of microplastics.

Figure : Publication statistics addressing plastic micro-litter in the marine environment, 1970 – 2013, generated using the search engines Web of Knowledge™, Science Direct™ and Google Scholar™. The keywords used were 'microplastic AND marine' and 'plastic pellet AND marine'. The publications were checked for their relevance but search may not include all 'grey literature' sources (Sarah Gall, Univ. Plymouth, pers.comm.).



5.6.5 The intended audience for the Assessment includes:

- UN Agencies
- other sponsoring organizations
- Regional Seas Organizations
- decision-makers in sovereign states
- general public
- scientific community

Future activities of the Working Group

5.6.6 A work programme has been agreed with lead contributors responsible for the three main sections. The draft Interim Assessment text is currently expected to be completed and edited by mid-October 2013, when a teleconference is

planned to discuss progress and agree plans for the remaining intersessional period. It is planned to hold regular on-line discussions and exchange electronic communications. The Final Assessment Workshop is planned to take place in the Republic of Korea, from 22 to 25 July 2014, with the generous sponsorship of KIOST (Korea Institute of Ocean Science and Technology). An open seminar is being organised for 21 July to allow wide regional representation of both scientists and decision-makers. The Assessment report will be prepared and launched at the IOC-sponsored 2nd International Ocean Research Conference, Barcelona, Spain, in November 2014. It is anticipated that the Assessment will set out a number of options for further investigation, focused on specific elements that could not be covered in

sufficient detail. This could form the basis for continuing the work of WG 40, depending on the wishes of the sponsoring bodies.

5.6.7 The timeline for the work of the Task Team is:

- Inception meeting report – May 2012
- Interim Assessment Workshop – July 2013, IMO London, UK
- Completion of draft Interim Assessment text – October 2013
- Final Assessment Workshop – July 2014, Republic of Korea
- Assessment Report¹ – to be launched at the 2nd International Ocean Research Conference, Barcelona, Spain, in November 2014.

(¹ further work may be undertaken depending on the outcome of the Assessment and the wishes of the sponsoring Agencies)

Links with related initiatives

5.6.8 The WG 40 Assessment is relevant to a number of other international initiatives, in which several members of WG 40 are involved, and to which WG 40 is expected to contribute:

GEF Transboundary Water Assessment full-sized project

5.6.9 GESAMP is contributing to three aspects of the TWA which have a focus on, or will include, marine microplastics:

- .1 Indicator of floating plastic in the Open Ocean and large marine ecosystems (LME);
- .2 Indicator of POPs in plastic resin pellets in LMEs, linked to the International Pellet Watch; and

- .3 Assessment of pollution in the open ocean – revision of GESAMP R&S 79.

International Whaling Commission

5.6.10 The IWC is conducting an assessment of the impacts of marine debris on cetaceans, including potential physical and chemical effects of microplastics on baleen whales, for the Scientific and Conservation Committees. A preparatory Workshop took place in May 2013 and a 2nd Workshop is planned for 2014, to look at potential mitigation and management options.

Global Partnership on Marine Litter

5.6.11 A brochure on 'Microplastics as an emerging issue' is being prepared (Dr. Peter Kershaw and Dr. Valeria Hidalgo-Ruz, WG 40) for the 2nd Global Land-Ocean Conference, 2-4 October 2013 in Jamaica.

Action taken by GESAMP

5.6.12 GESAMP commented favourably on progress achieved to date, noting the benefits of having multi-Agency and third party support. This additional support, especially from industry, has allowed the WG to invite experts from the wide range of disciplines covered by the topic area.

5.6.13 A request was made to GESAMP, by the WG Chairman, to approve the modification of one of the Terms of Reference, to more accurately reflect the main priorities as identified by WG 40 at the interim assessment workshop, including information and expertise available. The request was to remove the term 'economic' from ToR 6, which now reads: 'Assess the social aspects, including public awareness'. The WG considered that there was insufficient information to provide a reliable

assessment of any economic effects of microplastics in the marine environment. GESAMP approved the change in ToR 6.

6A CONTRIBUTIONS TO THE UN REGULAR PROCESS

Regular Process for Global Reporting and Assessment of the State of the Marine Environment including Socio-economic aspects

6A.1 The task of the first cycle of the Regular Process (2010 to 2014) will be to produce the first World Ocean Assessment (WOA). Following the adoption in 2012 of the Terms of Reference and Methods of Work for the Group of Experts as well as the outline of the first WOA, a number of activities have taken place and are briefly described below.

6A.2 From September 2011 to February 2013, a number of Regular Process Regional Workshops have been organized in Australia, Mozambique, United States, Belgium, China and Chile. Two more workshops will be held before the end of the year, in Cote d'Ivoire and India.

6A.3 The Regular Process through various meetings of this Ad Hoc WG has expressed the need to start building capacity of Member States for the conduct of integrated marine assessments as a key priority. Recommendations identified during the Regional Workshops are extremely useful in identifying regional priorities where targeted capacity-development interventions should be implemented.

6A.4 IOC and UNEP stated that a practical approach for addressing capacities needs as identified through the Regional Workshops, would

require the development of a tailored approach, such as the development and implementation of a specific Regular Process Training Module which would provide:

1. common information content/common approaches towards assessment methodologies;
2. defining approaches for scaling up assessments (national, regional, global); and
3. promote the use of standardized procedure to integrate the ecological and socio-economic dimensions of assessments, with the aim of securing coherence, consistency and comparability across regions.

6A.5 In the coming months, IOC, UNEP, UN-DOALOS as Secretariat of the Regular Process, as well as the Bureau of the Ad Hoc WG will continue to discuss these options.

6A.6 UNEP and IOC continue to provide technical and scientific reports to the WOA. The Group of Experts for the Regular Process have designated lead members and writing teams for the approved outline of the WOA. Experts to support the writing will be drawn from the pool of experts nominated by the member states. There have been adjustments to the timeline of the WOA, the draft report will be presented in December 2014 and published in 2015.

6B GEF TRANSBOUNDARY WATERS ASSESSMENT PROGRAMME (TWAP)

Background to the TWA Full-sized Project

6B.1 This GEF full-size project (FSP) was initiated in January 2013 and is due to run until December 2014. The overall intention is to promote effective institutional partnerships covering the five international waters systems of: aquifers, lakes, rivers, large marine ecosystems (LME) and the open ocean, outside national jurisdiction. The conceptual framework is loosely based on the DPSIR model, although an attempt has been made to map this on to the five-segments used in LME GEF programmes.

6B.2 It builds on a medium-size project⁴ that developed methodologies for carrying out the assessment, including indicators of ecosystem state (e.g. fisheries, nutrient status, pollution). A number of UN Agencies and other organizations are involved, with UNESCO-IOC having overall responsibility for the LME and Open Ocean components. The GEF contribution amounts to USD 5 million with 4-5 times this amount being 'leveraged' in cash and in kind contributions. GESAMP helped in the method development, including providing suggestions for indicators of pollution. GESAMP has a total budget of USD 120k as direct income with a significant in-kind contribution from GESAMP Members.

Inception meeting of the Open Ocean and LME partners

6B.3 The inception meeting for the partners of LME and Open Ocean components took place at UNESCO-IOC from 20 to 22 March 2013. This was the first opportunity to look in detail at the proposed

revised budget and work programme (the original budget had been USD 10 million GEF contribution).

6B.4 Only a sub-set of indicators and expert-based reviews are being used in the 2nd phase due to the budget restrictions. The full assessment methodology developed during the 1st phase is available on-line⁴.

Expected final TWA outputs

6B.5 Three main products are expected:

- Web portal – executive summary level, visual (maps, indicators, infographics), access to spatially explicit data
- Written report – executive summary
- Written report – full report with more detail from each partner, further background/rationale and information on the assessment process

Proposed timeline for the main TWA

6B.6 The tentative timeline for the main TWA is as follows:

- March 2013 – inception meeting
- April 2013 – agreement on personnel involved in GESAMP-related activities
- June 2013 – drafts for interim report
- September 2013 - interim report
- March 2014 – assessment indicators
- April – May 2014 – 2nd workshop
- May 2014 – draft of final text
- May-July 2014 – peer -review
- July 2014 – final narrative report
- December 2014 – completed assessment

⁴ www.twap.iwlearn.org

GESAMP inputs

6B.7 GESAMP has undertaken to carry out three elements of the TWA:

- Assessment of the pollution status of the Open Ocean based on expert-knowledge – loosely based on an update of the GESAMP R&S 79⁵ - Assessment of Assessment for the Regular Process.
- Selected PBTs analysed in plastic resin pellets collected from beaches – linked with International Pellet Watch programme
- Gridded data on floating litter, in LMEs and the open ocean

6B.8 In addition, GESAMP has contributed to a proposal being considered by the Bay of Bengal Large Marine Ecosystem Project, covering atmospheric inputs of nutrients and dust, linked to WG38. This would represent a 'Level 2' assessment in the TWA terminology.

GESAMP Task Team on Pollution of the Open Ocean

6B.9 A small core group of Task Team members met at IMO headquarters on 6 and 7 August 2013, to prepare a work plan and schedule for updating the report *Pollution of the Open Ocean* published by GESAMP (Reports & Studies No.79) in 2009. Funding for this workshop was provided from GESAMP funds.

6B.10 There was general agreement that the coverage of noise, plastics and mercury should be significantly expanded as a result of the new information on these parameters that had emerged in the last five years. Noise in the marine environment has been the subject of several major

reviews (e.g. CBD, NOAA) and there has been recent work on both microplastics and associated POPs (GESAMP WG 40) and mercury (GESAMP WG 37; MIT⁶). Where new information on a particular substance was sparse, or did not substantially alter the conclusions presented in the 2009 report, the substance might not be included. It was agreed that the updating process should concentrate on assessments, reviews and scientific literature generated in the last five years. Much of the introductory material given about substances in the previous report would not need to be repeated; instead there would be a brief introduction and a resume of previous findings for each substance. The possibility of including a CD of Reports & Studies No. 79 at the back of the updated report would be investigated.

6B.11 In order to obtain the expertise necessary to address the full range of issues, it was evident that membership of the Task Team would need to be expanded, especially in relation to ocean noise, mercury and POPs. However, the current budget of USD 30k to cover travel and subsistence for 2 working sessions would limit participation. It was agreed that additional funding would be very helpful to allow the intended scope of topics to be covered adequately. The Task Team urged that this matter be addressed at the forthcoming meeting of GESAMP ExCom.

6B.12 The core group had proposed that a full working session, involving as many contributors as possible, would be held in Monaco, with the support of IAEA. A further editorial meeting is planned for March-April 2014 to finalize the report.

6B.13 Due to budgetary restrictions, this main workshop will constitute the one and only opportunity for the team to engage in multi-disciplinary discussions, expert interaction and joint drafting, and it is hoped that a significant proportion of the work will be accomplished at this time. Although a small editorial group will meet in March or April 2014 to finalize the text of the report, from

⁵ GESAMP (IMO//FAO/UNESCO-IOC/WMO/IAEA/UN/UNEP Joint Group of Experts on Scientific Aspects of Marine Environmental Protection) 2009. *Pollution in the Open Ocean: a review of assessments and related studies*. Rep. Stud. GESAMP No. 79, 64pp.

⁶ <http://mercurypolicy.scripts.mit.edu/blog/>

the January meeting onwards further communications between Task Team members will be largely by correspondence; i.e. email, Skype, conference calls, on-line platforms, etc.

Indicators of floating plastic

6B.14 There has been considerable and growing interest in marine litter since the 2009 GESAMP report. There was a major event in 2011 in Honolulu, the 5th International Marine Debris Conference, and there has been a step-change increase in the number of publications both on marine litter in general and on micro-plastics. The UNEP Global Partnership on Marine Litter is an initiative launched and endorsed at the Rio +20 meeting, with an aim of providing a platform for sharing and disseminating information and expertise. GESAMP is involved through WG 40, which represents one of several current initiatives that can be used to draw material together for the TW assessment.

6B.15 A consultant has been appointed (Peter Kershaw) to lead the work on floating plastics, as well as contribute to the POPs in plastic resin pellets indicator work and act as the main point of contact between GESAMP and UNESCO-IOC on all matters relating to the TWA. One workshop is planned to bring together the main data holders and contacts with the NOAA Marine Debris Program and Sea Education Centre, two key bodies, are well developed already. It is intended to include a statistician who has experience with marine litter datasets (Chris Wilcox, CSIRO) to help in the interpretation of spatial and temporal trends.

Indicators of POPs in plastic resin pellets

6B.16 This indicator was selected on the basis of the availability of data from the International Pellet

Watch Programme⁷. The work will be conducted mainly using a sub-contractor (Tokyo University of Agriculture and Technology). A workshop is planned for early 2014 to bring together a small number of key researchers to pool and interpret the available data.

Bay of Bengal LME Level 2 Assessment: GESAMP-related contribution

6B.17 It had been agreed, in discussions between the TWA Secretariat and GESAMP, that members of GESAMP WG38 would be able to contribute to a potential assessment of the atmospheric input of nutrients to the Bay of Bengal (BoB). This is currently being considered by the Bay of Bengal Large Marine Ecosystem Secretariat. The GESAMP-related input will be achieved largely through a sub-contract with Dr. M. Sarin, with Dr. R. Duce providing additional oversight or review, as required, as well as providing a link to the overall assessment of atmospheric inputs forming part of the Open Ocean component of the TWA. Dr. P. Kershaw is providing a link to the overall GESAMP contribution to the TWA. There is an intention, within the main BoB assessment, to combine atmospheric deposition and riverine inputs in an overall assessment of the impact of nutrient inputs to the BoB.

Action taken by GESAMP

6B.18 It was agreed that the Task Team approach was the most appropriate mechanism for GESAMP to meet this request, considering the timetable and budget restraints. A similar approach to produce the earlier Assessment of Assessments report (Reports & Studies No. 79) had been successful in delivering a high quality product in a short period. It was also noted that the Terms of Reference and expected outputs had been agreed

⁷ <http://www.pelletwatch.org/>

and GESAMP had committed to delivering the requested output to a specific timetable.

6B.19 There was discussion about the selection procedure for both the range of pollutants considered and the make-up of the Task Team. This led to a sub-group of Members meeting to produce an agreed table of contents and contributors that better reflected the scope and content of the proposed assessment report.

6B.20 Following discussion about potential sources of additional support, UNDP generously offered to support a participant at the main workshop in Monaco. There is no provision in the GEF budget for printing hard copies of the TWA report. However, it was suggested that funding might be found to allow printing of the Task Team report in the GESAMP Reports & Studies Series.

7 IDENTIFICATION OF NEW AND EMERGING ISSUES REGARDING THE DEGRADATION OF THE MARINE ENVIRONMENT OF RELEVANCE TO GOVERNMENTS AND SPONSORING ORGANIZATIONS

7.1 This GESAMP agenda item is intended to provide an opportunity for Members to bring new topics related to the status of the marine environment to the attention of the Sponsoring Organizations, and to discuss issues arising during the course of the current GESAMP meeting⁸. Three potential new topics were identified and reviewed during this session.

7.2 One topic was raised during the informal meeting of the GESAMP Members on the morning of 9th September. This concerned climate-related changes in the distribution of species, in particular affecting the viability, success and migration of non-indigenous species introduced by a variety of vectors (e.g. hull fouling, aquaculture, aquarium releases). The rapid migration of the Lion Fish throughout the Caribbean provided an excellent example of the phenomenon. Other issues that could be included such as the prevalence of harmful algal blooms (HABs), fisheries impacts and viability of imported viruses were also raised. However,

during the discussions it was agreed that this topic was being covered adequately via a number of existing initiatives (e.g. IMO species distribution identification, GEOHABs, ICES) and there was no requirement for GESAMP to consider making an additional contribution at this stage.

7.3 The second item in this session concerned a paper submitted by T. Bowmer (GESAMP 40/5/5), proposing to set up a new WG on 'Pollution in the Open Oceans'. It arose out of the establishment of the Task Team for the Transboundary Waters Assessment, and one main driver was the perceived need for a full WG to provide the appropriate status and visibility of the topic area. A number of counter-arguments were put forward by UNESCO-IOC, WMO, UNDP, UNEP, UNIDO, IMO and IAEA which indicated that the general consensus amongst the sponsoring Agencies represented at GESAMP 40 was that this proposal was premature and too broad in its scope. There was a danger that the terminology being used, and broad scope of the objectives, could be misinterpreted by other Agencies or Member States. GESAMP agreed that

⁸ The process to propose new and emerging issues is set out in Annex VI.

the proposed WG would not be pursued. However, it was emphasized that the remit of GESAMP did cover pollution, and other issues of environmental protection, in the open ocean, but that this needed to be focused on particular issues, mindful of the competences of other IGOs.

7.4 The third topic arose as a result of discussion during the Side Event on the 'Discharge of mine tailings and coastal run-off in the marine environment: effects and impacts'. It was emphasized that this issue specifically concerns land-based sources of pollution, whether discharged directly via pipeline or via rivers, and that any GESAMP response would be similarly spatially limited. GESAMP was not concerned, in this case, with seabed mining of polymetallic deposits, whether inside or outside areas of national jurisdiction. This removed the need to consider the remit of the International Seabed Authority.

7.5 It was noted that the practice falls outside established international regulatory frameworks. However, the IMO, through the London Convention & Protocol, have been concerned about this issue since 2008. UNIDO and the UNEP-GPA are also concerned, and all three Agencies supported the proposal that GESAMP should proceed with further scoping activities. This would include a consideration of recognized knowledge gaps, such as the importance of adequately describing the receiving environment, the behaviour of slurries underwater, physical smothering, ecotoxicological effects and recovery times.

Action taken by GESAMP

7.6 It was agreed that a sub-group would prepare a scoping paper to help better define the nature of the issues involved, potential funding sources (including industry) and Terms of Reference (M. Huber, E. Ajao, A-C. Ruiz Fernandez). The group should also investigate options for holding a workshop to which

representatives of mining companies, peak industry bodies, licensing authorities, technical experts, potential funders and other interested parties could be invited. IAEA-MEL kindly offered to host a workshop in Monaco. An alternative would be to identify a location in SE Asia, Australia or South America where current mining operations are taking place or planned. UNIDO offered support to prepare the scoping report and workshop, taking into account UNIDO's interest in artisanal mining. IMO also offered support, and suggested that a link to the wider LC/LP process might attract industry support. It was noted that Dr. M. Huber had practical experience dealing with this issue.

8 SCOPING ACTIVITIES*

8.1 *Further exploration of the issue of bio-magnification in top predators and its ecological and social implications. Discuss the feasibility of holding a GESAMP Workshop on this issue (tentatively planned for late 2014 or immediately prior to GESAMP 41)*

8.1.1 The Chair suggested organizing a GESAMP workshop on bio-magnification, including value added as a means to re-engage FAO in GESAMP within its expertise and mandate. IMO indicated it had had discussions with FAO regarding re-engagement with GESAMP. It was suggested this could also provide an opportunity to re-engage WHO vis a vis their role in ensuring global seafood safety. IMO offered to follow up with both agencies to gauge interest.

8.2 *Scoping paper on the relevance of the production of disinfection by-products (DBP) against other inputs of DBPs in the aquatic environment (GESAMP 40/8).*

8.2.1 Item was introduced by Jan Linders: DBPs originally brought up in context of ballast water management systems but considered to explore looking at broader sources of DBPs (including comparative burdens from natural sources of some DBP chemicals). Document GESAMP 40/8 noted that over 700 DBPs that have been found in drinking water. The paper noted that processes and mechanisms which can introduce DBPs into the aquatic environment include industrial cooling units; desalination plants; land-based waste water treatment facilities; seawater toilets; and ballast

water management systems. In summary, the paper estimated the total tonnes of tribromomethane (as an example) from BWMS, industrial cooling and desalination which were all found to be about three orders of magnitude or more higher than natural occurrence, suggesting a modest overall risk to marine ecosystems and human societies. Nevertheless, especially at regional or local scale discharges of DBPs may lead to concentrations with some effects. Therefore, a potential project of GESAMP on the emissions of DBP at the regional and local scale should be considered, through possible creation of a GESAMP WG on DBP at regional and local scales.

8.2.2 Members discussed the possibility of establishing a WG in this area. There was concern regarding the necessary commitment vis a vis time, financial resources etc. Furthermore, Dr. Jan Linders who led the preparation of the scoping paper would not be available to chair the WG due to other commitments. The Chair suggested the need to at least set up an inter-sessional correspondence group to look at developing a TOR, potential funding sources and the identification of a chair. Dr. Jan Linders indicated his willingness to lead this intersessional effort.

8.3 *Status report of the Correspondence Group on Environmental Quality Standards (EQS) to explore the possibility of global standards.*

No document was available on this topic for GESAMP 40 and it will therefore be revisited at GESAMP 41.

* Template for new GESAMP Working Groups is at Annex VII.

9 GESAMP SIDE EVENT: WORKSHOP ON DISCHARGE OF MINE TAILINGS AND COASTAL RUN-OFF IN THE MARINE ENVIRONMENT: EFFECTS AND IMPACTS

9.1 There are about 2,500 industrial-sized mines operating around the world, and, extensive efforts have been made world-wide to minimize environmental damage from such activities. One of the biggest environmental challenges in mining is the management of mine tailings in coastal areas and the prevention of run-off to the seas. Communities of marine organisms such as coral reefs, but also many other habitats such as sea grasses, are vulnerable to smothering by fine particulate matter from coastal run-off as well as to effects of pollutants (mostly metals from the ores themselves or process related chemicals).

9.2 The issue has been noted by several of the Sponsoring Organizations and their constituencies, such as IMO, through the London Convention and Protocol, UNIDO, and the UNEP-GPA.

9.3 On Wednesday 11 September, GESAMP and UNIDO organized a special side event entitled “*Discharge of mine tailings and coastal run-off in the marine environment: Effects and impacts*”. The side event was chaired by Dr. Peter Kershaw, Vice Chairman of GESAMP. Approximately 30 people attended the side event. Five expert panelists and their presentations included:

- Dr. Hossein Ahmadzadeh, Ecole des mines d'Alès, France - *Environmental Impacts of Mine Tailings*
- Mr. Edward Kleverlaan, Head, Office for the London Convention/Protocol and Ocean Affairs, International Maritime Organization - *International Assessment*

of Marine and Riverine Disposal of Mine Tailings

- Mr. Ludovic Bernaudat, Water Management Unit, Environmental Management Branch, Programme Development and Technical Cooperation Division, United Nations Industrial Development Organization - *Environmental Impacts of Artisanal Gold Mining*
- Dr. David Santillo, Greenpeace Research Laboratories, University of Exeter, UK - *Mine waste disposal at sea: how can we assess impacts to inform regulation?*
- Dr. Hossein Ahmadzadeh, Ecole des mines d'Alès, France - *Remediation/compensation methods of effects of mine tailings*

9.4 In their presentations and the ensuing panel discussions, the panelists highlighted the gaps in terms of international legislation to regulate the issue of mine tailings and the impacts of mining wastes in the coastal zones. It was also noted that there is a knowledge gap when it comes to the environmental impacts, not least in relation to large-scale mining operations and marine disposal of mine tailings.

Action taken by GESAMP

9.5 GESAMP agreed that the issue of the environmental impacts of the disposal of mine tailings from industrial and artisanal mining in the coastal zone was of global significance and that there is a need for filling the knowledge gaps, which could in turn inform any further action by the Sponsoring Organizations, such as any possible development of guidance.

9.6 GESAMP therefore agreed to establish a Correspondence Group to develop a scoping paper and possible plan for taking this issue forward. It was noted that the issue is of great interest to

UNIDO, IMO (London Convention/Protocol) and UNEP-GPA, but there are several other bodies who could have an interest too, such as the International Council on Mining and Metals (ICMM) and relevant trade organizations, as well as industry itself.

9.7 It was further agreed that the Correspondence Group would, if possible try to convene a workshop on this topic before reporting back to GESAMP 41. It was also noted that several of the Sponsoring Organizations would be able to provide some limited financial and in-kind support to this scoping process.

10 DATE AND PLACE OF GESAMP 41

10.1 GESAMP accepted the kind offer of IMO to host the 41st session of GESAMP at the World Maritime University, Malmö, Sweden, in the third quarter of 2014. Proposed dates are subject to

availability for a room for up to 40 people and will be confirmed by end of January 2014. Tentatively, a side event on a topic to be decided will be organized.

11 FUTURE WORK PROGRAMME

GESAMP Working Groups, correspondence groups and task teams

Members:

S. le Floch (France), T. Höfer (Germany), D. James (U.K.), W. Jiang (China), M. Morrissette (USA), H. Saito (Japan), (two vacancies), K. McDonald (consultant)

Evaluation of the hazards of harmful substances carried by ships

Products:

- a) Hazard profiles of new substances & correspondence with the chemicals industry
- b) Maintenance and update of 900 GESAMP hazard profiles
- c) GESAMP Reports and Studies 64, 2nd edition

(Working Group 1)

Lead Agency: IMO

Co-sponsors: None

Chairperson: C. T. Bowmer (Netherlands)

Planning: - 49th Session, 25 to 29 June 2012 at IMO in London
- First draft of R&S 64 second edition by EHS 49
- Peer Review by GESAMP intersessionally prior to GESAMP 40

Review of applications for “Active Substances” to be used in ballast water management systems

(Working Group 34)

Lead Agency: IMO

Co-sponsors: None

Chairperson: J. Linders (Netherlands)

Members: T. Borges (Portugal), A. Dock (Sweden), S. Hanayama (Japan), E. Oyewo (Nigeria), E. Pelletier (Canada), K. Rhie (Republic of Korea), D. Smith (UK), G. Ziegler (USA), (2 vacancies)

Consultants: A. Craven, J. Crayford

Products: a) Evaluation of the risks to the environment, human health and the ships’ crew from ballast water management systems
b) Completion of the methodology in R&S following external and GESAMP peer review

Planning: A minimum of two meetings are planned before GESAMP 41 in 2014

Metals (formerly mercury) Working Group

(Working Group 37)

Lead Agency: UNEP

Co-sponsors: None

Chairperson: H. Keenan (U.K.)

Members: - Technical editing: M. Huber (Australia)
- Organization of peer-review: T. Bowmer (Netherlands)

Products: Completion and peer review of GESAMP Reports and Studies No.86 on “Mercury in the Marine Environment”.

Planning: - Final drafting to be completed by end June 2012
- External peer review to be completed by Sept. 2012
- Review and approval by GESAMP inter-sessionally – on-line publication end Oct 2012

Atmospheric input of pollutants to the oceans Working Group

(Working Group 38)

Lead Agency: WMO

Co-sponsors: IMO, US National Science Foundation

Chairpersons: R. Duce (USA), P. Liss (U.K.)

Members: A. Baker (U.K.), F. Dentener (EC), K. Hunter (New Zealand), N. Kubilay (Turkey), N. Mahowald (USA), G. Okin (USA), J. Prospero (USA), M. Sarin (India), V. Surapipith (Thailand), I. Tegen (Germany), M. Uematsu (Japan), T. Zhu (China)

Products: a) Completion of GESAMP Reports & Studies No.84 on

The Atmospheric Input of Chemicals to the Ocean.

b) Completion of peer reviewed paper in Environmental Science and Technology on atmospheric dust deposition. c) Submission of nine papers to peer-reviewed journals for publication during late 2013 and 2014.

Planning: A session is planned for the European Geophysical Union meeting in April 2014, covering the topics addressed by the WG. No other meeting of WG 38 is expected during the intersessional period.

Global trends in pollution of coastal ecosystems: retrospective ecosystem assessment

(Working Group 39)

Lead Agency: IAEA

Co-sponsors: UNIDO

Chairpersons: A.C. Ruiz-Fernandez (Mexico)

Members: J. Sericano (USA), R. Delfanti (Italy), N. Theobald (Germany), E. Nyarko (Ghana), J. A. Sanchez-Cabeza (Spain), E. Sombrito (Philippines), A. Wagener (Brazil), M. Sarin (India), D. N. Dang (Vietnam).

Products: Report on work items 1 and 2 of Terms of Reference

Planning: Report to GESAMP 41

Microplastics

(Working Group 40)

Lead Agency: UNESCO-IOC, UNEP,

Co-sponsors: IMO, UNIDO, IAEA, PlasticsEurope, American Chemistry Council, NOAA

Co-chair: P. Kershaw (U.K.), H. Leslie (Netherlands),

Members: T. Andrady (USA), J. Baker (USA), A. Koehler (Germany), K. Lavender Law (USA), N. Maximenko (USA), W. Joon Shim (Korea), H. Takada (Japan), R. Thompson (UK), A. Turra (Brazil), R. Venkatesan (India), C. Arthur (USA), V.H. Ruz (Chile), H. Bouwman (South Africa), P. Ryan (South Africa), J. Potemra (USA), K. Wyles (UK), S. Pahl (UK).

Products: Inception report (end May)

Planning: a) Global assessment report within 3 years (2014)

b) Virtual conferences to prepare Task Teams over the summer

c) Workshop: 3 to 7 December 2012

The Task Team on the Trans-boundary Waters Assessment Project

Lead Agency: IOC, UNEP

Chair: R. Boelens (Ireland)

Members: P. Kershaw, T. Bowmer, R. Duce, A. Baker.

Products: Report and data products supplied to the TWA Project, and published in the Reports and Studies series

Planning: Workshop planned for first quarter of 2014, editing workshop in second quarter of 2014, final report by July 2014.

Correspondence Groups

The following activities will continue during the intersessional period:

Correspondence Group on the impacts of mine tailings in the marine environment

The Correspondence Group would prepare a scoping paper as a starting point for further discussion, and will, if possible convene a workshop in the intersessional period.

Lead: M. Huber (Australia)

Members: R. Delfanti (Italy), E. Ajao (Nigeria), A.C. Ruiz Fernandez (Mexico)

Correspondence Group on the biomagnification of contaminants in marine top predators and its ecological and health implications

The Correspondence Group will continue, on the basis of the scoping paper provided (see GESAMP 38, Annex VIII), to: a) develop ToR and a programme for an international workshop on the ecological consequences of bioconcentration; b) prepare with CIESM a high level meeting with stakeholders on the human health issues of biomagnification; and c) establish contacts with FAO/WHO.

Lead: Frederic Briand CIESM

Members: C. T. Bowmer (Ireland), P. Kershaw (UK)

Correspondence Group on disinfection by-products

The Correspondence Group will prepare a scoping document. The issue is that based on the disinfection systems for ballast water to avoid bio-invasion of organisms, an additional amount of disinfection by-products will be discharged into the marine environment compared to the amounts discharged by cooling systems using disinfection as well.

Lead: J. Linders (Netherlands), A. Baker (UK)

Members: M. Huber (Australia), C. T. Bowmer (Netherlands), P. Kershaw (UK)

12 ANY OTHER BUSINESS

No other business was raised.

13 ELECTION OF CHAIRPERSONS

GESAMP elected Dr. Peter Kershaw as Chairman and Dr. Manmohan Sarin as Vice-Chairman, unanimously, for the intersessional period and the 41st session of GESAMP.

GESAMP extended its sincere thanks to Dr. Tim Bowmer for his dedication and services as Chairman for GESAMP during the last five years.

14 CONSIDERATIONS AND ADOPTION OF THE REPORT OF GESAMP 40

The report of the fortieth session of GESAMP was considered and approved.

15 CLOSURE OF THE SESSION

The newly elected Chairman of GESAMP, Dr. Peter Kershaw, closed the fortieth session of GESAMP on Friday, 13 September 2013 at 14.00 hrs.

ANNEX I – AGENDA

40th session of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) to be held at UNIDO, Vienna, Austria, from 9 to 13 September 2013

Monday, 9 September

Informal meeting of the members of GESAMP

First meeting of the Executive Committee of GESAMP (ExCom)

Opening of the session

- 1 Adoption of the agenda
- 2 Report of the Chairperson of GESAMP
- 3 Report of the Administrative Secretary of GESAMP
- 4 GESAMP Office matters
- 5 Planning of GESAMP activities:
 - .1 Evaluation of the hazards of harmful substances carried by ships (WG 1: IMO leading)
 - .2 Review of applications for 'active substances' to be used in ballast water management systems (WG 34: IMO leading)
 - .3 Expanded scientific review of mercury and its compounds and threats to the marine environment (WG 37: UNEP leading)

Tuesday, 10 September

- .4 Atmospheric input of pollutants to the oceans (WG 38: WMO leading)
- .5 Establishment of trends in global pollution in coastal environments (WG 39: IAEA leading)

- .6 Sources, fate and effects of micro-plastics in the environment – a global assessment (WG 40: IOC leading)

6 Contributions to the UN Regular Process/GEF Transboundary Water Assessment Programme

Wednesday, 11 September

7 Identification of new and emerging issues regarding the degradation of the marine environment of relevance to governments and sponsoring organizations

8 Scoping activities

Thursday, 12 September

9 GESAMP Side event: Topic to be announced.

Friday, 13 September, 09.00 a.m. to 1.00 p.m.

- 10 Date and place of GESAMP 41
- 11 Future work programme
- 12 Any other business
- 13 Election of chairpersons
- 14 Consideration and adoption of the report of GESAMP 40
- 15 Closure of the session

Friday, 13 September, p.m. (closed session)

Meeting of the Executive Committee of GESAMP (ExCom)

ANNEX II – LIST OF DOCUMENTS

GESAMP 40/1	Administrative Secretary	Provisional Agenda
GESAMP 40/1/1	Administrative Secretary	Annotations to the Provisional Agenda
GESAMP 40/3	Administrative Secretary	Report of the Administrative Secretary of GESAMP
GESAMP 40/5	Chairman of WG 34	Report of the GESAMP Ballast Water Working Group (WG 34)
GESAMP 40/5/1	Chairman of WG 38	Atmospheric input of pollutants to the oceans. Report of WG 38
GESAMP 40/5/2	Chairman of WG 40	Sources, fate and effects of micro-plastics in the marine environment – a global assessment. Report of WG 40
GESAMP 40/5/3	Chairman of WG 39	Trends in global pollution in coastal environments. Report of WG 39
GESAMP 40/5/4	Chairman of WG 1	Evaluation of the hazards of harmful substances carried by ships. Final manuscript of Reports & Studies No. 64, 2nd edition
GESAMP 40/5/5	Chairman of GESAMP	Proposal regarding the setting up of WG 41 on Pollution in the Open Oceans
GESAMP 40/5/6	Chairman of WG 1	Evaluation of the hazards of harmful substances carried by ships. Report of WG 1
GESAMP 40/6	Vice Chairman of GESAMP	Contributions to the GEF Transboundary Waters Assessment Programme (TWAP)
GESAMP 40/8	Chairman of WG 34	Scoping paper on the relevance of the production of DBPs against other inputs of DBPs in the aquatic environment
GESAMP 40/INF.1	GESAMP Office	Draft List of Participants

ANNEX III - LIST OF PARTICIPANTS

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ANNEX IV - ACTIVITIES AND ACHIEVEMENT BY THE SPONSORING ORGANIZATIONS OF GESAMP DURING THE INTERSESSIONAL PERIOD.

This annex provides a summary of the Sponsoring Organizations' achievements since GESAMP 39 (April 2012) from IMO, WMO, UNIDO, IAEA, UNDP, UNESCO-IOC and UNEP.

IMO

Implementation of the Ballast Water Management Convention

1 The Ballast Water Management Convention was adopted in February 2004 and aims to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments. The Convention will enter into force 12 months after the date on which not less than 30 States, the combined merchant fleet of which constitute not less than 35 per cent of the world's gross tonnage, have ratified it. Currently, a total of 37 states, representing 30.32 per cent of the world merchant fleet tonnage, have ratified.

2 In May 2013, MEPC 65 decided to grant Basic Approval to three and Final Approval to three ballast water management systems that make use of Active Substances, noting that there are already 33 type-approved ballast water management systems available.

3 To ease and facilitate the smooth implementation of the BWM Convention, the Committee approved a draft Assembly resolution on application of the Convention for submission to the 28th session of the IMO Assembly (25 November to 4 December 2013) for adoption.

4 The Committee also adopted resolution MEPC.228(65) on Information reporting for type approved ballast water management systems, and approved five BWM circulars as follows:

- .1 BWM.2/Circ.42 on Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2);

- .2 BWM.2/Circ.43 on Amendments to the Guidance for Administrations on the type approval process for ballast water management systems in accordance with Guidelines (G8);

- .3 BWM.2/Circ.44 on Options for ballast water management for Offshore Support Vessels in accordance with the BWM Convention;

- .4 BWM.2/Circ.45 on Clarification of "major conversion" as defined in regulation A-1.5 of the BWM Convention; and

- .5 BWM.2/Circ.46 on Application of the BWM Convention to Mobile Offshore Units.

Ship Recycling

5 Following the adoption of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, in May 2009, the Marine Environment Protection Committee of IMO worked on the development of six guidelines required under the terms of the Convention to facilitate the global implementation of its requirements in a uniform and effective manner. At its sixty-fourth session, in October 2012, the MEPC completed its work on all six sets of guidelines and adopted the *2012 Guidelines for the Survey and Certification of Ships under the Hong Kong Convention* and the *2012 Guidelines for the Inspection of Ships under the Hong Kong Convention*.

6 Currently, the *2011 Guidelines for the Development of the Inventory of Hazardous Materials* are under review as regards the development of threshold values and exemptions applicable to the materials to be listed in the Inventories of Hazardous Materials. MEPC 65 re-established the intersessional correspondence

group to further this work and to prepare amendments to the Guidelines, as appropriate.

the marine environment under MARPOL Annex V.

Amendments to MARPOL Annex I (Oil) - Development of a mandatory Polar Code

7 As reported to the last session, the increased interest in the polar regions with the projected growth in shipping traffic therein and the need to further promote the safety of navigation and prevention of pollution from ship operations, IMO has decided to develop a mandatory Code for ships operating in polar waters. The work is currently being undertaken by the DE Sub-Committee and is aimed to cover the full range of design, construction, equipment, operational, training, search and rescue and environmental protection matters relevant to ships operating in the inhospitable waters. MEPC 65 continued its deliberations on this issue, and more specifically resolved the outstanding environmental issues concerning development of the draft Polar Code; and approved, subject to concurrent decision of MSC 92, the holding of an intersessional meeting of the Polar Code WG in the autumn of 2013.

Review of MARPOL Annex V (Garbage)

8 The revised MARPOL Annex V was adopted by resolution MEPC.201(62), and entered into force on 1 January 2013, thus establishing a prohibition on the discharge of all types of garbage into the sea except in the cases explicitly permitted under the Annex. MEPC 65 made progress on the item and:

- .1 approved, with a view to adoption at MEPC 66, draft Amendments to the Form of Garbage Record Book under MARPOL Annex V;
- .2 adopted, by resolution MEPC.239(65), Amendments to the 2012 Guidelines for the implementation of MARPOL Annex V;
- .3 approved LC-LP.1/Circ.58-MEPC.1/Circ.809 on the Revised Guidance on the management of spoilt cargoes; and
- .4 approved MEPC.1/Circ.810 on Adequate port reception facilities for cargoes declared as harmful to

MARPOL Annex VI (Prevention of air pollution from ships)

9 Amendments to MARPOL Annex VI, Regulations for the prevention of air pollution from ships, adding a new chapter 4 to Annex VI on Regulations on energy efficiency for ships to make mandatory the Energy Efficiency Design Index (EEDI), for new ships, and the Ship Energy Efficiency Management Plan (SEEMP) for all ships entered into force on 1 January 2013.

10 MEPC 65 made further significant progress on the item and, in particular, adopted resolution MEPC.229(65) on Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships.

11 The Committee also adopted:

- .1 by resolution MEPC.230(65), 2013 Guidelines as required by regulation 13.2.2 of MARPOL Annex VI in respect of non-identical replacement engines not required to meet the tier III limit;
- .2 by resolution MEPC.231(65), 2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI);
- .3 by resolution MEPC.232(65), 2013 Interim Guidelines for determining minimum propulsion power to maintain the maneuverability of ships in adverse conditions;
- .4 by resolution.233(65), 2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI) for cruise passenger ships having non-conventional propulsion; and
- .5 by resolution MEPC.234(65), Amendments to the 2012 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI) (resolution MEPC.214(63)), as amended.

12 The Committee approved, with a view to adoption at MEPC 66, draft amendments to:

- .1 NOx Technical Code 2008 to permit appropriate certification of dual-fuel marine diesel engines;
- .2 MARPOL Annex VI concerning the effective date for Tier III NOx emission standards; and
- .3 MARPOL Annex VI concerning the extension of the application of EEDI to LNG carriers, ro-ro cargo ships (vehicle carriers), ro-ro cargo ships, ro-ro passenger ships, and cruise passenger ships having non-conventional propulsion and exemption of ships not propelled by mechanical means and cargo ships having ice-breaking capacity.

13 The Committee also approved three unified interpretations concerning implementation of MARPOL Annex VI, and the 2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI. The Committee, having considered the issue of data collection, also agreed to establish a sub-item under this agenda item for discussion of further technical and operational measures to enhance energy efficiency of international shipping, and to establish a WG on the matter at MEPC 66.

London Convention and Protocol (LC/LP)

Progress to regulate ocean fertilization

14 As reported to previous sessions of GESAMP, the governing bodies under the London Convention and Protocol started regulating ocean fertilization activities in 2008. In 2012 the governing bodies continued their work to review options to regulate ocean fertilization, as follows: an amendment to the Protocol to permit ocean fertilization as placement, with either a single or multiple new annexes; further implementation of, and gathering of experience from, the Ocean Fertilization Assessment Framework, under resolution LC LP.2(2010); and further development of an interpretative resolution.

15 A proposal has been submitted to the thirty-fifth Consultative Meeting of Contracting Parties to the London Convention and the eighth Meeting of Contracting Parties to the London

Protocol, to be held in October 2013, to amend the 1996 Protocol to regulate placement of matter for ocean fertilization and other marine geoengineering activities.

CO₂ sequestration in sub-seabed geological formations

16 In 2012, the governing bodies adopted the 2012 Specific Guidelines for Assessment of CO₂ Streams for Disposal into Sub-seabed Geological Formations to take into account transboundary migration of CO₂ within such formations. It is envisaged that the development of arrangements or agreements for the export of CO₂ streams for storage in sub-seabed geological formations will be concluded in October 2013.

Sub-sea disposal of mine tailings

17 Since the last session of GESAMP, the governing bodies of the London Convention and Protocol have continued their review of publicly available information on type and extent of "Riverine and sub-sea disposal of tailings and associated wastes from mining operations. The consultant's report has now been completed and reviewed by the Scientific Groups of the London Convention and Protocol, and is available for download on the LC/LP website. The results of this report will feature under the side-event to be held during this session (11 September 2013).

18 Given the increasing scale of mining activities globally, the LC/LP Scientific Groups agreed in May 2013 that there was a need for international guidance and/or codes of conduct to be developed on the environmental management of marine disposal of mine wastes in order to protect the marine environment. Furthermore, the Scientific Groups recommended that the governing bodies request the Secretariat to contact UNEP, UNIDO, UNDP and other relevant organizations, particularly representing mining organizations, in order to gather information on this issue (see document LC/SG 36/16, paragraph 8.27).

WMO

WMO/IOC/ICSU World Climate Research Programme (WCRP)

Integration of physical, biogeochemical and ecosystem research in the ocean

19 Research on physical oceanography and the research on ocean ecosystems and biogeochemistry, which is of prime priority for GESAMP, are continuously getting more integrated and interlinked. Main international oceanographic research projects are establishing links and developing plans for joint activities. Research on marine biophysical interactions and dynamics of upwelling systems is now included in the list of science priorities for WCRP CLIVAR Project. The WCRP CLIVAR Scientific Steering Group (SSG) at its 19th session in La Paz (Mexico, June 2012) and the IMBER (Integrated Marine Biogeochemistry and Ecosystem Research) project of IGBP and SCOR Scientific Steering Committee held a joint session and agreed to form a task team with a mandate to formulate a strategic approach to future joint work. Regions of ocean upwelling are critically important for the ocean dynamics and productivity. The CLIVAR "tiger team" is developing a white paper on upwelling research opportunities.

Regional ocean observing systems, field experiments, and process studies

20 WCRP and its Core Projects provide scientific support to regional ocean observations and help to coordinate them. Together with GOOS and GCOS, WCRP sponsors the Ocean Observations Panel for Climate (OOPC) and contributes to development of the Framework for Ocean Observing (FOO).

21 The utility of ocean measurements is continuously being enhanced through the efforts of the CLIVAR Global Synthesis and Observations Panel (GSOP). GSOP coordinates its contribution to implementation of FOO with OOPC. Such ocean synthesis products are needed to understand sea-level changes in the context of climate change and variability and to measure changes in the meridional overturning circulation that could lead to rapid climate change. They also form the basis for assimilation of ocean observations into climate prediction systems, and, in particular, those to be used for decadal prediction. Synthesis products that include information about carbon help to understand and monitor the role of the ocean as a carbon sink. Ocean data synthesis, coordinated by

WCRP and involving representatives from all the major modelling centres around the world, provides key information about the state of the ocean to a wide range of users.

22 New measuring techniques such as gliders and integrated physical and biogeochemical sensors are continuously being tested and refined in WCRP international field programmes. For instance, the New Guinea Coastal Undercurrent and its variation has been a major gap in ENSO diagnosis and the link between extra-tropics and tropics. CLIVAR is now addressing this gap in observations through the use of ocean gliders. These autonomous instruments provide a relatively inexpensive means to produce time series measurements. Ultimately it is expected that this sort of instrument will become part of a sustained ocean climate observing system.

Indian Ocean

23 The 9th Session of the CLIVAR - IOC/GOOS Indian Ocean Panel was held in October 2012 in Cape Town, South Africa, in conjunction with the 9th Session of the Indian Ocean Global Ocean Observing System (IOGOOS), the 3rd SIBER (Sustained Indian Ocean Biogeochemistry and Ecosystem Research) SSG meeting, and the 3rd IndOOS Resource Forum. An international field program CINDY2011 (Cooperative Indian Ocean experiment on intraseasonal variability in the Year 2011), with U.S. participation through the program DYNAMO, and several other projects, took place in the central equatorial Indian Ocean in late 2011 - early 2012 to collect in situ observations to advance understanding of the Madden – Julian Oscillation (MJO) initiation and improve MJO prediction. Subsequently, a symposium on MJO prediction was held 10 January 2013. Further, in July 2013 the second 'International Symposium on Boundary Current dynamics' was held in Li Jiang, Yun Nan, China, and was followed by a joint session of CLIVAR Pacific and Indian Ocean panels. Joint sessions and activities of scientists studying the Indian and Pacific Oceans are warranted by strong interactions of the oceans, as was confirmed, for example, by a very successful CLIVAR/WCRP Workshop on Decadal and Multi-decadal Variability in Pacific and Indian Ocean held in Qingdao, China, in September 2012.

Pacific Ocean

24 In the Pacific Ocean, improvements of observing, indexing, modelling and prediction of

ENSO remain the focus. The third Workshop on the Evaluation of ENSO Processes in Climate Models was held in Hobart, Australia in January 2013. A vast array of observing experiments is continuing in this basin, including the large-scale Southwest Pacific Ocean and Climate Circulation Experiment (SPICE) and its sub-experiments, field work on the origins of Kuroshio and Mindanao currents, and continuing development and maintenance of the TAO/TRITON ENSO observing system that includes the eastern part of the Indian Ocean. The 7th Session of the CLIVAR Pacific Panel took place in Noumea, New Caledonia, in April 2012.

Atlantic Ocean

25 A significant number of coordinated research, field experiments, and sustained observations are going on in the Atlantic Ocean. They are coordinated by the CLIVAR Atlantic Panel, which held its 12th meeting in September 2012 in Kiel, Germany, including a joint session with the 17th Meeting of the PIRATA SSG. The scope of oceanographic research in the Atlantic Ocean is large and includes subregional activities in the tropical, eastern, southern, northern basins that have differing foci such as the Atlantic meridional overturning circulation and Atlantic Multidecadal Oscillation. At present, this region exhibits the highest potential in terms of possible decadal climate predictability.

Southern Ocean

26 The 8th Session of the CLIVAR/CliC/SCAR Southern Ocean Panel took place in February 2013 in Hobart, Australia. This regional community is actively developing the Southern Ocean Observing System, a new international initiative, which was inaugurated in August 2011, to coordinate and expand efforts to collect and disseminate sustained observations. The research foci in the Southern ocean include ice sheet – ice shelf – ocean interaction, eddies in Southern Ocean, coordinated development of biogeochemical observations and modelling, variability of the Antarctic Circumpolar Current System, and Antarctic Bottom Water Mass formation. The Southern Ocean upwelling system may become a focus of the CLIVAR grand challenge on upwelling. As reported in the recent 2013 update of the SCAR Antarctic Climate Change and Environment Report, this region keeps posing difficult questions to climate science. For example, one of the most rapidly warming regions in the world is around the Siple Region of West Antarctica and,

at the same time, the Southern Ocean sea-ice extent has reached its observed maximum in 2012 with an overall positive multidecadal trend of approximately 1.3% per decade. This issue is the main area of research by the Antarctic Sea-Ice Processes and Climate (ASPeCt), a group sponsored by WCRP Climate and Cryosphere Project (CliC) and SCAR, which had its most recent meeting in July 2012, in Portland, USA, and is preparing a review paper on Antarctic sea ice.

Arctic Ocean

27 With diminishing multi-year sea-ice in the Arctic Ocean, WCRP has been engaged in the research on the reason(s) for significant underestimation of the rate of sea-ice reduction in the CMIP3 experiments, which were used in the analysis of the IPCC AR4 in 2007. These efforts are aimed at improved representation of sea-ice processes in climate models and their exploitation in ensemble climate projections of CMIP5 experiments to be analyzed in AR5. This work will continue in the future through the WCRP CliC project, which will support the development of the WCRP Polar Climate Predictability Initiative and the Grand Science Challenge “Cryosphere in a changing climate”. The CliC project is embarking on a series of activities focused on the Polar Regions including a series of seminars and workshops on the role of sea ice to be conducted with the sponsorship of the Norwegian Research Council. This series of workshops builds on the efforts of the CliC Arctic Sea-Ice WG, which had its recent meeting in Boulder, USA, on 31 October – 1 November 2011. A very successful topical workshop entitled “Earth Observation and Cryosphere Science” was organized in partnership with the European Space Agency (ESA), and the European Geosciences Union (EGU) in Frascati, Italy, in November 2012. A paper describing the way forward for cryospheric observations from space, based on the outcomes of this workshop, was prepared and published in the open access online journal “The Cryosphere”.

Transboundary Water Assessment

28 WCRP is a partner in the Transboundary Water Assessment Project whose overall objective is to develop methodologies to help the Global Environmental Facility (GEF) in setting priorities for their activities and to catalyze a partnership for conducting such a global assessment on a regular basis. WCRP's role is to facilitate access to data sets of future projections of various global marine

variables that will be merged with socio-economic data to produce indices of stress and vulnerability of human and natural systems. The ultimate goal is to produce a metric- and mapping-based assessment transforming existing scientific data and projections for the open ocean into stakeholder-relevant information for several themes of relevance such as sea-level rise, coral bleaching, and ocean acidification.

Ocean model development

29 The CLIVAR WG on Ocean Model Development (WGOMD) met for its tenth session in Venice, Italy, in January 2012, and for its eleventh session in Hobart, Australia, in February 2013. WGOMD, which is the leading coordinating body for ocean modelling, continues to develop the Coordinated Ocean - ice Reference Experiments (CORE) based on the CORE II protocol. A special online issue of the Ocean Modelling journal is in preparation. It will document the state-of-the-science in global ocean-sea ice modelling available through the CORE-II protocol.

Upper Ocean – Lower Atmosphere and fluxes between them

30 WCRP maintains its sponsorship of the fruitful IGBP/SCOR/WCRP/iCACGP Surface Ocean – Lower Atmosphere Study (SOLAS, <http://www.solas-int.org>). In a recent article “Evolving Research Directions in Surface Ocean-Lower Atmosphere (SOLAS) Science”, published Environmental Chemistry in 2013, new SOLAS research strategies are described. A SOLAS Open Science Conference was held in Cle Elum, Washington State, USA. Another notable event was the conference “Earth Observation for ocean-atmosphere interactions science” that was organized in November-December 2011 in Frascati, Italy, by SOLAS together with the European Space Agency (ESA), European Geophysical Union (EGU), and COST Action 735.

31 Progress in quantitative understanding of surface fluxes is the necessary condition for modelling of ocean circulation and for all climate predictions. In January 2012 WCRP published an Action Plan for WCRP Research Activities on Surface Fluxes, which contains recommendations on flux measurement and data processing to create validated datasets for evaluation of model-based fluxes.

Sea level variability and change

32 Analysis, assessment and prediction of sea-level variability and change, especially at the regional level, are a key focus for WCRP and an area of active cooperation with IOC. A dedicated WCRP Workshop hosted by UNESCO-IOC in Paris in February 2011 reviewed the state-of-the-knowledge in sea-level observations, research and modelling. In February 2013 these discussions were continued at another WCRP workshop jointly organized by the CLIVAR and CLIC Projects in Hobart, Australia. The main foci of this workshop were ocean dynamics and sea level change, ocean - ice shelf interactions, and dynamics of ice sheets. The outcomes of these two workshops are highly instrumental for current and future assessments of sea level. Based on their outcomes, it is possible to state that major progress is being made in improving the observing networks and developing models capable of capturing essential dynamics of ice-sheets, sea-ice, and glaciers. Another recent observation-based finding discussed at these workshops is the enhanced net mass loss from the major ice sheets, which, if it continues at recently detected rates, will mean that the contribution of the ice sheets to 21st century sea-level rise will be larger than from any other contributing factor (such as the mass loss of glaciers and ocean water thermal expansion).

Targeting climate research to meet societal needs

33 Following the independent review of the WCRP by its Sponsors in 2008-2009, WCRP began a series of consultations and deliberations with the international scientific community on its research plan and priorities for the ensuing decade. Six major scientific grand challenges were identified in this process to serve the basis for integrating the research activities across the entire WCRP and provide the foci for the development of targeted research efforts that meet the information needs of decision makers with the likelihood of significant progress over five to seven years. These Grand Science Challenges are:

- Provision of skilful future climate information on regional scales (e.g. decadal predictability);
- Regional sea-level variability and change;
- Cryosphere response to climate change (including ice sheets, water resources, polar predictability, permafrost and carbon);
- Improved understanding of the interactions of clouds and radiation (including the role of aerosols and precipitation and contributions to climate sensitivity);
- Past and future changes in water availability (with connections to water

security and water-resources management); and

- The science underpinning the prediction and attribution of extreme events.

Major ocean and climate research conferences

34 After the very successful WCRP Open Science Conference (OSC) entitled “Climate Research in Service to Society” (<http://conference2011.wcrp-climate.org>, Denver, Colorado, USA, 24-28 October 2011), WCRP co-sponsored and contributed to planning and organization of the successful second 2nd PICES/ICES/IOC Symposium “Effects of climate change on the world’s oceans” (Yeosu, Republic of Korea, 15–19 May 2012, in conjunction with Ocean Expo-2012). In addition, WCRP also organized a wide range of regional scientific workshops, capacity development and training activities.

WMO Marine and Oceanography Programme (MMOP)

35 The WMO Marine Meteorology and Oceanography Programme (MMOP) facilitates international cooperation and promotes activities to provide improved met-ocean information and services; through coordinating, and developing standards and procedures for, a fully integrated marine observing, data management and service system. MMOP aims a broad range of societal benefits, including; reducing loss of life and property from natural (and indirectly, human-induced) disasters at sea and in coastal zones; understanding marine environmental factors affecting human health and well-being; providing key met-ocean information to understand, assess, predict, mitigate and adapt to climate variability and change; and improving the management and protection of terrestrial, coastal and marine ecosystems.

36 The overall technical guidance and governance for MMOP is provided by the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), jointly sponsored by WMO and IOC of UNESCO. At the 4th session of JCOMM (May 2012, Republic of Korea), the objectives and priorities of JCOMM for 2012-2017 were agreed as following:

- To enhance the provision of marine meteorological and oceanographic services in support of the safety of life and property at sea and in coastal areas; contribute to risk management for ocean-

based economic, commercial and industrial activities; contribute to the prevention and control of marine pollution, sustainable development of the marine environment, coastal area management and recreational activities, and in support of the safety of coastal habitation and activities; and to coordinate and enhance the provision of the data, information, products and services required to support climate research and the detection and prediction of climate variability;

- To coordinate the development, enhancement and delivery of climate services related to the marine atmosphere and coastal and deep oceans, based on the core competencies within the Commission in marine meteorology and oceanography, as a contribution by JCOMM to the Global Framework for Climate Services (GFCS);
- To coordinate the enhancement and long-term maintenance of an integrated global marine meteorological and oceanographic observing and data management system, containing both in situ and remote sensing components and including data communication facilities, in the most cost-effective and efficient way, as part of the Global Ocean Observing System (GOOS) and the World Weather Watch (WWW), and in support of the Global Framework for Climate Services (GFCS), the World Climate Research Programme (WCRP), the Global Climate Observing System (GCOS), and other major WMO and IOC Programmes. This system is contributing to the WMO Information System (WIS) and the IODE Ocean Data Portal, and will be complying with the requirements of the WMO Integrated Global Observing System (WIGOS);
- To manage the evolution of an effective and efficient programme through the selective incorporation of advances in meteorological and oceanographic science and technology; and to work to ensure that all countries have the capacity to benefit from and contribute to these advances, and to contribute to the work of JCOMM in general; and
- To promote and facilitate the equitable participation of all WMO Members and IOC Member States in all activities of, and benefit from all products and services provided by, JCOMM.

37 The following paragraphs briefly introduce a subset of WMO/MMOP activities in 2012/2013 and relating plans in near-term, which are directly

relevant to understanding and protection of the marine environment.

Marine Meteorological and Oceanographic Support for Marine Environmental Emergency Responses

38 The Marine Pollution Emergency Response Support System for high seas (MPERSS), was formally established in 2001 at the 1st session of Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM-1; June 2001, Iceland), after a trial period since January 1994. Its primary objective is to have in place a coordinated, global system for the provision of meteorological and oceanographic information for marine pollution emergency response operations outside waters under national jurisdiction. The MPERSS is implemented as recommended practise following the guidance within the "Guide to Marine Meteorological Service (WMO-No.471)", by the Area Meteorological and Oceanographic Coordinators (AMOCs) who are identified among the National Meteorological and Hydrological Services (NMHS) with capabilities of marine modelling and service distribution.

39 At its 4th session (May 2012, Republic of Korea), JCOMM recommended to WMO and IOC that it should take a proactive role in supporting WMO Members / IOC Member States to respond to marine environmental emergencies, including the maritime radioactive material discharge. This should include supporting responsible centres to extend their technical capabilities, exchange diagnostic and forecast data, as well as provide enhanced coordination for services and information provision in a way that meets requirements as defined by the IAEA and IMO.

40 To this end, JCOMM established an ad hoc Task Team to; 1) firstly, review available technologies for modelling, forecasting and operational support, in view of exploring feasibility of providing enhanced coordination in basin scale; and 2) review the current framework for MPERSS and propose a future framework for the global coordination of marine environmental emergency responses, ensuring that existing capabilities within MPERSS (including Search and Rescue) are not compromised by any reapportionment of resources. The Team will complete its work and submit a proposal for future framework to the WMO Congress in 2015.

41 The Task Team had its meeting in July 2013 in Vienna, Austria, jointly with the IAEA

consultants meeting on Marine and Aquatic modelling for Radiological Emergencies , to share knowledge and discuss on future actions to enhance capabilities for assessment and prognosis of marine releases during a radiological event. The following recommendations were made to the IAEA Incident and Emergency Center (IEC), for its consideration in developing a concept of operations for the use of marine modelling:

- In the planning process of IAEA/IEC, focus should be on the operationally available models with global coverage, which address both the point (direct to sea) and deposition (i.e., from a plume), with a view to future improvements;
- Understanding that the needs/requirements are emerging from the operational need, a simple and clear list/description of mandatory products should be firstly identified, with simplified and agreed format between users (IEC technical team) and information providers;
- An interdisciplinary approach is crucial for marine modelling to be successfully employed in the operational warning; for example, investigation into underground water modelling;
- As an option, the IEC could consider arranging for an expert capability hosted offsite, to run marine modelling and provide necessary information on request. Such an arrangement is similar to the existing one between IAEA and WMO for the provision of atmospheric transport model products, which may offer a useful implementation framework for a marine modelling component in the future;
- The ongoing process might require participation of (a) UN agency(ies) with ocean-related mandates, such as IOC of UNESCO, therefore the IAEA/IEC should communicate with the IOC of UNESCO to explore potential roles of IOC in developing the concept of operation as well as in the implementation; and
- The scientific and technical development should be undertaken in parallel, to address longer-term issues, such as; potential use of risk mapping as advisory information (e.g., provision of a probability map of future distribution based on historical data).

42 The joint meeting provided an excellent opportunity for the Task Team to better understand the operational requirements of “users” for metocean information in radiological emergencies, and to initiate its work to propose a streamlined international coordination. The Task Team will maintain its primary consideration on clearly identifying users of metocean information for emergency responses - including any authoritative parties - and their requirements for specific information. Further investigation in this regard should be made for other issues (e.g. oil spill, Search and Rescue), through consultation with the IMO regional marine pollution combatting centres and other marine pollution research and monitoring programmes of IOC/UNEP.

43 A future framework should also include ways to ensure usability of information service / products, through continuous interaction with users to review/update requirements. Primarily responding to operational requirements, it will need to be recognized as part of relevant intergovernmental protocols and contingency plans (e.g. the Joint Radiation Emergency Management Plan for the respective parts of procedure), after rigorous trials/test and review.

Guide to Operational Ocean Forecasting Systems

44 Through successful implementation of the Global Ocean Data Assimilation Experiment (GODAE), operational oceanography (in a similar context to operational meteorology) is now becoming a reality; to provide operational ocean modeling products to a wide range of applications, including enhanced weather and climate predictions, marine safety, efficiency and environmental protection services. WMO through JCOMM Expert Team on Operational Ocean Forecasting System (ETOOFS) supports the ongoing efforts to coordinate the efficient transition of mature ocean forecasting systems to an operational environment, through facilitating and standardizing their operational implementation.

45 To this end, ETOOFS is developing a Guide to Operational Ocean Forecasting Systems, aiming to document best practices / overview of the state of art systems / technical requirements for ocean forecasting, in order to provide guidance to existing centres/services and to serve as an aid for developing centres. The ETOOFS has made significant progress through its 4th meeting (March 2013, USA) in reviewing the scope, structure and drafting chapters. Related activities are undertaken

in close coordination with the GODAE Ocean View (GOV), underpinning operational services through research.

46 The first issue of this Guide will focus on deep ocean forecasting systems, both global and regional, including sea-ice and biogeochemistry in addition to physical ocean parameters. The contents will include:

- Organization of Operational Ocean Forecasting Systems
 - Purpose and scope
 - Recommended practice for system operators (note: At present there are no agreed protocols for the issue of operational ocean forecasts for particular regions); accessibility of products; provision and updating of information; adherence to standards; sharing software, and levels of operability.
- Overview of the Ocean Forecast System Functions
 - Inputs (Observation data, surface forcing, surface fluxes from NWP, formulations / algorithms, boundary forcing, bathymetry, climatology, etc.)
 - Data assimilation
 - Ocean Models
 - Value-added applications (Oil spill drift monitoring and prediction, ice shipping route, Search and rescue, fisheries and aquaculture, coastal environment and water pollution, offshore energy, weather forecasting and climate monitoring, etc.)
 - Requirements for sustainable operational ocean services (research, computational resources, etc.)
- Forecasting Products
 - Standard products (levels, metadata, real-time products, delayed-mode products)
 - Additional optional products (real-time products, delayed-mode products)
 - Biochemistry (real-time products, delayed-mode products)
- Data Management
 - Data formats
 - Data exchange
 - Reanalysis data and aggregation with real-time data

- Archiving and data availability
- Input data for driving and validating ocean forecast systems
 - Observation data (surface and deep ocean in-situ data, satellite SST, satellite altimetry, etc.)
 - Surface forcing
 - Lateral boundary forcing
 - Bathymetries
 - Climatology
- Ocean Model Validation and Verification
- Nomenclature and symbology

47 The Guide will be published in 2016 after international review. Input and feedback from experts and interested parties will be sought throughout the process.

Re-focusing Ocean Observation Activities for Biogeochemistry and Biology

48 WMO, as co-sponsor of the Global Ocean Observing System (GOOS) as well as implementing agency of the WMO Integrated Global Observing System (WIGOS), continues to support the reforming process of GOOS. WMO's support extends to the GCOS/GOOS/WCRP Ocean Observations Panel for Climate (OOPC), a scientific expert advisory group charged with making recommendations for a sustained global ocean observing system for climate in support of the goals of its sponsors.

49 Following the expansion of GOOS from physics and climate into biogeochemistry and biology, OOPC is expanding activities from open ocean requirements towards the coast, and is reforming its structure and workplan to address non-physics ocean Essential Climate Variables. OOPC will continue to coordinate the Ocean component of the Global Climate Observing System (GCOS), and the Physical variables for the Global Ocean Observing System, acting as the main connector to non-physical areas, such as the International Ocean Carbon Coordination Project (IOCCP). The new Terms of Reference and workplan will be discussed at the upcoming OOPC-16 meeting, to be held in Washington DC, 3-5th September 2013. Further comment from sponsors, stakeholders and interested parties will be welcome.

50 Key areas of focus include:

- The Review and Vision for the Tropical Pacific Observing System: A workshop is planned in early 2014, to discuss on the need for sustained observations for seasonal forecasting, and for societal benefit (e.g. food security);
- The Review and update of the ocean component of GCOS Implementation Plan;
- Development of a Deep Ocean Observing System, considering the role of the deep ocean in buffering climate (Taking up large proportion of excess heat, Carbon);
- Sustained Observations of Boundary Currents;
- Reducing errors in air-sea fluxes;
- Polar Oceans; and
- Regional and coastal seas: in particular, observation requirements for coastal zones that are also related to coastal adaptation issues.

UNIDO

MED-TEST & SWITCH MED

51 The recently concluded "Transfer of Environmental Sound Technology in the South Mediterranean Region (MED TEST)" project was implemented by UNIDO with support from the GEF, the Italian government and the "Strategic Partnership for the Mediterranean Large Marine Ecosystem (LME)". The project successfully demonstrated the economic and environmental benefits of resource efficiency which industries can achieve through the introduction of best practices and integrated management systems. MED TEST was implemented in Egypt, Morocco and Tunisia, and covered a pool of 43 industries, mostly SMEs, across seven industrial sectors. The selected industries were located along or nearby the sea, thereby contributing to the protection of the marine and coastal environment of the Mediterranean. Among the project's achievements was the identification of total annual water and energy savings of 9.7 million m³ and 263 GWh, respectively. Also, noteworthy is the 20 million USD private sector investments in improved processes and cleaner technology, which translates into total annual savings of approximately 17 million USD in

energy, water, raw materials and increased productivity.

52 The success of the MED TEST project has led to the development of a follow up project. MED TEST II will be implemented under the scope of the European Commission funded SWITCH Med initiative and will cover nine countries of the South Mediterranean region. SWITCH Med will focus both on sustainable consumption and production and UNIDO will work with UNEP-DTIE and the Regional Activity Centre for Cleaner Production (CPRAC) as executing partners for this project. It is expected that on the ground activities will start in January 2014.

Collaborative Actions for Sustainable Tourism (COAST) Project

53 The main aim of the COAST project is to apply, through a series of practical Demonstration projects, a number of Best Available Practices and/or Best Available Technologies (BAPs/BATs) within selected coastal tourism destinations in Sub Saharan Africa (across nine partner countries), which will lead to reduce negative environmental impacts resulting from land based, tourism sector actions and pollutants. The project is now in its final year of implementation and is working actively within three thematic, science-based topic areas namely; Eco-tourism, Environmental Management Systems (utilizing the UNIDO Transfer of Environmentally Sound Technology methodology - EMS/TEST) and, Reef and Marine Recreation Management (RMRM).

54 Within the Eco-tourism theme of the project, six Demonstration sites (Cameroon, The Gambia, Ghana, Kenya, Nigeria, Tanzania) have been actively promoting local entrepreneurship and training in; sustainable beach cleaning & management practices (including for example training local tourism sector employees to become 'biodiversity champions' within their local industries), re-use/recycling of solid wastes including hard and soft plastics, support and establishment of local crafts and curio production based on the use of marine-sourced waste materials, and partnerships with private sector investors (hotels and restaurants) through Corporate Social Responsibility (CSR) actions.

55 The EMS/TEST methodology is working in four Demonstration sites (Kenya, Mozambique, Senegal, Tanzania) focusing on the development of sustainable public private partnerships with the emphasis on 'green technologies' and 'green business practices' to firstly reduce pollutant levels

within and around these tourism facilities, secondly to improve energy use and management efficiency on levels of waste (thereby increasing profitability levels), and thirdly through partnerships (based on CSR models) improve stakeholder relations and collaborative actions to sustainably manage coastal and marine resources through product recycling and business diversification models.

56 The project's Reef and Marine Recreation Management (RMRM) work is focusing on; reef assessment, sea grass bed and mangrove resource surveys in order to understand the levels of degradation and pollution resulting from tourism sector activities which are affecting such resources. This work is located across three Demonstration sites (Kenya, Mozambique, Tanzania) and is utilizing; underwater surveys, GIS mapping and local stakeholder capacity building to developing vulnerability maps which are to become inputs into a strategic management planning approach for selected high priority marine /reef sites.

IAEA

RML⁹ Activities

Fukushima Daiichi Nuclear Power Station Accident on 11 March 2011 and follow-up in 2012 until 2013

57 Since the extreme tsunami in March 2011 and the resulting accident at the nuclear power stations at Fukushima Daiichi, the IAEA was involved in the aftermaths of the accident at the nuclear power stations Fukushima Daiichi in Japan. Huge amounts of radioactive discharges into the Pacific Ocean occurred in the initial phase in March until July 2011 and these discharges are partly continuing until these days in 2013.

58 The company TEPCO of the Nuclear reactors at Fukushima as well as Japanese authorities monitored the situation in coastal as well off-shore waters. High levels up to several 100 kBq/kg fresh weight in some bottom living predatory fishes showed increasing levels of radiocesium (Cs-134 and Cs-137) from 2011 to 2013 within in the harbour of the nuclear power plant, however, the contamination levels outside the harbour both of seawater and fish were significantly lower of only up to some 100 Bq/kg in fish with some higher exemption in certain cases. The levels decreasing significantly with distance from the plant due to dilution and dispersion. Most of the radionuclides in

⁹ Radiometrics Laboratory of the Environment Laboratories in Monaco

water will be dispersed by the Kuroshio Current system across the Pacific over the next years with the result of a wide spread contamination, but with relatively low concentrations. It can be expected that traces can be detected over the next decade indicating the ocean current pattern by the typical nuclide vector.

59 As already reported in 2012, in June 2011, the IAEA Board of Governors approved an IAEA Regional Cooperation project to support countries in the Asia and Pacific region within the Regional Cooperation Agreement (RCA). Twenty-four countries are participating in the multi-year project "Marine Benchmark Study on the Possible Impact of the Fukushima Radioactive Releases in the Asia-Pacific Region". The project started 1 July 2011 and is supported primarily by extra-budgetary contributions from the USA, Australia, New Zealand, Japan and Republic of Korea and is planned to be completed by end of 2015.

60 The project has the aim to harmonize the determination of various radioisotopes in marine waters, marine plants and animal life, sediments and suspended matter, to ensure a comparable and verifiable assessment across the Pacific Ocean. A first proficiency test was performed successfully organized by the Monaco laboratory in 2012 and a second one is presently under way; the results should be submitted by end of September 2013. Several training courses have been organised in 2012 on Quality Management Systems, on ocean sampling techniques, and on radiochemistry within this project. Further information on the project is available on the IAEA website¹⁰.

61 A first seawater sampling in the Small Island Developing States in the Pacific was performed by Palau and the cartridges submitted for analysis to IAEA Monaco laboratory RML. Analysis was successfully completed and new extraction cartridge prepared for exchange. These samples are collected by the equipment provided by RML to the Small Pacific Island States (Fiji, Cook Islands, Palau, Kiribati, Marshall Islands, Solomon Islands) participating in the RAS 07/021 TC project on the Potential Impact from Fukushima Discharges in the Asian-Pacific Region.

62 The IAEA department Nuclear Safety and Security (NS) initiated the project MODARIA¹¹ to improve capabilities in the field of environmental

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<http://www.iaea.org/newscenter/news/2012/radioactive-releases.html>

<http://www.iaea.org/newscenter/news/2011/tcmarine.html>

¹¹ <http://www-ns.iaea.org/projects/modaria/default.asp?s=8&l=81>

radiation dose assessment by means of acquisition of improved data for model testing, model testing and comparison, reaching consensus on modelling philosophies, approaches and parameter values, development of improved methods and exchange of information. WG 10 "Modelling of marine dispersion and transfer of radionuclides accidentally released from land-based facilities" will test several hydrodynamic and other types of models to estimate the doses to man and biota resulting from the discharges from Fukushima as the radioactivity in the Baltic Sea, where most measured data are available from the HELCOM monitoring programme MORS¹². Most of the artificial radionuclides in the Baltic Sea are a consequence from the fallout after the Chernobyl accident in 1986.

Involvement to marine cruises

63 In September 2012, a joint Norwegian-Russian cruise to the Kara Sea was completed in order to study the dumping sites for radioactive wastes. The main focus was given to the objects in the Stepovogo Bay, where nuclear wastes and the nuclear submarine K-27 were dumped by the former Soviet Union. The IAEA RML was invited as observer to that cruise and collected seawater and sediment samples. The Norwegian-Russian expert group met in June 2013 at the premises of the Monaco laboratories in order to present the results of the three parties (RML, Norway and Russia) It was shown that similar trends of decline in activity concentration of anthropogenic radionuclides as compared to data from the previous expeditions indicating that there seems to be no or minor release from the dumped objects with emphasis on nuclear sub-marine (K-27). Discussion is on-going that this nuclear submarine might be recovered from the sea.

Analytical quality service

- Production of a Certified Reference Materials for radionuclides in Seaweed (*Fucus vesiculosus*) from the Baltic Sea. A large batch of 900 units, 100g each was produced, so as to match increasing demands from Member States. The natural seaweed material used to produce this CRM was obtained through collaboration with Denmark in the framework of the HELCOM-MORS programme.

¹² MORS: Monitoring of Radioactive Substances in the Baltic Sea

- Inter-laboratory Comparison Exercises: Two candidates certified reference sediments (IAEA-412 and IAEA-410) have been distributed to 23 laboratories including 5 labs from the CELLAR (Collaboration of European Low-Level Underground Laboratories) group. The objective is to characterise these materials.
- Proficiency Testing: As part of project RCA RAS/07/021, RML has organised a second proficiency test exercise in which samples containing seawater spiked with Sr-90, Cs-134 and Cs-137 were offered to 36 exercise participants. The exercise intends to support Member States in sea water analyses, in relation to the Fukushima accident in 2011 and the resulting on-going contamination of the marine environment in the Asia-Pacific Region.

Published Reports

- Proceedings of the International Symposium on Isotopes in Hydrology, Marine Ecosystems, and Climate Change Studies held in March 2011 were published¹³.
- Report of the Thirty-eighth Session of GESAMP Monaco 9-13 May 2011 published.
- Report on the Worldwide Laboratory Comparison on the Determination of Radionuclides in IAEA-446 Baltic Sea Seaweed (*Fucus vesiculosus*), IAEA/AQ/25

REL¹⁴ Activities

Launch of the "Ocean Acidification International Coordination Centre (OA-ICC)"

64 The OA-ICC, an IAEA Peaceful Uses Initiative project, became operational in January 2013 with the recruitment of the Project Officer. An Advisory Board with the role to advise the project on its different activities was established and its first meeting held in May 2013. The first activities were launched, including an inter-comparison exercise on

¹³ <http://www-pub.iaea.org/books/IAEABooks/8890/Isotopes-in-Hydrology-Marine-Ecosystems-and-Climate-Change-Studies-Proceedings-of-the-International-Symposium-Held-in-Monaco-27-March-1-April-2011>

¹⁴ REL: Radioecology Laboratory of the Environment Laboratories in Monaco

carbonate chemistry calculation software, a Web Page and a News Stream. The OA-ICC was presented and attracted a lot of attention from IAEA Members States at the 14th Meeting of the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS), 17-20 June 2013 in New York.

Edition of the Brochure for Policy Makers of the 2nd CSM/IAEA International "Bridging the Gap" Workshop on the Economics of OA

65 During the 2nd International Workshop held in November 2012, 55 international experts discussed impacts of OA on fisheries and aquaculture, and formulated recommendations for Policy Makers. The Workshop conclusions and recommendations were summarized in a Brochure that was released in June 2013. Recommendations include: reduction of CO₂ emissions, education and training for coastal communities, monitoring for OA, and the adaptation of aquaculture and fishing practices.

Establishment of the radio-ligand Receptor Binding Assay (RBA) methodology at REL

66 The RBA¹⁵ technique for HAB¹⁶ toxin detection has been implemented at REL. It is intended to contribute to both experimental work (assessment of vulnerability of edible marine organisms to algal toxins in the context of climate and environmental changes) and training of Member States representatives in support to the Technical Cooperation Programmes (there is currently a shortage of training centres for RBA). The RBA methodology is also being promoted within different international partnerships (e.g. GPNM¹⁷, IPHAB¹⁸, GEOHAB¹⁹).

Study of vertical fluxes of carbon in a critical oceanic zone off the coast of Peru

67 Within the partnership with German research institutes (GEOMAR in Kiel and University

¹⁵ RBA: Receptor Binding Assay

¹⁶ HAB: Harmful Algal Blooms

¹⁷ GPNM: Global Partnership on Nutrient Management of UNEP

¹⁸ IPHAB: Intergovernmental Panel on Harmful Algal Blooms of the IOC-UNESCO

¹⁹ GEOHAB: Global Ecology and Oceanography of Harmful Algal Blooms; <http://www.geohab.info/>

of Kiel) a cruise was carried out to study and better understand tropical oceans and marine low oxygen zones. This is done within the German Collaborative Research Centre SFB-754 (Sonderforschungsbereich) on "Climate Biogeochemistry Interactions in the Tropical Ocean". As part of this, REL participated in a sampling mission off the coast of Peru in January-February 2013 on board of the research vessel "METEOR". The main objective of the sampling was to understand carbon sedimentation and sequestration in an upwelling and minimum oxygen zone using natural radiotracers.

MESL²⁰ Activities

Strengthen the capability of MEDPOL laboratories in order to establish a reliable marine monitoring programme

68 MESL provided technical support for strengthening the capability of MEDPOL countries in the frame of MED POL Programme (Programme for the Assessment and Control of Pollution in the Mediterranean Region (UNEP)). Designated monitoring laboratories in Mediterranean countries benefit by being able to use the analytical support of MESL in the development in their quality assurance programs for determination of trace elements and organic contaminants in marine environment.

69 The harmonisation of analytical practise and implementation of basic metrological principles in the laboratory practice of MEDPOL countries is important for comparability of obtained monitoring data in the region and based on them socio-economic decisions.

70 Four new standard operation procedures for determination of trace elements and organic contaminants have been developed in MESL and will be provided to MEDPOL laboratories.

71 MESL provided technical support in the quality assurance of data for MED POL specifically by organising two interlaboratory comparisons, two analytical performance studies and two training courses on analytical techniques and basic metrological principles for the determination of organic contaminants and trace elements.

Provision of reference products for the marine environment and laboratory performance support

²⁰ Marine Environmental Studies Laboratory of the Environment Laboratories in Monaco

72 A word-wide interlaboratory comparison for organic contaminants for determination of organic pollutants in marine sediment was finalised. Certified Reference Material IAEA-459 (organochlorine compounds, polybrominated diphenyl ethers and petroleum hydrocarbon in marine sediment) was also produced. The Reference Sheet and IAEA-459 Certification Report are available for MSs laboratories.

Tools for assisting MSs to analyse Mercury and Methyl Mercury in marine samples

73 MESL continued the development of recommended analytical methods for determination of Mercury and Methyl Mercury in marine samples. These methods in combination with the mercury CRMs produced earlier are valuable assistance to MSs, in view of the signature of the UNEP's Global Mercury Convention in Japan on October 2013.

74 Two recommended procedures for total mercury and methyl mercury in marine biota samples, based on the application of different analytical techniques have been finalised.

Development of the HR ICP-MS methodology for determination of lead isotopic ratios in marine samples and provenance pollution studies

75 Methodology for accurate measurement of lead isotopic ratios with High-Resolution ICP-MS in marine sediments was finalised. Knowledge on the Pb-isotopic ratios is a proxy to understand the provenance of lead pollution and to distinguish natural and anthropogenic sources of lead in the marine environment.

UNDP

76 In 2012, UNDP contributed to a number of Rio+20 and related oceans knowledge, policy and advocacy products including:

- Worked with US-NOAA in preparing and releasing UNDP/GEF publication, "Frontline Observations on Climate Change and Sustainability of Large Marine Ecosystems";
- UNDP contribution to interagency publication "Green Economy in a Blue World" launched at 2012 GPA IGR4 in Manila and Rio+20; UNDP contributed

chapter "Ocean Nutrient Pollution from Agriculture, Fertilizer Production and Wastewater Management Sectors", which sets forth a bold strategy to apply innovative economic, policy/legal and financial tools to address the geometrically increasing issue of ocean hypoxia from excess nutrient pollution;

- UNDP contributed to the interagency (IOC/UNDP/FAO/IMO) publication "Blueprint for Ocean and Coastal Sustainability" launched in late 2011;
- UNDP, GEF and the Global Ocean Forum jointly produced and released "Oceans at Rio+20 - How well are doing in meeting the Commitments....Summary for Decision Makers";
- UNDP released (4th) UNDP-GEF "International Waters – Delivering Results" publication, highlighting substantive portfolio results from about 25 International Waters projects and cataloguing overall portfolio progress across GEF IW indicator suite; and
- Prepared and released jointly with the GEF "Catalysing Ocean Finance", a two volume publication that presents three proven ocean strategic planning methodologies (TDA/SAP, ICM, building on regional/global legal frameworks), 6 case studies from UNDP/GEF portfolio which delivered very highly leveraged financial flows on initial investments of public finance, and uses these results to estimate the costs of a global scaling up of efforts to reverse coastal hypoxia, move towards sustainable fisheries, reduce marine invasive species risk, and reduce coastal and ocean-related greenhouse gas emissions.

77 Some highlights of 2011-2012 UNDP/GEF oceans portfolio results include:

- Four protocols to the Tehran Convention for the Caspian Sea were developed, of which two (Oil Pollution, Land-Based Pollution) were signed and adopted in 2012. The two remaining protocols were expected to be signed at the next conference of the parties (COP);
- Marine Environment Diagnostic Analyses (MEDA), national diagnostic analyses conducted for all 9 countries participating in the Agulhas/Somali LMEs project. The work to develop the Transboundary

Diagnostic Analysis (TDA) based on the MEDAs, is progressing well. Once completed, TDA will significantly fill the data and information gaps identified during the preparatory stage of the ASCLME project;

- The Timor-Arafura Sea project successfully completed development and multi-country approval of the TDA which serves as the basis for SAP development which has commenced;
- Caribbean Sea LME - The delivery and acceptance of the three fisheries ecosystem TDAs of regional significance (reef, pelagic and continental shelf fisheries ecosystems) and regional TDA show that a common understanding on main issues for the sustainable management of shared marine resources has been reached among the main partners. Based on the TDA findings a draft "CLME Vision", "Ecosystem Quality Objectives", "Societal Benefits Objectives" and "Strategic Directions" (management objectives) statements have been developed by a SAP Core Development Team for the different ecosystems; and
- PEMSEA achieved a number of important milestones in 2012. At the regional level, the PEMSEA Governance and By-Laws and Transformation Plans and Roadmaps have been adopted and implementation initiated. PEMSEA put in place all arrangements required for the conduct of the East Asian Seas Congress 2012 and Fourth Ministerial Forum, developed and published a regional review of SDS-SEA implementation progress, achievements and challenges from 2003 to 2011, and developed the Regional SDS-SEA 5-Year Implementation Plan. At the national level, PEMSEA supported drafting of eight 5-year national SDS-SEA Implementation Plans in coordination with the countries for adoption. These implementation plans 'nationalize' the regional SDS-SEA and outline strategies for scaling up ICM in each country towards achieving the goal of putting at least 20% of the region's coastline under ICM.

UNESCO-IOC

Ocean acidification

78 Efforts of IOC on ocean acidification include advocacy and communication, and

promotion of research and oriented actions towards capacity building.

79 Regarding advocacy and communication, one of IOC-UNESCO missions is to enhance the sensitivity for OA not only among scientist, but also to the public, the stakeholders and the decision makers. A few examples include:

- .1 The IOC-SCOR-IGBP 3rd International Symposium on the Ocean in a High-CO₂ World, (Monterey, September 2012), was attended by a total of 529 scientists from 34 countries. They presented new information about the ability and inability of organisms at different trophic levels to cope with decreasing pH levels. The conference clearly emphasized the need for combining the stressor CO₂ with other factors such as temperature, nutrient availability and hypoxia. Preliminary studies revealed that rising temperature and CO₂ levels can have positive effects (Arctic phytoplankton (diatoms)) or affect species antagonistically (seagrass). Mesocosm experiments obtained shifts in community composition, reduced diversity, as well as direct and indirect CO₂ effects within the water column and sediments;
- .2 An Ocean Acidification summary for policy makers, coordinated by the IGBP and the IOC, is under preparation following the IOC-SCOR-IGBP Symposium Ocean in a high CO₂ World. The information in the summary will identify advances and significant findings in our understanding of ocean acidification; and
- .3 Further, the UNESCO-IOC supports the Ocean Acidification International Coordination Centre, operated by the IAEA Marine Environmental Studies Laboratory in Monaco. The Centre will be

overseen by an Advisory Board consisting of leading institutions, including the IOC of UNESCO.

80 With respect to the promotion of research and oriented actions towards capacity building, the IOC has developed the following activities in 2012-2013:

- .1 IOC is running since 2012 a project on Ocean Carbon Sources and Sinks, which includes biogeochemical time series, ocean carbon and blue carbon. Related to that, the IOC, and IOCCP are working on a new compilation of existing biogeochemical time series. In total, 125 biogeochemical time series have been compiled from around the world, which could be the embryo for a monitoring network for standardized ship based measurements of ocean acidification;
- .2 The IOC has launched in 2012, together with NOAA and other organizations, the Global Ocean Acidification Observing Network (GOA-ON), which aspires to provide a central source of information and data exchange for ocean scientists on research activities in this area and to effectively monitor OA in coastal waters and high seas. Last meeting was held in St Andrews (Scotland) in July 2013; and
- .3 Finally we also develop our own research on OA and biodiversity. In this regard IOC is leading the Trans-boundary Water Assessment, which will assess the impact of ocean acidification on biodiversity using Pteropods (sea butterflies) as a case study. This research will demonstrate the potential of the Ocean Biogeographic Information System (OBIS) database, now

part of IOC, as a key tool for research, knowledge generation and capacity building.

Declaration ocean fertilization after large scale experiment off Canada

81 In July 2012 a private company dumped one hundred tons of iron to deliberately fertilize the Pacific Ocean 300km off the west coast of Canada and trigger a plankton bloom. The stated intention was to enhance fisheries in the area. In scientific terms, this deliberate intervention is known as ocean fertilization or climate engineering. As the Intergovernmental Oceanographic Commission of UNESCO (IOC) has been closely involved in CBD and LC/LP discussions to regulate iron experiments at sea, we agreed with the IMO to release a statement to reiterate that given the present state of knowledge, ocean fertilization activities other than legitimate scientific research, should not be allowed unless they are conducted in agreement with the resolution adopted under the London Convention and Protocol. Large scale experiments should be conducted responsibly and transparently, and the potential benefits and risks equitably distributed.

IOC Joint action with ICES and IMO on Ballast and other Ship Vectors

82 The ICES/IOC/IMO WG on Ballast and Other Ship Vectors (WGBOSV) critically reviews and reports on the status of shipping vector research with an emphasis on new developments in ballast water treatment technology, risk assessment, ballast water sampling devices, and selection of ballast water exchange zones. The WG also discusses and evaluates the sampling strategies to ensure that international guidelines are based on accurate scientific information, thereby helping to achieve consensus on difficult and technical issues.

Nutrient's coastal Impacts research

83 Together with UNEP, FAO, UN-Habitat and UNDP, the IOC-UNESCO has started a new GEF funded project on 'Global Foundations for Reducing Nutrient Enrichment and Oxygen Depletion from Land-based Pollution in Support of Global Nutrient Cycle'. Through this partnership project we would like to help ensure Blue Oceans and Green Fields.

84 The project will provide the foundations (including partnerships, information, tools and policy mechanisms) for governments and other stakeholders to initiate comprehensive, effective and sustained programs addressing nutrient over-enrichment and oxygen depletion from land based pollution of coastal waters

85 The deliverables include:

- .1 Development and application of quantitative modeling approaches to estimate and map sources and contributions of different nutrient sources to coastal nutrient loading and their effects; to indicate when nutrient over-enrichment problem areas are likely to occur; and to estimate the magnitude of expected effects of further nutrient loading on coastal systems under a range of scenarios;
- .2 Development of a "Policy Toolbox", through which the decision-makers will have informed and interactive access, to cost effective, replicable tools and approaches to develop and implement nutrient reduction strategies; and
- .3 Execution of pilot projects in the Manila Bay watershed, Philippines and the Chilka Lake in India.

Microplastics

86 Efforts of IOC on microplastics include advocacy and communication as well as promotion of research and scientific assessment.

87 In terms of advocacy the IOC is working with several foundations and civil society organizations such as the MOAF (Multi One Attitude Foundation), FNOB (Fundacion Navegacion Oceanica Barcelona), TARA and film makers to create awareness on the impacts of plastics and microplastics in the ocean, its marine organisms and ecosystems. Side events are being held in parallel to, for example, the IOC Assembly and the UNESCO General Conference.

88 Regarding the promotion of research and scientific assessment, the IOC is leading a the GESAMP WG40: Sources, fate and effects of micro-plastics in the marine environment – a global assessment, tasked to conduct a global assessment of the inputs, levels, distribution and fate of micro-plastics in the ocean, and the potential role of micro-plastics as a pathway for persistent, bio-accumulating and toxic substances entering marine food-webs.

ecological and socio-economic dimensions of assessments, with the aim of securing coherence, consistency and comparability across regions.

93 In the coming months, IOC, UNEP, DOALOS as Secretariat of the Regular Process, as well as the Bureau of the Ad Hoc WG will continue to discuss these options.

Regular Process – WOA

89 The task of the first cycle of the Regular Process (2010 to 2014) will be to produce the first World Ocean Assessment. Following the adoption in 2012 of the Terms of Reference and Methods of Work for the Group of Experts as well as the Outline of the First Global Integrated Marine Assessment (World Ocean Assessment, WOA-I), a number of activities have taken place and are briefly described in this document.

90 From September 2011 to February 2013, a number of regular process regional workshops have been organized under the auspice of the United Nations in Australia, Mozambique, USA, Belgium, China and Chile.

91 The Regular Process through various meetings of this Ad Hoc WG has expressed the need to start building capacity of Member States for the conduct of integrated marine assessments as a key priority. Recommendations identified during the Regular Process Regional Workshops are extremely useful in identifying regional priorities where targeted capacity-development interventions should be implemented.

92 IOC and UNEP stated that a practical approach for addressing capacities needs as identified through the regional workshops, would require the development of a tailored approach, such as the development and implementation of a specific Regular Process Training Module which would provide:

- .1 common information content/common approaches towards assessment methodologies;
- .2 defining approaches for scaling up assessments (national, regional, global); and
- .3 promote the use of standardized procedure to integrate the

TWAP

94 The Transboundary Waters Assessment (TWA) Programme Full Size Project by the Global Environment Facility (GEF) was approved in December 2012 and the time frame is 24 months, January 2013 – December 2014. UNEP's Division of Environmental Policy and Implementation (DEPI) is the implementing agency of TWAP FSP. The partners are UNEP's Division of Early Warning and Assessment (DEWA) as the main executing agency coordinating the work of UNESCO-IHP, ILEC, UNEP-DHI and the IOC-UNESCO.

95 The project is aimed to produce the first truly global assessment of all transboundary waters within the five recognized categories: transboundary aquifers and SIDS groundwater; transboundary lakes and reservoirs; transboundary rivers; Large Marine Ecosystems and the Open Ocean, and at the same time formalize the network of partners to establish a firm institutional basis on which to base future periodic global assessments of transboundary waters. The project also aims to assist the GEF and other international organizations in improved priority setting for funding by providing a baseline and priorities for intervention. It is anticipated that this baseline will serve to assist international funding agencies in tracking the impacts of their interventions in terms of changes in state of the aquatic environments under consideration.

96 The Large Marine Ecosystems (LME) and Open Ocean (OO) Components held a joint Inception Workshop at IOC/UNESCO Headquarters in Paris from 20 -22 March 2013.

UNEP

UNEP's Marine and Coastal Strategy²¹

97 Lead by the Division of Environmental Policy Implementation (DEPI) a key strength of the marine and coastal ecosystem programme is its ability to facilitate cooperation at global, regional and national levels through the Regional Seas Programme and the Global Programme of action for the protection of marine environment from land-based activities (GPA). UNEP's work focuses on using sound science to apply ecosystem management to address factors causing decline of ecosystem services in marine and coastal areas.

98 The key areas of work include environmental aspects of fisheries, integrated management of marine protected areas, marine biodiversity and ecosystems, and impacts of climate change on the marine environment.

99 As UNEP's focal point for Small Islands Developing States (SIDS), DEPI is also coordinates UNEP's effort in assisting countries to implement the Mauritius Strategy for the further implementation of the programme of action for the sustainable development of SIDS.

100 DEPI is also the UNEP focal point for coral reefs (tropical and cold-water) which supports concerted action to improve the conservation and sustainable use of coral reefs. This work is implemented through the International Coral Reef Initiative (ICRI), existing networks, and other relevant programmes.

101 UNEP is continuously providing technical support and capacity building on the integrated management of marine and coastal ecosystems within the framework of its Marine and coastal strategy; in particular support is given to member states through the platforms of the GPA and the Regional Seas Conventions and Action Plans; e.g. Abidjan Convention, Barcelona Convention, Cartagena Convention, COBSEA, Nairobi Convention, and NOWPAP. Furthermore, UNEP collaborates extensively with UN Agencies such as UNESCO/IOC, UNDP, IMO, FAO, UN DOALOS, UN DESA and the World Bank, amongst others. Activities related to

102 Small Island Developing States are being followed closely in particular in the context of follow up to RIO +20. As we know, Small Island Developing States (SIDS) are particularly vulnerable to the degradation of coastal and marine

ecosystems. International cooperation towards strengthening their adaptive resilience to address such vulnerability is urgently needed. To address SIDS specifically, UNEP has developed a policy paper on Thematic Priority Areas for UNEP's support to the Sustainable Development of SIDS, aligned to the Bali Strategic Plan for Technology Support and Capacity-building, that mainstreams the Mauritius Strategy for the further implementation of the Programme of Action for the sustainable development of SIDS into UNEP's programme of work, and sets out priority outcomes to be achieved (For more information on the Mauritius Strategy visit:

<http://www.un.org/en/ga/president/65/issues/sids.shtml>). Furthermore, UNEP is leading a partnership on the Green Economy in SIDS. This area of work analyses what a green economy in the context of sustainable development would mean to SIDS, given their particular socio-economic and environmental settings.

Regional Seas Strategic Directions (2013-2016)

103 The Regional Seas Conventions and Action Plans are one of the on-the-ground implementation vehicles that UNEP has to support member states in addressing the growing degradation of the marine and coastal environment around the world. The 18 Conventions and Action Plans encompass 143 countries. The proposed project focuses on need to strengthen key areas of work of the Regional Seas Conventions and Action Plans in order to promote the conservation and sustainable use of the marine and coastal environment, building partnerships and establishing linkages with multilateral environmental agreements.

104 UNEP support to the implementation of the Regional Seas strategic Direction 2013-2016 focuses on:

- .1 enhancing countries' "ownership" over their respective Regional Seas Conventions and Action Plans;
- .2 effectively applying an ecosystem approach in the management of the marine and coastal environment;
- .3 contribute to the implementation of the Manila Declaration of the Global Programme of Action for

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<http://www.unep.org>

the Protection of the Marine Environment from Land Based Activities (GPA), in particular the partnerships on wastewater management, nutrients and marine litter;

- .4 strengthen capacities at the national and regional level on marine and coastal governance, in order to enable coordination and coherence with Large Marine Ecosystem projects, Regional Fisheries Management Organizations and River Basin Organizations, as appropriate;
- .5 support the provision of tools to decouple economic growth from environmental pressures in the marine and coastal environment by promoting resource efficiency and productivity, including assessing the services provided by these key marine and coastal ecosystems;
- .6 strengthen coordination and build necessary capacities at the national and regional levels to improve global knowledge and trends on the state of the marine environment, contributing to the World Oceans Assessment (Regular Process);
- .7 strengthen collaboration mechanisms with relevant Multilateral Environmental Agreements (MEAs), UN Agencies and International Financial Institutions (IFIs); and
- .8 Contribute to the implementation of the Mauritius Strategy for the Sustainable Development of Small Island Developing States and the preparatory process for Barbados +20.

The implementation of these key areas of work are directly linked to the support that the Regional Seas provide to their member states.

105 The UNEP/GEF International Waters unit assisted partners to mobilize GEF funding for a number of marine projects, including the UNEP/GEF Transboundary Waters Assessment Programme

(TWAP): Aquifers, Lake/Reservoir Basins, River Basins, Large Marine Ecosystems, and Open Ocean to Catalyze Sound Environmental Management which was endorsed by the GEF CEO in 2012 and began implementation in early 2013. In addition, the GEF Council has approved the concepts for new projects on Implementing Integrated Land, Water & Wastewater Management in Caribbean SIDS; and Addressing land-based activities in the Western Indian Ocean – SAP Implementation Phase; these projects are currently under development. Once approved, they will join UNEP's large portfolio of marine GEF projects, including methodology projects, like TWAP, for carbon accounting and valuing ecosystem services in Blue Forests and Global foundations for reducing nutrient enrichment and oxygen depletion from land-based pollution in support of the Global Nutrient Cycle, as well as specific ecosystem management projects in various Large Marine Ecosystems.

106 Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). The Third Intergovernmental Review Meeting (IGR-3) held 25-26 January 2012 decided that the GPA should focus its efforts primarily on the three pollution source categories of nutrients, wastewater, and marine litter, through establishment and management of global partnerships. Details of the GPA Coordination Offices work in this regard are highlighted below.

107 The Global Partnership on Nutrients Management (GPNM) carried out a global over-view of nutrient management policies, practices and their impacts on water quality, soil health and human wellbeing, in partnership with the International Nitrogen Initiative. A draft report was presented during the Rio+20 Summit through a Side Event entitled "Nutrients: For Food or Pollution? The Choice is Ours!" During the year, the steering committee for the GEF funded project on "Global Foundations for Reducing Nutrient Enrichment and Oxygen Depletion from Land-based Pollution in Support of Global Nutrient Cycle" met and approved the 2012 work plan and budget. The project is being managed by the GPA. Pilot projects were initiated in India (Lake Chilika) and the Philippines (Manila Bay) to address nutrient over-enrichment of coastal waters.

108 Under the GPNM new partnerships were forged with the Dutch Nutrient Platform, GPA participated in the design of the Phosphorus Summit, supported by European Union and other partners, and contributed to the preparation of the 6th International Nitrogen Conference (N2013) to be held in November 2013 in Kampala, Uganda.

109 Other areas where the GPA contributed to include the following: preparation of a presentation on Human Alteration of the Nitrogen Cycle and Global Partnership on Nutrient Management for the GEF STAP meeting in Washington, DC, USA in September 2012, SACEP to develop a regional program of nutrient management (covering Bangladesh, India, Sri Lanka, Maldives and Pakistan) and to secure funding for its implementation.

110 In the area of wastewater management, the GPA Coordination Office was charged with the establishment of a Global Partnership on Wastewater Management (GPWWM). The elements of this GPWWM have been developed, informed by existing partnerships within which the GPA is working, such as for capacity building and for coordinating activities under the UN-Water Task Force on Wastewater. The GPA, as Co-Chair of this Task Force, convened, jointly with UN-Habitat and others, two meetings of the Task Force were held on August 26 and December 6 2013 during World Water Week in Stockholm and The Hague respectively.

111 The GPA also supported training in the Safe Use of Wastewater for Agriculture in two countries in Africa, India; and Peru, alongside UN-Water Decade Programme on Capacity Building and other agencies. The GPA led the preparations for the training course held in September 2012 in Johannesburg, for Anglophone Africa. Additional training took place in 2013, in Indonesia and in Iran.

112 The GPA has also been holding discussions with the World Bank regarding the Global Partnership for Oceans, to discuss target setting and investments for pollution (e.g. in the Wider Caribbean, with Secretariat for the Cartagena Convention).

113 Development of the Global Partnership on Marine Litter (GPML) was the focus of the GPA in 2012. This resulted in the launch of the GPML during the Rio+20 Summit, through the convening of a Side Event titled "Marine Debris: The Ocean is not a Dumping Ground". Key recommendations made during the launch included improving the legal, policy and regulatory environments for managing marine litter, improving materials use efficiency, supporting recycling efforts, tackling the pollution problem at source and identifying clear goals and targets for the work of the partnership. At the conclusion, a number of statements of support for the Global Partnership on Marine Litter were made, including from the Governments of the Netherlands and the USA, as well as from FAO, IMO,

UNEP/IETC, the NRDC, and the Plastics Pollution Coalition.

114 The GPA collaborated with UNEP RONA in the convening of a Marine Litter workshop for North America, in December 2012. The GPA also supported the World Society for the Protection of Animals on a joint symposium on Marine Entanglement symposium, also held in December 2012 in Florida. Planning continued for the African Marine Debris Summit, which GPA supported, in collaboration with Plastics South Africa and other partners. UNEP aims to broaden the participation and to facilitate an African Network on Marine Litter.

115 In order to provide an opportunity for governments to provide such guidance, and to keep governments informed of progress made since the IGR-3, the GPA Coordination Office organized a briefing on progress for interested governments, on the margins of the 27th Session of the Governing Council, during the week of February 18-22, 2013, in Nairobi, Kenya. Another major event for 2013 will be the Second Global Land Oceans Connections Conference (GLOC-2), scheduled for October 2-4, 2013, in 120 Montego Bay, Jamaica. This will be organized in conjunction with the Caribbean Regional Coordinating Unit (CAR/RCU) of UNEP, as host of the Cartagena Convention Secretariat. It will follow the annual Regional Seas Programmes meeting, also being hosted in Montego Bay by CAR/RCU. The GLOC-2, follows successful convening of the first GLOC in January 2012.

The Regular Process

116 The current process being referred to as World Oceans Assessment (WOA) with secretariat (UN DOALOS) and member states is implementing the first integrated assessment cycle 2010-2014. UNEP has since been providing technical and scientific support in the following areas: 1. Communication: initial support to set up of a communications portal for use by the Group of Experts and member states; 2. Assessments: sharing its extensive knowledge gained through the GEO processes and in the development of integrated assessments; 3. Capacity building: support to member states on the Regular Process in the organization/facilitation of regional workshops through the platform of the Regional Seas Conventions and Action Plans; 4. Resource mobilization: engagement with potential donor countries to support the Regular Process.

117 During the period 4 Regional workshops held under the auspices of the UN to identify capacity building needs on the World Oceans Assessment (WOA) in the Latin America and Caribbean, East Asia and the Pacific, Western Indian Ocean and Europe. UNEP has provided scientific, technical and financial support these workshops. Capacity building needs have been identified for each region in terms of the conduction of integrated assessments and accessibility of data. As a follow up to last year's workshop a Regional Scientific and Technical Capacity Building Workshop on the WOA was held in Bangkok, Thailand, 17–19 September 2012. Workshop held under the auspices and support of UNEP (COBSEA, NOWPAP and GRID Arendal), UNESCO/IOC (Sub-Commission for the Western Pacific, (IOC/WESTPAC) and the Asia-Pacific Network for Global Change (APN). The objectives were to conduct the pilot as capacity building process, encouraging review, questioning and real-time revision of the assessment process to build a common understanding across the participants about an effective form of rapid assessment for the region, including how to scale the pilot assessment down to national jurisdictions. Participants included members of the Group of Experts of the Regular Process, UNEP, UNESCO-IOC/WESTPAC as well as countries including Cambodia, China, Indonesia, Japan, Republic of Malaysia, Philippines, Russia, Singapore, Thailand and Vietnam.

118 Two workshops were held in The Western and Southern Indian Ocean Region Workshop under the Nairobi Convention Secretariat hosted by the Government of Mozambique 1-3 August and 1-3 December 2012 in Maputo, Mozambique. The workshop was attended by experts from Comoros, Madagascar, Mauritius, Mozambique, Kenya and Tanzania. In addition, the representatives of the following intergovernmental organizations and institutions participated in the workshop: the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC-UNESCO), Western Indian Ocean Marine Science Association, (WIOMSA) University of Nairobi, Mombasa Polytechnic University College, and Kenya Marine and Fisheries Research Institute. In their concluding statement the experts at the workshop urged the secretariat of the Nairobi Convention to inform the Conference of the Parties to adopt the outline of the Regular Process (RP) (subject to the proposed changes) to form the basis of the outline of the Regional State of Coast Report (RSOCR). Experts identified gaps in expertise in the region and requested the Group of Experts for the Regular Process to develop a working link with the Nairobi Convention Secretariat and regional experts in order

to help in fast-tracking information delivery. The second workshop was a Scientific and Technical Capacity Building Workshop.

119 The workshop for the Wider Caribbean Region was hosted by the Government of the United States of America 13-15 November 2012 in Miami, Florida facilitated by the Cartagena Convention. The meeting was attended by experts from Anguilla, Antigua And Barbuda, Aruba, Barbados, Belize, British Virgin Islands, Cayman Islands, Costa Rica, Grenada, Guyana, Haiti, Jamaica, Mexico, Nicaragua, OAS – Jamaica, Panama, St. Kitts & Nevis, St. Lucia, St. Vincent & The Grenadines, Trinidad & Tobago, Turks & Caicos Islands, The USA, Venezuela and Suriname. Members of the Group of Experts as well as UNEP, IOC- UNESCO, IOCARIBE- UNESCO, UNDOALOS and UNEP-CEP.

The GEF Transboundary Waters Assessment Programme (TWAP)

120 As sequel to the 2 years of the Medium Size Project (MSP) entitled "Development of the Methodology and Arrangements for the GEF Transboundary Waters Assessment Programme (TWAP)", Another two year project a Full-sized Project of the Transboundary Waters Assessment Programme was approved by GEF in December 2012. UNEP is serving as the implementing agency and the Division of Early Warning and Assessment (DEWA) is the primary executing agency coordinating the work of UNESCO-IHP, ILEC, UNEP-DHI and the IOC of UNESCO. These agencies serve as the lead executing agencies for the assessment of: transboundary aquifers and SIDS groundwater; transboundary lakes and reservoirs; transboundary rivers; Large Marine Ecosystems and the Open Ocean respectively. Each of these executing agencies is engaged with a network of partners with responsibilities either of a thematic issue or geographic area together with an extensive network of data and information rich institutions and organizations.

121 TWAP FSP will apply the methodologies developed during the MSP to produce the first truly global assessment of all five recognized transboundary water systems and to formalize the partnerships on which to base future period global assessments. This two-year project aims to assist the GEF and other international organizations in improved priority setting by providing a baseline and priorities for intervention. The project aims to assist the GEF and other international organizations in improved priority setting for funding by providing a

baseline and priorities for intervention. It is anticipated that this baseline will serve to assist international funding agencies in tracking the impacts of their interventions in terms of changes in state of the aquatic environments under consideration.

COBSEA Key Achievements (April 2012-March 2013)

122 COBSEA, through the Sida Project Spatial Planning in the Coastal Zone – Disaster Prevention and Sustainable Development, which aims to prevent/reduce the impacts from natural disasters, climate change and sea-level rise, and to promote sustainable development of the coastal areas through the application of spatial planning, has delivered to six COBSEA participating countries – Cambodia, China, Indonesia, Philippines, Thailand and Vietnam the following activities and outputs:

- Regional Train the Trainers Course on how to integrate emerging issues such as climate-change, sea-level rise adaptation and disaster risk-reduction, and modern management approaches such as ecosystem-based management into their national spatial planning processes and regimes, with the aim of strengthening national capacity to plan and manage their coastal zones more sustainably at national, sub-national and local scales;
- National Resource Documents (in local languages) on coastal and marine spatial planning to help local planners, researchers, students, and national authorities on relevant information on coastal spatial planning in the country;
- National Training Manuals (in local and English languages) for national training courses on coastal and marine spatial planning;
- Regional Resource and Reference Documents (in local languages) as key reference and resource documents for national training courses; and
- National Training Courses on coastal and marine spatial planning.

123 Under the KOICA Yeosu Project Addressing the Challenge of Sea-Level Rise and Coastal Erosion in the East Asian Seas, which aims to build capacity in COBSEA developing countries on the sustainability, resilience and wise management of threatened coastal resources and associated ecosystems through the implementation of the COBSEA Regional Programme on Coastal Erosion, COBSEA has delivered to the six COBSEA participating countries – Cambodia, Indonesia,

Malaysia, Philippines, Thailand and Vietnam the draft National Assessment Report (NAR) on Coastal Erosion. The report is a ‘Situation Analysis’ of coastal vulnerability with a focus on coastal erosion and sea-level rise, which include a study on the policy and institutional landscape relevant to addressing or contributing to the problem of coastal erosion at sub-national and national levels; assessment of past, current and planned development partners’ initiatives relevant for addressing coastal erosion; and assessment of gaps and operational needs in terms of policies, institutional and legal arrangements, capacities and finances, including a roadmap for implementation of specific pilot interventions to address coastal erosion.

Green Economy for Oceans

124 The report on the Green Economy in a Blue World was launched at the Global Conference on Land Oceans Connections that UNEP organized as part of the 3rd Inter-Governmental Review of the Global Programme of Action for the Protection of the Marine Environment from Land-based Sources of Pollution, in Manila, the Philippines 23-27 January 2012.

125 A session on the Green Economy in a Blue World was organized as part of the main plenary discussions with member states. The session was integrated by a keynote speaker, Dr. Andrew Farmer (Institute for European Environmental Policy), Dr. Linwood Pendleton (Duke University) as moderator and the following countries as panellists: Philippines, India and China.

126 Main conclusions and recommendations from this plenary panel were that a Green Economic Approach is one that includes the promotion of low carbon economic activities and green industries (e.g. renewable energy), a more circular economy in which re-use and recycling are key components, and an ecologically-based economy - in which an ecosystem-based approach is followed and values for market and non-market activities, resources, and conditions are considered.

127 A Green Economic approach requires that we change our view from one in which environmental protection and management are weighed against economic growth to one in which environmental concerns are essential to guarantee a growing and resilient overall level of economic well-being. Examples for moving forward with a Green Economic approach were provided for China, the Philippines, and India. The examples included:

- Setting more stringent standards for water quality, nutrients, and pollutants.
- The creation and dissemination of best management practices (e.g. for waste water treatment) and codes of conduct (e.g. Code of Conduct for Sustainable Fisheries)
- Monitoring of environmental and ecological conditions
- Sharing information
- Better planning (integrated fisheries planning, coastal nutrient planning, restoration planning)
- Flexible approaches

128 The panel discussion highlighted the importance of harnessing the interests of business (e.g. fisheries, aquaculture, and eco-tourism) to demand and promote reductions in water pollution and reversals in environmental degradation.

129 The partnership around the Green Economy in a Blue World consists of UNEP, UNDP, UNDESA, IMO, FAO, IUCN, World Fish Centre, GRID-Arendal. Given the positive interest generated by the Green Economy in Oceans, the partnership has decided to continue this inter-agency collaboration focusing on sector specific analysis in a regional/national setting, using the platforms of the Regional Seas Conventions and Action Plans.

130 Similarly, the World Bank recently launched the Global Partnership for Oceans where UNEP has been invited to become a partner, to steer the discussions around the Green Economy in Oceans.

131 A side-event was organized at Rio +20 (14 June 2012) on the Green Economy in a Blue World, where the full report was launched. The panellists were comprised of all the partners who undertook the report.

132 On the 13th December 2012, at the 7th Conference of Parties to the Nairobi Convention, the Green Economy for SIDS report was launched, with the participation of the Ministers from Comoros, Mozambique, South Africa and Mauritius. The full report is available online and a synthesis report was printed. Both versions can be viewed on the UNEP website (www.unep.org) and can be downloaded from http://www.unep.org/pdf/Green_Economy_in_SIDS.pdf

133 In 2012 UNEP launched a report: *21 Issues for the 21st Century: Results of the UNEP Foresight Process on Emerging Environmental Issues*²². The

report was widely circulated within and outside the UN system in the run-up to Rio +20 and at Rio +20, and has stimulated many lively discussions about priorities for policy action. As such, the list of emerging issues primarily reflected the views of the scientific community. But would the list of emerging issues be the same if it was produced by experts from Small Island Developing States (SIDS)? Would the distinctive perspective the SIDS provide new insights to policymakers?

134 To answer these questions, UNEP is carrying out a unique new Foresight Process centred on the viewpoints of the SIDS as part of UNEP contribution to the preparation of the Barbados plus 20 Conference in 2014. Especially one of the four thematic foci of the conference is identified as "Identify new and emerging challenges and opportunities for the sustainable development of small island developing States and ways and means to address them, including through the strengthening of collaborative partnerships between small island developing States and the international community". The process will produce what is likely to be the first systematic determination of emerging issues from the perspective of the SIDS and will further strengthen UNEP's work with the SIDS.

135 UNEP is developing a partnership approach with Regional Seas programmes to provide a delivery support framework for achieving internationally adopted targets relevant to coral reefs at the regional and national level, in particular Aichi Target 10. To this end the partnership will promote activities consistent with the International Coral Reef Initiative (ICRI) Call to Action and Framework for Action, through the Regional Seas. The partnership responds to the Regional Seas strategic directions 2013-2017 adopted in 2012. At the global level, the partnership will develop approaches and tools that enable an ecosystem approach to assessment, planning and management of coral reefs and related ecosystems, and support exchange of best practice and lessons learned between regions through a community of practice. At the regional level, approaches, tools and methods will be adapted and tailored to regional needs, for adoption through regional intergovernmental mechanisms. This is complemented by national level pilot or demonstration interventions to support uptake, application and capacity building. Substantive activities address spatial management, water quality, adaptation planning, industry stewardship, co-management, and strengthening state of environment and management performance reporting for decision support. The partnership is being launched in 2013. <http://coral.unep.ch>

²² <http://www.unep.org/publications/ebooks/foresightreport/>

136 UNEP has supported the Global Coral Reef Monitoring Network (GCRMN) to strengthen its regional coral reef status and outlook reporting. This has included development of a new approach for data acquisition and analysis by GCRMN, in collaboration with Regional Seas programmes. A workshop was held in Panama from April 29 through May 5, 2012, attended by 36 scientists from 18 countries and territories within the Region and beyond, to compile and structure data for analyses. The report "Status and Trends of Caribbean Coral Reefs 1969-2012" will be released in October 2013. The report provides a coral reef status assessment and outlook for coral reefs in the Wider Caribbean, based on data from 35,000 survey events at 95 reef locations in 32 countries/territories over 44 years,

contributed by 78 principal investigators (www.gcrmn.org)

137 UNEP has initiated a project on "Island Ecosystem Management" aimed at development of effective guidance and communication materials to advance ecosystem management in small island environments, in partnership with the Secretariat of the Pacific Regional Environment Programme (SPREP) as well as the Wildlife Conservation Society, Alluvium Consulting, Sustainable Island Innovations, Edith Cowan University, and Hodge Environmental. Case studies are being compiled for presentation at the 9th Pacific Conference on Nature Conservation and Protected Areas, Fiji, 2-6 December 2013 and for publication by the end of 2013. www.islandecosystemmanagement.com

ANNEX V - TERMS OF REFERENCES FOR CURRENT GESAMP WORKING GROUPS

The Terms of Reference for each of the currently active WG are reproduced below, with the information on administrative arrangements, background and context, etc.

Working Group 1: GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships (EHS)

The Terms of Reference of the GESAMP EHS WG, as given by GESAMP at its 6th session in Geneva (1974), were amended at its 8th session in Rome (1976). At that time, the rationale for hazard evaluation specified for the WG was laid down in GESAMP IV/19/ Supp. 1; this was replaced in 1982 by GESAMP Reports and Studies No. 17, which was in turn superseded by GESAMP Reports and Studies No.35 in 1989. As approved by GESAMP at its 28th session in 1998, the procedure described in GESAMP Reports and Studies No. 64 (2001), replaced all previous versions. GESAMP, at its 38th session in Monaco (2011), agreed to amend the Terms of Reference, as follows, to meet IMO's requirements under the revised MARPOL Annex II

with regard to human health and safety issues associated with chemicals on board ships:

"To examine and evaluate data and to provide such other advice as may be requested, particularly by IMO, for evaluating the hazards to the environment and human health of harmful substances carried by ships, in accordance with the rationale approved by GESAMP for this purpose," where 'rationale' is understood to mean GESAMP Reports and Studies No.64.*

Working Group 34: Review of applications for 'Active Substances' to be used in Ballast Water Management Systems

Terms of Reference approved intersessionally by GESAMP in November 2005 are:

- i. Consideration of development of necessary methodologies and information

requirements in accordance with G9* for consideration by MEPC 56.

- ii. For Basic Approval, the Group should review the comprehensive proposal submitted by the Member of the Organization along with any additional data submitted as well as other relevant information available to the Group and report to the Organization. In particular, the Group should undertake:

- .1 scientific evaluation of the data-set in the proposal for approval (see paragraphs 4.2, 6.1, 8.1.2.3, 8.1.2.4 of G9);
- .2 scientific evaluation of the assessment report contained in the proposal for approval (see paragraph 4.3.1 of G9);
- .3 scientific evaluation of the risks to the ship and personnel to include consideration of the storage, handling and application of the Active Substance (see paragraph 6.3 of G9);
- .4 scientific evaluation of any further information submitted (see paragraph 8.1.2.6 of G9);
- .5 scientific review of the risk characterization and analysis contained in the proposal for approval (see paragraph 5.3 of G9);
- .6 scientific recommendations on whether the proposal has demonstrated a potential for unreasonable risk to the environment, human health, property or resources (see paragraph 8.1.2.8 of G9); and
- .7 preparation of a Report addressing the above-mentioned aspects for consideration by MEPC (see paragraph 8.1.2.10 of G9).

- iii. For Final Approval, the Group should review the discharge testing (field) data and confirm that the residual toxicity of the discharge conforms to the evaluation undertaken for Basic Approval and that the previous evaluation of the risks to the ship and personnel including consideration of the storage, handling and application of the active substance remains valid. The evaluation will be reported to MEPC (see paragraph 8.2 of G9).

- iv. The Group shall keep confidential all data, the disclosure of which would undermine protection of the commercial interests of the applicant, including intellectual property.*

Working Group 37: Metals in the marine environment

GESAMP decided that it should remain in existence, albeit with a reduced role and instructed the WG to:

- i. Complete the drafting of a final report for Reports and Studies by mid-2012;
- ii. Organize an external peer review panel and collate the reviewers comments by September 2012;
- iii. Complete electronic publication by October 2012; and
- iv. Review and support as appropriate a future role for WG 37 in the TWAP project.*

Working Group 38: Atmospheric Input of Chemicals to the Ocean

GESAMP 39 acknowledged that WG 38 had completed its tasks assigned to it in and furthermore agreed that, at the request of WMO, WG 38 should be continued with the intention of examining atmospheric nitrogen inputs to the ocean. The WG would:

- i. Finalise a new Terms of Reference for the continued examination by the group of anthropogenic atmospheric inputs of Nitrogen to the oceans for approval, intersessionally, by GESAMP (refer paragraph 5.4.10, above); and

* G9 stands equivalent for MEPC 53/2/1 annex, as amended: Procedure for approval of ballast water management systems that make use of Active Substances (G9).

- ii. Organise and report on the results of a workshop on this topic in early 2013.

Working Group 39: Global Trends in Pollution of Coastal Ecosystems

Terms of Reference approved by GESAMP 38 in May 2011 are:

- i. Revise existing methodologies on suitable environmental archives, dating methods, pollution indicators, analytical techniques and trend analysis. Sedimentary environments not deeper than 200 meters would be considered in the analysis, thus including all the ocean borderlands as well as main Islands;
- ii. Review existing data, including data quality, on a regional basis. Records of pollution in coastal environments will be used as background information;
- iii. Design, implement and maintain, with the help of the leading organization, a database of global trends of pollution;
- iv. Disseminate the WG activities through the GESAMP website, press releases, preparation of educational materials and presentation at stakeholder meetings. Publish results in scientific journals. International Conference; and
- v. Report to GESAMP on all WG activities once per year.

- i. Assess inputs of micro-plastic particles (e.g. resin pellets, abrasives, personal care products) and macro-plastics (including main polymer types) into the ocean; to include pathways, developing methodology, using monitoring data, identifying proxies (e.g. population centers, shipping routes, tourism revenues);
- ii. Assess behavior of surface transport, distribution & areas of accumulation of plastics and micro-plastics, over a range of space- and time-scales;
- iii. Assess processes (physical, chemical & biological) controlling the rate of fragmentation and degradation, including estimating long-term behavior and estimate rate of production of 'secondary' micro-plastic fragments;
- iv. Assess long-term modelling including fragmentation, seabed and water column distribution, informed by the results of ToR 3;
- v. Assess uptake of particles and their contaminant/additive load by biota, as well as their physical and biological impacts at a population level; and
- vi. Assess the social aspects, including public awareness.

WORKING GROUP 40: Sources, fate and effects of micro-plastics in the marine environment – a global assessment

Revised Terms of Reference approved by GESAMP 40 in September 2013 are:

ANNEX VI - FOUR STEP PROCESS TO PROPOSE A NEW AND EMERGING ISSUE

Four step process to propose a New and Emerging Issue (Taken from GESAMP 37 R&S 81, paragraph 7.3)

This starts with a proposal or initial paper to GESAMP which, if approved, is followed by a more detailed scoping paper describing the essence of the issue, the potential need for and scale and feasibility of an assessment, the identification of expert communities, and potential sources of funding. In the third step GESAMP may approve an international workshop to seek external advice and develop the issue further with a view to attracting the attention of the UN Sponsoring Organizations and other interested parties. Finally GESAMP, with the support of the UN Sponsoring Organizations, can launch a global assessment on the issue to

advise makers and environmental managers. It was discussed that a wide variety of external bodies could act as informal or formal partners in the foresight process or formal work programme.

ANNEX VII - TEMPLATE FOR NEW GESAMP WORKING GROUPS

BACKGROUND & CONTEXT

- **The subject:** Brief general background on subject of the study
- **The issue/problem:** Why the subject is of concern or interest to the international community from the perspective of marine environmental protection
- **The need:** Why a GESAMP study is needed (e.g., synthesis of scattered information, assessment of environmental status/impacts, development of new methodologies, establishment of standards or guidelines, identify requirements for research, monitoring, management, and/or policy development)

TERMS OF REFERENCE

- Specific, concrete, point-by-point tasks to be carried out by the WG, and/or specific information to be included in the report
- Defined scope: what will and won't be done
- Not open-ended: focus on a specific product to be produced (usually a report)
- If additional tasks are envisioned they may be identified as future work for the WG, but the TOR should focus on the specific task being proposed
- Identify expertise required for the WG

WORK PLAN

- Work methods (usually meetings and intersessional work/correspondence)
- Provisional timeline, including:
 - Meeting dates
 - Milestones (drafts, reviews, revisions, etc.)
 - Deliverables and delivery date (usually publication of a report)
- Provisions for peer review
- Provisions for publication, dissemination and outreach (PR)

ADMINISTRATIVE ARRANGEMENTS

- Sponsors
- Budget & funding
- WG Chairperson(s) & members if available at time of proposal
- Technical secretary for the WG

ANNEX VIII – GESAMP REPORTS AND STUDIES

The following reports and studies have been published so far. They are available from the GESAMP website: <http://gesamp.org>

1. Report of the seventh session, London, 24-30 April 1975. (1975). Rep. Stud. GESAMP, (1):pag.var. Available also in French, Spanish and Russian
2. Review of harmful substances. (1976). Rep. Stud. GESAMP, (2):80 p.
3. Scientific criteria for the selection of sites for dumping of wastes into the sea. (1975). Rep. Stud. GESAMP, (3):21 p. Available also in French, Spanish and Russian
4. Report of the eighth session, Rome, 21-27 April 1976. (1976). Rep. Stud. GESAMP, (4):pag.var. Available also in French and Russian
5. Principles for developing coastal water quality criteria. (1976). Rep. Stud. GESAMP, (5):23 p.
6. Impact of oil on the marine environment. (1977). Rep. Stud. GESAMP, (6):250 p.
7. Scientific aspects of pollution arising from the exploration and exploitation of the sea-bed. (1977). Rep. Stud. GESAMP, (7):37 p.
8. Report of the ninth session, New York, 7-11 March 1977. (1977). Rep. Stud. GESAMP, (8):33 p. Available also in French and Russian
9. Report of the tenth session, Paris, 29 May - 2 June 1978. (1978). Rep. Stud. GESAMP, (9):pag.var. Available also in French, Spanish and Russian
10. Report of the eleventh session, Dubrovnik, 25-29 February 1980. (1980). Rep. Stud. GESAMP, (10):pag.var. Available also in French and Spanish
11. Marine Pollution implications of coastal area development. (1980). Rep. Stud. GESAMP, (11):114 p.
12. Monitoring biological variables related to marine pollution. (1980). Rep. Stud. GESAMP, (12):22 p. Available also in Russian
13. Interchange of pollutants between the atmosphere and the oceans. (1980). Rep. Stud. GESAMP, (13):55 p.
14. Report of the twelfth session, Geneva, 22-29 October 1981. (1981). Rep. Stud. GESAMP, (14):pag.var. Available also in French, Spanish and Russian
15. The review of the health of the oceans. (1982). Rep. Stud. GESAMP, (15):108 p.
16. Scientific criteria for the selection of waste disposal sites at sea. (1982). Rep. Stud. GESAMP, (16):60 p.
17. The evaluation of the hazards of harmful substances carried by ships. (1982). Rep. Stud. GESAMP, (17):pag.var.
18. Report of the thirteenth session, Geneva, 28 February - 4 March 1983. (1983). Rep. Stud. GESAMP, (18):50 p. Available also in French, Spanish and Russian
19. An oceanographic model for the dispersion of wastes disposed of in the deep sea. (1983). Rep. Stud. GESAMP, (19):182 p.
20. Marine pollution implications of ocean energy development. (1984). Rep. Stud. GESAMP, (20):44 p.
21. Report of the fourteenth session, Vienna, 26-30 March 1984. (1984). Rep. Stud. GESAMP, (21):42 p. Available also in French, Spanish and Russian
22. Review of potentially harmful substances. Cadmium, lead and tin. (1985). Rep. Stud. GESAMP, (22):114 p.
23. Interchange of pollutants between the atmosphere and the oceans (part II). (1985). Rep. Stud. GESAMP, (23):55 p.
24. Thermal discharges in the marine environment. (1984). Rep. Stud. GESAMP, (24):44 p.
25. Report of the fifteenth session, New York, 25-29 March 1985. (1985). Rep. Stud. GESAMP, (25):49 p. Available also in French, Spanish and Russian
26. Atmospheric transport of contaminants into the Mediterranean region. (1985). Rep. Stud. GESAMP, (26):53 p.
27. Report of the sixteenth session, London, 17-21 March 1986. (1986). Rep. Stud. GESAMP, (27):74 p. Available also in French, Spanish and Russian
28. Review of potentially harmful substances. Arsenic, mercury and selenium. (1986). Rep. Stud. GESAMP, (28):172 p.
29. Review of potentially harmful substances. Organosilicon compounds (silanes and siloxanes). (1986). Published as UNEP Reg. Seas Rep. Stud., (78):24 p.
30. Environmental capacity. An approach to marine pollution prevention. (1986). Rep. Stud. GESAMP, (30):49 p.
31. Report of the seventeenth session, Rome, 30 March - 3 April 1987.

- (1987). Rep. Stud. GESAMP, (31):36 p. Available also in French, Spanish and Russian
32. Land-sea boundary flux of contaminants: contributions from rivers. (1987). Rep. Stud. GESAMP, (32):172 p.
33. Report on the eighteenth session, Paris, 11-15 April 1988. (1988). Rep. Stud. GESAMP, (33):56 p. Available also in French, Spanish and Russian
34. Review of potentially harmful substances. Nutrients. (1990). Rep. Stud. GESAMP, (34):40 p.
35. The evaluation of the hazards of harmful substances carried by ships: Revision of GESAMP Reports and Studies No. 17. (1989). Rep. Stud. GESAMP, (35):pag.var.
36. Pollutant modification of atmospheric and oceanic processes and climate: some aspects of the problem. (1989). Rep. Stud. GESAMP, (36):35 p.
37. Report of the nineteenth session, Athens, 8-12 May 1989. (1989). Rep. Stud. GESAMP, (37):47 p. Available also in French, Spanish and Russian
38. Atmospheric input of trace species to the world ocean. (1989). Rep. Stud. GESAMP, (38):111 p.
39. The state of the marine environment. (1990). Rep. Stud. GESAMP, (39):111 p. Available also in Spanish as Inf.Estud.Progr.Mar.Reg.PNUMA, (115):87 p.
40. Long-term consequences of low-level marine contamination: An analytical approach. (1989). Rep. Stud. GESAMP, (40):14 p.
41. Report of the twentieth session, Geneva, 7-11 May 1990. (1990). Rep. Stud. GESAMP, (41):32 p. Available also in French, Spanish and Russian
42. Review of potentially harmful substances. Choosing priority organochlorines for marine hazard assessment. (1990). Rep. Stud. GESAMP, (42):10 p.
43. Coastal modelling. (1991). Rep. Stud. GESAMP, (43):187 p.
44. Report of the twenty-first session, London, 18-22 February 1991. (1991). Rep. Stud. GESAMP, (44):53 p. Available also in French, Spanish and Russian
45. Global strategies for marine environmental protection. (1991). Rep. Stud. GESAMP, (45):34 p.
46. Review of potentially harmful substances. Carcinogens: their significance as marine pollutants. (1991). Rep. Stud. GESAMP, (46):56 p.
47. Reducing environmental impacts of coastal aquaculture. (1991). Rep. Stud. GESAMP, (47):35 p.
48. Global changes and the air-sea exchange of chemicals. (1991). Rep. Stud. GESAMP, (48):69 p.
49. Report of the twenty-second session, Vienna, 9-13 February 1992. (1992). Rep. Stud. GESAMP, (49):56 p. Available also in French, Spanish and Russian
50. Impact of oil, individual hydrocarbons and related chemicals on the marine environment, including used lubricant oils, oil spill control agents and chemicals used offshore. (1993). Rep. Stud. GESAMP, (50):178 p.
51. Report of the twenty-third session, London, 19-23 April 1993. (1993). Rep. Stud. GESAMP, (51):41 p. Available also in French, Spanish and Russian
52. Anthropogenic influences on sediment discharge to the coastal zone and environmental consequences. (1994). Rep. Stud. GESAMP, (52):67 p.
53. Report of the twenty-fourth session, New York, 21-25 March 1994. (1994). Rep. Stud. GESAMP, (53):56 p. Available also in French, Spanish and Russian
54. Guidelines for marine environmental assessment. (1994). Rep. Stud. GESAMP, (54):28 p.
55. Biological indicators and their use in the measurement of the condition of the marine environment. (1995). Rep. Stud. GESAMP, (55):56 p. Available also in Russian
56. Report of the twenty-fifth session, Rome, 24-28 April 1995. (1995). Rep. Stud. GESAMP, (56):54 p. Available also in French, Spanish and Russian
57. Monitoring of ecological effects of coastal aquaculture wastes. (1996). Rep. Stud. GESAMP, (57):45 p.
58. The invasion of the ctenophore *Mnemiopsis leidyi* in the Black Sea. (1997). Rep. Stud. GESAMP, (58):84 p.
59. The sea-surface microlayer and its role in global change. (1995). Rep. Stud. GESAMP, (59):76 p.
60. Report of the twenty-sixth session, Paris, 25-29 March 1996. (1996). Rep. Stud. GESAMP, (60):29 p. Available also in French, Spanish and Russian
61. The contributions of science to integrated coastal management. (1996). Rep. Stud. GESAMP, (61):66 p.
62. Marine biodiversity: patterns, threats and development of a strategy for conservation. (1997). Rep. Stud. GESAMP, (62):24 p.
63. Report of the twenty-seventh session, Nairobi, 14-18 April 1997. (1997). Rep. Stud. GESAMP, (63):45 p. Available also in French, Spanish and Russian

64. The revised GESAMP hazard evaluation procedure for chemical substances carried by ships. (2002). Rep. Stud. GESAMP, (64):121 p.
65. Towards safe and effective use of chemicals in coastal aquaculture. (1997). Rep. Stud. GESAMP, (65):40 p.
66. Report of the twenty-eighth session, Geneva, 20-24 April 1998. (1998). Rep. Stud. GESAMP, (66):44 p.
67. Report of the twenty-ninth session, London, 23-26 August 1999. (1999). Rep. Stud. GESAMP, (67):44 p.
68. Planning and management for sustainable coastal aquaculture development. (2001). Rep. Stud. GESAMP, (68):90 p.
69. Report of the thirtieth session, Monaco, 22-26 May 2000. (2000). Rep. Stud. GESAMP, (69):52 p.
70. A sea of troubles. (2001). Rep. Stud. GESAMP, (70):35 p.
71. Protecting the oceans from land-based activities - Land-based sources and activities affecting the quality and uses of the marine, coastal and associated freshwater environment.(2001). Rep. Stud. GESAMP, (71):162p.
72. Report of the thirty-first session, New York, 13-17 August 2001. (2002). Rep. Stud. GESAMP, (72):41 p.
73. Report of the thirty-second session, London, 6-10 May 2002. (in preparation). Rep. Stud. GESAMP, (73)
74. Report of the thirty-third session, Rome, 5-9 May 2003 (2003) Rep. Stud. GESAMP, (74):36 p.
75. Estimations of oil entering the marine environment from sea-based activities (2007), Rep. Stud. GESAMP, (75):96 p.
76. Assessment and communication of risks in coastal aquaculture (2008). Rep. Stud. GESAMP, (76):198 p.
77. Report of the thirty-fourth session, Paris, 8-11 May 2007 (2008), Rep. Stud. GESAMP, (77):83 p.
78. Report of the thirty-fifth session, Accra, 13-16 May 2008 (2009), Rep. Stud. GESAMP, (78):73 p.
79. Pollution in the open oceans: a review of assessments and related studies (2009). Rep. Stud. GESAMP, (79):64 p.
80. Report of the thirty-sixth session, Geneva, 28 April - 1 May 2009 (2011), Rep. Stud. GESAMP, (80):83 p.
81. Report of the thirty-seventh session, Bangkok, 15 - 19 February 2010 (2010), Rep. Stud. GESAMP, (81):74 p.
82. Proceedings of the GESAMP International Workshop on Microplastic Particles as a Vector in Transporting Persistent, Bioaccumulating and Toxic Substances in the Oceans (2010). Rep. Stud. GESAMP, (82):36 p.
83. Establishing Equivalency in the Performance Testing and Compliance Monitoring of Emerging Alternative Ballast Water Management Systems (EABWMS). A Technical Review. Rep. Stud. GESAMP, (83):63 p, GloBallast Monographs No. 20.
84. The Atmospheric Input of Chemicals to the Ocean (2012). Rep. Stud. GESAMP, (84) GAW Report No. 203.
85. Report of the 38th Session, Monaco, 9 to 13 May 2011 (pre-publication copy), Rep. Stud. GESAMP, (85): 118 p.
86. Report of the Working Group 37: Mercury in the Marine Environment (in prep.). Rep. Stud. GESAMP, (86).
87. Report of the 39th Session, New York, 15 to 20 April 2012 (pre-publication copy), Rep. Stud. GESAMP, (87):92 p.
88. Report of the 40th Session, Vienna, 9 to 13 September 2013, Rep. Stud. GESAMP, (88):86p.



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