

## **BALLAST WATER OPPORTUNITY NEWSLETTER 2011/4**

### **Introduction**

The last quarter of 2011 saw two conferences organised from the project: The conference on risk associated with ballast water treatment, by the German Federal Institute for Risk Assessment (Special under WP2) and the NSBWO-Europort 2011 Conference to reach the shipping world organised by WP6 (Report under WP6).

### **WP 1 The project as a whole**

In October, project members attended the BW Risk conference (Berlin, organised by sub partner BFR, Germany - see Special Item, this Newsletter) and the GloBallast Test Facility Forum and BWM Research and Development Forum (Istanbul, organised by GloBallast and GloBallast Mediterranean Lead Country Turkey); see also WP6.

At the GloBallast Test Facility Forum representatives of test-facilities for ballast water management systems met to harmonise strategies with an intent to draft a Memorandum of Understanding on future co-operation. Although the Forum elected a Chairman and a Steering Committee, as yet the MoU has to be further developed, with special attention to safeguarding full transparency and harmonising of mutual open and free exchange of information, so as to be acceptable by all members of the 'GloBal TestNet'.

On 8 and 9 November, WP6 organised, for the project as a whole, the conference 'Ballast Water Management, Threat or Treat?' during the maritime exhibition 'Europort 2011' in Rotterdam (See WP6, this Newsletter). The meeting was well attended by more than 250 visitors. The attendees responded quite positive to a targeted questionnaire. The first issue of the 'Ballast Water Times', with contributions by most NSBWO partners and sub-partners, was launched at the conference.

The project group held a live work package leader meeting (Hamburg, 29 November), chaired by Etienne Brutel de la Rivière, who since has left the project as of 31-12-2011. The meeting minutes can be found on the redesigned NSBWO website (see WP6), 'Project line' under 'Meetings'.

The Institute of Marine Engineering, Science & Technology (IMarEST, UK) has indicated that it will restrict its contribution to a minimum, as they cannot and will not claim a budget from the project. Hence redistribution of the workload of WP6 was considered at the WP6 meeting (19/12/2011, Hoevelaken) as the withdrawal of IMarEST considerably increases the workload of WP6-leader Cato Marine Ecosystems, the other WP6 team members, in particular ProSea, and to a lesser extent The Wadden Sea Society and, outside the WP6 team, to some extent also of WP1 (NIOZ).

Partner WP2 (BSH) applied for a re-arrangement of sub-partner budgets; the Federal Institute for Risk Assessment (BfR) will contribute more substantially, while some others sub partners will either withdraw from the project or remain in at a lower key (see WP2).

Several workshops either scheduled for the coming period or rescheduled due to delays, have now firmly been anchored in the WP6 Action plan for project year 4 & 5 (see WP6, WP4 and WP3).

## **WP 2 Policy**

The Federal Institute for Risk Assessment organised a conference, Emerging Risks from Ballast Water Treatment (Berlin from 19 to 21 October 2011). For a full report see: Special - WP2.

The IMO (International Maritime Organization) approval procedure for ballast water treatment systems includes ensuring the acceptability for human health and the aquatic environment. Systems based on oxidative principles produce disinfection by-products (DBPs). The BFR conference focussed on environmental and human health consequences of such DBPs in view of risk assessment and paid ample attention to their not well understood long-term toxicity in the aquatic environment, while strategies for improved human health and environmental risk assessment were highlighted. The conference welcomed outstanding speakers from the scientific and policy community, amongst others Mr Dandu Pughiuc, Head of the Ballast Water office of the (IMO), and Professor Urs von Gunten, Swiss Federal Institute of Aquatic Science and Technology. We thank the Federal Institute for Risk Assessment most sincerely for the high level concept and excellent organisation of the conference.

A second group of ballast water treatment systems that use UV radiation for disinfection has faced substantial interest in recent years. A number of issues require specific attention, such as design and installation of UV systems, sensor and control technology, and environmental acceptability evaluation. Issues that need further discussion include standards and limitations of using UV radiation in ballast water treatment. The BSH, together with the International Ultraviolet Association, organised a UV-ballast water workshop (Hamburg, 22 November 2011). About 60 European and American experts from science, industry, and administration met to share their knowledge and to discuss new ideas arising from the increasing use of UV technology in ballast water treatment.

If the IMO Ballast Water Management Convention 2004 will enter into force, easy-to-use methods and techniques for sampling and analysis for compliance control will be required. Guideline G2, BW sampling for port state control (PSC), of the BWM Convention covers some aspects. However, detailed standardised instructions for a useful sampling regime on board ship and in ports are as yet not available. In a specific call in different scientific journals (September 2011) BSH encouraged scientist from all over the world to submit their ideas in a competition that would solicit the most feasible ones. For the most promising proposal BSH offers financial support to develop a procedure for rapid and representative ballast water sampling. At the moment the submissions are being evaluated by international ballast water experts.

Currently the BSH is in the process of reorganising the beneficiary - sub partner structure. Changes should guarantee a more efficient project contribution and co-operation by the sub partners contributing to the work package of WP2, for the last part of the project period. The reorganisation should also reduce the administrative burden to BSH.

## **WP 2 Special: Conference Emerging Risks from Ballast Water treatment**

The German Federal Institute for Risk Assessment (BfR) hosted a three-day **Conference on emerging risks from ballast water treatment** in October 2011. This event was funded by the North Sea Ballast Water Opportunity Project and by BfR and aimed to provide a platform for information exchange and discussion. At the Conference experts from the North Sea Ballast Water Opportunity Project as well as other interested scientists participated.

During the conference the evidence that disinfection by-products (DBPs) from ballast water treatment play a more important role than previously assumed was abundantly documented. This evidence is even more important as the majority of the IMO-approved ballast water management (BWM) systems are based on oxidative principles such as chlorination and ozonation. DBPs are a mixed group mostly consisting of halogenated organic substances such as trihalomethanes, haloacetic acids and haloacetonitriles. Their formation may vary significantly depending on the BWM system and the chemicals used, as well as on a variety of conditions including environmental parameters such as composition of organic matter within the aquatic environment. Presentations showed that the formation of DBPs is well known from drinking water disinfection, from aquaculture and from industrial disinfection of aquatic cooling systems (e.g. power plants). However, chemicals chosen and concentrations used for such purposes may be different from those used for ballast water treatment. Many DBPs that are also known to arise from ballast water treatment are regulated under drinking water legislation, because of their long-term toxicity. Moreover some of such DBPs have genotoxic properties and may be a concern as to environmental and human health impacts. The experts agreed that an appropriate identification and determination of DBPs under different conditions is as a mayor task for the future scientific work and a crucial asset to ensure the environmental acceptability of ballast water treatment.

Ballast water management systems utilising chemical agents have to comply with the IMO BWM Guideline G9. G9 is a thorough procedure for a two-step environmental acceptability assessment, (for Basic and Final Approval), which requires risk assessment including a human exposure assessment. The GESAMP Ballast Water Working Group (GESAMP-BWWG, the body advising IMO on the granting of Basic and Final Approval under G9), has in developing and refining her methodology also developed a human exposure scenario that includes quantitative assessment for the different ballast water treatment systems. At the conference the participants discussed appropriate human exposure scenarios and methods for exposure assessment, taking into account common approaches used in risk assessment. The conference proposed a suitable approach for quantification of exposure which is based on PEC-values derived from specific exposure scenarios to improve the procedure available for risk assessment of chemical agents used for ballast water treatment.

The conference also focused on testing facilities for BWM. Usually the land-based tests are the first tests performed with any given BWM under “real world” conditions in terms of scale and volume. Based on experience gained by full-scale test series and pilot studies, the experts discussed how to improve the test methods as well as the role of land-based testing in the framework of risk-assessment. There was consensus, that also monitoring programs could contribute to the assessment of DBPs and could offer valuable information about background exposure and environmental concentrations along shipping routes and in harbours, where ballast water is frequently discharged.

Presentations including the main results and discussion highlights will be published in spring 2012.

### **WP 3 Science - Testing**

After finalising the testing season for ballast water treatment systems, two filter installations were tested, while land-based tests were successfully completed. We did additional experiments to better understand the quantitative and qualitative characteristics of the suspended solids (“mud”) used in the tests. As to particle size distribution the Wadden-Sea mud consists of three different particle size classes: around 0.1 µm, around 10 and around 100 µm. The larger-sized particles could explain why filters in the 6 to 40 µm size range manage to remove part of the clay fraction in the test water.

As part of the ‘Science Plan’ we reported on the actual state and progress of the NSBWO land-based testing and laboratory science. The report of the NSBWO workshop on detection of organisms >50 µm is being revised and will be circulated to the participants; the series of certification workshops are a WP2 activity, to be fed into the IMO process. A flow cytometer inter-calibration workshop, which raised considerable interest, will be held in September 2012.

At the GloBallast R&D Conference Isabel van der Star, member of the WP3 team, presented an excellent paper highlighting the relevance of organisms <10 µm in evaluating ballast water treatment systems. Members of the BW team also attended other conferences, SOWOS (Hamburg, November) and Lloyds List Ballast Water R&D (London, December).

### **WP 4 Science - Sampling**

As reported before, the work in WP4 focused on investigating additional methods for organism detection in ballast water. Due to several challenges (mainly as to analysing organism viability and generating rapid results) the task has not yet been completed. We are, however, at present in the final phase of giving an overview of adequate methods.

Candidate technologies suitable for organism detection will be tested in a laboratory environment, while selected methods will be used on-board vessels. Both activities will be continued in 2012. One apparently promising method in rapid phytoplankton detection, the Pulse-Amplitude Modulated fluorometer (PAM), was re-tested with different algal cultures at NIOZ this autumn. Another quite promising method was developed by Nick Welschmeyer (Moss Landing Marine Lab, USA), who made one detection kit available for on-board testing in early 2012. WP4 did the organisational planning for a workshop for “detection of <10 µm organisms”, which is a non-certification workshop, not related to the series of detection workshops for certification. For the workshop no finite date and location have as yet been set.

As dissemination is an on-going event during the entire period of the project, we continued to introduce the project objectives at relevant scientific and shipping-related conferences and meetings. One outstanding event was the NSBO-Europort 2011 Conference in Rotterdam.

## **WP 5 Strategies**

### **Timely CME course to be taught at WMU.**

With the BWM Convention closing in to full ratification, Partner World Maritime University (WMU) has developed a training course on Compliance, Monitoring and Enforcement (CME) for the Ballast Water Management Convention.

The course offers practical knowledge on Compliance, Monitoring and Enforcement related to the implementation of the Ballast Water Management Convention. It will in particular emphasise Port and Flag State Control procedures as are required by the Convention. The enforcement of such BWM requirements is tasked to flag and port state control authorities that inspect national and foreign ships. They will review ballast water certificates and record books, may board selected ships to review the documents and to inspect equipment, while they might use sanctioning powers to detain or fine vessels for failing to meet their legal obligations.

During the training course participants will learn by being taught and by mutual exchange, while they will jointly review and discuss issues of common interest.

The two-day course is based on a training package developed by the GloBallast Partnerships project in partnership with the International Union for the Conservation of Nature (IUCN) and the World Maritime University, with support from the TOTAL Foundation and the MPA of Singapore.

The course will be held in spring 2012 (date to be determined) at the WMU in Malmö

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## **WP 6 Dissemination**

In October, while attending the BFR conference and participating in the GloBallast Test Facility Forum and the GloBallast R&D Forum, WP6 used the opportunity to strengthen ties with project partners, sub partners, with the world around and with the GloBallast project that has similar objectives as NSBWO and also complementary assets to the NSBWO project, all for the benefit of mutual co-operation and wider dissemination of project deliverables.

### ***NSBWO-Europort 2011 Conference***

November 8 & 9 the successful NSBWO-Europort 2011 Conference '***Ballast Water Management - Threat or Treat***' was held in Rotterdam. The concept and programme, as developed by WP6, aimed to reach out to the shipping community, a group of ballast water stakeholders that in the past has not been the easier entity for successfully raising an active interest in ballast water management or establishing mutual co-operation.

We are grateful to the organisers of Europort 2011, a major Shipping Trade Fair, who welcomed the co-operation and supported the organisation of the conference by making their facilities available as a courtesy from the Europort 2011 organisation. Their enthusing responses straight from our first talk a year before the conference, has greatly helped us in developing the concept and logistics of the conference. We really look forward to join hands again for a final NSBWO conference during the Europort 2013 Trade Fair. We also thank Etienne Brutel de la Rivière for the initiative to contact the organisers of Europort 2011 to solicit their co-operation.

The conference focused on the complexities of ballast water management. As such it aimed to raise the understanding and awareness of the challenges of ballast water management, while informing participants about potential solutions and developments in the implementation of ballast water management policies. The conference started with a half-day programme about what is expected from shipping. This delved into regulations, compliance and enforcement. The second half-day programme dealt with the potential and drawbacks of ballast water management systems and what it meant for ships.

The conference was a success; we counted about 270 visitors, many of which came from all parts of the globe, while the audience included many representatives from shipping. Although the conference primarily targeted quartermasters and officers at sea, it also included a substantial window for manufacturers of ballast water management systems, detection tools and shipbuilders.

The first issue of the 'Ballast Water Times' launched at the conference, was warmly welcomed by conference attendees and NSBWO partners and sub-partners alike.

### ***Other WP6 activities***

The NSBWO web site has now been redesigned, also on the initiative of Etienne Brutel de la Rivière, so as to re-organise the now so substantial contents in a more structured and accessible manner. Still some issues have to be cleared, such as the incorrect naming of what should be the 'Calendar' and some missing entries.

The WP 6 team held a live WP6 planning meeting for 2012 and 2013, where we set targets and goals to achieve in the coming two years, while taking the benefit of successful deliverables so far, such as the concept of the NSBWO-Europort 2011. We intend to carry the NSBWO-Europort concept forward to other shipping fairs, to be organised by local partners and sub partners. We also explore how such concepts can be transferred, mutatis mutandis, for generating a programme targeted at ports and other stakeholder entities. We have learnt much during the past period, one of the assets may also be that flexibility in jumping in when the project structure, logistics and /or dynamics does not support sufficient progress on some items, can release a vessel of additional energy and enthusiasm that can move mountains.

Although the past period has not been the easiest for some project partners, in particular not for WP6, as partner IMarEST, who would co-operate on WP6 with CaTO Marine Ecosystems, withdrew from playing its substantial part in the work of WP6, although remaining a welcome, supportive partner in the project. The change of role of IMarEST meant a substantially increased work load for WP6. At the WP6 team meeting a redistribution in WP6 tasks was discussed, which would also entail a redistribution of budgets. WP6 was also relatively heavily burdened due to the changes at NIOZ, the base of the WP leaders of WP1 and WP3, that brought about some initial misunderstanding by the new project management about the responsibilities of WP6 as an independent partner and project group member, for the dissemination of the project.

WP6 also took a lead in programming for the Annual meeting 2012, where several dedicated workshops will be held back-to-back to the general meeting and the Steering Group meeting. A definite location could not be set in the past period, while the dates were tentatively set in the period between half May and the end of May. Since then it has become clear that the original plan to meet for the AC12 in Copenhagen will not materialise, so the location will be Hamburg instead.

Workshops to be held at the AC12 will be: Round table detection (WP4 - GoConsult), Modelling (WP5 –WMU / DHI), Ports – I (WP6 - CaTO), Contacts with other players in the field (WP6, - ProSea).

