were compiled from published scientific literature, governmental reports, and the NORMAN network`s EMPODAT database. The dataset now contains ca. 30,000 entries of data, collected from 1996 to 2014, from all sources. Three areas for consideration were identified that needed to be addressed to enable calculation of summary statistics: First, most of the measured values were actually below a limit of detection for a study and detection limits varied over several orders of magnitude across all studies. The Kaplan-Meier method was used to estimate concentrations below detection limits from the distribution of values above these detection limits in studies with a lower detection limit. Second, many studies only reported summary statistics such as means or ranges. When the number of samples was known, values were imputed for that number of samples so that the summary statistics of the imputed concentrations were identical to the summary statistics reported and the distribution of the imputed concentrations approximated a log-normal distribution. Third, many sampling campaigns collected samples over broad areas, while others collected multiple samples at few locations thus requiring the use of weighting factors such that each location carried the same weight in calculating summary statistics. For Europe, a total of 3,675 freshwater and 456 marine water weighted observations are available. For freshwater locations, 30 % were below a detection limit (varying detection limits). Median and upper 95th centile concentrations for the full distribution of weighted observations were 0.029 and 0.30 μg/L. For marine locations, 39 % were below a detection limit. Median and upper 95th centile concentrations were 0.007 and 0.15 μg/L. The distribution of weighted observations of BPA will be compared to the distribution of aquatic ecotoxicity data for freshwater and marine organisms.

WE248

Single substance and mixture toxicity of emerging polar micropollutants detected in the marine environment

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The European Union's Marine Strategy Framework Directive (MSFD) adopted in 2008 aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. Good Environmental Status is defined as: "The environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive." In practice, involved countries should aim for maintenance of biodiversity, healthy populations of commercial marine fish species, food webs ensuring long-term abundance and reproduction, and no effects caused by contaminant concentrations. The NewSTHEPS project addresses the current fundamental scientific and methodological issues related to the implementation of GES of the marine environment by development of novel procedures for comprehensive environmental monitoring and risk assessment of a broad set of both priority and emerging contaminants in the marine environment. In March 2016, an explorative sampling campaign and chemical monitoring based on SPE-LC-Orbitrap-HRMS was performed in one Belgian harbour and at one open sea location in the Belgian part of the North Sea; and several personal care products, pesticides and pharmaceuticals were detected at both sampling sites. It was our goal to determine chronic effect concentrations for some of the detected compounds to fill toxicity data gaps of emerging polar chemicals for marine organisms. Thus, we chose 2 pesticides (chloridazon and pirimicarb) and 2 pharmaceuticals (carbamazepine and sulfamethoxazole) based on detection frequency, lack of marine ecotoxicity data and physico-chemical properties. The selected substances were tested individually and as mixtures in a 72h growth inhibition test with the marine diatom algae *Phaeodactylum tricornutum* (according to the ISO guideline 10253) and effect concentrations were determined. The results will be presented and discussed in a context of marine chemical mixture risk assessment. **Acknowledgments** The authors like to acknowledge the Belgian Science Policy (BELSPO) for funding the NewSTHEPS project (BR/143/A2/NEWSTHEPS; www.newstheps.be). The financial support from the Hercules Foundation (Flemish Government; AUGE/11/016) and from the Ghent University Special Research Fund (01B07512) is acknowledged for the UHPLC-Q-Exactive™ and the automated SPE equipment, respectively.

WE249

Development of a rapid screening methods for pathogenic bacteria by using chemical contaminants in Olympic Triathlon swimming courses at Tokyo bay

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The coastal areas are important for sound ecosystems and economic activities such as fishing industries and recreations. Especially, Triathlon games will be held at coastal areas in Tokyo bay Odaiba marine park) in 2020 Tokyo Olympic game. However, surface water in swimming areas for triathlon is contaminated by chemicals and pathogens in combined sewage overflows (CSOs) from Kanto metropolitan area. Occasionally, concentrations of *Escherichia coli* (*E. coli*) exceed the water quality standards recommended by International Triathlon Union. Therefore, effective countermeasures should be performed by 2020 Olympic games and water quality should be monitored during the games. But, it takes about one day to measure the concentrations of these bacteria by general methods. Moreover, these concentrations fluctuate daily by weather condition. As a result, it is difficult to evaluate these concentrations and human risk on the day of the games. Adding to that, CSOs also carry chemical pollutants, especially fecal sterols. Though these contaminants do not have adverse effects on athletes, previous reports discussed their correlations to *E. coli.* This study will demonstrate some simple indicators for *E. coli* at swimming courses in Tokyo Bay. The concentrations of these pathogenic bacteria are monitored with simple water qualities such as transparency, suspended matters (SS), total organic carbons (TOCs), caffeine and crotamiton. Transparency and SS are influenced intensely by algae bloom in the bay. However, a new TOC analyzer could demonstrate water contamination near coastal areas and could reveal that dissolved organic carbon concentrations have a strong relationship to *E. coli* concentrations at Tokyo bay. This may be caused by various unknown fecal pollutants in dissolved phase. Caffeine and crotamiton are reported to be useful indicators for contamination by sewage water. This study also revealed their relation to *E. coli* concentrations. A battery of TOCs and several chemical pollutants has potential about simple and rapid indicators for pathogenic contamination and human risk at swimming courses. We also develop a smartphone software application that allows for on-site estimation of water quality as well as risk evaluation for swimmers in Odaiba marine park. Furthermore, we try to establish novel water monitoring and swimmers risk management procedures (including smartphone software) for recreational water area near metropolitan area.

WE250

Spatial analysis of human health risk through drinking groundwater in Taiwan's Lanyang Plain

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Chronic arsenic (As) exposure continues to be public health problem of major concern worldwide. A groundwater quality survey has revealed that part of groundwater in northeastern Taiwan's Lanyang Plain is clearly contaminated with the measured As concentration in excess of the harmful level recommended by the WHO of 10 μg/L. Efforts for assessing the health risk associated with the intake of As through the contaminated drinking groundwater are required as part of the important work for health risk management. Considering that the conventional approach to conducting human health risk assessment may be insufficient, this study performs a spatial analysis of the health risk associated with ingesting As through drinking groundwater in the Lanyang Plain. First, the spatial distribution of the As occurrence is analyzed by using the geostatistical interpolation method. The health risk assessment based on the hazard quotient (HQ) and target cancer risk (TR) established by the U.S. Environmental Protection Agency is then spatially evaluated and mapped based on the spatially estimated concentration. Ultimately, a map that delineates areas with high TR values and high population densities is provided. The findings in this study provide a basis for improving the decision-making process of the health risk management.

WE251

A milestone on the way to a "whole" water Certified Reference Material: ERM-CA100, PAHs in surface water

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Polycyclic Aromatic Hydrocarbons (PAHs) are among the Priority Substances (PS) identified by the Water Framework Directive (WFD) for which the EU Member States shall apply Environmental Quality Standards (EQS) [1] towards the achievement of good surface water chemical status. Directive 2009/90/EC [2] establishes minimum performance criteria for the analytical methods used in the WFD monitoring and requires the laboratories to demonstrate their competence through the use of Reference Materials (RMs) that are representative of collected samples. In the case of organic PS, the water EQS are expressed as total concentrations in the whole (non-filtered) water sample given the high hydrophobicity of many of these molecules. This requirement translates in a significant challenge for the production of CRMs which should mimic surface water, containing variable amounts of dissolved and/or suspended organic matter. This project concerns the production of ERM-CA100, a water RM containing humic acids (HAs), certified for the concentrations of naphthalene, anthracene, fluoranthene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene and indeno[1,2,3-cd]pyrene. The CRM consists of 3 items (water, HAs solution, PAH solution) to be combined at the laboratory's premises following an easy-to-apply reconstitution protocol. Homogeneity and stability of the CRM were assessed: their contributions to the uncertainty of the certified values were estimated between 1.7 to 4.7 % and 1.4 to 8.6 %, respectively, depending on the PAH congener. The certified values, determined through an interlaboratory comparison of expert laboratories, were assigned to seven PAHs between 29 to 104 ng/L (except naphthalene's value of 1.21 μg/L). The main analytical challenge was the control over the PAHs adsorption onto the HAs in the water matrix [3]. This is the first CRM approaching a whole water sample, as requested by the WFD, through the addition of HAs to simulate organic matter. The CRM will be useful for assessing the performance of the analytical methods applied in the mandatory monitoring of