ISSUE 01 July 2024

WORKING GROUP PROGRESS AND STORY UPDATE

Marine WG 8 Newsletter

This edition:

Call For Publications

A shared Google Drive Folder has recently been established to gather publications from Working Group 8 members on marine CEC data. This also includes any studies members may have on legacy pollutants.

Currently there is 110 publications in the folder. We invite more members to submit their publications so as to help make this repository as beneficial and as useful for everyone.

The creation of this shared folder is a way to work towards achieving task 3 outlined in the JPA which focuses on the Systematic sharing of published and proposed marine biota, water, and sediment ecotoxicity threshold values for inclusion in the NORMAN Ecotoxicology Database (EI, UBA, all).

If you have yet to upload to the drive it would be great if you would drop your publication (PDF) into this shared folder . When complete we will put this information on the Norman WG 8 webpage to give access to this work, as well as on the Outcomes section of the website. Along with this, please feel free to share any data associated with your studies of the marine environment.

Welcome to issue 1 of the NORMAN Working Group 8 Newsletter.

Working Group 8: Marine environment (Leader: DCU fiona.regan@dcu.ie or chloe.martin@dcu.ie) in collaboration with Marine Institute Brendan.McHugh@Marine.ie and EI slobodnik@ei.sk)

Establishment of Working Group 8 – Marine Environment

The European Green Deal with an emphasis on Zero Pollution is relevant to the marine environment. This is of urgent concern and an area that can be greatly facilitated by the NORMAN network activities. The Zero-Pollution vision for 2050 is for air, water, and soil pollution to be reduced to levels no longer considered harmful to health and natural ecosystems, that respect the boundaries with which our planet can cope, thereby creating a toxic-free environment. This is highly ambitious and requires the initiatives such as WG-8 joint activities for success.

Several large-scale marine environment specific projects were carried out in recent years, which demonstrated the feasibility of the use of many NORMAN-developed tools in support of the implementation of the Marine Strategy Framework Directive (MSFD), including NTS, passive sampling, prioritization, setting up marine ecotoxicity threshold values and monitoring of microplastics. Several recent activities have generated important marine data, e.g., EU-funded LIFE APEX and EU/UNDP-funded EMBLAS-Plus and EU4EMBLAS projects. The projects involved analysis of samples from polar regions – Antarctica, Arctic region (see JPA 2019/2020). As a part of the EU4EMBLAS, The Cruise of Three European Seas had been carried out in the end of 2021, with involvement of the EC JRC.

Three European Regional Sea Conventions have already successfully applied various NORMAN tools and approaches: OSPAR (North-East Atlantic) within the CONNECT project (and included as a case study in the 2023 Quality Status report); HELCOM (Baltic Sea) within PreEMPT and UBA-HELCOM projects; and the Black Sea Commission within the EMBLAS projects. NORMAN is regularly invited to the MSFD Expert Network on Contaminants meetings organised by the EC.

The creation of WG-8 on Marine environment was proposed and approved in 2021 which aims to draw value from these incredible studies to improve marine environment awareness among the NORMAN network and beyond. The official kick-off of WG8 took place in November 2022, and Fiona Regan agreed to chair the group with assistance from Marine Institute and EI.

Welcome to WG 8 –

We invite you to be involved in marine environment monitoring!!

The Use of Effect Based Methods for pollutants prioritization in the aquatic environment

An interesting research project by Working Group 8 members.

Armintza (Basque country) typical coastline: flysch composed by clear sequences of sedimentary rocks

One of the latest research projects of the Research and Innovation in Analytical Chemistry group from the Research Centre for Experimental Marine Biology & Biotechnology (Marine Station of Plentzia, University of the Basque Country), deals with the use of Effect Based Methods for pollutants prioritization in the aquatic environment.

In particular, in a couple of recently published papers, it has been evaluated through an Effect Directed Analysis (EDA) procedure the potential effects of hospital effluents on marine wild fauna and their estrogenic potential using in-vivo and in-vitro bioassays respectively. Included here is a selection of images highlighting the work. completed as part of this project.

Sea urchins and their local food samples for their maintenance in the Marine Station of Plenztia installations.

Read more about these projects at the following links :

Suspect Screening of Chemicals in Hospital Wastewaters Using Effect-Directed Analysis Approach

Main authors of the publications sampling in the Armintza bay. From left to right: Belen Gonzalez Gaya, Naroa Lopez Herguedas and Leire Mijangos.

Reseacher Profile

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Welcome Ph.D. Enrique J Díaz

Ph.D. Enrique J D´az is a postdoctoral fellow in the I-SECURE project which is funded by the Irish Marine Institute. Ph.D. The project is focused on the determination and quantification of contaminants of emerging concern (CECs) around the coast of Ireland with focused studies on the Atlantic Ocean and the investigation of contaminants from source-to-sea in Dublin. During the I-SECURE project outputs include the occurrence of PFAS (per- and polyfluoroalkyl substances) in the Dublin coastal area – including using passive sampling and the evidence showing uptake of sunscreen agents in marine biofilms. The latest results, conference attendance and publications related to the project are being shared in the @isecuresocial X account.

Reseacher Profile

Follow

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Chloe Martin

Chloe Martin is a research assistant in the DCU Water Institute. Chloe studied Environmental Science and Technology in Dublin City University and graduated in 2023. Since being appointed to this role in June 2023, she has worked within the NORMAN Network, across Working Group 8 and the Cross Working Group on Passive Sampling Within WG 8, Chloe's work focuses on the coordination of tasks outlined in the JPA, such as the general management of the working group, as well as prioritization and data gathering. She has completed research into identifying knowledge gaps that currently exist in publications and studies on CEC's in the marine environment, as well as aiding in the construction of a WG 8 publication repository. To contact Chloe regarding general management of WG 8 , newsletter submissions , or adding to the WG 8 repository please email her at chloe.martin62@mail.dcu.ie or chloe.martin@dcu.ie.

Marine WG 8 at the General Assembly 2023

In December 2023 the General Assembly of the NORMAN Network was hosted at the Goethe University with more than 100 participants from academia and regulatory agencies all over Europe in attendance.

During General Assembly sessions, the eight NORMAN working groups as well as the cross-working groups presented their goals, outputs, and future perspectives.

Working Group 8 activities and proposals were presented by Fiona Regan (DCU Water Institute, Ireland) and Brendan McHugh (Marine Institute, Ireland), who showed the key objectives proposed over the coming years highlighting the linkages of the marine environment to all other Working Groups.

Information on pilot screening projects by OSPAR (CONnECT) and HELCOM (Pre-EMPT) project was shared; a special focus was put on the categorization of substances by identifying knowledge gaps. Prioritization of substances identified in North-East Atlantic and Baltic Sea using NORMAN tools, based on frequency of appearance, persistence and bioaccumulation was proposed as a future focal point. Incorporation of the Mediterranean Sea into WG8 activities was of high interest among attendees.

Finally, the world café, and networking time allowed for valuable catch-up and discussion time and for information sharing with colleagues about topics of prioritisation of chemicals, passive sampling and microplastics in the marine environment.

MARINE WG 8
2024 JPA OUTLINE

1.General Management

Meetings ,Newsletter and website updates, 2024 roadmap and development of WG 8 roadmap , Sub-groups for working on tasks 2 and 3 will be established and will meet as needed. We would like to see a marine environment presentation or mini seminar at the next GA.

2. Prioritization of sea specific contaminants for European Sea Regions

The proposal is for prioritization of substances identified/determined in the North-East Atlantic and Baltic Sea under a series of Tiers.

3. Data Gathering

An effort will be made to improve the population of the databases with the data relevant to the marine environment, with a specific focus on data from AMAP study on emerging substances in Arctic environment, data from the ICESdatabase into LIFE APEX and NORMAN Database System.

4. Ocean Decade event

WG-8 proposes to establish a Norman WG8 sub-committee to plan an Ocean Decade event on chemicals. This should also include members of ERICs and other relevant groups.

21 United Nations Decade of Ocean Science - Sustainable D

5. Microplastics – collaborative engagement

We will meet quarterly with the microplastics WG to investigate how the harmonisation of reporting can be done and how microplastics screening could be achieved.

6.Explore a MC DTN application

It is proposed to prepare an application for a MC Doctoral Training Network building on the HORIZON 2020 project

Task 3: Data Gathering update

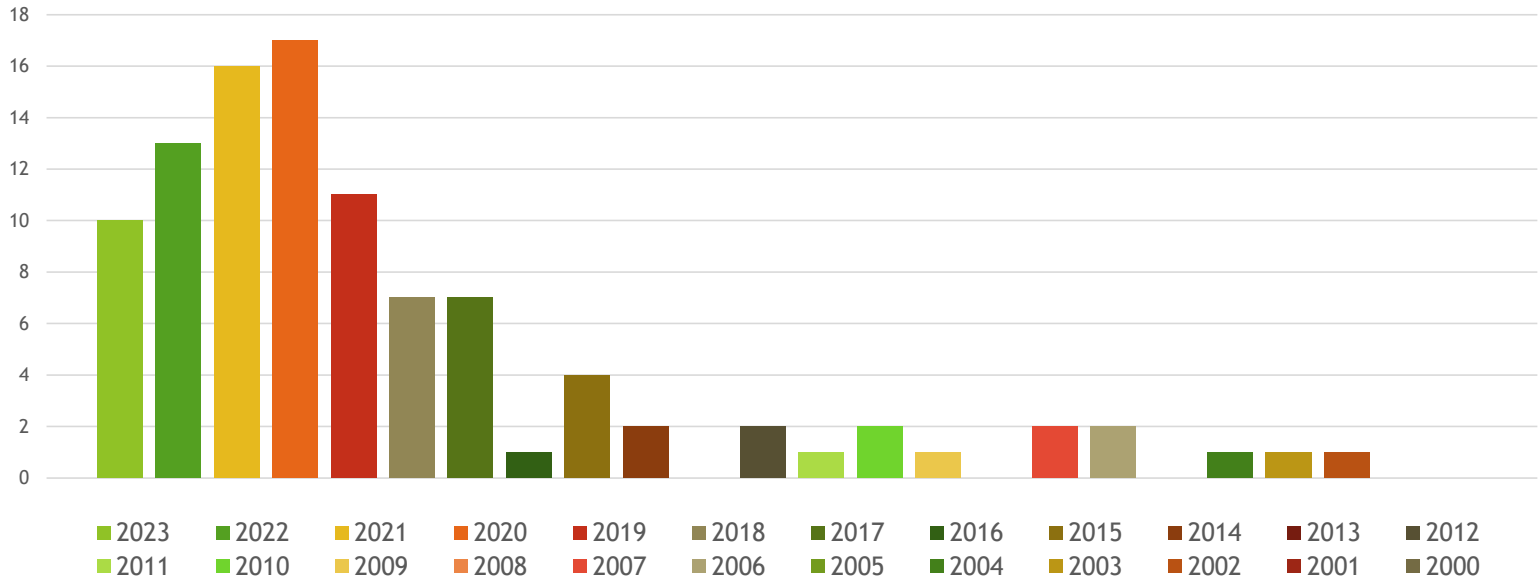
What do we know now and what knowledge gaps have been identified?

An in-depth look into the Data Gathering findings.

A key task in WG 8 has been the collection of relevant publications with the purpose of this task being to generate a repository of relevant publications highlighting both chemicals of emerging concern (CECs) and legacy pollutants relevant to the Marine environment . For now, this “repository” is a shared google drive that allows for anyone with the link to add their **marine research publications**. Although paper collection is an ongoing task, an evaluation of the findings of these publications has been conducted by investigating the publications and categorizing them by year and geographical location or sea in which the research has been conducted in addition to the chemical type of interest in the research.

A total of 110 publications on the topic of CECs in the marine environment have been gathered to date. In this, 27 publications have been submitted by WG 8 members to the drive, and the remaining 83 have been found through a literature search. Of the 110 total papers available, 94% are open access publications, an important consideration for data sharing.

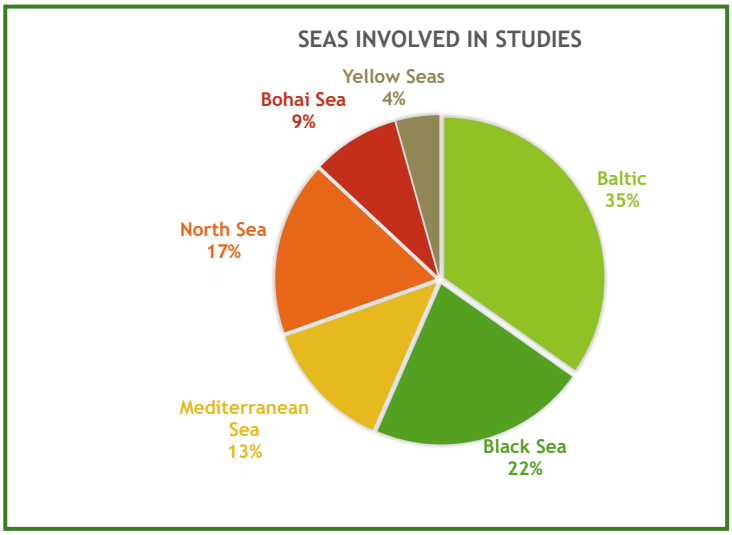
One of the clear ways to characterise studies is by the year of publication (primarily 2000 to 2023). A number of papers pre-date 2000 although a larger number of publications and up to date case studies have been published since in the period of time from 2017 until present day, indicating the high level of interest in these areas in recent years.



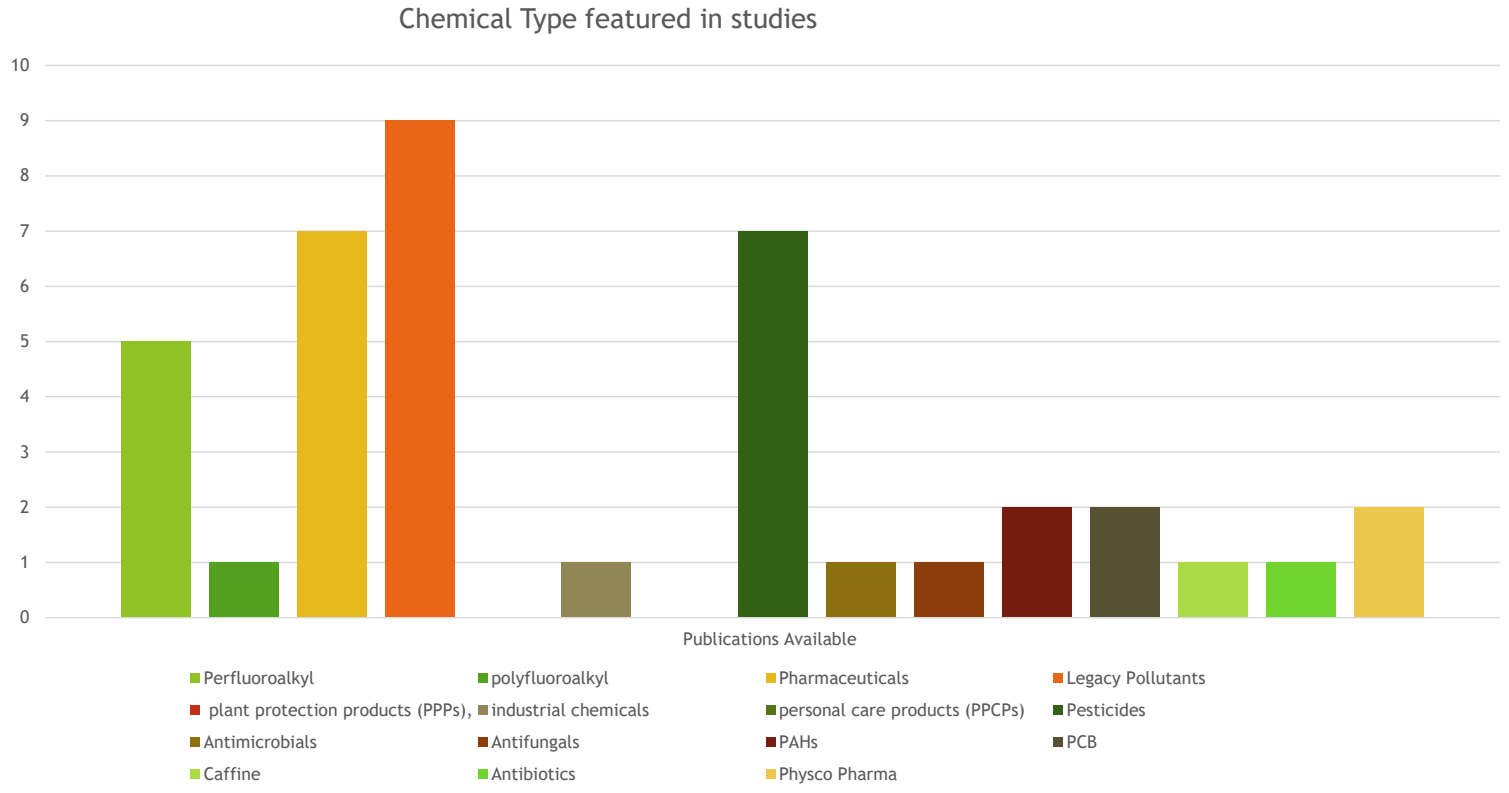
Investigating the seas areas studied was a crucial investigation point in the case of WG 8.

In total, 35% of publications featured research completed in the Baltic Sea, this was followed by the Black Sea, which comprised 22% of the publications.

From these findings it can be concluded that a focus should be on gathering more publications from the Mediterranean Sea



Legacy pollutants have been found to be the most prevalently studied chemicals in the marine environment, with them featuring and being investigated in 9 publications. This was followed by pharmaceuticals and then by pesticides. This work is in its infancy and many more publications, datasets and studies will follow... with indeed the help of our NORMAN community.



Spotlight: Sensors for Marine Chemical Monitoring

Sensors for contaminants of emerging concern

Horizon Europe funded projects in 2024 saw the kick-off of marine sensing projects e.g. Aquabiosens (https://cordis.europa.eu/project/id/101135432) for the measurement of aquatic hazards and pollution - to measure contaminants of emerging concern, microbial biohazards and heavy metals.

Marine metal contaminants

The recently finished project - https://www.monitoolproject.eu – developed and demonstrated the use of DGT passive sampling for metal monitoring in the marine environment. Partners from Atlantic coastal countries gathered important data on the occurrence of priority pollutant metals. The data will be available on the NORMAN database and meanwhile you can take a look at the recent publications.

https://www.sciencedirect.com/science/article/pii/S2352340924001161 https://doi.org/10.1016/j.dib.2024.110145 and https://doi.org/10.1186/s12302-023-00733-4 - A new approach to using Diffusive Gradient in Thin-films (DGT) labile concentration for Water Framework Directive chemical status assessment: adaptation of Environmental Quality Standard to DGT for cadmium, nickel and lead

The call is out for all our members to help us populate this further!!!

Publications To Note

Human footprint on the water quality from the northern Antarctic Peninsula region. Access this publication here.

NORMAN guidance on suspect and non-target screening in environmental monitoring. Access this publication at this link.

Wide-scope target screening characterization of legacy and emerging contaminants in the Danube River Basin by liquid and gas chromatography coupled with high-resolution mass spectrometry. Click here to read more.

Passive-Sampler-Derived PCB and OCP Concentrations in the Waters of the World - First Results from the AQUA-GAPS/MONET Network. To read this publication , click here.

UPCOMING EVENTS

Full Working Group Meeting

September 2024- date to be confirmed

To be confirmed

Zoom link will be provided in advance.

If unable to attend this meeting please contact chloe.martin@dcu.ie