

First report of SCOR Working Group #146, September 2015.

Radioactivity in the Ocean, 5 decades later (RiO5)



Group photo taken on July 17, 2015 at WHOI

I. Major Activities:

SCOR WG 146 held three teleconferences on 3 June and 1 July, 2015 to discuss WG activities and the plan of the first meeting. The first WG meeting was held on 15-17 July 2015 in Woods Hole Oceanographic Institution. Eight full members, 2 associate members participated throughout the meeting. The meeting went extremely well with very fruitful discussion.

II. Progress

The proposed action items of WG # 146 are well underway and/or being planned. Along the lines of the Terms of Reference, we summarize as below some of the actions being taken and/or being planned:

ToR#1: Combine and build upon existing global and individual databases of natural and artificial radionuclide distributions to make an user friendly and easily accessible on line product which will be useful to both the scientific community and the public.

The WG has updated the data bases via the IAEA's MARiS portal, including data collected and is working on the compilation of other data sets via the GEOTRACES and HAM data bases and individual studies. MARiS is a publicly accessible database in the same spirit embraced by GEOTRACES (<http://www.egeotraces.org/>) and various time - series programs (HOT (<http://hahana.soest.hawaii.edu/hot/hotdogs/interface.html>), PAPA (<http://oceanobservatories.org/infrastructure/ooi-stationmap/>

station - papa/), etc.).

ToR#2 & 3: Summarize and publish review papers in peer review journals on these global radionuclide datasets and provide examples of how these can help improve our understanding of ocean processes and contaminant fate and transport. Identify gaps in scientific knowledge in relation to radioactivity in the marine environment and publish the results in a perspectives paper in Eos or elsewhere.

During the first WG meeting, we came up with an outline for a paper to be submitted to *Annual Reviews in Marine Science* in March 2016. Other possible review papers are being discussed and developed.

ToR#4: Bring together academic, nuclear industry and national laboratory expertise for an international symposium on radionuclides in the ocean.

We were initially hoping that IAEA would be a major sponsor for such an international symposium but it turned out that major support from IAEA is not possible. The WG is exploring and considering alternative ways to promote marine radioactivity science and to foster exchanges between academic, industrial and governmental sectors.

ToR#5: Provide a warehouse of education materials to assist in the education and training of the next generation of marine radiochemists and radioecologists.

The WG has been working towards the development of a series of e-lectures on: 1) Radioactivity Basics, 2) Introduction to Radionuclides in Marine Systems, 3) Radionuclides as Tracers of Marine Processes, 4) Impacts and Radioecology. These lectures will be in Benitez-Nelson radiochemistry course in Spring 2016 and further tested in Xiamen Marine Radiochemistry Course in June 2016. Eventually, these lectures will be submitted for publication to eLectures: <http://aslo.org/lectures/>.

The brochure “How radioactive is our ocean?” (OurRadioactiveOcean.org) will be made available at least into Chinese by 2016, perhaps into Portuguese and other languages.

We also discussed about improving survey used to see what students know about radioactivity.

The WG will also take the advantage of having our next WG 2016 meeting in Xiamen to give public lectures on ocean radioactivity topics on World Ocean Day (June 8th). Also, the WG will be holding a short training course following our WG meeting in Xiamen on June 9-11, 2016 for Asian students and young scientists.

ToR#6: Develop web - based tools to enhance public understanding of radioactivity, in particular in the ocean.

New data visualization tool is being developed at WHOI via OurRadioactiveOcean website.

III. Future plan

The second meeting of the WG#146 has been scheduled to be held in Xiamen on 5-7 June 2016. The third WG meeting will be held in Aug., 2017 in France.