

ANNOUNCEMENT and REGISTRATION

Workshop Title: Marine Pollution

Instructor: Prof. Nicholas Fisher, School of Marine and Atmospheric Sciences, Stony Brook University, NY

Workshop Dates: January 15, 2017- January 19, 2017

LOCATION – University of Haifa

PLEASE CONTACT Daniela Zak at MERC by November 1, 2017 **FOR REGISTRATION. Email following details: Name, Graduate status (year, degree), and affiliation to dzak@univ.haifa.ac.il.**

Course cost: 100 ₪, includes accommodations at the IH Haifa Hostel

This course will consider marine pollution in its various forms. We will focus primarily on chemical contaminants, including an array of metals and metalloids, long-lived radionuclides emanating from the nuclear fuel cycle and weapons testing, and organic pollutants (including oil, chlorinated hydrocarbons, pharmaceutical wastes). The course will consider sources of these contaminants, routes to the sea, biogeochemical cycling, toxicity to marine organisms, and possible public health implications from consumption of contaminated seafood. Problems associated with sewage treatment plant effluents, including excess nutrients and pathogenic microorganisms, will also be considered, as will non-toxic pollutants such as plastics. This workshop is designed for graduate students and postdoctoral investigators, but may also be suitable for advanced undergraduates with strong biology and chemistry backgrounds. Students will be expected to lead discussions on some assigned readings and participate in debates on controversial subjects related to marine pollution. The workshop will also include a one-day field trip to sites such as sewage treatment and desalination plants.

Brief bio Nicholas Fisher is a marine biogeochemist who is known primarily for his studies on the interactions of contaminants with marine organisms, particularly the cycling and bioaccumulation of metals, metalloids, and long-lived radionuclides in marine ecosystems. These studies have considered contaminant fluxes in the oceans, the trophic transfer of metals in marine food webs, and public health implications of seafood contamination. Fisher has a BA in Biology from Brandeis University (1970) and a PhD in Biology from the State University of New York at Stony Brook (1974). He was a postdoctoral investigator in the Chemistry

Department of the Woods Hole Oceanographic Institution from 1974 to 1977, and then worked as Senior Research Scientist for the Ministry for Conservation in Melbourne Australia from 1977 to 1980. Dr. Fisher then became Research Scientist at the IAEA Laboratory of Marine Radioactivity in Monaco (until 1985), worked as Oceanographer for the Brookhaven National Laboratory in 1986-1987, and moved to Stony Brook University in 1988, where he is now Distinguished Professor of Marine Sciences and also Founder and Director of the Consortium for Interdisciplinary Environmental Research at Stony Brook.

Marine pollution: tentative syllabus
Five-day short course offered by Prof. Nicholas Fisher

Day 1

Eutrophication and related problems: sewage treatment plant effluents; algal blooms including toxic (“harmful”) algal blooms; effects on dissolved oxygen levels and impacts on fauna; effects on particle loads in coastal waters.

Metals and metalloids: sources; routes to the sea; geochemical cycling in the ocean

Day 2

Metals and metalloids: speciation in natural waters; bioaccumulation and trophic transfer; review of toxic effects on marine organisms; public health consequences.

Day 3

Long-lived radionuclides: review of basics about radioactivity; anthropogenic and natural radionuclides in the environment; sources and biological effects of environmental radioactivity; case studies of accidental and intentional releases of radioactive wastes; potential disposal of radioactive wastes in the sea vs. terrestrial sites; public health consequences.

Day 4

Persistent organic contaminants: review of chemical properties of key classes of compounds, including pesticides, industrial products, pharmaceuticals; environmental degradation/persistence; bioaccumulation and trophic transfer; toxic effects on marine organisms; public health consequences.

Day 5

Visit to coastal sewage treatment plant and desalination plant

*For each topic, students will read key review papers and have a chance to lead a discussion critiquing a relevant published study. For the radioactivity topic, students will engage in a debate on the pros and cons of disposing high-level wastes in the sea.