marine sciences research center
state university of new york
Stony Brook, New York 11794

newsletter

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MSRC ASSOCIATES DAYS

The MSRC Associates held their first annual gathering on 18-19 August 1978. Associates and friends and officials of the University attended a dinner which was hosted by the MSRC faculty and held on the lawn of Sunwood, the University's guest residence. Several of MSRC's scientists briefly described their research programs before dinner.

Prof. Iver Duedall presented a plan for utilizing the wastes produced by burning coal instead of oil. This plan would turn these by-products into resources. According to Prof. Duedall, industry has developed a way to convert fly ash and calcium sulfate--two coal-produced waste products--into solid blocks which can be used for cinder blocks and road pavements. However, this process does not use up enough of the wastes, and large quantities remain. The answer to this problem, as related by Prof. Duedall, is to determine whether these blocks are environmentally acceptable to the ocean, and, if they are, to use them in the construction of artificial fishing reefs.

Field work in this endeavor began two years ago in Conscience Bay, where these solid blocks were tested for toxic effects. So far no such effects have occurred. The next step, which Prof. Duedall described to the Associates, is a demonstration study to be undertaken near Fire Island. A large fishing reef will be built using the blocks, and will be monitored for five years. The funds for this project were obtained from the New York State Energy Research and Development Authority. Other participants in the study include Professors Ramesh Dayal, Harold O'Connors, and Peter Woodhead of MSRC, Mr. Jeffrey Parker of MSRC, and Professors Herbert Carlton and Franklin Wang of the Materials Science Department.

Professor Charles Wurster's presentation concerned the contamination of the environment by chlorinated hydrocarbons. These substances include insecticides such as DDT and Dieldrin and the industrial chemicals known as polychlorinated biphenyls (PCB). These pollutants are particularly harmful to the environment because they can move large distances through the environment, are broadly toxic, and can retain their toxicity for long periods. They are carcinogenic in laboratory rodents and are capable of damaging fish, birds and other animals.

Dr. Wurster described to the Associates his study of the effects of chlorinated hydrocarbons on phytoplankton. He hypothesized that PCB pollution reduces fish production by reducing the size of both phytoplankton and zooplankton, which fish consume. He and his colleagues are currently testing this hypothesis by examining the effects of PCB-altered phytoplankton on zooplankton.

William Swan (right), MSRC's first Associate, receives an award from J. R. Schubel, Director of MSRC.

Prof. J. L. McHugh dealt with his efforts to penetrate what he termed a "barrier of ignorance" regarding American fisheries. One myth that Prof. McHugh wished to dispel involved the belief that elimination of foreign fishing off the shores of the U.S. would bring an end to all of the country's fishery problems. This opinion led to the 1976 passage of a law which extended the fishery jurisdiction of the U.S. to 200 miles. However, as Prof. McHugh pointed out, catches of species which were never taken by foreign fishermen have declined by about 83%, demonstrating that domestic management of fishery resources to date has been an almost total failure.

Prof. McHugh also discussed the fact that most people believe larger striped bass should be protected because a large striped bass will produce more eggs than the smaller variety. However, it is not generally recognized that the small fish are much more abundant than large ones, and that they produce a much greater *total* number of eggs than all the large fish added together.

Professor Lisandro Chuecas discussed the abundant marine resources of Chile and how they related to MSRC. Chile's long coastline provides that country's oceanographers with many opportunities to share the research policies and interests of MSRC's scientists. Prof. Chuecas related that, because of a common concern with the problems of the coastal zone, the MSRC and the University of Concepcion, Chile had decided to develop cooperative teaching and research programs that would benefit both institutions. Efforts toward this end, Prof. Chuecas said, included a graduate course on "Marine Resources and Policies in Chile" that was offered at MSRC, and a proposal which will allow an exchange of MSRC-Chilean faculty members.

AWARDS

KEVIN D. WYMAN, MSRC graduate student and Jessie Smith Noyes Fellow, received a Grant-in-Aid of Research from the Society of Sigma Xi in support of his research on the effects of PCBs on plankton.

Professor AKIRA OKUBO was awarded an NSF grant for his theoretical study of advection and diffusion by the use of Lagrangian diffusion equation.

Professor IVER DUEDALL was granted continued support by the Link Foundation for study of behavior of stabilized sewage sludge in seawater.

Professors PETER WOODHEAD and IVER DUEDALL received initial funding from the New York State Energy Research and Development Authority for their proposal to build a prototype artificial reef off Fire Island inlet to test the environmental acceptability of compacted power plant scrubber blocks as reef-building material.

Professors CHARLES WURSTER and HAROLD B. O'CONNORS received a grant from the New York Department of Environmental Conservation and a renewal award from the New York Sea Grant Institute to support their studies of the behavior and biological effects of PCBs on aquatic ecosystems.

SOME RECENT PUBLICATIONS

BIGGS, D. C., R. G. ROWLAND, H. B. O'CONNORS, Jr., C. D. POWERS and C. F. WURSTER. 1978. A comparison of the effects of chlordane and PCB on the growth, photosynthesis, and cell size of estuarine phytoplankton. Environ. Pollut. 15:253-263.

JONES, C. F. and J. R. SCHUBEL. 1978. Distribution of surficial sediments and eelgrass in New York's south shore bays: an assessment from the literature. MSRC Special Rept. 13. 80 pp.

MAGNANI, B., C. D. POWERS, C. F. WURSTER, and H. B. O'CONNORS. 1978. Effects of chlordane and heptachlor on the marine dinoflagellate, *Exuviella Baltica*, Lohmann. Bull. of Env. Contam. and Toxicol. 20:1-8.

O'CONNORS, H. G., Jr., C. F. WURSTER, C. D. POWERS, D. C. BIGGS and R. G. ROWLAND. 1978. Polychlorinated Biphenyls may alter marine trophic pathways by reducing phytoplankton size and production. Science 201: 737-739.

SCHUBEL, J. R., H. J. BOKUNIEWICZ, R. G. GORDON. 1978. Transportation and accumulation of fine-grained sediments in the estuarine environment: recommendations for research. MSRC Special Rept. 14. 13 pp.

Students from SUNY's Rockland Community College participated on an oceanographic cruise up the Hudson aboard the R/V ONRUST. The cruise was co-sponsored by the New York Sea Grant Institute and MSRC.

I. W. Duedall (MSRC), L. Chuecas (U. of Concepcion), T. A. Pond (SUSB), V. Gallardo (U. of Concepcion), J. R. Schubel (MSRC) in front of the University of Concepcion's new marine laboratory at Dichato (40 km from Concepcion).

PROGRAM OF INTERNATIONAL COLLABORATION

An international program of scholarly collaboration was recently initiated between scientists of the MSRC and the Department of Marine Biology and Oceanography (DMBO) of the University of Concepcion (Chile). The program is an outgrowth of a friendship between Professors IVER DUEDALL (MSRC) and LISANDRO CHUECAS (DMBO) that began in 1970 aboard the R/V HUDSON while the two scientists were collaborating on an investigation of Chilean fjords. Acting President POND, J. R. SCHUBEL, I. W. DUEDALL, and L. CHUECAS visited the University of Concepcion 22-26 September 1978.

During the past year while Chuecas has been a Fulbright-Hays Fellow at MSRC, he and Duedall have developed support from the Tinker Foundation, the International Sea Grant Program and the Organization of American States for a program in research and education in coastal oceanography. The program calls for an exchange of scholars between the two institutions and the design of a research program for an investigation of pollution problems in the Bay of Concepcion.

The program was developed with assistance of Professor RAYMOND JONES, Director of SUSB's Office of International Studies.

WURSTER TO BE SPECIAL ASSISTANT TO DIRECTOR OF NATIONAL CANCER INSTITUTE

Later this month Professor CHARLES F. WURSTER will accept a one year appointment as a Special Assistant to the Director of the National Cancer Institute, Arthur Upton. Wurster will have the responsibility for overseeing the integration of scientific information from NCI into the regulatory process. It is hoped that this will lead to more effective regulation of chemical carcinogens, reduced human exposure to these chemicals, and a lower cancer incidence. Wurster will work with NCI scientists and staff members, regulatory agencies and Congressional committees to develop information pertaining to environmental carcinogens.

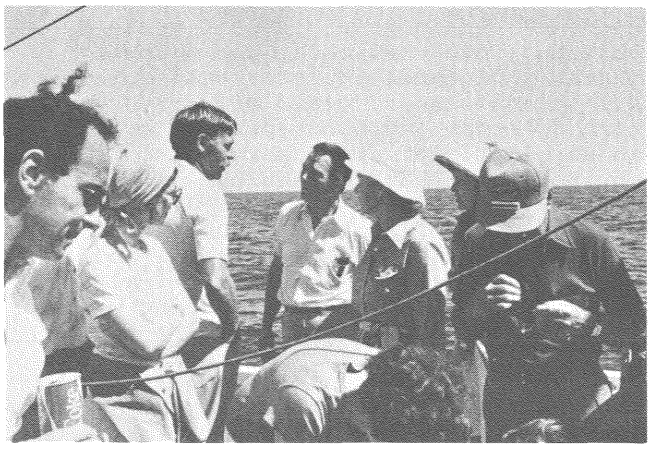
Since a major fraction of human cancers is caused by environmental factors, including contacts with carcinogenic chemicals, an important strategy for preventing cancer involves reducing human exposure to carcinogens. Statutory authority for regulating carcinogenic chemicals is vested with several Federal agencies and the oversight of existing legislation on environmental carcinogens is performed by several Congressional committees. The maximum information on chemical carcinogenesis, however, lies within the National Cancer Institute, which has no regulatory authority. It is hoped that Wurster will be able to translate NCI's scientific data into forms readily usable by decison makers.

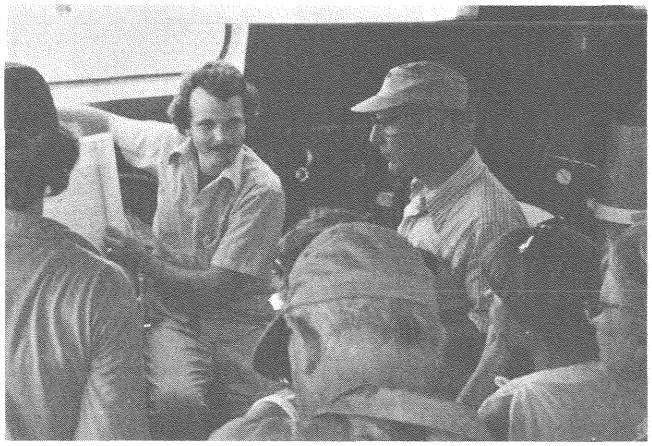
MSRC CONDUCTS WETLANDS COURSE

During the week of 10 September 1978, the MSRC and the New York Sea Grant Institute conducted a course in wetlands science and technology, funded by the U.S. Army Corps of Engineers Institute for Water Resources. Fifty Army Corps of Engineers regulatory personnel attended the course, as well as ten Environmental Protection Agency officials. The purposes of the course were (1) to instruct participants in the basic ecological principles of fresh and salt-water wetlands, (2) to assess the impacts of man's activities in these environments and (3) to present and critically analyze current wetland management practices.

The course included a series of lectures at MSRC by invited speakers on a wide range of wetland-related topics: classification and general overview of regional wetlands; ontogeny of a salt marsh; energy flow through a salt marsh; wetland mapping techniques; wetland soils; man's impact on local wetlands and how such impacts can be minimized. Lecture material was supported by field trips to wetlands at Flax Pond, Carmans River and South Hempstead.

The course was coordinated by W. M. WISE, J. R. SCHUBEL, O. W. TERRY and B. H. BRINKHUIS of MSRC.





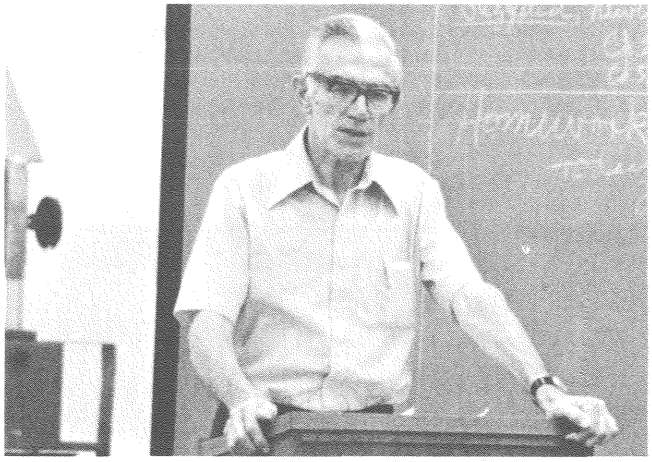
ASSOCIATE CRUISE

On Saturday, 19 August 1978, MSRC Associates boarded the R/V ONRUST to observe first-hand some of MSRC's research programs in Long Island Sound. Both the morning and afternoon demonstration cruises were well attended by enthusiastic Associates.

Each cruise left Port Jefferson Harbor and headed east to Mt. Misery Shoal. Prof. Henry Bokuniewicz assisted by some Associates, demonstrated the use of a Uniboom seismic sub-bottom profiler. This is an acoustic device that allows one to examine the layers of marine sediment and glacial deposits that form the bottom of Long Island Sound. Prof. Bokuniewicz then ran a seismic profile track northwest towards Stratford Shoal, and led a discussion on Long Island's geological history.

Prof. Wayne Esaias showed the Associates how an in-situ fluorometer is used, and measured the surface temperature and salinity of the water with the Plunket

system. He also sampled for zooplankton with a meter net, and demonstrated the use of a Nesken water sampling bottle. Prof. Esaias concluded the cruise with a look at tiny marine organisms such as copepods and diatoms through a microscope.



Professor Kenneth F. Bowden, distinguished estuarine oceanographer from the University of Liverpool, England, visited MSRC in September.

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