



Italian Interuniversity Consortium  
“Chemistry for the Environment”  
(INCA)



University of Genova

**International Summer School**  
***“Innovative approaches to the management and  
physical & chemical remediation of  
contaminated sediments”***

**Magazzini dell'Abbondanza, Genoa, Italy**  
**September 8-10, 2005**

**Directors: Prof. Pietro Canepa**, University of Genova  
& INCA Vice-President  
**Prof. Fabio Fava**, University of Bologna

Sponsored and organized by:  
The Interuniversity Consortium INCA, Venezia  
Faculty of Science, University of Genoa  
*Alma Mater Studiorum*, University of Bologna

and in collaboration with SEDNET

**For additional information, please contact:**

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## **Introduction**

Several organic contaminants of great environmental concern, such as polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and chlorinated dioxins, along with highly toxic heavy metals, are progressively accumulating in freshwater, estuarine and marine sediments. Sediments act as both a repository and source of pollutants. Hydrophobic organic contaminants such as PCBs and PAHs are long-lived in sediments and impair water quality by leaching into overlying water, accumulating in sediment-dwelling organisms and aquatic biota, and transferring through the food web to humans and other animals. Therefore, contaminated sediments comprise one of the most significant environmental problems in the world.

Despite decades of research, we lack adequate methods to relate contaminant concentrations in sediment to water quality and bioavailability, due to a) an inadequate understanding of the sorption and release of contaminants from sediments and b) the feeding behaviour of aquatic organisms. Thus, experts disagree on management strategies: contaminated sediments are very widespread and traditional cleanup technologies such as dredging and disposal are expensive, difficult to apply and may disperse buried contaminants and disrupt existing ecosystems. Further, current management options can reduce risks but cannot completely eliminate exposure for troublesome contaminants like PCBs.

To overcome these obstacles, new approaches for long-term assessment, improved dredging and ex-situ management and remediation strategies along with innovative *in situ* treatment technologies are needed. This in turn requires training activities addressed towards young scientists and engineers involved in such issues for which a combination of different aspects of modern biology, chemistry and engineering sciences, often not sufficiently provided by the current European University programs, is required. This summer school represents a preliminary attempt to cover such a lack of information and formation on a modern and efficient management of contaminated sediments.

In particular, the main objective of the school is to provide to 40 selected young European and US scientists and engineers and to 5 professionals a critical overview on: a) new approaches to the management of contaminated coastal areas; b) new dredging technologies; c) new technology for the physical-chemical *ex-situ* treatment of contaminated sediments; d) advances in capping technologies; e) new approaches for *in situ* stabilization or treatment; f) long-term assessment of contaminant flux and availability, including monitoring requirements for natural recovery of contaminated sediments.

## **Preliminary program**

**Thursday September 8, 2005**

### ***Introductory remarks***

#### ***9.00-9.30 Welcome and opening remarks***

Prof. Gaetano Bignardi, Head of the University of Genoa, Italy  
Prof. Pietro Canepa, Vice-President of INCA & University of Genoa, Italy  
Dr. Giovanni Novi, Head of the Port Authority, Genoa, Italy  
Prof. Fabio Fava, University of Bologna, Italy

#### ***9.30-10.30. "State of the art" on contaminated sediments in Europe and on the strategies adopted for their management.***

Dr. Jos Brils, SedNet coordinator, TNO, The Netherlands

***10.30-11.00 Coffee break***

***Assessment of contaminated ports and harbors and sediment characterization***

***11.00-12.30 Contaminated sediments in USA and innovative technologies for their assessment***

Dr. Eric Stern, U.S. Environmental Protection Agency, USA

***12.30-14.00 Lunch***

***14.00-14.30 Poster viewing***

***14.30-16.30 In-situ transport and fate of contaminants***

Dr. Mauro Frignani - ISMAR, Section of Marine Geology, Bologna, Italy

***16.30-17.00 Coffee break***

***Dredging, management and ex-situ physico-chemical remediation of contaminated sediments***

***17.00-18.30 Dredging technology selection***

Dr. Siegfried D'haene, DEC, Belgium

***Friday September 9, 2005***

***9.00-10.30 Management of dredged material***

Drs Pol Hakstege, Aquatic Sediment Expert Centre, The Netherlands

***10.30-11.00 Coffee break***

***11.00-12.30 Environmental assessment of treatment products and capping of sediments***

Dr. Kay Hamer, University of Bremen, Germany

***12.30-14.00 Lunch***

***14.00-15.00 Chemical treatment of dredged sediments***

Prof. Giacomo Cao, University of Cagliari, Italy

***15.00-16.00 Washing of dredged material and physical characterization of resulting products***

Prof. Paolo Bevilacqua, University of Trieste, Italy

***16.00-16.30 Coffee break***

***16.30-18.00 Beneficial use of dredged material***

Drs Pol Hakstege, Aquatic Sediment Expert Centre, The Netherlands

***Saturday September 10, 2005***

***In-situ management of contaminated sediments***

***9.00-10.30 Sequestration and repartition of heavy metals and organic toxicants in sediments***

Prof. Claudio Minero, University of Turin, Italy.

**10.30-11.00 Coffee break**

**11.00-12.30 Reactive caps and in situ treatment**

Prof. Danny Reible, The University of Texas at Austin, USA

**12.30-14.00 Lunch**

**14.00-14.30 Poster viewing**

**14.30-16.00 In situ stabilization of contaminated sediments**

Arch. Alberto Giulio Bernstein - Consorzio Venezia Nuova, Italy

**16.00-16.30 Coffee break**

**Poster section and concluding remarks** (coordinators: Prof. Pietro Canepa and Prof. Fabio Fava)

**16.30-18.00 Selected poster presentation**

**18.00-18.30 Panel section and concluding remarks .**

### **School venue**

All school activities will take place at the Magazzini dell'Abbondanza, Porto Antico, via del Molo 65, Genoa, Italy. Coffee-breaks and lunch will be provided by the facilities existing inside the building. The selected participants will be accommodated in hotels located in the old part of Genoa city.

### **Who can attend the school**

Forty young scientists and engineers possessing a PhD, MS or *Laurea* degree and working at Universities, public and private research Centres or private Companies along with 5 professionals can participate in the school. Ten (of the 40) positions will be reserved to scientists and engineers from Eastern and South European Countries. Participants will be selected on the basis of their *Curriculum vitae* and documented experiences in the field objective of the school. Participants are encouraged to present their activities through one or more posters (1 m x 0,70 m) that will be viewed and discussed during the school; a 1-page A4 abstract related to each poster should be submitted by e-mail (along with the *Curriculum vitae* and the application form) at the following addresses: [secanepa@chimica.unige.it](mailto:secanepa@chimica.unige.it) AND [stefania.evangelisti@mail.ing.unibo.it](mailto:stefania.evangelisti@mail.ing.unibo.it), as they will be published in the final book of the school presentations. The University of Bologna will assign one European Credit Transfer System (ECTS) to those participants who will submit an abstract and present a poster at the school. The official language of the school is English. Presentations, papers and all the other documents provided will be in English.

### **Registration**

Registration fee is 400 €(+20% VAT) for professionals, 300 € for participant from West European Countries and USA, and 150 € for the 10 selected participants from Eastern and South Europe Countries. The registration fee includes: a copy of the teaching material, a copy of the final book (that will be published within 6 months after the end of the School) along with coffee breaks and lunches from Thursday 8 to Saturday 10, 2005.

Participants interested in participating in the school should send an e-mail with all their data and *Curriculum vitae* to the following addresses: [secanepa@chimica.unige.it](mailto:secanepa@chimica.unige.it) AND

[stefania.evangelisti@mail.ing.unibo.it](mailto:stefania.evangelisti@mail.ing.unibo.it), before June 1, 2005. Selected participants will be reached by e-mail by June 15, 2005 and they must pay the registration fee (by transferring the registration fee to the account that will be indicated in the e-mail message) and send their abstracts by July 1, 2005. Cancellation refunds will be made for written cancellations received by the school secretariat prior to July 15, 2005. No refunds will be made for cancellations after this date, but the final summer school book will be mailed.

For additional information, participants should contact Prof. Pietro Canepa ([secanepa@chimica.unige.it](mailto:secanepa@chimica.unige.it); phone 0039 0103536195) or Prof. Fabio Fava ([fabio.fava@unibo.it](mailto:fabio.fava@unibo.it); phone: 0039 051 2093212)

### **Local Organising Committee**

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