



Professor Dr.-Ing. Raffaello Cossu

Born 1948

Prof. Raffaello Cossu one of the best known scientists in waste management. His main topic in research was the landfill body the technology and his impact on the environment. He has an enormous credit in the international communication in waste management by organizing conferences and workshops with his very personal charm and his ability to emphasize everybody to work and discuss with.

Academic education

- 1973. Graduation and MSc in Chemical Engineering at the Technical University of Milan.

Academic activities

- 1973-1984. Researcher at the Institute of Sanitary Engineering, Technical University of Milan From
- 1984-1986. Associate Professor of Waste Management Technologies, Technical University of Milan.
- 1987-1998. Full Professor of Environmental Engineering, University of Cagliari.
- 1994-1997. Dean of the Environmental and Land Planning Engineering Courses at the University of Cagliari
- 1997-2018. Full Professor of Environmental Engineering, at the University of Padova.
- 1999-2014. Dean of the Environmental of Environmental Engineering School at the University of Padova. During this period he was chairing the Commission for the Graduation exam of the first students of Environmental Engineering at the University of Padova

Education activities

- 1980-1981. Visiting professor at the Technical University of Kracow, Poland
- 1983-1984. Guest researcher at the Water Research Centre of Stevenage, UK
- 1988. Invited Lecturer on waste management topics at the Universities of Durban and Bloemfontein (SA)
- 1989. Visiting professor at the Technical University of Quito, Ecuador
- 1990. Guest lecturer at the Environmental Section (CRAES) of the Chinese Academy of Science, Beijing, China
- 1991. Guest lecturer at the National Institute for the Environment, Tsukuba and the Fukuoka University, Japan

- 1987-1997. He taught at the University of Cagliari the Sanitary Engineering module. In ten years he added at the University of Cagliari a module on Solid Waste Management and a module on Wastewater treatment.
- 1997-2018. At the University of Padova he taught three modules: Principles of Environmental Engineering (6 ECTS), Solid Waste Management (9 ECTS), Design of Solid Waste facilities (6 ECTS). Additionally he founded In 2000 the first course in Italy on Remediation of Contaminated sites.

Scientific activities

- He founded the Laboratories and led the Environmental Engineering Research Group first at the University of Cagliari then at the University of Padova.
- The Research focused on subjects related Wastewater Treatment (removal of nutrients from domestic sewage, leachate treatment processes, separation at sources of different domestic sewage fluxes, phytotreatment process and design, anaerobic dynamic membrane separation) and Solid Waste Management (Landfill mining for the recovery of old landfill, Reclamation of contaminated sites, Landfill sustainability using PAF model, Landfill aeration for the stabilization of old landfill by airflow system, Special and hazardous waste management - automotive shredder residue, tannery sludge, etc - Landfill as geological Carbon Sink in the climate change control strategy, Hydrogen production from organic wastes, Treatment of residual oils for bio-diesel production, Hybrid reactor, Composting of sludges and different industrial organic wastes)

Main achievements

Educational

- First course of Solid Waste Management held at any Italian University (1984)
- First course of Contaminated Site Remediation at any Italian University (2000)
- First University study programme held totally in English at the University of Padova (2008)
- First University study programme on Environmental Engineering held totally in English at any Italian university (2008)
- Starter (from Italian side) of the Double Degree Programme on environmental Engineering between the University of Padova and the Tsinghua University (2018 to be implemented in 2019).
- 1977. First studies in Italy on Biological removal of nutrients from wastewaters
- 1989. First applied research in the mediterranean area of sorce segregation of putrescible waste (Serdiana, Sardegna)
- 1990. First international application of geophysical methods for surveying old landfills.
- 1994. First scientific investigation in Italy on Landfill Mining (Simbirizzi, Quartu S.E., Cagliari))
- 1993 First studies in Italy for the application of stability indices of putrescibles waste
- 1997. First studies in Italy and assessment of the innovative messa system "Airflow" for low pressure aeration of old landfills
- 2012. Establishment of the Sanitary Environmental Engineering Centre at the University of Padova (Building and laboratories spread at a 2 ha campus)
- 2013. First studies on phytotreatment of wastewater by using oleaginous species
- 2014. First studies in Italy on hybrid landfill reactors

Other information

- 1997 to 2009. Member of the International Mentors Group for the Environmental Engineering Programme of the University of Kalmar, Sweden
- 2008-2017. Editor in chief of Waste Management, Elsevier, Amsterdam
- 2018. Editor in chief of Detritus, CISA, Italy
- Member of the Editorial board of the Journal "Ingegneria Ambientale".
- Lecturer in waste management topics in more than 40 courses and seminars.
- Speaker in numerous (more than 100) international conferences, congresses and symposia on waste management and wastewater treatment topics
- Italian Coordinator of the Governmental Agreement on waste management between Italy and Japan
- Chairman of the Scientific Committee of the "Sardinia" International Symposia on Sanitary Landfill, held every two years in Sardinia, Italy. Sponsored by WHO, EU and Research

Landfill design

- 1978. Design of the first lined landfill in Italy, with collection and treatment of leachate percolato (San Liberale-Venice)
- 1978. Design of the first lined landfill in Italy constructed below the groundwater level (Cavallino-Venice)
- 1983. First landfill in Italy constructed along a slope with geomechanical monitoring (Tre Monti-Imola)
- 1996. Design of the first 5.000.000 m³ sector of the sanitary landfill of Ano Liossia (Athens)
- 1999. First full scale applications in Italy of the in situ aeration of landfills (Modena, Legnago, Campodarsego).
- 2003. First full scale application of the "Aquanova" system for source separation of sewage fractions and integrated management of with solid waste, with production of bioenergy

Individual remarks

- Member of the International Mentors Group for the Environmental Engineering Program at the University of Kalmar in Sweden
- Chairman of the Italian Technical Committee for Guidelines on Sanitary Landfill
- Italian Coordinator of the Governmental Agreement on Waste Management between Italy and Japan
- Founding member of the European Waste Club
- Founding member of the International Waste Working Group
- Editor of the Italian Journal "RS-Rifiuti Solidi".
- President from 2004 to 2008 of the IWWG – International Waste Working Group, the international scientific association for waste management
- Since 1987 he is Chairman of the Scientific Committee of the Biennial International "Sardinia" Symposia on Waste Management and Landfilling
- Founder and Chairman of the Biennial International "Venice" Symposia on Energy from biomass and waste
- Founder and Chairman of the Biennial International "SUM" Symposia on Urban Mining and Circular Economy
- Co-chairman of "Waste Safe", Biennial waste management conference in Developing Countries (Khulna, Bangladesh)

- Co-chairman fo the “Crete” Sympsoim on Industrial and hazardous waste management (Chania, Greece)
- Editor in Chief (from 2009 till to 2017) of Waste Management (IF in this period moved from 2.1 to 4.7), published by Elsevier, Official Journal of IWWG
- President of the Italian Committee for Contaminated Sites Remediation (CTTC) with publication of Guidelines for a New Regulations.
- “A Life for Waste” Award, 2018
- Founder and Editor in Chief of the scientific journal Detritus, a new journal of IWWG
- Leader of the ROLES Project, between Italy and China for old landfill remediation.

Personnel remarks

This very impressive output of the career of Prof. Raffaello Cossu would be sufficient for several “academic lives”. Behind all these down written activities stay high quality research, highly motivated, lively and sound education and great enthusiastic engagement to bring the international academic “waste world” together. All these activities were/are realized on a profound scientific basis, with a lot of “heart blood”, personal input and pleasure.

Cristina Lavagnolo, Rainer Stegmann and Werner Bidlingmaier

Publications (Selection)

- Author of more than 200 international publications
- Co-editor of the following books:
 - T.H.Christensen, R.Cossu & R.Stegmann, Eds.. (1989). Sanitary Landfilling: Process, Technology and Environmental Impact . Academic Press Inc., London, ISBN 0-1.
 - J.Carra & R.Cossu, Eds.. (1990). International Perspectives on Municipal Solid Wastes and Sanitary Landfills, Academic Press, London
 - Christensen, R. Cossu & R. Stegmann, Eds.. (1992). Landfilling of Waste: Leachate. Elsevier Science Publishers, Amsterdam, The Netherlands, ISBN 1-85166-733-4
 - Christensen, R. Cossu, R. Stegmann, Eds.. (1993). Landfilling of Waste: Barriers. Chapman and Hall, Cambridge, UK
 - Christensen, R. Cossu, R. Stegmann, Eds.. (1996). Landfilling of Waste: Biogas. Chapman and Hall, Cambridge, UK
 - R. Cossu, R. Stegmann, Eds.. (2018). Solid Waste Landfilling: Concepts, Processes, Technologies, Elsevier, Amsterdam