



“Gheorghe Asachi” Technical University of Iasi, Romania



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INNOVATIVE ENVIRONMENTAL BIOTECHNOLOGY-DRIVEN BY EDUCATION FOR SUSTAINABLE DEVELOPMENT

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Abstract

Experiences connected with long-term (44 years) **problem-solving education for the promotion of Sustainable Development** (as European and global top priority) introducing progress in environmental biotechnology seems to be a key factor for training staff and experts as well as for cooperation with knowledge-based society in different regions and countries. I and my former students and coworkers have good practice in introduction of **new methods for early detection of environmental risk factors for human health** (including microbiological risk factors for cancer/leukaemia incidence in in-door environment e.g. toxinogenic fungi *Aspergillus flavus* and *Penicillium meleagrinum*, drinking water, animal and human food chains), **nature and culture heritage, as well as innovative biotechnology for more efficient treatment** of waste water, as well as protection buildings against toxinogenic moulds, biological corrosion (including basic, research-developing study and introduction of new patent). I also introduced new laser biotechnology for more efficient treatment of **waste water** (by photostimulation with adequate algorithm of coherent light water plants), **bioremediation of contaminated land as well as reclamation** of industrial regions as well as areas after flood incidence including biomass production in areas out of use, acceleration of the formation of tall hedges alongside main roads for prevention against traffic output. My **educational activity is based both on voluntary action** in cooperation with the university students scientific teams for the promotion of sustainable development (interdisciplinary case studies) in the regions of top quality nature and culture heritage like national parks in Poland (such as National Summer Schools from 1968 to 2011) and International Summer Schools or Workshops in Poland, Spain – Coto Doñana and Italy - Cinque Terre P.N. and Florence (from 1972 to 2010), as well as connected with 30 years of **formal education** (series of diploma and doctoral studies, postgraduate courses, as well as lectures as visiting professor in 12 countries). The basic idea is the **introduction of progress in biotechnology for both detection of environmental risk factors as well as more efficient prevention against contamination of the natural environment and for more efficient bioremediation** (of toxic trace metals) or biodegradation (of hydrocarbons) followed by introduction of new biotechnology for better reclamation for deteriorated areas (including linkage to adaptation to climate change). **Problems-solving training** (including cooperation of scholars and students from natural, technical, social, economic and other subjects of studies) was supplemented by **education of local stakeholders**. This is a field of pilot cooperation of European and Asian teams of experts e.g. in India, Japan and China. AGH Open University is involved since 23 years in dissemination of knowledge about progress in biotechnology for **common action of experts and knowledge-based society** (including representative of different age groups) for promotion sustainable development focused on primary prevention of environmental risk factors. Scientific Council of the Goetel’ s School of Environmental Protection Engineering and AGH-UST Open University **will be held in Krakow, Poland from 6th to 9th September 2012 the International Conference on Sustainable Development and Ecoinnovation** (based on Innovations in Environmental Biotechnology). All the interested experts are welcome to contact the author (the address given above) or e-mail to: tuo@agh.edu.pl
