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**Dr Ioannis K. Kalavrouziotis**  
**Agronomist-Ph.D Environmental Geochemistry**



**ASSOCIATE PROFESSOR IN THE SCHOOL OF SCIENCE AND TECHNOLOGY,  
HELLENIC OPEN UNIVERSITY, 13-15, TSAMADOU STR., 26222 PATRAS,  
GREECE.**

**DIRECTOR IN MASTER PROGRAMME 'WASTE MANAGEMENT'**

**WEB SITES: [HTTP://WWW.EAP.GR/VIEW.PHP?ARTID=3643](http://www.eap.gr/view.php?artid=3643)**

**PERSONAL : [WWW.IOANNISKALAVROUZIOTIS.GR](http://www.ioanniskalavrouziotis.gr)**

# GRADUATE POSTS IN OTHER UNIVERSITIES

**Teaching “Earth Sciences and Environment”** in the context of the Graduate Studies Master’s Program in the Department of Geology, **University of Patras**, during the academic years: 2002-2003, 2003-2004, 2004-2005, 2005-2006, 2006-2007, 2007-2008, 2009-2010, 2010-11, 2011-12, 2012-13, 2013-14.

**Teaching “Sustainable Management of the Protected areas”** in the context of the Graduate Studies Master’s Program of the Universities: (a) Ioannina, (b) Thessaloniki and (c) Patra, during the academic years: 2003-2004, 2004-2005, 2005-2006, 2006-2007, 2007-2008, 2008-2009, 2009-10, 2010-11, 2011-12, 2012-13.

**Teaching “Quality identification of Agricultural Products”** in the context of the Interdepartmental Graduate studies, Master’s programme, in the Departments of: (a) Environmental management and natural Resources, (b) Organization and management of Agricultural Enterprises, (c) Environmental Management and Natural Resources and medicine, of Ioannina University, during the academic years: 2003-2004, 2004-2005, 2005-2006, 2007-2008, 2008-2009, 2009-10, 2010-11.

**Teaching** in the **Open University of Greece** as Assistant Professor in Natural Environment and Pollution in the context in Master’s programme, Waste Management (academic year 2009-10, 2010-11, 2011-12).

**Teaching** in Microbiological Technology Biology Department, **Kapodistrian University of Athens**, as Assistant Professor, Master’s programme, in subject: Geochemical application of Wastewater, Academic year 2009-10, 2010-11, 2011-12, 2012-13

# HIGHER STUDIES

- A)** ARISTOTLE UNIVERSITY OF THESSALONIKI, DIPLOMA IN AGRICULTURE (1984.)
- B)** SELETE – PEDAGOGIC DEPARTMENT, DEGREE IN PEDAGOGIC STUDIES (1989)
- C)** PH.D IN ENVIRONMENTAL GEOCHEMISTRY, ‘INVESTIGATION OF PLANT’S BEHAVIOR IN RELATION TO THE HEAVY METALS ACCUMULATION IN SOILS’, DEPARTMENT OF GEOLOGY, UNIVERSITY OF PATRAS, GREECE ,1999.

## PROFESSIONAL EXPERIENCE

- Member of the Administrative Board of the GEOTECHNICAL CHAMBER OF GREECE from 2002 to 2003
- Agronomist of the Ministry of Agriculture from 1988 to 2000
- Member of the Administrative Board of the State Agronomists Pan-Hellenic Union (PUSA) during the periods 1991-1993, 1993-1995, 1995-1997). Secretary General of the Union during 1997.
- Member of the Committee for following the program of MOP for the Region (1990-1994).
- Coordinator and basic instigator of the Western Region’s of Greece Working Group in the context of DELLORS program, for the rural development of western Greece’s Prefectures

# HIGHER STUDIES

- Representative of the Regional Administration of Western Greece in the Administrative Board of the Local Development Center of Lower Achaia (*LEADER*) (1992-1993).
- Director of the Western Greece Region Administration, from 30-1-1993 to 25-11-1993.
- Lecturer at the University of Ioannina Department of Environmental Management and Natural Resources (Agrinion) from 8-11-2002.
- Member of the Administrative Board of the Organization for the Authentication (certification) and Supervision of the Agricultural Products (*OPEKEPE*), representing the Geotechnical Chamber of Greece 2004-2005.
- Assistant Professor at the University of Ioannina, Department of Environmental Management and Natural Resources (Agrinion) from 8-8-2007.
- Member of the Administrative Board of the National Agricultural Research Foundation ( *NAGREF*) from 2006 to 2009
- **President** of the Sector for the Management of Messologion Lagoon (Ministry of Environment, Physical Planning and Public Works) from June 2006- January 2010.

# BOOKS- PUBLICATIONS

- He has published 5 Books and chapters, 67 peer-reviewed full research papers in International Journals, 3 papers in National Greek Journals, 40 papers in International Conferences, 35 papers in National Conferences and 80 articles in journals and newspapers.

## BOOKS

- Kalavrouziotis I.K. **Sustainable management of natural resources**. Edited by Tziolas publishing (2010) pp.1-276.
- Kalavrouziotis I.K., Geochemistry Lab manual Notes (2005) pp.1-50
- Soil Resources, Chapter 3, pp77-93., Tsakiris, G (ed) In: “ **Hydraulic works, Design and Management, Vol. II, Land Reclamation Works, SYMETRIA Publishers, Athens, 2006**
- Kalavrouziotis I., Koukoulakis P., Sasha Koo-Oshima , 2014 “**Elemental Synergism and Antagonism in plants under the effect of treated municipal Wastewater**” **FAO** , Publications, Rome, (submitted)

# BOOKS- PUBLICATIONS

## RECENT PUBLICATIONS

- *Kalavrouziotis I. and Koukoulakis, P. 2010.* Elemental antagonism in vegetables under treated municipal wastewater, *Journal of Plant Interactions*, Vol. 5, No 2, pp. 101-109.
- I. K. Kalavrouziotis, E. Kostakioti, P. H. Koukoulakis, A. H. Papadopoulos, M. Leotsinidis, E. Sakazli, 2011. The impact of Cl x Cd interrelationship on planning Wastewater reuse in cabbage, submitted *Water, Air, Soil pollution*, 214:565–573.
- *F. Pedrero, I.K. Kalavrouziotis, J. Alarcon, P.Koukoulakis, T.Asano 2009.* ‘Use of treated municipal wastewater in irrigated agriculture- Review of the practices in Spain and Greece’, *Agricultural Water Management*, Vol. 97(9) pp. 1233-1241.
- *D. Fatta-Kassinou, I.K. Kalavrouziotis, P. H. Koukoulakis, M.I.Vasquez 2011,* ‘The risks associated with wastewater reuse and xenobiotics in the agroecological environment’, *The Science of the Total environment*, 409, 3555-3563.
- *Kalavrouziotis I.K., Koukoulakis P.H., Kostakioti, E. 2011.* Assesment of metal Transfer Factor under irrigation with Treated Municipal Wastewater, *Int. Journal Agricultural Water Management*, Volume 103, pp. 114-119.
- *Kalavrouziotis I.K. and Koukoulakis P.H. 2012.* Soil Pollution under the effect of Treated Municipal Wastewater, *Int. Journal Environmental Monitoring and Assessment*, Volume 184:6297-6305, DOI 10.1007/s10661-011-2420-0



# SHORT BIOGRAPHY

Dr. Associate professor Ioannis K. Kalavrouziotis has received his Ph.D in Environmental Geochemistry of the Department of Geology, University of Patras, Greece in 1999.

Currently, he is working as Associate Professor In The Department Of Environmental And Natural Resources Management, In Agrinio, University Of Western Greece (2000-2013).

Associate professor in the Hellenic Open University , School of science and technology, in wastewater management (from 01 July, 2013). Director of the education in in the 'Wastewater Management' Master Program.

He has successfully completed his administrative responsibilities as: agronomist of the ministry of agriculture from 1988 to 2000, director of the western greece region administration from 30-1-1993 to 25-11-1993, member of the administrative board of the national agricultural research foundation ( NAGREF) from 2006 to 2009, **resident** of the sector for the management of Messologion lagoon (Ministry Of Environment, Physical Planning And Public Works) from June 2006- January 2009.

# SHORT BIOGRAPHY

He is serving as an editorial member of several reputed journals like *water reuse and desalination (IWA)* , *environment and pollution (canadian center of science and education)*, *journal of environmental and analytical toxicology* and *frontiers in green and environmental chemistry journal*.

Member in IWA and president of the organizing and scientific committee of the IWA symposium on '*water, water and environment: traditions and culture*', 22-24 march, 2014, patras, greece. Member of the interim **management committee** of IWA specialist group on water and wastewater in ancient civilizations, waterwiki group space, WG on environment.

He is a member of the administrative board of the geotechnical chamber of greece from 2002 to 2003, member of the administrative board of the state agronomists pan-hellenic union (PUSA) during the periods 1991-1993, 1993-1995, 1995-1997). Secretary general of the union during 1997, member of the administrative board of the organization for the authentication (certification) and supervision of the agricultural products (OPEKEPE), representing the geotechnical chamber of greece 2004-2005. Member of the administrative board of the national agricultural research foundation (NAGREF) from 2005-2009.

# RESEARCH ACHIEVEMENTS

- Advisor of 4 PhD students, one of these are finished in 2009, Title of the thesis: Investigation of Forest species behavior under the effect of Treated Municipal Wastewater.
- Advisor of 45 undergraduate student's theses studying in the Department of Environmental management and natural Resources
- Advisor of 20 graduate student's Master's theses studying in the Department of Environmental management and natural Resources in Agrinion, Greece and Hellenic Open University

# MEMBER IN EDITORIAL BOARD

- 1. Member in Editorial Board Editorial Board *Journal Environmental & Analytical Toxicology*
- 2. Member in Editorial Board *Journal of Water Reuse and Desalination, IWA*
- 3. Member in Editorial Board *Journal Environment and Pollution*, published by **Canadian Center of Science and Education**
- 4. Member in Editorial Board Editorial Board *Journal Environmental Quality (EQA)*
- 5. Review Editor *Journal Frontiers in Environmental Chemistry*

# REVIEWER OF PAPERS PUBLISHED IN INTERNATIONAL SCIENTIFIC JOURNALS

- 1.Fresenius Environmental Bulletin
- 2.Agricultural Water Management
- 3.Journal of Hazardous Materials
- 4.Journal of Environmental Management
- 5.Water Resources Management
- 6.Archives of Environmental Contamination Toxicology
- 7.Journal of plant Interactions
- 8.Environmental Science and Technology
- 9.Environmental Monitoring and Assessment
- 10.Environmental Monitoring and Software
- 11.Desalination and Water Treatment
- 12.Journal of Environmental & Analytical Toxicology
- 13.International Journal of Physical Sciences
- 14.Chemosphere
- 15.Ecototoxicology and Environmental Safety
- 16.Journal of Environmental Chemical Engineering
- 17.Journal of Forest Tropical Science

# RESEARCH ACHIEVEMENTS

- Academic visitor in the School of Environmental and Applied Sciences in the University of Derby U.K. 20/6/2000-20/9/2000.
- Academic visitor in School of Environmental and Applied Sciences in the University of Glamorgan, U.K., 10/7/2003-10/8/2003 (lecture and cooperation research)
- Academic visitor in School of Environmental and Applied Sciences in the University of Glamorgan, U.K., 12/7/2004-26/7/2004, (lecture and cooperation research)
- Invited member in the Final Review Meeting of the 3rd Edition of WHO Guidelines for the safe use of Wastewater, Excreta and Graywater, 13-17 June 2005, WHO, Genève.
- Academic visitor in National Academy of Ukraine, Kiev, 25-29/07/2005 (lecture and cooperation research)
- Academic visitor in School of Environmental and Applied Sciences in the University of Glamorgan, U.K., 08-11/08/2005.
- Academic visitor in National Academy of Ukraine, Kiev, 24-27/05/2006.
- Member of the scientific team of the workshop for the evaluation of the manual of Good Agricultural Practice for the national reuse of the wastewaters and sludge (Dec. No277520/15-06-2006). Ministry of Agricultural development and Food.
- Academic visitor in Faculty of Analytical Chemistry, Polytechnico Gdansk, Poland, 25-07/01-08-2009.

# RESEARCH ACHIEVEMENTS

- Academic visitor in Environmental Engineering Department, Technical University of Istanbul, 21-27/03/2010 (Erasmus program, lecture and cooperation research)
- Scientific Member in NATO Advanced Research Workshop, 'Climate change and its effect on water resources-issues of National and Global security' 01-04 September 2010, Cesme, Izmir, Turkey.
- Academic visitor in Faculty of Analytical Chemistry, Polytechnico Gdansk, Poland, 05-11-07-11 (Erasmus program, lecture and cooperation research)
- **Academic visitor** in University of Tula, Mexico, 18-09-11/28-09-11 (invitation from University of Tula for cooperation research).
- DAAD Felloswip University of Braunschweig Germany, Institute of Sanitary and Environmental Engineering, 01-11 to 30-11 /2012.
- **Academic visitor** in Open University of Cyprus, 05 -09 May 2014 (Erasmus Teaching programme, teaching 5 hours in the MSc Course 'Environmental Conservation and Management Programme')
- Member in **ESSEM COST Action ES1403** 'New and emerging challenges and opportunities in wastewater reuse (NEREUS)' 2014
- Coordinator COST proposal entitled: Integrated Systems for Sustainable New Water Production and Use (IntSyWtPr), Earth System Science and Environmental Management, July 2014

## PARTICIPATION IN OTHER RESEARCH PROJECTS

- Study on the disposal and exploitation of wastewater and sludge-new energy sources. Member of the research team of the department of mechanical Engineering, Laboratory of Special Engineering of the University of Patras, funded by SPA of W. Greece 1991-1994.
- Study of the wastewater and sludge exploitation. Member of the research team, in the Department of Mechanical Engineering, Laboratory of Special Engineering, University of Patras, 1994-1996
- Member of the research team, laboratory of applied Geochemistry, Department of Geology, University of Patras, 1995-1997
- Member of the research team in the Department of Mechanical engineering, for the study of **“Solid waste management in the holy town of Messolongion”, November 1996-1997.**
- Member of the research team of the laboratory of special engineering, for the investigation of **“The wastewater reuse of the town of Kerkira”** August 1998-1999.
- **Responsible Scientist** of the Research program **“PYTHAGORA II”** entitled **“Regional planning for the safe reuse of the treated wastewater and sludge of the Biological Processing Plants in soils and crops of Western Greece”.** (EPEAEK).
- **Responsible scientist** of the study assigned by the Ministry of Agricultural development and Food on: **The possibilities of the wastewater and sludge reuse for irrigation of the soils and crops, produced by the Biological processing Plants of Argolida and Laconia.** (EPAAY 2006).



# PARTICIPATION IN OTHER RESEARCH PROJECTS

- Member of the research team PENNED 2005, for the investigation of: **“Planning possibilities of reuse in soils and crops of the waste water and sludge reuse of DEYAM Messolongiou”**. Aegean University, Laboratory of Geographical Information and Remote sensing Systems
- **Coordinator** of the research team of Agency for the Management of Messologion Lagoon (Ministry of Environment, Physical Planning and Public Works) from June 2006- January 2010.
- **Coordinator** of a proposal in Antirrion Western coastal zone for the needs of SHOOAP, Municipality of Antirion, Research Committee of the University of Ioannina.
- Responsible scientific Coordinator for writing and publishing of ‘Document on heavy metal interaction from wastewater reuse in agriculture’, FAO, Rome 2010.
- **Coordinator** of Proposal submitted to the Organization of the Black Sea Economic Cooperation (BSEC), entitled: **‘Survey of the applicability and implementation possibilities for the reuse water and nutrient sources from treated wastewater in the agro-ecological environment’** Participating countries member states of the BSEC, i.e.: (a) the University of Ioannina, Greece, (b) Istanbul Technical University, Turkey, and (c) Ukraine, National Academy of Sciences. Coordinator: Dr I.K.Kalavrouziotis.
- **Coordinator** of proposal submitted to the Program **THALIS** entitled: “Research and Technology for the agricultural exploitation of treated municipal wastewater and biosolids (sludge), and their environmental implications”.
- **Coordinator** of a submitted postgraduate research proposal entitled: “Elemental interaction's contribution between macro-, microelements and heavy metals in wheat (*Triticum aestivum* L.) due to the effect of sludge and treated municipal wastewater reuse’ 2011.

# RESEARCH ACTIVITIES AND ACCOMPLISHED RESULTS DURING THE PERIOD 2000-2012

- In the context of general research activities of the Department of Environmental and Natural Resource Management of the University of Western Greece, related to “**planning and exploitation of land conservation**” relevant work has been conducted in relation to reuse and exploitation of treated municipal wastewater (TMWW) and sludge in agriculture.



# CONDUCTED INVESTIGATIONS

- The effect of treated municipal wastewater reuse on the following plot and soil aspects.
- 1. Accumulation of heavy metals in soils and plants with emphasis on the edible parts.
- 2. Interactions between heavy metals and macro, micronutrients and soil physical and chemical properties.
- 3. Quantification of elemental contribution to soils and plants by the elemental interactions.
- 4. Distribution of elemental interactions in plant parts (roots, stems, leaves and edible plants).
- 5. The positive role of some heavy metals in plant growth and development has been explained on the basis of elemental interactions.
- Heavy metal accumulation in soil and plants (maize, tomato), grown along the highway sides.
- The results of the above investigations have been published in internationally recognized scientific journals.



# CURRENT RESEARCH WORK IN PROGRESS

- Investigation of the effect of zeolite on the heavy metals of sludge in relation to the growth of *Raphanus sativus* L.
- Determination of parameters for an integrated evaluation of heavy metal soil pollution.



# SOME IMPORTANT CONCLUSIONS DRAWN FROM THE RESULTS OF THE CONDUCTED RESEARCH WORK

- Numerous interactions occur under the effect of treated municipal wastewater, and sludge in soil and in various plant parts between heavy metals, macro, micronutrients and soil physical and chemical properties, which seem to play an important role in the balanced nutrient requirement by plants.
- Evaluation of the contributed quantities of nutrients and heavy metals by the interactions was possible by means of quantification. It was thus shown that significant quantities of nutrients and to a lesser extent of heavy metals, are supplied to plants and soil.
- The study of the role of heavy metals in plant growth, showed that some heavy metals may increase plant growth functioning as plant nutrients. This contradicting results were explained by means of elemental interactions.
- The testing of pollution load index (PLI), used as a parameter of soil pollution evaluation with heavy metals, showed that it is an effective means of predicting soil pollution that could be caused by the reuse of wastewater and sludge.

# GENERAL CONCLUSIONS FROM THE RESEARCH WORK CONDUCTED

- Accumulation of heavy metals under use of TMWW and sludge reuse must be studied in long term experiments for national reuse planning purposes. Designing specific experiments for studying along with the main effects of TMWW use, the elemental interactions and residual effect on soils and plants.
- Detailed investigation of the environmental effect of interactions by laying out special greenhouse experiments, like Cl and Cd.



# CONCLUSIONS RELATING TO THE CONTINUATION OF THE RESEARCH

- The continuation of the investigation of elemental interactions under TMWW in various plant species (wheat, maize, vegetables, horticultural trees etc) to ensure elemental contributions to edible plant parts (mainly heavy metals)
- The stability and consistency of interaction occurrences in various plant parts, ie roots, stems, leaves and edible parts to assess risk for human and animal health, and environmental quality.
- Studies of the interaction contributions of elemental quantification with the view to accurately assess their effects to the quality of agricultural production and soil fertility levels under TMWW use.
- The fate of organic compounds and various agricultural chemicals, including pharmaceutical products contained in TMWW should be investigated, esp. in relation to plant uptake and accumulation in various plant parts and soil. Information of this type is necessary for the protection of human health and consumer well being.







# RESEARCH COOPERATION

## We collaborate with the following labs

- Geochemistry lab, Geological University of Patras, (Professor Dr. S.P.Varnavas)
- Physic and Chemistry (Dr. Deliginnakis, Professor), University of Ioannina
- Soil research lab, ΕΘΙΑΓΕ, Thessaloniki
- Department of Health Sciences, University of Patras (Professor Dr. Michalis Leotsinidis)
- Department of Irrigation, Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC), (Spanish Council for Scientific Research), Espinardo-30100-Murcia-Spain
- Department for Information Technologies of Inductive Modeling, the International UNESCO Center of Information Technologies and Systems of the National Academy of Sciences of Ukraine, Ukraine
- Professor Dr. Despo Kassinos, Civil and Environmental Engineering Department, School of Engineering, University of Cyprus
- Topographic mapping lab, University of Aigio, I.N. Hatzopoulos, professor
- Technical University of Braunschweig, Institute of sanitary and Environmental Engineering, Professor Dr. Thomas Dokhron
- Ben Gurion University, Israel, (Professor Dr. Gideon Oron)

# Journal of Environmental & Analytical Toxicology Related Journals

- Journal of Environmental Analytical Chemistry
- Journal of Pollution Effects & Control

# Journal of Environmental & Analytical Toxicology Related Conferences

- International Summit on Past and Present Research Systems of Green Chemistry
- International Summit on Toxicology & Applied Pharmacology



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