



## Thursday 5 November EU-India PARTNERING EVENT

### PROFILE FORM

ORGANISATION DETAILS				
Organisation name Institute of Environmental Engineering of the Polish Academy of Sciences (IEE-PAS)				
Street * 34, M. Skłodowska-Curie St				
ZIP *	41-819	City *	Zabrze	Country * Poland
Phone *	+48 32 271 64 81		Fax	+48 32 271 74 70
Email *			Web	www.ipis.zabrze.pl
Employees	<input type="checkbox"/> 1-10	<input type="checkbox"/> 11 - 50	<input type="checkbox"/> 51 - 250	<input type="checkbox"/> 250 +
Organisation type	<input type="checkbox"/> University <input checked="" type="checkbox"/> Research Center <input type="checkbox"/> Industry <input type="checkbox"/> SME <input type="checkbox"/> Other			
Department				
Short description of your company/organization	<p>The <b>Institute of Environmental Engineering of the Polish Academy of Sciences (IEE PAS)</b> has currently 80 employees, including 28 scientists (8 professors) that conduct mechanistic research on anthropogenic pollutants release, migration, transformation, prevention and attenuation in air, aquatic environment and soil. The Institute provides also applied expert studies customers from the industry, the public administration, or other business companies. In particular, the applied research topics include: (1) development of technologies and equipment for the environmental protection; (2) environmental impact assessment of the industry and transport; (3) development of guidelines for modernization of industrial enterprises in compliance with the environmental protection requirements; (4) evaluation of air, soil, water and plants contamination; (5) development of viable preventive and remediation measures; (6) providing solutions for other problems of the environmental engineering and bioengineering.</p>			

PARTICIPANT			
Gender	<input checked="" type="checkbox"/> Mr	<input type="checkbox"/> Ms	Title PhD
First name	Sebastian		
Last name	STEFANIAK		
Position	Assistant Professor in Laboratory of Non-point Contamination of the Environment		

**Sebastian STEFANIAK** is a Senior Assistant Professor (Adjunct) in Laboratory of Non-point Contamination of the Environment at the Institute of Environmental Engineering of the Polish Academy of Science (IEE-PAS) in Zabrze, Poland. He received his Ph.D. in Environmental Engineering from Central Mining Institute in Katowice and his M.S. in Mining Geology from Silesia Technical University in Gliwice.

Dr Stefaniak has authored 1 monograph (in print), and is a co-author of 11 chapters in books, over 42 scientific papers, gave 12 presentations at international and national symposia, co-organized 1 international symposium (NATO Advance Research Workshop) and is a co-author (Managing editor) of a book from NATO Science Series, Series IV: Earth and Environmental Sciences – Vol. 69, “Viable Methods of Soil and Water Pollution Monitoring, Protection and Remediation” Springer, 2006. He has been a leader of 1, a main contractor of 2, a member of a research team of 6 multidisciplinary research projects, and actively participates in the international research projects within PAS bilateral agreements on scientific collaboration with Greece and India and recently with China and Vietnam.

His research interests are focused on: Interdisciplinary studies on impact assessment of nonpoint (large area) and point sources of contamination of the different parts of the terrestrial and aquatic environment (surface and groundwater); Geochemical transformations and migration of contaminants in solid wastes, soil, bedrock, pore solutions of soil and groundwater; Pathways, accumulation and release of contaminants in the environment; Prognosis of pollutants pathways in the environment, their interaction, temporal and spatial migration, transformations and environmental impact; Effect of solid waste disposal and management on the aquatic and terrestrial systems; Environmentally safe disposal and reuse of solid wastes; Optimization of prevention, attenuation and control measures, contaminated site remediation; Environmental monitoring as a system of early warning. He is a member of international scientific Society of Ecotoxicology and Environmental Safety (SECOTOX) and of Mineralogical Society of Poland.

PARTNERSHIP PROPOSAL	
EU-India partnering event session participation:	
<input checked="" type="checkbox"/>	<i>Sustainable production and management of biological resources from land, forest and aquatic environment</i>
<input checked="" type="checkbox"/>	<i>Fork to farm: Food (including seafood), health and well being</i>
<input checked="" type="checkbox"/>	<i>Life sciences, biotechnology and biochemistry for sustainable</i>
<input checked="" type="checkbox"/>	<i>Health</i>
Areas of activity (Free keywords)	sustainable waste management, waste reuse, environmental safety, soil/water quality protection

PROJECT DESCRIPTION	
Title of your research project in one sentence	Sustainable management and bulk reuse of fly ash in the light of soil and groundwater resource protection and food /drinking water safety.
Short description of project	In India, coal-based power production contributes to 70% of total power consumption, and is fast growing. This results in annual generation of about 100 Mt of fly ash, with prospects of reaching 180 Mt/year by 2012 and its increasing massive application in agriculture and as a structural fill. In the EU, despite emphasis on clean energy, in several Member States over 50% of electricity production is still coal-based, which also causes problems with sustainable management of fly ash that is one of the major waste streams. In view of bulk generation of fly ash as well as the fact that it contains trace elements in about 10-fold higher

	<p>concentrations than in lithosphere and is subject to long-term weathering processes, its sustainable management is crucial for the sustainability and health of the future generations. Project is aimed to elucidation temporal transformations of properties of fly ash applied as soil amendment and as a structural fill for sustainable protection of the environment and natural resources. To achieve this goal, mineralogical and physicochemical studies of weathering transformations of fly ash and composition of pore solutions in objects of different defined age such as surface structural fill, opencast mine fillings, active and closed landfills (ponds) of power plant fly ash, groundwater quality in their vicinity as well as fly ash amended soils will be carried out. The anticipated outcome of the joint project will be: (1) reliable long-term assessment of the environmental safety of groundwater and agroecosystems at fly ash use as surface structural fill and in agriculture as soil amendment; (2) guidelines on environmentally safe fly ash management with a focus on the principles of sustainable development .</p>
Description of expertise offered	<p>Research team of the Laboratory of Non-point Contamination of the Environment include highly qualified hydrogeologists, geologists, mineralogists, chemists and soil scientists, also from other research institutions permanently collaborating with the Laboratory in many research projects. Its expertise covers among others: (1) assessment of non-point contamination of terrestrial and aquatic environment, including leaching behavior of solid wastes, contaminant release from waste disposal sites, impact of leachates on soils, as well as on ground- and surface waters; contaminant migration in the vadose and saturated zones, including extraction and analysis of chemical composition of pore solutions; dry and wet deposition of air contaminants, environmental impact of application of reused waste materials in agriculture; environmental impacts of transport; (2) studies on mechanism and dynamics of short and long-term transformations of waste materials under different conditions of the environmental exposure – for long-term prognosis of their environmental behavior and impact; (3) development of efficient means for mitigating/preventing pollution of terrestrial and aquatic environment, utilizing barrier and sorption properties of abundant natural and waste materials. Analytical equipment includes the most advanced analytical equipment required for proposed research, including ICP-MS Elan DRC-e (Perkin-Elmer), EDXRF Epsilon 5, Ion Chromatograph GC/ECD, GC/FID, GC/MS, POLARIS (Varian) , Ion Chromatograph METROHM, Beckman Coulter CEN-AVANTI J- 25, Fritsch particle sizer, vibratory sieve shaker analysette 3 SPARTAN (Fritsch) and other equipment such as FAAS Jarrell Ash AA-Scan 1 (Thermo), as well as access to other equipment when needed. The team members are skilled in using hydrogeochemical, hydrogeologic and statistical computer programs</p>
Description of requested partner expertise	<p>Knowledge of methods and techniques of fly ash management, familiarity with the construction and a history of objects of fly ash utilization, expertise in sampling, including use of deep drillings, and chemical analysis of solids (fly ash and soil mixed with fly ash), plant material and liquids (leachate, surface and groundwater), along with QA/QC procedure, expertise in soil science.</p>