

ANNUAL MEETING REPORT OF THE NATO SPS PILOT STUDY ON CLEAN PRODUCTS AND PROCESSES

**May 4-9, 2008
Magnus Haus, Berlin, Germany**

Goals of Phase II of this Pilot:

- **To promote cooperation for improving the common pollution landscape by stimulating cross-national dialogues and collaboration**
- **To share knowledge on the methods, tools, and technologies for making cleaner and sustainable products and processes possible**

The 11th annual meeting of the NATO SPS Pilot Study, Clean Products and Processes, was held in Berlin, Germany from May 4 to 9, 2008. Of the 36 countries involved in this pilot, 23 sent representatives to this meeting. In addition, it was an honor to have the Topical Symposium start by introducing Mr. Thomas Holzmann, Vice President, Federal Environment Agency, Germany. Mr. Holzmann thanked the delegates for their efforts in the field of sustainable/renewable energy and their roles in promoting science for peace, security, stability and solidarity. He acknowledged that while the topic of Biomass production is controversial, Germany and the EU have ambitious targets to achieve. He concluded by wishing everyone a wonderful stay in Berlin.

The conference was efficiently organized and included two days of technical presentations, one day for field trips to four Biomass facilities, Thursday's Symposium, and wrapping up on Friday with final presentations and discussions. This year, the meeting was mainly sponsored by NATO SPS, U.S. Environmental Protection Agency and the Federal Environment Agency of Germany (Umwelt Bundes Amt). Typically one delegate per country attends this meeting. However, the United States of America, Czech Republic, Belgium, Portugal, Italy, and Germany each had more than one attendee at this meeting. The countries represented in this meeting were Azerbaijan Republic, Belgium, Canada, Croatia, Czech Republic, Denmark, Germany, Greece, Hungary, Italy, Lithuania, Norway, Poland, Portugal, Republic of Moldova, Romania, Russia, Slovak Republic, Slovenia, Spain, Ukraine, the United States of America, and Turkey.

The meeting started at 6 pm on **Sunday evening, (May 4)** with a reception, delegate introduction, and get-together. The opening session on **Monday morning, (May 5)** was addressed by Dr. Horst Pohle, Meeting Director, Federal Environment Agency (Germany), Subhas Sikdar, Director of this Pilot Project, and Mr. Daniel Murray, the Co-Director of the Pilot.

Here is the summary of the meeting's activities:

Following the opening talks, the first technical session on **Monday started at 10:20 am**. This session was chaired by Daniel Murray. Monday's technical presentations were as follows:

- Jurgis Staniskis (Lithuania): Sustainable consumption and production – how to make it possible?
- Carlo Vandecasteele (Belgium): Evaluation of the eco-efficiency of the Flemish Industry (1995-2006)

- Alexander Omelchenko (Canada): Surviving Lead: The grave has been dug, the coffin prepared, the service arranged, but the body just would not lie down in coffin
- Alexandru Stratulat (Moldova): Energy Efficiency in Moldova
- Annik Magerholm Fet (Norway): From Cleaner Production (CP) to Corporate Social Responsibility (CSR) – an overview of tools and methods
- Andrzej Marcinkowski (Poland): Technical and organizational problems accompanying a design of symbiotic connections between enterprises
- Viorel Harceag (Romania): Industrial ecology from theory to practice
- Chantal Block (Belgium): Eco-industrial parks, a collaboration between Flanders, Poland and Romania, outgrowth of the NATO/SPS Pilot Project on “Clean Products and Processes”
- William Zadorsky (Ukraine): Cleaner production theory, tools, methods and experience of realization

The first day closed with a Pilot Study Retrospective presentation that captured the past ten years of contributions, participants and the strong evidence of partnerships for future collaborative efforts in the field of environmental security pursuits.

The second day of technical presentations **started Tuesday, May 6 at 8:35 am**. This session was chaired by Daniel Murray. Tuesday’s technical presentations were as follows:

- Miroslava Vaclavikova (Slovakia): Arsenic removal from water streams using Fe-modified zeolite: A column study
- Gueorgui Kagramanov (Russia): Use of membrane filtration methods for treatment of heavy metals containing wastewaters in combination with flotation
- Farhang Shadman (USA): Manufacturing in Nano-Scale: Environmental Opportunities and Pitfalls
- George Gallios (Greece): Removal of colour from water streams by advanced oxidation methods
- Alessandra Criscuoli (Italy): New application of membrane contactors
- Daniel Murray (USA): Update on Sustainable Water Infrastructure and Water Reuse in the U.S.
- Gyula Zilahy (Hungary): Sustainable consumption – the human dimension
- Gerd Winkelmann (Germany): Hazard Prevention and Emergency Planning at Transboundary Rivers in the UN ECE Region
- Vagif Baghiyev (Azerbaijan): Catalytic conversion of ethanol to chemicals as examples of catalysis in a sustainable fine chemical industry
- Ales Komar and Frantisek Bozek (Czech Republic): Problems of Biomass Exploitation in the Czech Action Area
- Jose Coca (Spain): Technical and Economic Evaluation of Biodiesel Production by Enzymatic Catalysis
- Aysel Atimtay (Turkey): The Role and the Importance of Biomass in Sustainable Development
- Teresa Mata and Antonio Martins (Portugal): Prospects for Biodiesel Production and Future Evolution

Wednesday, May 7th, a field trip was scheduled to visit four Biomass Facilities which was a perfect lead into Thursday’s Symposium topic of Biomass: Resources, Conversion, Markets, and Policies. The first stop was the Selbelang Biogas Plant. Selbelang had a plant capacity of 340 kWh. The process used to generate the biogas was wet fermentation using regenerative agricultural resources (substrate was a mixture of cow manures and various silages). Electricity produced from this plant is fed into the national grid. The next stop was the Fehrebellin Biogas Plant (Rhinmilch GmbH Agrargesellschaft). This plant boasted a larger capacity yield of biogas generation again using a combination substrate of cow manures and silage. The tour directed us through



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several of the process stages and showcased state of the art technology upgrades. The third stop was the Ketzin Biogas Plant. This plant, built in 2007/2008, was unlike the others as it is classified as a dry fermentation facility and is sponsored by e.disnatur Erneuerbare Energien GmbH. Using a mixture of maize silage and grain, this plant claims to produce a more purified gas which is fed directly into the electric grid. Schwanebeck Biogas Plant was the last facility toured. Located adjacent to a pig breeding farm, this plant collects the liquid pig manure and accepts third party substrate of fat and food wastes to generate biogas used to process heat, equipment operation, hot water generation and heating for the pig-breeding facility.

Thursday, May 8th was devoted to the one-day topical symposium on Biomass: Resources, Conversion, Markets, and Policies. Dr. Horst Pohle introduced Mr. Thomas Holzmann, Vice President of Federal Environment Agency of Germany who welcomed the participants to Germany and recognized this pilot program as a great forum for cooperation and collaboration in the effort to use scientific research to promote peace with security, stability and solidarity.

To supplement the discussions and promote industry awareness, typically several guest speakers are invited to join in the Topical Symposium. This year was no different and featured presentations from five professionals in the field of Environment, Energy and Research. In addition, Ms. Özlem Özgül Yilmaz, Consultant for NATO Public Diplomacy Division (PPD) / Science for Peace and Security (SPS) was in attendance Thursday for the Symposium. She delivered the opening presentation on the new structure, roles and objectives of the Environmental Security Panel (ESP).

The session was chaired by Subhas Sikdar and Dan Murray (US). These are the talks delivered:

Topical Symposium: Biomass: Resources, Conversion, Markets, and Policies

- Thomas Holzmann (Germany): Welcome and Introduction
- Özlem Özgül Yilmaz (Turkey): Environmental Security Panel (ESP)
- Subhas Sikdar (USA): Biomass to Biofuels: Environmental, Societal, and Economic Issues
- Michael Herr (Germany): Political and legal framework in Germany
- Frank Scholwin (Germany): Availability and Utilization of Biomass Resources – Overview and technological options at the example of biogas production
- Frank Scholwin (Germany): Production of biogas at different German Biogas plants in agriculture and waste management
- Franziska Müller-Langer (Germany): Overview Biofuel-Technologies
- Uwe Fritsche (Germany): Sustainability Standards for Biofuels in Germany: Status and Perspectives
- Henrik Wenzel (Denmark): Life Cycle Assessment Study Comparing Biogas for Transportation with other Biofuels
- Gilbert Rochon (USA): BioFuels: The Dialectics of Energy Security and Food Security
- Peter Glavic (Slovenia): Biomass and Biofuels – the Solution or another Illusion?

On Friday, May 9th the schedule was altered to accommodate three presentations originally scheduled for the Symposium that were changed due to time constraints. The revised schedule of presentations included:

- Gilbert Rochon (USA): The Kamal Ewida Earth Observatory – NATO SPS Grant
- Enrico Drioli (Italy): An integrated membrane system for advances biogas production, recovery and valorisation
- Annik Magerholm Fet (Norway): Biofuel and Eco-Efficiency – Exemplified by Small Recreation Boats



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- Jurgis Staniskis (Lithuania): The development of projects and activities on Environmental Security
- Subhas Sikdar and Dan Murray closing discussion

As this was the last meeting under the NATO Pilot grant, at the conclusion of all the presentations the floor was open to discuss next steps. Preliminary discussions showed an interest in focusing on water infrastructure in Mediterranean Dialect countries, Advanced Research Workshops (ARW) in hazard prevention and environmental security, and continued focus on Biofuels.

The request was made for each of the delegates to reflect on how he or she benefited from participating in the program. Overall, there was an overwhelming exchange of pleasure and appreciation shown by each delegate. The new partnerships, joint ventures, and communications that have been exchanged over the past 11 years are immeasurable.

At 12:05, May 9th, the conclusion of the pilot study was announced.

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**NATO/SPS Pilot Study on Clean Products and Processes –
2008 Annual Meeting – Berlin, Germany, 4-9 May, 2008**

List of Participants*
Name Affiliation Country

Dr. Vagif Baghiyev, ELKO ltd, Baku, Azerbaijan Republic
Dr. Carlo Vandecasteele, University of Leuven, Leuven, Belgium
Dr. Chantal Block, University of Leuven, Leuven, Belgium
Ms. Özlem Özgül Yilmaz, NATO Headquarters, Brussels, Belgium
Dr. Alexander Omelchenko, University of Manitoba, Winnipeg, Canada
Dr. Ksenija Vitale, University of Zagreb, Zagreb, Croatia
Col. Ales Komar, University of Defence, Brno, Czech Republic
Dr. Frantisek Bozek, University of Defence, Brno, Czech Republic
Mr. Henrik Wenzel, University of Southern Denmark, Odense Denmark
Dr. Horst Pohle, Federal Environment Agency, Dessau, Germany
Dr. George Gallios, Aristotle University of Thessaloniki, Thessaloniki, Greece
Dr. Gyula Zilahy, Corvinus University of Budapest, Budapest, Hungary
Dr. Alessandra Criscuoli, University of Calabria, Rende Italy
Prof. Enrico Drioli, University of Calabria, Rende, Italy
Dr. Jurgis Staniskis, Kaunas University of Technology, Kaunas, Lithuania
Prof. Annik Magerholm Fet, Norwegian University of Science and Technology, Trondheim, Norway
Dr. Andrzej Marcinkowski, Technical University of Lodz, Lodz, Poland
Dr. Teresa M. Mata, University of Porto, Porto, Portugal
Dr. Antonio Martins, University of Porto, Porto, Portugal
Mr. Alexandru Stratulat, EC PCA Project, Chisinau, Republic of Moldova
Mr. Viorel Harceag, Ministry of Development, Public Works and Housing, Bucharest, Romania
Prof. Gueorgui G. Kagramanov, D. Mendeleev University of Chemical Technology, Moscow, Russia
Dr. Miroslava Vaclavikova Slovak Academy of Sciences, Kosice, Slovak Republic
Prof. Dr. Peter Glavic, University of Maribor, Maribor, Slovenia
Prof. Jose Coca, University of Oviedo, Oviedo, Spain
Prof. Aysel Atýmtay Middle East Technical University, Ankara, Turkey
Prof. William M. Zadorsky, Ukrainian Ecological Academy of Sciences, Dnepropetrovsk, Ukraine
Dr. Subhas K. Sikdar, U.S. Environmental Protection Agency, Cincinnati, United States
Mr. Daniel J. Murray, Jr., P.E., U.S. Environmental Protection Agency, Cincinnati, United States
Prof. Farhang Shadman, University of Arizona, Tucson, United States
Dr. Gilbert Rochon, Purdue University, United States

Other participants in the one-day symposium on Biomass: Resources, Conversion, Markets and Policies

Thomas Holzmann, Vice President, Federal Environmental Agency, Germany
Michael Herr, German Energy Agency, Germany
Frank Scholwin, Institute for Energy and Environment, Germany
Franziska Müller-Langer, Institute for Energy and Environment, Germany
Uwe Fritsche, OEKO Institute, Germany

**Alphabetized by country.*



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