



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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ANNUAL MEETING REPORT OF  
THE NATO CCMS PILOT STUDY ON  
CLEAN PRODUCTS AND PROCESSES

June 19-24, 2005  
Aalesund, Norway

The 8th annual meeting of the NATO CCMS Pilot Study, Clean Products and Processes, was held in Aalesund, Norway from June 19 to 24, 2005. Of the 31 countries involved in this pilot, 27 sent their representatives to this meeting. The meeting was organized and superbly run by the host, Prof. Annik Fet of the Norwegian University of Science of Technology (NTNU), Trondheim. The primary sponsors of the meeting are NATO CCMS and US EPA. Additional local sponsors are Aalesund University College, and such local organizations as the Aalesund City Council, Tossebro, Global & Local, Moreforskning Aalesund, and Kunnskapsparken. Several Norwegian companies: Hjellegjerde (high quality furniture maker), Sandella (polyurethane foam manufacturer), Ulstein Verft (shipyard), and Fjordlaks (fish processing plant) provided guided tours of the facilities and lunch for the delegates. These companies shared technical information about cleaner production techniques. Aalesund University College also offered a guided tour of a unique ship simulator facility on campus. This was the largest meeting of the Pilot thus far. Typically one delegate per country attends this meeting. However, United States of America, Israel, Czech Republic, Belgium, and Norway each had more than one attendee at this meeting. We started at 6 pm on Sunday evening (June 19) with a reception and get-together. The newest delegates to attend this meeting were from Azerbaijan and Sweden.

On Monday morning (June 20) we were greeted at the Aalesund City Hall by the City's Mayor Mr. Arve Tonning. The special event of the morning was an address by Ms. Kristin Krohn Devold, the Norwegian Minister of Defense. She welcomed the delegates to Norway and gave us her views of the importance of cleaner production, sustainability, and Norway's role in supporting international peace and security.

We reaffirmed the goals of Phase II of this Pilot:

S To promote cooperation for improving the common pollution landscape by stimulating cross-national dialogues and collaboration

S To share knowledge on the methods, tools, and technologies for making cleaner and sustainable products and processes possible

Here is the summary of the various activities:

Following introduction of the delegates, meeting agenda overview (Dan Murray), and a report of the 2004 meeting in Budapest (Gyula Zilahy), Monday's technical presentations started at 1. pm. The following presentations included updates of cleaner production and sustainability activities in respective countries:

- Aysel Atimtay (Turkey): A comparison of the application of BREFs in EU candidate countries and in Turkey
- Andrzej Doniec (Poland): A cellular concrete material used for thorough cleaning of wastewater generated in electroplating process.
- Tom Chapman (USA): Mercury emissions, both from chlorine plants and power plants.
- Viorel Harceag (Romania): Towards a sustainable development of water resources in Romania
- Alexandru Stratulat (Moldova): Cleaner production on the Republic of Moldova
- Hakan Rodhe (Sweden): Assessing technology uptake: a model developed for cleaner production programs
- William Zadorsky (Ukraine): Tools and methods for innovative cleaner technologies
- Stefka Tepavicharova (Bulgaria): European scientists for clean black sea
- Frantisek Bozek and Col. Ales Komar (Czech Republic): Military unit cleaner production project
- Horst Phle (Germany): Sustainable production – some aspects

From 4 to 6 pm a mini-workshop was organized and conducted by Subhas Sikdar on sustainable technologies. The delegates were engaged in discussing what sustainable technologies are, how does one characterize them and measure progress towards sustainable technologies, and what concepts and metrics are involved in considering sustainable systems at various scales from technologies to global sustainability.

Tuesday June 21 was scheduled for a field trip to visit three industrial sites where cleaner production is practiced. These were Ulstein ASA, a ship builder for oil and fishing industries, Hjellegjerde AS, a high-end furniture manufacturer, Sandella AS, a polyurethane foam manufacturer.

On Wednesday June 22 and a part of Thursday June 23 we held this year's Topical Symposium on Environmental Challenges in Marine Biotechnology, Product Design and Innovation at the Aalesund University College. This program was cosponsored by Aalesund University College and More Research. We were greeted by the Rector Karl Johan Skaarbrevik, who spoke on research and education. The symposium was chaired by Annik Fet. The technical presentations are as follows:

#### Session I: Biotechnology (with emphasis on marine biotechnology)

- Marianne Synnes (More Research, Aalesund): Learning from the deep-sea organisms
- Knut Sjaastad (Aalesund College): Composition of marine biofilms on different submerged surfaces
- Niels Peter Ravsbech (University of Aarhus, Denmark): Biofilm research at University of Aarhus
- Henrik Wenzel (Tech Univ of Denmark): Environmental sustainability of enzymatic biotechnology
- Kamal Ewida (Univ of Zagazig, Egypt): A sustainable approach to the recycling of rice straw through pelletization and controlled burning, I. pelletization of rice straw, II. combustion characteristics of a rice straw pellet in fluidized conditions

- Peter Glavic (University of Maribor, Slovenia): Committing universities to sustainable development

#### Session II: Product Design and Innovation

- Per Erik Dalen (Aalesund College): Industrial innovation in the More region
- Hans Petter Hildre (Aalesund College): Regional and global perspectives on product design and innovation
- Per Walde (Aalesund College): Energy saving in fish processing
- Carlo Vandecasteele (University of Leuven, Belgium): Flemish chemical industry on the way to sustainability

These presentations were followed by a guided tour of the Aalesund College ship simulator, a unique facility. Before dinner in the evening the delegates were given a guided tour of the Sunnmore Museum, a quaint village of Viking buildings, homes and community centers.

On Thursday, June 23, we continued with the Topical Symposium.

#### Session III: Cleaner Production Tools and Methods:

- Farhang Shadman (University of Arizona, USA): Environmental aspects of nanotechnology and nano-manufacturing
- Ksenija Vitale (Zagreb University, Croatia): Nanotechnologies in environmental and public health
- Alessandra Criscuoli (University of Calabria, Italy): Potentialities of membrane operations in the logic of the process intensification
- Alexander Omelchenko (Univ of Manitoba, Canada): Modern tools and methods of water treatment for improving living standards: presentation of the book
- Antonio Martins and Teresa Mata (Univ of Porto, Portugal): A framework for sustainability metrics
- Chantal Block (Univ of Leuven, Belgium): Indicators for the evaluation of the environmental impact of industry
- Jurgis Staniskis (APINI, Lithuania) and Annik Fet (NTNU, Norway): Industrial ecology and sustainability reporting in the Klaipeda region, Lithuania, a lesson learned
- David Wolf (Ben-Gurion Univ, Israel): Slow release chemicals and the effect on the environment
- Harad Yndestad (Aalesund College): Understanding environmental influence on marine systems

The afternoon comprised a visit to the fish processing plant Fjordlaks AS.

On Friday, June 24, the technical meeting was held at Atlanterhavsparken, the largest aquarium in Northern Europe.

- Jim Swindall (Queen's Univ Belfast, UK): Managing the interface between cooperative and contract research
- Gilbert Rochon (Purdue Univ, USA)/Buck Sharpton (Univ of Alaska, USA): Remote sensing project proposal
- Khatuna Gogaladze (Ministry of Env Protection and Natural Resources, Georgia): Cleaner production related processes in Georgia
- Mirka Vaclavikova (Slovak Academy of Sc, Slovakia): Preparation and sorption properties of Fe-nanomaterials for removal of toxic metal ions from waters
- Georgios Gallios (Aristotle Univ, Greece): Color removal from water streams using power ultrasounds and flotation

. G.G. Kagramanov (Mendeleyev Univ., Russia): Purification of wastewaters by membrane flotation

The rest of the time on Friday was devoted to wrap-up discussion. We concluded that this was a highly successful meeting in which the delegates used their time effectively to learn from each other and create alliances to work together for the common goal of cleaner production and sustainability. We acknowledged many spin-offs that have occurred because of the pilot and many more that are in the making. The Pilot has fostered goodwill and understanding among delegates from different countries with diverse background and a spontaneous willingness to join in teams on selected projects. We decided that we should keep the CCMS country representatives abreast of the developments in this highly successful Pilot by publishing a monthly newsletter, and Kamal Ewida of Egypt volunteered to be its Editor. Several ideas of the topical symposium for 2006 were offered, and we decided to make a decision later by electronic voting.

For the 2006 meeting there were three proposals. By majority vote we selected Istanbul, Turkey as the city of choice. Prof. Aysel Atimtay will be the host of the 2006 meeting. The delegates are currently being about dates of choice (likely in May).

Twenty-seven countries were represented in the Budapest meeting (out of 31). Delegates were present from the following countries: Azerbaijan (new member), Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Georgia, Germany, Greece, Hungary, Israel, Italy, Lithuania, Moldova, Norway, Poland, Portugal, Romania, Russia, Slovak Republic, Slovenia, Sweden, Turkey, Ukraine, United Kingdom, and United States.

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