Defense and the Environment: Effective Scientific Communication

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Defense and the Environment: Effective Scientific Communication

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Preface

The NATO Advanced Research Workshop, “Effective Scientific Communication Related to Recent Challenges and Activities in the Military Sector,” was the result of close collaboration between defense and environmental officials in the United States and the Slovak Republic. It was recognized that effective solutions to environmental problems are achieved through the proper application of science, including the communications and the social sciences.

Workshop was co-directed by Messrs. Ronald A. Kreizenbeck of US EPA and Lubomir Kušník of Slovak Ministry of Defense.

Workshop topics were grouped into five major topic areas including 1) Environmental Policy Perspectives, 2) Environmental Management Systems and Public Participation, 3) Environmental Security, 4) Environmental Decision Support, and 5) Protection of Nature and Natural Systems.

Delegates from nineteen countries assembled to explore these topics at the Hotel Danube in Bratislava from April 22-26, 2003. A total of forty six delegates were in attendance, twenty from NATO countries and twenty six from Partners for Peace countries. The final program included technical sessions using a presentation and dialog format, work groups, field trips, and networking sessions. There were twenty nine technical presentations divided into seven sessions, and these form the basis for these proceedings.

Acknowledgments

The organizers of this Advanced Research Workshop acknowledge the support of two major financial sponsors, the NATO Science Programme and the U.S. Department of Defense (USDOD) under the Partners for Peace Program (PfP). Together these organizations provided the majority of assistance for both Workshop organization and delegate participation. The USDOD was assisted through the system of PfP national coordinators, with special contributions from the host PfP Coordinator in the Slovak Republic.

In addition to the Advanced Research Workshop, the NATO Science Programme provided financial support for the publication of these proceedings, and for this the Co-directors and editors are extremely grateful.

Substantial additional contributions were provided by both the Ministry of Defense of the Slovak Republic (MODSR) and the U.S. Environmental Protection Agency (USEPA.)

MODSR provided logistical support before, during, and after the workshop. They hosted the opening banquet, organized field visits to significant military and environmental sites, provided local transportation support to delegates, and full office services during the duration of the workshop.

The Slovak youth folk group, Kozlúbek, offered a program of traditional Slovak folk music, both at the opening banquet and at the official welcome by the Lord Mayor of Bratislava.

Dr. Juraj Silvan, Executive Director of *Za Zdravé Životné Prostredie*, managed sponsor funds, negotiated all needed commercial services, and designed the social program.

A Research Scholar with the USEPA, Ms. Katarina Mahutova, served as Workshop Manager. USEPA organized the overall program, prepared all pre-workshop materials, conducted the publicity program, and managed all activities throughout the five days of the workshop.

John J. Barich, III

Introduction

The Ministry of Defense of the Slovak Republic (MODSR) and the U.S. Environmental Protection Agency (USEPA) face many of the same challenges in fulfilling their national and international environmental management responsibilities. MODSR and USEPA collaborated to identify a set of technical issues common to military bases in both countries.

Effective communication of scientific results in an environment of rapid change emerged as the unifying and universal theme. Specific environmental issues related to operations at military facilities included ‘encroachment’ on training ranges, implementation of effective environmental management systems, pollution prevention within the military sector, and public participation, especially as it relates to the unique requirements of national security.

MODSR officials recognized that these issues were common to all newly admitted NATO countries, and that any scientific response done in conjunction with the USEPA should include all countries from the Central and Eastern European (CEE) region, as well as long-term NATO members from Western Europe.

An Advanced Research Workshop (ARW) sponsored by the NATO Science Programme, was identified as the preferred format to vet these issues. The U.S. Department of Defense agreed to co-sponsor the workshop in furtherance of goals of the Partners for Peace (PfP) Program. Accordingly, application was made, sponsorship secured, and an ARW convened in April or 2003.

Each of the key lecturers was invited to submit a manuscript for publication. Most chose to do so, and these manuscripts were assembled by the editors into these proceedings. They are divided into five Chapters that correspond approximately to the seven workshop sessions.

In Chapter 1, “Environmental Policy Perspectives,” papers were presented that identified selected major environmental issues of interest to all militaries. *Silvan* provided a review of the major international conventions related to the environment. *Kreizenbeck* discussed environmental aspects of natural resource assets within the military sector. Delegates from the Czech Republic, Estonia, Hungary, and Poland presented papers on the environmental policy programs in their respective countries.

Chapter 2, “Environmental Management Systems and Public Participation,” includes five papers related to the use of Environmental Management Systems (EMS) and Public Participation in meeting environmental policy objectives. *Clark* discusses the role of public participation in decision-making at Ministry of Defense Sites. *Kusnir* described the use of Kuchyna Air Base as a model for the Ministry of Defense of the Slovak Republic in implementing EMS requirements and other national environmental policies. *M. Dawson* provided a perspective of problems and opportunities in implementing EMSs in the military sector. This paper provided a basis for one of the three work groups that were convened as a part of this workshop. *Moore* summarized a ‘corporate’ EMS for the UK Ministry of Defence, and *Pavlickova* reviewed recommendations from a multi-year study on environmental impact assessment.

Chapter 3 is devoted to the contemporary topic of “Environmental Security.” *Barich and Mahutova* provide an overview of EMSs, reliability management, and the risk paradigm within contemporary environmental security settings. *Silins* discusses non-ionizing electromagnetic radiation, and what this means to environmental security. *Grodzinsky* suggests that the Chernobyl catastrophe can serve as a prototype for response and effects from nuclear terrorism events. *Malesic* presented a case study of environmental security in Slovenia. And *Zadorsky* defined military conversion/restructuring as integral elements in the Ukraine’s sustainable development strategy. He suggests that the Ukraine situation is not dissimilar to that faced by many other developing countries with former extensive investment in military assets.

Chapter 4, “Environmental Decision Support and Research,” provided examples of research programs and tools that are available to assist environmental managers in meeting requirements of the military. *Komar* describes the development and use of an index of acceptability for military training. The index assists military managers to assess the appropriateness and potential environmental consequences of a particular training activity in a given environmental setting. *Bozek* contributed two papers on risk assessment methodologies at military facilities, and a case study on how these apply to large petroleum storage facilities. *G. Dawson* presented a risk management and remedy optimization tool for evaluating large contaminated soil sites. The methodology allows for the scale of

analysis to match the needs of the issue under investigation, and for small-scale results to be passed to macro-scale evaluations, and vice versa. *Wilburn* reviewed environmental research capabilities and deployments at the Los Alamos National Laboratory in the United States, including how these capabilities might be used within the military sector. And finally, *Donnelly* presented the US Superfund Basic Research Program, a research program that stresses interdisciplinary research, training, and translation of research results into practice.

Chapter 5, “Protection of Nature and Natural Systems,” includes papers related to ecology and nature conservation. *Jakamaviciute* describes the program to protect rare species and habitats as implemented by the Lithuanian Armed Forces. An innovative program to raise and protect birds of prey for re-introduction into previously damaged habitats, and to use them as a natural control for nuisance bird populations at Slovak military facilities was presented by *Marcin*. *Grimm* reviewed the experience of the US Army in protecting natural habitats in Europe. And *Pauca-Comanescu* and *Botzan* presented a case study on Romanian shrublands as an ecosystem threatened by conversion to higher economic uses, and as a valuable training setting for the Romanian military.

Three work groups all explored in facilitated discussion format the same basic question: “what are the basic communications needs as they apply to issues that are critical to the military in fulfilling its environmental responsibilities.” Issues were selected based on interests of the delegates and include:

- Work Group 1: What is ‘good science’ and how does it apply to environmental management within the military sector?
- Work Group 2: What influences the rate of adoption and quality of Environmental Management Systems within the military sector?
- Work Group 3: What role does/should public participation play in military environmental management decisions?

In general, work group discussions added an added practical perspective to the papers published in these proceedings.

‘Good science’ requires careful research investment strategies, quality management, and peer review. Research investments benefit when science needs are matched to operational military requirements, and when competitive processes are used to allocate resources. Competitive proposals are reviewed from both excellence-of-science and relevancy perspectives. The former requires qualified peer reviewers while the latter requires experienced operational users of the existing science.

Quality management includes the proper use of quality management tools such as the careful establishment of data quality objectives and having recognized quality control procedures as an integral part of the execution of every science project. The most effective quality

management and quality control plans are those that are documented in writing following well-known procedures. External, preferably peer, review of draft documents assures that the quality process contributes to the realization of ‘good science.’

Peer review of science results is an identifying characteristic of ‘good science.’ The timing and extent of peer review is most effective when planned during the early stages of any project. Sufficient time and resources should be available to both obtain the peer reviews and to respond to critical observations.

The rate of adoption and quality of Environmental Management Systems (EMS) at military facilities requires support and leadership from the highest levels of management, adequate resources to both develop and implement EMSs, and acknowledgment by Commands that personnel involved in the EMS process are an integral and important part of facilities and operations management. In addition, because of the rapid development of EMS tools and techniques, it is important to provide for information and experience exchange among NATO member, PfP, Mediterranean, and other countries. This is a formative period for EMSs in military settings. Future successes will depend, in part, on the responsiveness and robustness of the initial systems, as well as the enthusiastic acceptance by facility and operations managers.

Public participation in environmental decision making in military settings must balance national security objectives with the public’s right-to-know. The PfP countries and the new NATO members are all developing their public participation traditions, many guided by the principles of the Aarhus Convention. Work group members stressed the need for military public participation case studies, and information and experience sharing.