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Conference Services

**Fifteenth OSCE Economic and Environmental Forum - Part 2:
“Key challenges to ensure environmental security and sustainable development in the
OSCE area: Land degradation, soil contamination and water management”
Prague, 21 - 23 May 2007**

**Session V
Land degradation and soil contamination**

Please find attached the presentation by Dr. Armen Saghatelian, Director of the Center for Ecological-Noosphere Studies NAS, Armenia.

FIFTEENTH OSCE ECONOMIC AND ENVIRONMENTAL FORUM

"Key challenges to ensure environmental security and sustainable development in the OSCE area: Land degradation, soil contamination and water management"

ENVIRONMENTAL CHALLENGES, ADDRESSED BY ARMENIA IN COOPERATION WITH OSCE

Dr. Armen Saghatelian
Director of the Center for Ecological-Noosphere Studies NAS

21-23 MAY, 2007, PRAGUE

After the former USSR disintegration, the new independent states faced a huge amount of hardships stemmed from the process of transition from command to market-based economy.

This is true for the countries of the South Caucasus, too, where Armenia that borders on Georgia and Azerbaijan has come across economic and ecological threats.

Under such conditions OSCE initiated a set of projects aimed to neutralization of most distinct threats to ecological security and oriented to expansion of collaboration, stimulation of realistic actions for ecological risk reduction, development of human resources, assurance of civic rights for access to information and for enrolment in making decisions to environmental issues.

NATO - OSCE SfP 977991- South Caucasus River Monitoring



- Center for Ecological-Noosphere Studies (Yerevan)
- Institute of Radiation Problems (Baku)
- Tbilisi State University
- Norwegian University of Science and Technology (Trondheim)
- University of Antwerp
- University of New Mexico

OBJECTIVES OF THE PROJECT

- River discharge and water quality monitoring and data collection, using standardized sampling and lab techniques
- Implementing the Quality Control Program (QAPrP)
- Database shared and managed via the internet
- GIS and dynamic simulation models shared via internet
- Applying data and social/technical relationships to transboundary watershed management

NATO-OSCE-SfP977991 Sampling points



BENEFITS GAINED BY THE PROJECT EXECUTORS

- The research organizations from the three South Caucasian republics got up-to-date precise analytical devices, and presently have the best equipped labs in the region,
- The young researcher from the three countries were trained for up-to-date water analysis methods in leading European research centers,
- The labs of the three countries put into practice technologies of quality assurance and quality control of analyses following ISO requirements,
- The researchers were given an opportunity to take missions for participation in different scientific meetings to present the obtained research outcomes,
- The project end-users (in Armenia: Ministry of Nature Protection, Standing Committee on Environmental Protection of the Parliament) and other interested organizations regularly got data on water quality obtained as a result of independent research monitoring.

Increasing technical capabilities (monitoring, lab analytical methods, and communications) of the partner countries

- Modern standard equipment has been purchased and preparation works for their installing are implemented



Water samplers



AAS Spectrometer for heavy metals test



Water quality testers



A device for obtaining high purity water



Radon analyzer



Gamma-spectrometer

ACHIEVEMENTS

- In the conflict region a project was initiated that has successfully been performed for 5 years already. Collaboration of the researchers from the three countries in the frame of the project serves as a real basis for the improvement of the level of confidence,
- To execute the project, collaboration was established with NATO, and their mechanisms were used for assuring scientific project expertise, due to which the studies meet international standards,
- For the first time after the former USSR disintegration, compatible data on a region scale were obtained on the quality of Rivers Kura-Araks basin waters easily accessible to all interested organizations,
- First ever systemized data were obtained on the contents of heavy metals, radionuclides, persistent organic pollutants (POPs) for Rivers Kura-Araks waters,
- A scientific basis was created to assure transition to watershed management of water resources and establishment of a regional early warning system.

THE PROJECT CONTINUATION

In 2005 the project "South Caucasus River Monitoring" was recognized as one best corresponding to ENVSEC goals and tasks.

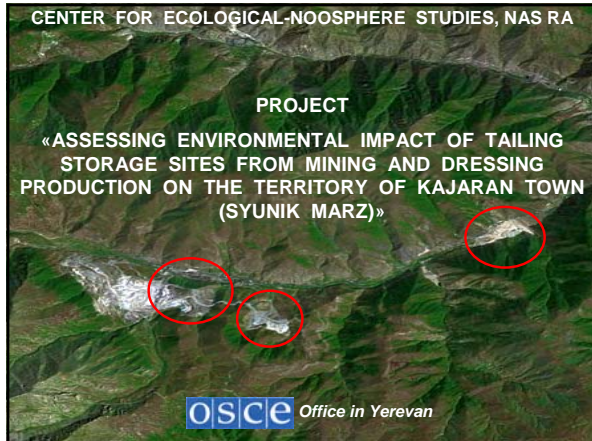
This year, after special site visit to the three countries, the NATO Scientific Board and the OSCE Secretariat have made a joint decision on the project extension to the end of 2008.

For the next period special attention will be given to young scientists' training:

- sharing experience and lessons learned,
- POPs measuring on up-to-date analytical instruments and water quality modeling

CENTER FOR ECOLOGICAL-NOOSPHERE STUDIES, NAS RA

PROJECT
«ASSESSING ENVIRONMENTAL IMPACT OF TAILING STORAGE SITES FROM MINING AND DRESSING PRODUCTION ON THE TERRITORY OF KAJARAN TOWN (SYUNIK MARZ)»



PRE-HISTORY OF PROJECT

At the request of Municipality of the city of Kajaran, the OSCE Office in Yerevan rendered financial support to the Center for Ecological-Noosphere Studies to perform a complex research of environmental state of Kajaran.

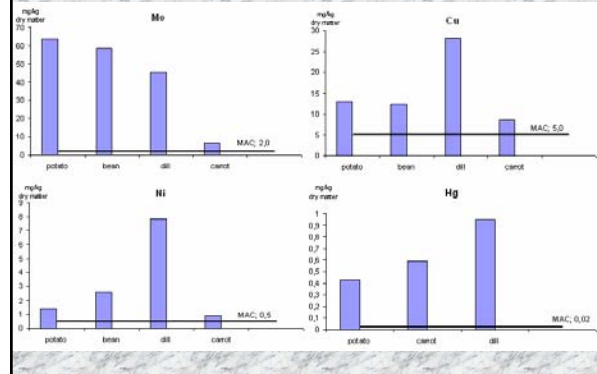
The city lies within the impact zone of a mining plant. Just on the city's territory and its vicinities located are old tailing repositories that are used for agricultural purposes.

There, the occurrence rate of diseases and particularly malignant tumors and anemia in children is very high, indeed.

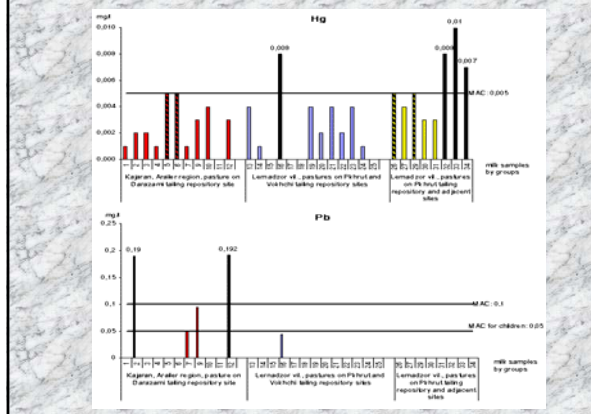
MAJOR OUTCOMES

The major outcome for 2 years of research was indication of contamination of separate environmental objects with toxic elements of I and II grade of hazard. Indicated was transition of such elements to trophic chains.

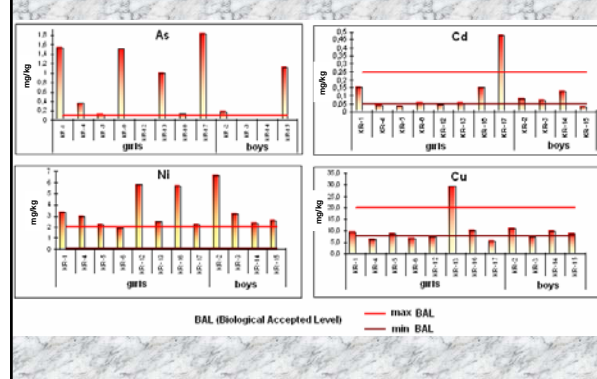
Heavy metals accumulation in vegetables grown in Kajaran



The contents of toxic elements in fresh milk



Heavy metal accumulation in children's hair, Kajaran



THE OUTCOMES OF A PROJECT SUPPORTED BY THE OSCE OFFICE IN YEREVAN

- Encouraging collaboration between an academic organization, local self-government body and a private mining company,
- Providing decision-makers with proved facts and figures of risk level and ecological threat to public safety,
- Public awareness of real ecological situation in the city,
- Launching concrete actions by local authorities and administration of the plant on damage mitigation and neutralization of threat to safety

MUNICIPALITY ACTIONS

- Closing of harmful springs,
- Bounding and exception of polluted sites from agricultural circulation,
- A set of actions for improvement of children's health
- Initiation of discussion of the issue for transferring the city to a new site as earlier as planned.

With regard for active development of mining and processing industry in the South Caucasus and its adverse impact upon the environment, in the frame of ENVSEC initiative the scientists from the three countries have developed a regional project:

PROPOSED PROJECT

“The assessment of the impact of mining production upon the environment in the South Caucasus”

STUDY OBJECTS: mining industrial cities in Armenia, Azerbaijan, Georgia.

PROJECT DURATION: 3 years

PROJECT COST: 810.000,00 EUR (270.000,00 per country for 3 years).

CENTER FOR ECOLOGICAL-NOOSPHERE STUDIES, NAS RA

“Ecological monitoring and evaluation of the project “Elimination of rocket fuel component stocks (Melange) in the Republic of Armenia - Phase III – “Implementation”



OSCE Office in Yerevan

PRE-HISTORY OF THE PROJECT

Since the former USSR disintegration, a depot of components of rocket fuel – a liquid oxidant called melange (872 tons) has remained in Kaltakhchi military base located on Armenia’s territory.

Acid melange is a highly toxic, aggressive, incombustible, fire risk inducing mixture of acids. Melange threatens both the populace and the environment.

For this reason the RA Ministry of Defense adopted resolution on melange utilization. The OSCE Office in Yerevan provided technical and financial support to the melange utilization project on implementation of treatment process – obtaining a nitrogenous mineral dressing (Fertilizer) for agriculture.

Synchronously with technical works on melange utilization, a program was developed on controlling the quality of Fertilizer and ecological monitoring of plausible environmental effects when applying it.

THE PROJECT GOALS

To complexly assess ecologically significant impacts while implementing the project on melange treatment and applying the obtained product as mineral dressing (Fertilizer) in agriculture.

THE RESEARCH TASKS

1. Controlling the quality of Fertilizer.
2. Analyzing the state of soil before and after application of Fertilizer.
3. Assessing the efficiency of Fertilizer in fields.
4. Assessing the effect of Fertilizer on element migration in soils.
5. Assessing ecological impacts of production and application of Fertilizer upon the environment.
6. Performing a pot experiment.

INTERMEDIARY OUTCOMES

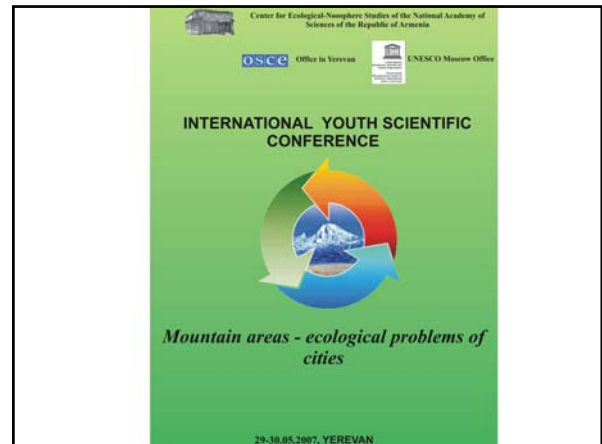
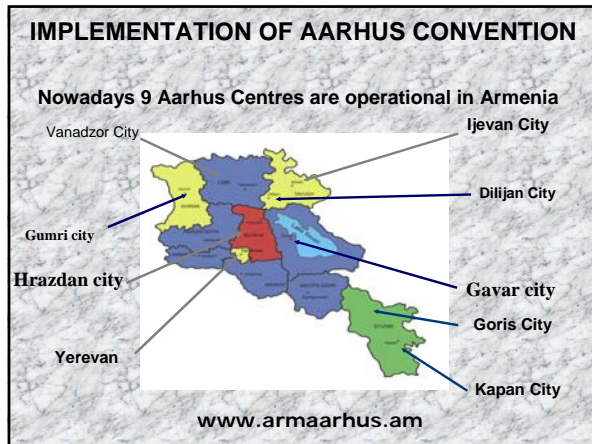
- Product quality assessment,
- Improvement of technology,
- Assessment of possible soil contamination,
- Assessment of the increase in nitrogen concentration in soil

The outcomes of this complex research indicated that while treating and applying Fertilizer, no ecologically valuable environmental impact was detected.

PROJECT EFFICIENCY

This project nicely illustrates that well-considered ecologically oriented technologies both neutralize a threat to security and are economically beneficial. In this case - as support to peasants’ farms through transferring mineral fertilizer with no compensation.

This year the project works will be continued and there is an intention, too, to perform a pot test aimed to the development of recommendations for optimal use of the treatment product in agriculture – in other countries where large volume of Melange is stored.



RESUME

In the frame of its ecological programs OSCE renders assistance to Armenia and the South Caucasian region as a whole in solution of most topical and urgent ecological issues. As a representative of the Academy of Science and a member of 'Directors' Board REC-Caucasus I wish to emphasize the efficiency of OSCE efforts in such essential areas as young scientists' training and development of international collaboration.

It should be noted that participation of representatives of the academic sector in such meetings is an opportunity to highlight the situation in the context of global challenges, to more precisely formulate the goals and a whole set of other positive aspects.

To conclude, I would like to express my thanks to OSCE and OSCE Office in Yerevan for collaboration and a chance to make presentation to such an impressive forum.

THANK YOU FOR ATTENTION