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Environmental Policy and Technology Project

**For the New Independent States
of the Former Soviet Union**

Contract No. CCN-0003-Q-00-3165-00

**UKRAINE, BELARUS, AND
MOLDOVA**

FINAL REPORT

Delivery Order No. 13

Ukraine

Industrial Pollution Control Assessments/Audits

Prepared for:
**Bureau for Europe and the New Independent States
U.S. Agency for International Development**

Prepared by:
Environmental Policy and Technology Project
A USAID Project Consortium Led by CH2M HILL

PREFACE

Under the 1992 Freedom Support Act, the United States Congress initiated a program to provide assistance to new independent states (NIS) of the former Soviet Union. Cooperative Agreements were signed between representatives of the U.S. government and each country in which assistance was to be undertaken. The U. S. Agency for International Development (USAID) was given the responsibility to coordinate all U. S. Government assistance to the NIS under the Act. The strategic objectives of USAID's assistance to the NIS were to promote:

1. Environmentally sound, sustainable economic development during the transition to a market based economy;
2. Reduction in pollution-related risks to health; and
3. Reduction of the threats to the global and regional environment.

Through competitive bidding, USAID awarded a multi-year contract to a team managed by CH2M HILL International Services, Inc. (CH2M HILL) to support implementation of an environmental assistance program to republics of the former Soviet Union. Under this contract, termed the Environmental Policy and Technology (EPT) Project, CH2M HILL was to assist USAID's missions in Moscow, Kyiv, and Almaty undertake a program to promote environmental improvements in the NIS.

The CH2M HILL team included the following organizations:

- Center for International Environmental Law
- Clark Atlanta University/HBCUMI Environmental Consortium
- Consortium for International Development
- Ecojuris
- Environmental Compliance, Inc.
- Harvard Institute for International Development
- Hughes Technical Services Company
- International Programs Consortium
- International Resources Group, Ltd.
- Interfax Newsagency
- K&M Engineering
- Ogden Environmental and Energy Services Company
- World Wildlife Fund (US).

The USAID mission in Kyiv supports environmental, and other, assistance programs to Ukraine, Belarus, and Moldova. CH2M HILL established an office in Kyiv, Ukraine to manage and support activities in these countries under the EPT Project. As appropriate, field offices were established at specific project sites within the countries. The project's headquarters office in Washington, D.C. provided overall direction and management support for project activities in all regions.

This report was prepared as a contractually required deliverable under the contract between USAID and CH2M HILL. Although work on this report was conducted in cooperation with the assisted governments and USAID, the findings and recommendations are those of the CH2M HILL team. They do not necessarily represent official positions of the governments of the assisted countries nor of USAID.

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Appendix

Appendix A: Status of Deliverables

Section 1 Introduction

1.1 Overview of the USAID/WESTNIS Environmental Assistance Program

The former Soviet Union sought production and production increases above all, particularly in heavy industries, agriculture, and defense related sectors of the economy. Natural resources were largely regarded as inexhaustible, and accordingly, not valued in use or seen as components of ecosystems which might be killed, damaged, or rendered less productive by mis-uses. The result was extensive environmental degradation, massive pollution, and ecosystem stress. These have had negative health consequences as well as deleterious effects on the viability of various industries.

Since independence, behaviors that caused despoilment of the environment have hardly changed. At the scale of the enterprise, including large farms, there remains little real incentive to save resources or reduce pollution. The current administrative and productive system confronts a legacy of past pollution. And, despite the reduction in immediate pollution dynamics in certain sectors which economic malaise has brought, the mitigation of a continuing flow of new pollution and destructive resource management is even less practical than before as the economy declines

Environmental information has been found to be unreliable. While vast amounts of statistical information are collected by numerous central and local institutions, these are most often generated using outdated collection and analytical techniques and simply do not add up.

The USAID Regional Mission for Ukraine, Belarus, and Moldova (USAID/WESTNIS) was established in 1993 and, faced with the Soviet Union's environmental legacy, began to develop an environmental program comprising three separate but interconnected activities:

- obtain effective environmental information;
- undertake integrated ecosystem restoration;
- address special industrial and environmental problems.

In October 1993, the Environmental Policy and Technology (EPT) Project contract, designed to support implementation of USAID's environmental assistance to the republics of the former Soviet Union, was awarded to a team managed by CH2M HILL International Services, Inc. (CH2M HILL). Four delivery orders for work to support the Aral Sea Program were executed under the EPT Project contract beginning in 1994:

Delivery Order No. 5 - WESTNIS Environmental Program Phase I: Quick-Start Initiatives and Long-Term Program Specification and Start-Up;

Delivery Order No. 9 - Project for Ukraine, Belarus, and Moldova: Mitigating Health

and Economic Consequences of Environmental Mismanagement;

Delivery Order No. 13 - *Industrial Pollution Control Assessments/Audits;*

Delivery Order No. 15 - *Infrastructure and Energy Efficiency, Ukraine.*

1.2 Introduction to Delivery Order No. 13

Delivery Order No. 13 (DO 13) was executed in August 1995 to extend and expand activities initiated under the first two delivery orders for Ukraine, Belarus, and Moldova, Delivery Order No. 5 and Delivery Order No. 9. One of the DO 5 activities involved evaluating current environmental management techniques at, and pollution by, industrial enterprises, especially in the heavily industrialized Donetsk Oblast. Drawing in part from information obtained during the performance of DO 5, USAID developed DO 9 which included, in Task U1, undertaking in Donetsk ... *a demonstration project to promote effective control of enterprise releases into the environment* ... A component of that task was to provide training in environmental auditing techniques and then to undertake three rounds of audits in order to implement the training. The first round of audits, performed under DO 9, were to be followed by second and third rounds. These subsequent rounds were completed under DO 13.

This report reviews the scope of work, deliverables and major accomplishments of and lessons learned from the work carried out under Delivery Order No. 13. The body of this report contains four main sections : II. Delivery Order Objectives and Scope; III. Deliverables; IV. Major Accomplishments; and V. Lessons Learned.

Section 2

Delivery Order Objectives and Scope

2.1 Delivery Order Objectives

Delivery Order No. 13 had as its objective to ... *continue the [audit] demonstration project initiated under Task U1 of DO 9 ...*

2.2 Delivery Order Scope

The scope of work for Delivery Order No. 13 included two tasks:

1. Task 1 - Enterprise Audits: Conduct the second and third of three rounds of environmental audits of industrial enterprises, the first round of which was conducted under DO 9, Task U1. Each round was to consist of 2-3 industrial enterprises. The audits were to be conducted using teams of U.S. and local specialists. In the second round, local specialists were to conduct the audits with U.S. experts closely observing and interacting with the trainees, while in the third round, the trainees would primarily conduct the audits and prepare reports, both of which were to be reviewed and evaluated by the U.S. experts.
2. Task 2 - Follow-up Audit Workshop: Provide logistical and administrative support to a follow-up audit workshop, to be conducted by the local audit trainees. At this workshop, the trainees would present the audit techniques learned, and results of the audits, to environmental professionals from government agencies, enterprises, academia, and other institutions from Donetsk Oblast and elsewhere.

2.3 Evolution of Delivery Order Objectives and Scope

Delivery Order No. 13 was modified once. This Modification, which extended the period of performance from December 31, 1996 until April 30, 1997, did not change the objectives or scope of work of the delivery order.

Section 3

Delivery Order Deliverables

Article V - Reports /Deliverables of Delivery Order No. 13 specified the following deliverables:

3.1 Enterprise Audits

- Round 2 draft audit report
- Round 2 final audit report
- Round 3 evaluation report

3.2 Follow-Up Audit Workshop

- Workshop attendees list
- Workshop summary report

3.3 Other Activities

- Work plan
- Monthly status reports

The status of deliverables produced under DO 13 is presented in Appendix A.

Section 4

Delivery Order Accomplishments

Under Task U1 of DO 9, a series of classroom and field-based training courses on environmental auditing techniques had been completed for representatives of Donetsk environmental agencies, industrial enterprises, and scientific entities. An environmental auditing manual had been prepared, auditing equipment obtained, and the first round of environmental audits conducted at Azovstal Metallurgical Plant and the water and wastewater operations of the Enakievo Metallurgical Plant.

DO 13 continued the environmental auditing program, as follows:

1. The second round of audits was conducted at the Illich Iron and Steel Plant and that portion of the Enakievo Metallurgical Plant not audited during the first round.
2. The third round of audits was conducted at the Stirol Fertilizer Plant and the Druzhkovka Metal Parts Plant.

During Round 2, the Ukrainian trainees worked alongside the U.S. experts from the U.S. Environmental Protection Agency and CH2M HILL and jointly undertook the audits. In Round 3, the audits were conducted by the Ukrainian trainees while the U.S. experts observed and later commented on the techniques used and results obtained.

After completion of the third round of audits, a workshop was conducted by the trainees for more than 30 participants from local agencies, industrial enterprises, scientific and academic institutions, and environmental consultants. The workshop covered the basic elements of environmental auditing, with emphasis on identifying opportunities for and benefits of pollution prevention and waste minimization, as well as highlighting lessons-learned by both the audit teams as well as audited enterprises.

As a result of the audit training, and information on industrial environmental management techniques located in the Technical Information Center that was established as part of DO 9, a greater capability now exists within Donetsk Oblast to address industrial pollution issues through a more structured approach, particularly via waste minimization. The Donetsk Oblast office of the Ministry for Environmental Protection and Nuclear Safety (MEPNS-DO) began to use the auditing techniques as a basis for its inspections of industrial facilities, while requiring the 65 largest polluters within the oblast to submit environmental management plans based in part on self-conducted environmental audits.

During the audit of Azovstal Metallurgical Plant under DO 9, several waste minimization opportunities were identified. As part of DO 13, one of these was implemented in order to demonstrate cost-effective means of pollution reduction that could be replicated at other metallurgical facilities in Ukraine. This demonstration involved the capture of graphite particulates that were otherwise released into the atmosphere from one of six large open “mixing vessels” into which molten metal is poured. The EPT Project contributed about \$50,000 toward a total cost of about \$170,000. The recovered graphite was reused in the steel making process as carbon raw material, and any excess was locally sold. The cost was paid back in less than one year, and the

company committed to implement similar facilities at its five remaining mixing vessels.

Section 5

Delivery Order Lessons Learned

When conducting the audit training, it was difficult to gain the trust and permission of industrial enterprises to enter their premises to undertake an independent audit. The enterprises did not wish to have environmental agency personnel participate in the audits and in the disclosure of audit reports. Procedures need to be developed so that if USAID wish to have regulatory agency personnel participate in audit training which requires them to enter industrial enterprises, the information thereby obtained cannot be used to initiate enforcement actions.

The graphite recovery project at Azovstal was a good example of a highly effective approach to pollution control. Its cost would be recovered in less than one year, and thereafter it would generate an additional source of revenue to the enterprise. DO 13 did not provide for the wide dissemination of its results, which diminished its utility. USAID has also funded many other waste minimization projects in Ukraine, as well as in neighboring countries, via a grant to the World Environment Center. A well-coordinated series of seminars and site visits regarding successful USAID-funded waste minimization projects in eastern Europe, together with information on project financing, should be undertaken for industrial enterprises in order to encourage the wide implementation of this highly effective means of pollution reduction. Such an action could also be incorporated within USAID's assistance for the privatization of large state enterprises and the encouragement of small- to medium-sized enterprises.

Appendix A
Status of Deliverables

DELIVERY ORDER 13
Status of Deliverables

Task	Delivery Order Deliverables	Status of Deliverables
All	Draft work plan	Work plan provided: <i>Delivery Order #13: Draft Work Plan. October 1995</i>
All	Oral presentation of draft work plan	Completed
All	Final work plan	Work plan provided: <i>Delivery Order #13: Work Plan. May 1996</i>
All	Monthly status reports	Reports provided: <i>EPT Project Weekly Reports on Accomplishments and Issues, 1995, 1996, 1997</i> <i>EPT Project Deliverables Updates, 1997, 1998</i> <i>EPT Project Monthly Summary Reports, 1993, 1994, 1995</i> <i>EPT Project Quarterly Summary Reports, 1996, 1997, 1998</i>
Enterprise Audits		
1	Two Round 2 draft audit reports	Audits conducted at 2 facilities. Results reported in: <i>Ukraine: Draft Report, Round 2 Environmental Audit - Illich Iron & Steel Plant in Mariupol</i> <i>Ukraine: Draft Report, Round 2 Environmental Audit - Enakievo Metallurgical Plant</i>
1	Two Round 2 final audit reports	Reports provided: <i>Ukraine: Final Report, Round 2 Environmental Audit - Illich Iron & Steel Plant in Mariupol</i> <i>Ukraine: Final Report, Round 2 Environmental Audit - Enakievo Metallurgical Plant</i>
1	Evaluation report of draft Round 3 audit reports	Report provided: <i>Ukraine: Round 3 Environmental Audit Evaluation Report</i>
Follow-Up Audit Workshop		
2	List of workshop attendees	List provided: <i>Ukraine: Follow-Up Environmental Audit Workshop Attendees List</i>
2	Workshop summary report	Report provided: <i>Ukraine: Follow-Up Environmental Audit Workshop March 25-28, 1997</i>