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EAPS

ENVIRONMENTAL ACTION PROGRAMME SUPPORT PROJECT

POLLUTION-PREVENTION ASSESSMENTS:
SAMARA, RUSSIA

In-Plant Environmental Assessments for Low-Cost/No-Cost
Pollution-Prevention and Abatement Measures

Contract No. DHR-0039-C-00-5034-00

Submitted to:
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Submitted by:
Chemonics International Inc.

with the cooperation of:
The Russian Engineering Academy, Volga Department
Samara, Russia

May 1999

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B

TABLE OF CONTENTS

Acknowledgments	i
Preface	iii
Executive Summary	v
A. Training and Overall Objectives of the Activities	1
B. In-Plant Assessments	1
C. Pollution-prevention Opportunities Identified	1
D. Exit Workshop and the Monitoring Program	1
TABLE 1. SUMMARY OF POLLUTION-PREVENTION AND ENERGY-SAVING OPPORTUNITIES IDENTIFIED AND THEIR INCENTIVES	2

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d

P R E F A C E

The EAPS project is a part of the environmental component of the Samara Regional Investment Initiative, a collaborative effort among the U.S. and Russian governments, regional authorities, and private sector entities. The initiative aims to improve the investment environment and overall business climate for sustainable economic growth in selected regions in Russia. This report summarizes EAPS' series of rapid pollution-prevention assessments at four industrial enterprises in the Samara oblast: Samara Bearing Plant, Samara Cable Company, Yukos Novokuibyskersk Oil Refinery, and Rodnik Vodka Company. In this work, the assessment team focused on identifying no-cost/low-cost measures and showing the companies that they can join sound environmental practices with sound business practices and incur little or no financial burden. The assessments were performed with the cooperation and permission of the four companies.

EXECUTIVE SUMMARY

This report summarizes the pollution-prevention assessments conducted during February and March 1999 at the following enterprises: Samara Cable Company, Samara Bearing Company, Yukos Novokuybishev Oil Refinery, and Rodnik Vodka Company (Bottling Plant and Novobuyansky Distillery). The objective was to demonstrate the benefits of conducting in-plant environmental assessments aimed at identifying approaches and solutions to cost-effectively manage pollution. Emphasis was given to identifying no-cost/low-cost methods for controlling and managing pollution, waste, and energy inefficiencies.

Russian-American technical teams conducted the in-plant assessments in cooperation with the four industrial companies. Combined, these rapid assessments identified approximately 652,000 rubles per year in materials, reduced pollution fines, and energy savings. In addition, longer term, higher investment pollution-prevention opportunities were also identified and documented in technical reports prepared on each enterprise.

The assessments were based on a standardized step-by-step pollution-prevention methodology developed by EAPS and on universally accepted approaches. EAPS has prepared this methodology as a guide, entitled "In-Plant Environmental Assessment Sourcebook: A Guide to Pollution Prevention Planning," and translated it into Russian. The guide serves as a starting point for enterprises in developing formal environmental management plans and a roadmap for developing facility-wide plans that focus on low-cost, pollution-prevention opportunities.

EAPS POLLUTION-PREVENTION ASSESSMENTS: SAMARA SUMMARY REPORT

A. Training and Overall Objectives of the Activities

The assessment team conducted a one-day workshop with members of the four cooperating enterprises to orient them on the objectives of the program and introduce a formal methodology for conducting in-plant pollution prevention assessments. The EAPS-prepared guide "In-Plant Environmental Assessment Sourcebook: A Guide to Pollution Prevention Planning" was used as a training manual. During the workshop, the attendees were organized into four groups, each comprised of an enterprise representative(s) and members of the Russian-American assessment team. The groups reviewed information obtained from a pre-assessment questionnaire designed to gain information on plant operations in advance of the team's in-plant assessments.

B. In-Plant Assessments

Senior management for each enterprise recommended one part of their plant operations to be the focus of the assessments. The in-plant assessment consisted of the following:

- *Pre-assessment.* In this step, the team collected general information about the operations of the facility, the specific shop area chosen for the assessment, and the waste issues and energy demands. The information collected was based on pre-assessment questionnaires provided to the enterprises at the start of the program and follow-up meetings with the plant technical experts assigned to assist the assessment team.
- *One-half to two-day walk-through of each operation.* In the walk-through, the team focused on specific areas of an enterprise's shop to evaluate waste problems, pollution issues, and energy-saving opportunities. Interviews were conducted with shop operating personnel and local management to gain an understanding of the operation and the environmental and energy-demand issues.
- *Exit interview with the plant technical experts.* At each enterprise, the team reviewed preliminary findings and recommendations with the plant technical experts. Pollution-prevention and energy-saving recommendations were further refined during these meetings.
- *Exit interview with senior management.* The team presented recommendations to the senior management of each enterprise.

C. Pollution-Prevention Opportunities Identified

The pollution-prevention and energy-saving opportunities identified, along with specific recommendations, were detailed in technical reports, translated into Russian, and provided to each enterprise. Table 1 presents a summary of the no-cost/low-cost recommendations and their environmental, health, safety, and financial benefits.

D. Exit Workshop and the Monitoring Program

The team conducted an exit workshop with all program participants to review findings and recommendations. During the workshop, participants organized into respective groups and developed action plans and schedules for implementing the low-cost/no-cost recommendations. The action plans included a schedule for monitoring performance.

1

Table 1. Summary of Pollution-Prevention and Energy-Saving Opportunities Identified and Their Incentives

Samara Cable Company								
Priority Pollution Problem	No-Cost/Low-Cost Recommendation	Environmental, Health, and Safety Benefits	Potential Savings (Ru/yr)					
			Materials	Energy ¹	Air	Water	Solid	Total
Airborne copper dust caused by wire drawing and extrusion	A1. Implement roller maintenance program. A2. Implement floor and machinery maintenance program A3. Enclose main emitters. A4. Implement air monitoring combined with A1 and A2 above. W1. Improve stormwater monitoring program and management.	<ul style="list-style-type: none"> Improved indoor air quality. Reductions in contaminated stormwater discharges. 	10,150		EH&S ²	15,500		25,600
High-moisture, semi-solid sludge with low copper content generated by recycling system	S1. Combine with wastes from A2, A3. S2. Implement sludge drying experiment in ovens.	<ul style="list-style-type: none"> Elimination of off-site disposal. Possible recycling; total elimination of waste 	202,000				8,000	210,000

¹ Not part of the intended scope of work, except for Yukos Novokuibyskersk Oil Refinery.

² EH&S = A serious environmental health and safety issue was identified.

**Table 1. Summary of Pollution-Prevention and Energy-Saving Opportunities Identified and Their Incentives
(continued)**

Samara Bearing Company								
Priority Pollution Problem	No-Cost/Low-Cost Recommendation	Environmental, Health, and Safety Benefits	Potential Savings (Ru/yr)					Total
			Materials	Energy	Air	Water	Solid	
Poor indoor air quality	A1. Implement floor-maintenance program. A2. Implement preventive maintenance program and regular air monitoring. A3. Implement intermittent exhaust operation. A4. Implement automatic air-lock system. A5. Rotate worker rotational assignments.	<ul style="list-style-type: none"> • Reduced health risks. • Improved worker productivity. • Less worker absenteeism. 			EH&S			
Shop recycling and waste discharge	W1. Use NaOH to correct cooling liquid composition. W2. Use urotropine as anti-bactericide agent. W3. Improve cooling liquid treatment (using coagulant to increase vacuum-filtration efficiency). W4. Use steam condensate instead of fresh water for cooling liquid preparation. W6. Implement preventive maintenance program.	<ul style="list-style-type: none"> • Extension of lubricating-cooling liquid recycling time; less costly materials. • Reduced wastewater discharges. • Reduced water consumption. 	150,000			36,000		186,000

Table 1. Summary of Pollution-prevention and Energy Savings Opportunities Identified and Their Incentives (continued)

Novokuibyshevsk Refinery of Yukos Enterprise								
			Potential Savings (Ru/yr)					
Priority Pollution Problem	No-Cost/Low-Cost Recommendation	Environmental, Health, and Safety Benefits	Materials	Energy	Air	Water	Solid	Total
Energy inefficiencies lead additional environmental emissions factors	E1. Implement energy audit and monitoring. E2. Decrease cooling water recycle. E3. Decrease air-heater capacity. E4. Reserve compressor automation.	<ul style="list-style-type: none"> Decreased dependency on dirty fuels for electricity production. 		75,000				75,000
Rodnik Bottling Plant								
Wastewater discharges to municipal system	W1. Recycle once-through water to boiler feed and other uses.	<ul style="list-style-type: none"> Reduced pollution fees. Higher productivity from water recycling. Materials savings from reduced fresh water used. 	155,582			80,903		236,485
			517,732	75,000		51,500	8,000	652,232