

# U.S.-SOVIET COOPERATIONS PROGRAMME ON MUNICIPAL AND INDUSTRIAL POLLUTION MONITORING AND CONTROL

by

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Effective cooperation is the cornerstone of the 13 year old U.S.-USSR Agreement on Cooperation on the Field of Environmental Protection. This makes also the prospects for the future exchanges, mutually beneficial and promising despite some difficult circumstances.

The goal of the Agreement is to obtain specific, economically effective, and mutually beneficial results for solving problems related to preservation and improvement of the environment and to the rational use of natural resources in both countries.

To realize this goal, group meetings, joint experiments, tests of technical equipment, field studies, symposia, seminars, data exchanges, and verification of research methodology have been carried out in most of the Agreement's 42 projects.

From the U.S. side, one of the most productive has been that 02.02-21, i.e. Prevention of Water Pollution from Municipal and Industrial Sources. This project includes cooperation on the methods of identification and treatment of wastewater from various municipal and industrial enterprises. Its purpose is to develop economical methods of wastewater purification to the levels corresponding to the requirements for water quality binding in each country. The project is subdivided into two main areas: treatment of municipal and industrial wastewaters and sludges. The activity consists in the exchange of information among scientific institutes, industrial unions, and administrative organs, and includes chemical, cellulose, paper, petrochemical, and refining industries.

The first chairman of this project on the U.S. side was Mr. HAROLD P. CAHILL, formerly of the EPA's Municipal Construction Division. The second chairman, WILLIAM J. LACY, former Director of EPA's Water and Waste Management Monitoring Research Division, had served first for five years as Mr. CAHILL's deputy on this project. The current chairman is Mr. DONALD J. EHRETH, EPA's Deputy Assistant Administrator for Research and Development, while Dr. ROBERT MEDZ, Office of Monitoring Systems and Quality Assurance, is Mr. EHRETH's deputy on the U.S.-USSR project.

The Soviet side is represented by Prof. S. V. YAKOVLEV, the member of Soviet Academy of Sciences and Director of the all Union Scientific Research Institute of Water

Supply, Sewage, Hydrotechnical Facilities and Engineering (VNII VODGEO, GOSTORY) in Moscow, USSR, who is the chairman, Mr. IGNOT N. MYASNIKOV who serves as the project officer and usual delegation leader, and Dr. V. N. SHVETZOV who is the Deputy Director VNII VODGEO.

In the most recent meeting of the U.S. and Soviet specialists, held in the U.S. in February 1985, the ongoing work, technical information and outputs acquired by each side and new area of cooperation were discussed. It has been agreed that this mutually beneficial scientific exchange, including a scheduled meeting in September 1985 in the USSR, will be continued.

Discussion include treatment of municipal and industrial wastewaters, problems related to the energy conservation and ozonation, nitrification and denitrification, and the removal of organic pollutants. It has been also planned that the actual projects will be implemented in the pilot plant of the advanced wastewater treatment in Cincinnati and the current and new monitoring and quality control methods applied to analysis of municipal and industrial wastewaters.

The bilateral project brought for the U.S. side several significant and beneficial results:

1. Specific data and methodologies on close-loop industrial water systems.
2. Information on close-loop municipal-industrial systems utilizing rainwater catchment and nitrogen compounds instead of sulfate compounds to reduce the reuse waters' dissolved solids and increase the fertilizer value of the sludge.
3. Unique and novel applications of electromagnetic separators to improve filtration and reduce boiler scale formation.
4. Utilization of ozone in the treatment of wastewaters difficult to handle as well as in disinfection of drinking water.
5. Improved operations and performance of biological treatment plants under cold climatic conditions.
6. Higher clarifier performance due to modifications of design.

Exchange activities under this project have met some problems including:

1. Slowness of accomplishing small tasks such as technical report exchanges.
2. Lack of the experience in the joint pilot scale work.
3. Some reluctance to exchange openly information on long-term R and D programme planning.

Some of the highlight results achieved due to the exchange of the industrial working group are the following\*:

1. Pulp and paper industry.

Determining of the developmental trends in the research on environmental monitoring of industrial wastewaters.

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\* The industrial phase of the agreement has been carried out by Dr. LACY and Mr. ANDREW PARETTI, the Deputy of the Milwaukee, Wisconsin Metropolitan Sanitation District.

Exchange of experience and technical documents for design of off-site purification installations.

Develop specifications relative to design of system for collecting, transporting and dehydration of off-gases.

## 2. Chemical industry

Exchange of information and performance data on physical, chemical, and biological methods of wastewater treatment.

Stream stripping operations of ammonia plant wastewater.

Recycling of wastes from a nitrogen chemical fertilizer manufacturing complex.

## 3. Petroleum refining

Exchange of design and operating performance information on the activated sludge, filtration, and solids incineration systems.

Discussion and reports on the activated carbon and cooling tower water treatment, including dual salt-fresh water systems and drift problems.

Design and description of various oil bearing waste incinerators have been discussed and exchanged.

Three Soviet specialists in pollution control from the USSR Pulp and Paper Ministry are scheduled to visit the U.S. for technical discussions. A joint industrial symposium on biological methods for wastewater treatment with the cooperation of Dr. I. GELLMAN of National Council on Air and Stream Improvement of the U.S. Pulp and Paper Industry will be held in the U.S.

### EXCHANGE OF SPECIALISTS IN ENVIRONMENTAL PROTECTION

In the past, two U.S. specialists from the Metropolitan Sanitary District (MSD) in Chicago, Illinois, studied research works on municipal and industrial wastewater treatment in Moscow, Tashkent, Samarkand, and Ryazan.

Then two Soviet specialists during their extended stay in the U.S. visited four EPA laboratories including new joint municipal industrial pilot plant facilities in Cincinnati, Ohio, and the MSD, Chicago, Illinois. They were shown Prairie Plan land application operations in Peoria, Illinois, the Oxitron System of fluidized bed processing by Dorr-Olivier, Inc. in Greenwich, Connecticut, and were briefly informed about the rotating biological contactor plant in Alexandria, Virginia.

### GENERAL COMMENTS

Over the past eight years the joint working group symposia have resulted in more than 150 technical papers on the following subjects:

1. Handling, treatment and disposal of wastewater sludge.
2. Physicochemical treatment of municipal and industrial wastewaters.
3. Intensification of biochemical treatment of wastewater.
4. Physico-mechanical treatment of wastewater.

5. Advanced equipment and facilities for wastewater treatment.

6. Advanced treatment of biologically treated effluent including nutrient removal.

The broad participation has increased the reciprocal information exchange. Every U.S. delegation to the Soviet Union consisted of the outstanding specialists from industry, universities, professional associations, municipalities, as well as U.S. EPA (see list).

In summary: bilateral cooperation is a means of beneficial exchange of information among engineers and scientists working on common environmental problems but applying different technological methods. It also happens to have an extremely high benefit to cost ratio for obtaining substantive information.

The univocal opinion of the scientists and engineers, who have been given the first hand knowledge of the U.S.-Soviet wastewater treatment project, is that this is an effective and beneficial area of information exchange which should be continued.

#### LIST OF PARTICIPANTS

##### *Professional Associations*

American Academy of Environmental Engineers  
 American Institute of Chemical Engineers  
 Water and Waste Equipment Manufacturers Association  
 National Council in Air and Stream Improvement  
 Water Pollution Control Federation  
 International Ozone Association  
 American Water Works Association  
 American Society of Testing Materials  
 American Society of Civil Engineers  
 American Petroleum Institute  
 American Iron and Steel Institute

##### *Industries*

American Oil Company  
 EXXON  
 TEXACO  
 American Cyanamide  
 Envirotech. Corp.  
 Sala Magnetics  
 Ford Motor Co.

##### *Municipalities*

Chicago  
 St. Louis

Los Angeles  
Tahoe-Truckee  
Virginia Beach  
Atlanta  
Milwaukee

U.S. EPA representatives included scientists and engineers from Office Water Programmes Construction Grants, Office of Research and Development, Effluent Guidelines Division, with the participation of headquarters and laboratory staff members.