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UNIDO North-Western International Cleaner Production Centre

**PROMOTION AND IMPLEMENTATION OF
“CLOSING THE LOOPS” COOPERATION AND BUSINESS
MODELS IN THE CHEMICAL LEASING**

**Final report
(January – December 2008)**

Based on the work of the NWICPC according to the

Contract No: UE/INT/06/003

January, 2009

St. Petersburg, Russia

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1. BACKGROUND

Chemical Leasing business models represent an innovative approach to respond to the global changes in international policies of the chemical sector. The key element is a shift of the focus from increasing sales volume of chemicals towards a more service-oriented and value-added approach. The producer mainly sells the benefits associated to the chemical. This relates to conditions of use, recycling concepts and disposal. In addition, while in the traditional model the responsibility of the producer stops when the chemical is sold, in the current approach, the producer remains responsible throughout the use and treatment, disposal and recycling phases.

Experience obtained in Austria shows that applying these new models contributes to reducing ineffective use and over-consumption of chemicals and helps companies to enhance their economic performance and efficiency.

The present project aims at promoting the Chemical Leasing concept, which is an essential part of UNIDO's SIRM (Sustainable Industrial Resource Management) approach. In close cooperation with the National Cleaner Production Centres from Egypt, Russia and Mexico, it is foreseen to implement a number of training, information and demonstration projects in companies from the chemical industry.

The participating Centres will be responsible for ensuring the involvement and active participation of the main stakeholders, especially the private sector. The concrete application of Chemical Leasing business models in selected companies will demonstrate the applicability and impact of the concept.

Based on the lessons learned and the materials prepared, the Centres will also contribute to the further development of UNIDO's Chemical Leasing toolkit that provides a standardized approach to the implementation of the concept at plant level.

The scope of contracting services

The present contract aims at ensuring the promotion and continuation of Chemical Leasing projects in Russia. It builds on the experience already obtained in implementing Chemical Leasing in the country. The integrated approach to be applied combines the methodology of Chemical Leasing and Cleaner Production. In specific the following services should be carried:

- Organization of information and awareness raising events on the Chemical Leasing concept for national industry, government and other stakeholders;
- Finalization of on-going Chemical Leasing and Cleaner Production projects and start-up of a minimum of five new projects, involving new additional companies;
- Preparation of PR material illustrating the results achieved during the implementation and monitoring of Chemical Leasing and CP projects in Russian companies;
- Preparation of training material on the integrated approach of Chemical Leasing and CP;
- Contribution to the further development of UNIDO's Chemical Leasing toolkit and other training material.

2. OVERVIEW OF CHEMICAL LEASING ACTIVITIES IN RUSSIA

After the demonstration of the Chemical Leasing (ChL) Business Model advantages to the authorities of selected enterprises in St-Petersburg during seminars, workshops, company visits and bilateral meetings in 2007 the main goals of the project were set forth as follows:

1. Further promotion and development of ChL based relations between the participating companies towards the conclusion of ChL contracts.
The main efforts towards the implementation of Chemical Leasing concept and business were focused on the cooperation with enterprises relating to the following branches:
 - Water purification and disinfection (for a portable water supply system)
 - Optimization of galvanic processes
 - Optimization of car washing service
 - Perfumery productions
2. Monitoring of the current situation with delayed and suspended ChL projects (Henkel-Era, Fuel Systems).
3. Search for new areas and participants of ChL projects
4. Establishment of contacts between NWICPC and the potential new participants in order to promote ChL implementation:
 - Arrangement of workshops to explain the ideas and advantages of ChL Business Model to companies' representatives;

- Visits to selected companies and meetings with their authorities to get more detailed information about the fields and activities promising for involvement into ChL projects, further promotion of ChL advantages;
 - Organization of bilateral contacts between the selected chemicals producers/suppliers and users to promote the establishment of ChL based business relations;
 - Organization of training seminars and preparation of training material on the integrated approach of Chemical Leasing and CP
5. Close cooperation with the international expert on Chemical Leasing:
- Exchange of information about the current progress on the project;
 - Assistance to the international expert during his visits to Russia;
6. Close cooperation with UNIDO
- Participation in the workshops on ChL Business Model implementation;
 - Submission of the information about the progress on the project to UNIDO including current data, intermediate activity reports and final report.

3. SUMMARY OF STATUS AND RESULTS OF THE CHEMICAL LEASING PROJECTS

3.1. ERG - Henkel-ERA cooperation on wastewater purification

In the reporting period the contacts with Henkel-Era plant were continued. Two meetings took place on February and June 2008. Participants:

A.Sharonov, chief engineer, Henkel-Era

R.Tjapkina, the head of waste water treatment facilities,

W.Burger, industrial glues workshop chief,

A.Startsev, General Director, NWICPC,

V.Smirnov, expert of NWICPC, project coordinator

A.Romanychev, expert of NWICPC

The questions of possible involving of waste water facilities in Chemical Leasing project were discussed at the first meeting with chief engineer A.Sharonov and head of waste water treatment facilities R.Tjapkina. The chemicals used for waste water treatment are supplied by several firms. The calculations based on natural performances are difficult in this

case. Technological process optimization is possible only with implementation of new more effective and not expensive coagulants and flocculants. The modernization of facilities equipment is in plans of plant, but not in the nearest time.

Our suggestions regarding to service of local waste water line of industrial glue workshop by specialists of plant facilities did not supported because they are full time busy.

The issues of industrial glues workshop waste water treatment were discussed with W.Burger, industrial glues workshop chief. According to new information the amount of waste water of this shop will not be increased essential. The base problem is as before the additional payment for treatment on plant facilities precleaned on local line waste water of industrial glue workshop. The reason is 2-2.5 times excess COD norm for this water. The technical measures on decreasing COD to norm level are connected with large extra expenses. The additional treatment of this precleaned water with coagulants doesn't reduce COD to norm (500 mg O₂/l). The plant facilities apparently diluted pretreated industrial glues waste water with rainfall volumes which are much exceed (in 5-7 times) this flow. The managers of plant waste water facilities probably don't want to lose additional payment for industrial glue waste water treatment. Unfortunately our specialists couldn't help to reach the compromise between these two units of the plant.

According to request of industrial glue workshop manager expert of our Centre helped in launching of local waste water treatment line (3.03.2008), but further work of this line was suspended.

We have found the new more effective coagulant for rain water treatment. The sample of this reagent was send to the factory. Efficiency of this reagent may be evaluated after additional tests.

We plan also to assist the workshop to reduce waste water flow by implementation of more effective washing technology of glue transport containers.

3.2. Cooperation with Federal State Unitary Enterprise Admiralteiskie Verfi and RIVT, Ltd.

The object of Agreement between Admiralteiskie Verfi and RIVT companies (November, 30th, 2007) is the reduction of the chemical impact onto the environment particularly on the basis of the following approaches:

- reduction of aluminum parts degreasing/pickling application of alkali solutions hazardous for human's health and environment and yielding high amounts of solid and liquid wastes requiring high expenses for decontamination;
- implementation of wasteless and environmentally safe BOK-2 reagent solutions for aluminum parts degreasing/pickling;
- assessment of overall effect achieved due to the application of new chemicals according to natural criteria based on the number, weight or surface square of the degreased or cleaned metal parts or products.



The industrial tests showed high effectiveness of new technology. This process was implemented in galvanic workshop. The work on evaluation washing solution consumption was started. But at the beginning of the year this work was suspended because of technical problems concerned with need of substitution of degreasing bath. The continuation of work is planned in July 2008.

Pic. Galvanic workshop

Activity on the Chemical Leasing Project:

New pickling and degreasing technology of metal parts by safe and reusable washing environmentally sound reagent BOK-2 is introduced

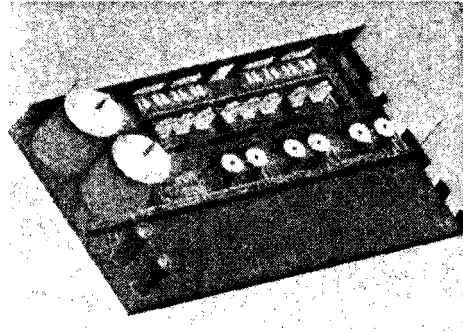
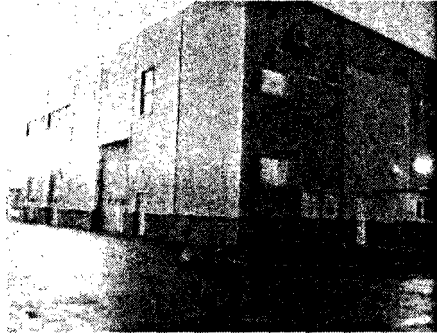
Results:

- Chemical Leasing Contract is signed on December,2007
- Safe to one's health work conditions
- No problems with bathes cleaning, no damage of bathes
- Calculated economical effect is about € 25,000 per year (for one degreasing bath)

3.3. Cooperation with the State Unitary Enterprise St.Petersburg Vodokanal and Aquatechservice, Ltd.

Upon the project of Chemical Leasing a 3-lateral Agreement between State Unitary Enterprise (SUE) St. Petersburg Vodokanal, Aquatechservice, Ltd and NWICPC was signed on 29.02.2008 (Annex 1). Chemical Leasing project is based on substitution of toxic chlorine on environmentally safe reactant (0.8% sodium hypochlorite solution) and reducing reagent

(NaCl) and energy consumption. Service company (Aquatechservice) performs services on the production this reactant from the available raw materials for the subsequent application by Vodokanal in the water preparation processes.



Workshop: hypochlorite production.

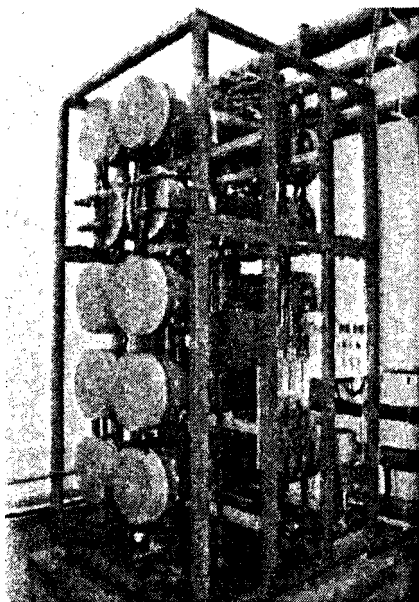
Configuration of production area

Vodokanal supplied required salt and electricity for electrolysis process. The optimal payment conditions based on the natural performances are under discussion between Vodokanal and Aquatechservice with NWICPC participation.

The meetings with specialists and managers of Vodokanal and Aquatechservice took place 3 times on 2008.

Initial conditions:

- Water decontamination by means of liquid chlorine (consumption – up to 7 tons Cl / critical day)
- High risks for personnel, city population and environment



- High costs to maintain adequate safety level

Activity on the Pilot Chemical Leasing Project:

- Service company provides integrate service (raw material storage, machine maintenance, reagents production)
- Technological process optimization thanks to resource saving, know-how application, reduction of loss and waste

Picture: exterior view of electrolyzer

- Payment idea is based on m³ of NaClO solution

Results:

- Risks of chemical accidents are reduced
- Reduction costs from 13.3 USD/t to 8.9 USD/t (about 33%)
- Total economic benefit – EURO 1.7 millions / year

NWICPC experts and St.Petersburg Vodokanal specialists participated also in organization of International Conference “Responsible Care: Business – Innovative technologies – Social responsibility” (22 May 2008, St.Petersburg). One of sections of the conference was dedicated to Chemical Leasing development under aegis of UNIDO. NWICPC General Director A.Startsev and Sonja Bayer, BiPRO Director, made three presentations on this Conference with information concerning the Chemical Leasing UNIDO project and REACH program. The Program of Conference is enclosed (Annex 2).

NWICPC experts and specialists participated in preparing of Sonja Bayer, BiPRO Director, visit in St.Petersburg (May, 21-25, 2008). In this period two meetings took place with Managers of Aquatechservice and St.Petersburg Vodokanal.

In the reporting period Mrs. Sonja Bauer (BIPRO, GmbH) visits in St.Petersburg for participation in the international conference.



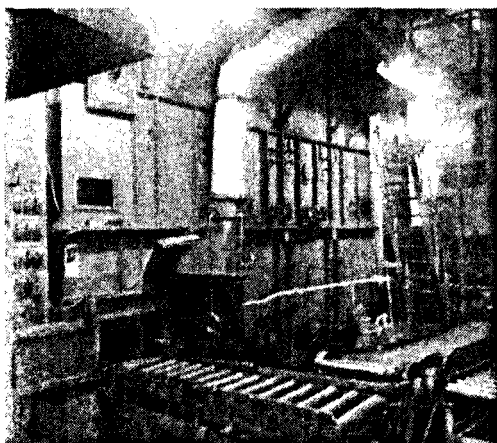
Mrs. Sonja Bauer has also participated in visits to production sites of SUE St.Petersburg Vodokanal. Two meetings took place on 23.05.08 at the Southern water supply and Central water supply plants of St.Petersburg Vodokanal. S. Bauer studied technical and economic aspects of the Chemical leasing project. Participants:

- Sonja Bauer, BiPRO GmbH, Director;
- Jakovlev V., Aquatechservice, production manager;
- Kozlov V., Director of St. Petersburg Vodokanal subsidiary;
- Startsev A., NWICPC General Director;
- Romanychev A., NWICPC, national expert;
- Smirnov V., NWICPC, project coordinator.

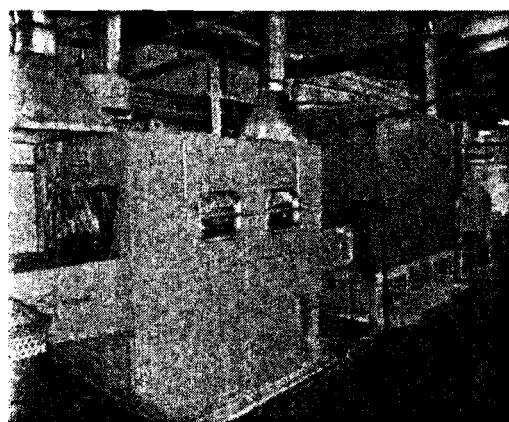
Vodokanal of St.Petersburg is one of the largest water supply company in Russia. It consumes a large amount of chemical reagents for water treatment. The positive experience of Chemical Leasing project may be implemented on other various water supply companies in Russia and in other countries.

3.4. Cooperation with Fuel Systems Ltd. and Neftechem-Service on the building of a new rinsing water purification line CP and Chemical Leasing (synergetic effect)

After completion of the preparatory activities including coordination of all the legal, technical and economic issues, Fuel Systems Ltd., Neftechem-Service company and NWICPC (as a coordinator) concluded an agreement on performance of a demonstration project on Chemical Leasing (October 2008).



Old degreasing machine



New degreasing and washing machine

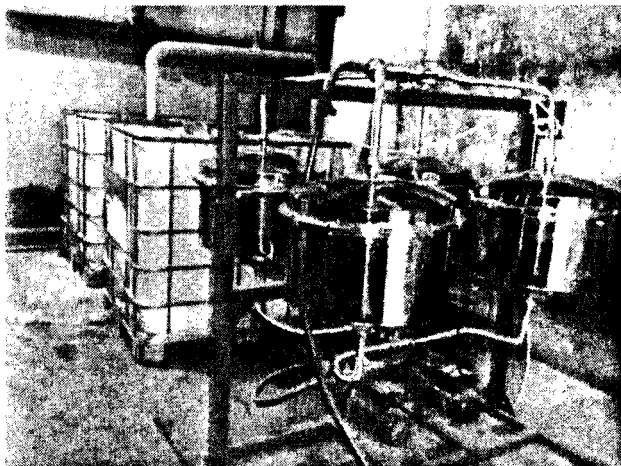
Before the application of Chemical leasing the situation on the plant was as follows: foundry workpieces, coming from foundry machines (48 units), having high temperature and covered by oil were delivered to the baths with cooling water and then to next technological stage. Rinsing water accumulated and proceeded to the local plant disposal facility.

As a result it led to:

- Additional load on disposal facility;
- Water losses amounted to 20% (120 m³ per diem) from the daily water consumption by the plant (600 m³ per diem);
- High payments for negative environmental impact.

Under the Chemical Leasing:

- There was laid the pipe manifold of the circulation water supply system that ensures water access to next technological stage;
- There was built the rinsing water purification system, consisting of 2 receiving boxes (1 m³), 2 pumps, 4 filters with removable cartridges, containing the reagent (volume of each filter is about 200 kg of oil product) and control equipment (sensors, flowmeter, manometer).



Now the new line CP and ChL provides with the purification system of rinsing water and its return into the circulation water supply system. As a result:

- 20% water savings per diem due to its return into the circulation water supply system;
- Expected direct economy due to the water consumption reduction amounts to 300 000 rubles per annum (11 100\$);
- Optimization and efficiency enhancement of the process (oil product savings make up 0,5 ton per annum, that can be applied for cooling or other purposes);
- Cost cutting for maintenance and personnel (additional specialist is not needed, 1 cartridge is enough for 6 months, cost for 4 cartridges' replacement is about 480 \$);

- Fine sanctions and pollution charges savings make up 500 \$ per month;
- Annual savings on fine sanctions for toxic agents excess are about 20% to 150 000 \$ per annum;
- Reduction of load on disposal facility;
- Carrying out of requirements on the protection of the environment in respect of waste management on the production territory;
- Reduction of chemical, raw materials, energy consumption as well as the volume of emissions and wastes;
- Extension of personnel opportunities due to the joint application of know-how;
- Long-term business relations on the base of the monitored contract;
- Guarantees of the final production high quality;
- Investments – 1 800 000 rubles (about US\$ 65 000);
- Project payback – less than 2 years.

In prospects all parties concerned consider the following steps like possible:

- Admission of the new system of "natural indice" payment (1m3 of purified water) if mutually agreed by the parties (plant-consumer and service company);
- Application of the UNIDO principle "Zeroing Wastes and Emissions";
- Carrying out of research aimed at the obtaining of data on the quantity of possible regeneration cycles of high reactivity carbon mixture and its reuse in the rinsing water purification system;
- Conclusion of the agreement on the chemical leasing, where the service company undertakes a commitment on the purification of sparge water till the quality of technical water applicable for the circulation water supply.

3.5. The situation with the Chemical leasing project in Krasny Bor

The project suggested for implementation at Krasny Bor will not be continued in view of the following circumstances.

The main problem is determined by the fact that Krasny Bor is a unique and the only enterprise specializing on hazardous wastes storage in the whole North-Western region

of Russia (1.7 mln km²). This facility became an object of serious contradictions between numerous organizations interested in the profitable management of these wastes. Krasny Bor is a federal enterprise located at the territory of St-Petersburg Suburban Region (Leningradskaya Oblast) but managed by another regional administration (St-Petersburg city government). Within two years Krasny Bor could not get a permission from federal authorities in Moscow to prolong a license for collecting wastes. Furthermore, Krasny Bor was permanently inspected by various environment protection organizations. An international "Greenpeace" organization claimed a protest to the central prosecutor's office concerning Krasny Bor's activities. The General Director of Krasny Bor Mr. Pavel Taukin initially involved in our cooperation plans was fired.

In addition, we faced another factor preventing from the organization of our ChL project at Krasny Bor. As a result of growing competition on the market of wafers for the electronic industries, increasing activity of Chinese producers led to a reduction of St-Petersburg enterprises output in this field subsequently causing a significant decrease of galvanic wastes. For this reason the new authorities of Krasny Bor considered non-promising our approach based on the separation of galvanic wastes and reduction of the toxicity level for the remaining wastes.

Generally, the economic crisis resulted in a marked drop of hazardous wastes amounts transported to Krasny Bor. However, the volume of the existing open landfills containing about 2 mln. m³ of liquid wastes (clearly shown in the UNIDO film) is not reduced taking into account natural filling (snow, rains).

Last summer, upon the consideration of this situation, NWICPC suggested a new ChL project variant to Mr. D. Golubev, Head of the Environment Protection Committee of the St-Petersburg Government. The suggested approach is based on an original technology providing a precipitation of solids with reduction of their toxicity level and using the volume of purified water as a natural indicator of the process efficiency. This project can provide an excellent technical solution to Krasny Bor in combination with the demonstration of ChL potential.

4. CURRENT POTENTIAL AND PIPELINE OF CHEMICAL LEASING CLIENTS

The main direction of the further activities on Chemical Leasing concept implementation at Russian enterprises is the assistance to the introduction of new environment friendly technologies providing a reduction of the chemical impact on the environment.

Among the promising project the following ones can be particularly outlined:

1. Service company POLICHIM and car wash stations of PTK (S.Petersburg fuel company)

The service company POLICHIM supplies periodically modified activated carbon to number of car wash stations for water cleaning from organic pollutions.

POLICHIM signed the Agreement with NWICPC on collaboration in Chemical Leasing UNIDO project on March, 28. POLICHIM specialists together with expert of our Centre developed more rational and economical model of service which included the constant service during the year. More careful cleaning and periodic reactivation of carbon allow to increase the work period of this substance in 5 times. New model of service may be also less expensive for consumers. NWICPC expert is now in treaty with managers of PTK for signing of Contract based on Chemical Leasing methodology.

The meetings with POLICHIM Director N.Papyrin and Chief Engineer V.Sergeev took place two-three times per month in last two months.

The meeting with P.Kalushev, Head of autoservice department of "Nevskaja Fuel Company" (PTK auto wash owner) took place on 20 June, NWICPC participators – A.Startsev and A.Romanychev. The project of Chemical Leasing Contract was discussed. P.Kalushev asked some time to study this document.

This company has more then 20 auto wash stations in St.Petersburg, therefore the possibilities for Chemical Leasing project implementation are very attractive.

2. Palitra, Ltd. and Tikkurila Powder Paints, Ltd. (the former name - Ochtinsky plant of powder paints)

Palitra is the service company on painting of metal constructions and the user of powder paints also. In the period under report our expert had 3 meetings with Palitra Vice Director A.Boldarev and one with Tikkuria Powder Paints General Director I.Tatarenkov.

Both companies are interested in experimental application of Chemical Leasing models and raise no objection to sign the Chemical Leasing Agreement. Now NWICPC expert is preparing corresponding Agreement.

3. InterGrim, perfumery firm, and RIVT, Ltd.

The enterprise producing such cosmetic products as cremes, shampoos etc. faced problems with reactor washing after creme production. Presently this cleaning procedure is performed using a hot water with synthetic surfactant additives and alkali solutions requiring large consumption of reagents and yielding large amounts of wastes. Waste water produced after these operations flows to purification equipment and are treated by coagulant (iron sulfate), flocculant and lime milk. A large amount of waste is produced after this treatment.

As a solution UNIDO experts suggested to use a special reusable washing method (on the basis of BOK) for these purposes. As a result the detergent solutions (produced by RIVT company) were successfully tested for degreasing cream production reactors on the InterGrim perfumery firm. The firm plans to buy new equipment for reactors degreasing. But during February-June 2008 the plant is transferring cream production on other place. The production renewal is planned in July, 2008. New equipment may be bought in autumn of this year. NWICPC expert coordinates now the signing of Agreement on Chemical Leasing between these companies. Meetings with Intergrim production manager A.Suvorov took place on 25.01 and 30.05.08.

4. LOTOS, dry-cleaners association, and POLICHIM, Ltd.

The work with drycleaners association LOTOS is also continued. Now the tests of modified active carbon sorbent of Polichim firm are producing for waste water cleaning from tetrachloroethylene impurities. If the tests results are positive, the agreement between LOTOS and Polichim may be signed on the local waste water cleaning systems production and their service by Polichim on the base of Chemical Leasing. The meetings with Production Manager O.Loginova and Chief power engineer C.Klizko took place on 19.03, 23.03 (with Polichim managers participation), 11.06.08.

5. New proposal on Chemical Leasing project involving Fuel Systems, Ltd.

Some new possibilities for Chemical Leasing implementation are revealed by the ChL expert for carburetor parts production at Fuel Systems plant.Fuel

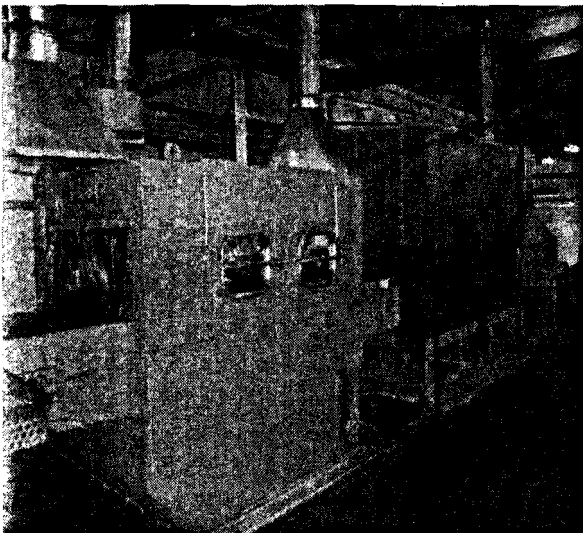
Systems Ltd. purchased at the market about 80 tons of hazardous chloro-organic solvents (tetra- and trichloroethylene) were used for metal parts degreasing with a minimized responsibility for the environment

In the molding machine press-forms are processed with technical oil (based on oil refinery products). After the molding machine the produced parts follow to cooling in water. Then the cooling water with oil products follows to the purification facilities. Presently these facilities are insufficient for complete purification of industrial effluents and a part of contaminants penetrates into the outgoing water collector.

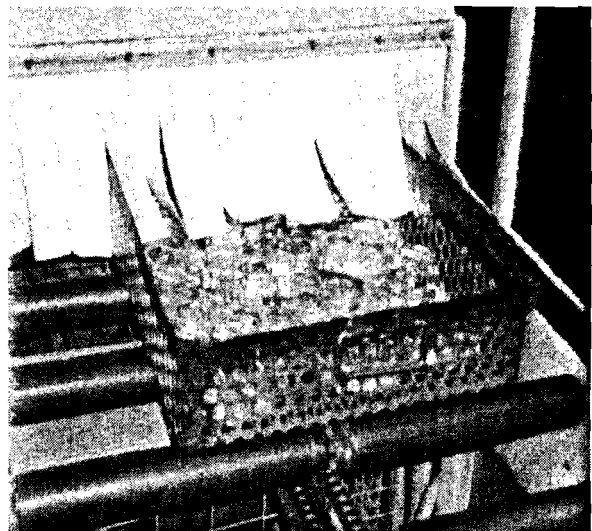
The environment protection authorities revealed the content of oil products in the enterprise's wastewater on the average level about 2 g/L exceeding the established sanitary safe threshold concentration by 5-17 times.

The elimination of this pollution requires the installation of an additional system for wastewater purification from oil products with the productivity 3 m³/hour.

In order to address this problem the implementation of ChL is suggested. New degreasing technology of metal parts by safe and reusable washing reagent BOK-5 (refreshable solution strength 0.5%) is introduced as well as a new washing machine is purchased, installed and put into operation (instead of two old machines) is much more efficient.



New degreasing and washing machine



New drying chamber

Chemical Leasing is supposed to be applied for wastewater purification at the enterprise with the natural basis for payment being the volume of water purified from oil products to the sanitary appropriate level.

The launch of the new purification system is planned for the middle of November 2008.

In the reporting period NWICPC expert had also meetings on St.Petersburg Newspaper Complex with A.Potapova, Chief of Ecology Department (28.01.08), on Ecros,

Ltd., chemicals supplier, with D.Kuznetsov, Chief Specialist on chemicals (7.05.08), on Notech, Ltd., chemical producer and supplier, with I.Tatarenkov, General Director (2.06.08). The specialists and managers of these companies were informed about Chemical Leasing business models. The possibilities of Chemical Leasing application in these companies are now under analysis.

A lot of industrial plants have the issues with insufficient treatment of waste water poured out in St.Petersburg Vodokanal collector. That produces heavily loads of sewage water facilities of Vodokanal. Our Centre together with environmental police (Rostekhnadzor) and St.Petersburg Vodokanal started the work on formation of pilot group of such plants in April 2008. Goals: to reduce the harmful chemical loads on sewage water facilities of St.Petersburg Vodokanal, to work-off new methods of communications between environmental control organizations and industrial plants, to support the plants for solving ecological issues. Along others measures Chemical Leasing could be implemented for these purposes. Managers of St.-Petersburg Vodokanal gave to us information about 25 plants using chemicals in processes of waste water treatment. Expert contacted with managers of these plants with proposal of participation in the pilot group. About 15 plants interested in this collaboration. List of these plants was passed to Rostekhnadzor to send the official invitations for these works.

5. OTHER ACTIVITIES

5.1. Promotion of Chemical Leasing

The training with managers of Vodokanal was conducted at 27.02.08. The theme of training was implementation of payment of water disinfection service on the base of natural performances, the evaluation of economical effects of water treatment process optimization in frames of Chemical Leasing project. Training participators:

D.Karlick, Deputy General Director, St.-Petersburg Vodokanal

E.Nefedova, Executive producer, St.-Petersburg Vodokanal

A.Startsev, General Director, NWICPC,

A.Romanychev, expert, NWICPC

An international training seminar on Chemical Leasing with the participation of seven countries concerned took place in the UNIDO Headquarter (Vienne, Austria) on 3-4 of March

2008. Two representatives of St.Petersburg Vodokanal: E. Nefedova, A. Kazulina, NWICPC General Director A.Startsev and project coordinator V.Smirnov took part in work of the seminar. There was introduced the presentation about the St.Petersburg Vodokanal emphasizing the sodium hypochlorite application of own production (the largest factory in the world) instead of liquid chlorine in the water-treatment system.

During the seminar national UNIDO expert V.Smirnov carried out some consultation meetings with Joas Reinhard, international UNIDO expert.

As the result experts reached conclusion that human synthesized materials again head the list in the contemporary world chemical materials circulation. In the mean time there are no approaches to the assessment of combined and complex impact of chemical materials on the environment and health; there is no even an opportunity to provide international control systems with financial support.

To settle the above mentioned problems experts suggest to proceed to the development of international system working model of informative monitoring for the potentially hazardous chemical materials circulation.

Supposed topic of the pilot project №1 is «Development of the international system model of potentially hazardous chemical materials circulation regulation on the basis of modern information technologies». Main goal of the project is to reduce losses of potentially hazardous chemical materials into the environment. Implementation term of the pilot project is 5 years.

Supposed topic of the pilot project №2 is «Development of the computer-aided program for classification harmonization of chemical materials hazard in Russia and EU countries ». Main goal of the project is to harmonize classifications of chemical materials hazard in Russia and EU countries. Depending upon availability of the data base in the European Union the pilot project can be implemented for 3 years.

Pilot project №3 «Working out of an auction holding main principles on the allocation or sale of quotas for admissible circulation volume of chemical materials for organizations implementing chemical leasing» can be implemented after the development of analysis model of admissible circulation volume of potentially hazardous chemical materials on the basis of Russian or European models. The project will assist to create a new business model focused on the losses reduction of potentially hazardous chemical materials into the environment and will promote enterprises to apply less hazardous chemical materials.

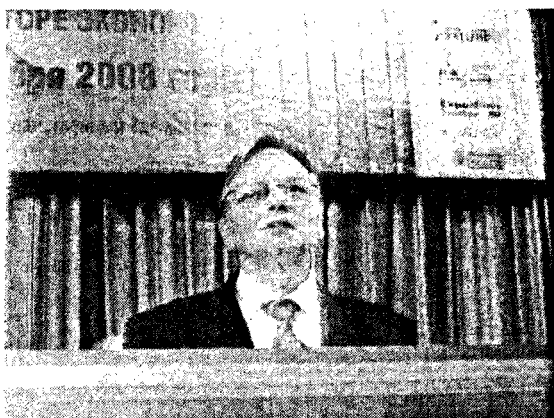
NWICPC initiates the work on Chemical Leasing on State level. Social order of the Federal Service on ecological, technological and atomic control (Rostekhnadzor) on 14.05.08 decided to organize the meeting (participants: Rostekhnadzor, St.-Petersburg Vodokanal, UNIDO NWICPC and ecological funds, industrial plants). Goals: 1.to work out economic and administrative actions of reducing chemical impact on structures of water treatment plants. It is planned to use the possibilities of UNIDO Chemical Leasing project for deciding of this issue. It is recommended to prepare seminar on Chemical Leasing for representatives of these plants. NWICPC expert contacted with managers of these plants with proposal of participation in the pilot group. About 15 plants were interested in this collaboration.

5.2. Capacity building activities

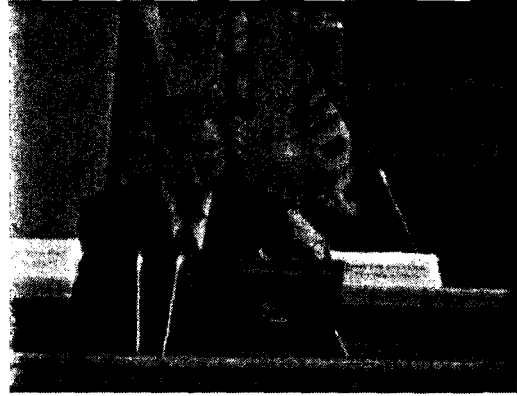
NWICPC General Director A.Startsev and project coordinator V.Smirnov with two Managers of St.Petersburg Vodokanal participated in work of training seminar on Chemical Leasing (4-6 March, 2008, Austria, Vienna, UNIDO HQ).

NWICPC specialists also participated in the work of International Conference "Getting Fit for REACH Applying Chemical Leasing" (Balatonfüred, Hungary, March 6-7, 2008). The Program of Conference is enclosed.

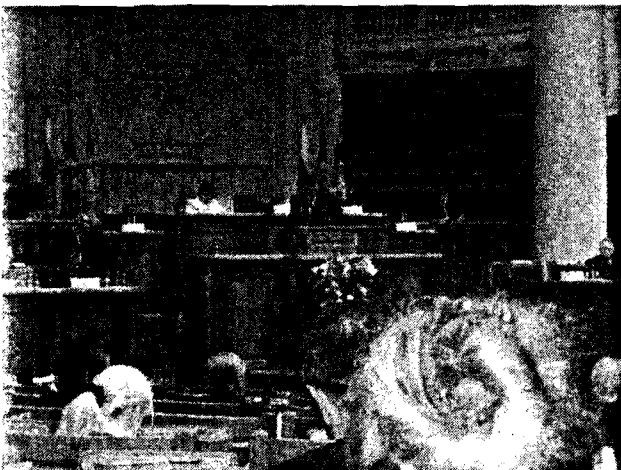
NWICPC General Director A.Startsev participated in work of presidium at the 4-th Allrussian ecological confrence that was held in Main Kreml Palace on 18 November 2008. In his speech he pointed out importance of UNIDO`s role as a guiding point for development of Russian new ecological policy for reals sector economy. Participation in implementation of UNIDO international projects, such as Chemical Leasing, allows definition of right direction and supports (organizationally, technologically, legally) global task aiming at minimisation of chemical impact on environment.



St. Petersburg UNIDO Centre was one of initiators for carrying out of Nevsky international ecological congress that took place 9 December 2008 in Tavrichesky Palace. Before the congress on December 5 NWICPC General Director A. Startsev visited UNIDO Head Quarters in Vienna. During the visit he consulted with Mr. Dm. Piskounov, Managing Director of UNIDO, as well as Mr. Igor Volodin, Chief of Water management unit and Mrs. Petra Schwager, programme manager of Chemical Leasing.



On request of Mr. Dm. Piskounov and on his behalf NWICPC General Director addressed to participants of the congress in St. Petersburg. In course of the congress press conference A. Startsev informed media representatives from newspapers and gournals about UNIDO, its role in organization of the multi-lateral international cooperation in frames of diverse programmms and projects, particularly, Chemical Leasing. He mentioned specificity of work of North-West UNIDO Centre in St. Petersburg and spoke about future plans for work expansion in chemical sector, especially in context of UNIDO environmental initiatives "Closing the loops" and "Zeroing wastes and emissions". After the plenary session A. Startsev chaired one of the round tables of the congress and showed the presentation about above mentioned issues of UNIDO`s and Centre`s work.



5.3. Steps to be taken in the next phase - 2009

- Monitoring of the Chemical Leasing projects performed at SUE St.Petersburg Vodokanal, SUE Admiralteiskie Verfi, Fuel Systems, Henkel-Era, Krasny Bor, .
- Preparation of new projects involving other companies – candidates for the implementation of Chemical Leasing business models (Polichim-PTK, Palitra-Tikkurila Powder Paints, Intergrim-RIVT).
- Finalization of on-going Chemical Leasing and Cleaner Production projects and start-up of a minimum of five new projects, involving new additional companies;
- Preparation of PR material illustrating the results achieved during the implementation and monitoring of Chemical Leasing and CP projects in Russian companies;
- Preparation of training material on the integrated approach of Chemical Leasing and CP;
- Contribution to the further development of UNIDO's Chemical Leasing toolkit and other training material.
- Preparation of Case-Studies and practical application of Chemical Leasing methodological innovations developed by UNIDO according to the concept "Zeroing wastes and emissions".
- Search of new candidates for ChL implementation in Russia

CONTRACT
on performance of a Chemical Leasing project

St-Petersburg

February 29, 2008

Federal Unitary Enterprise "St-Petersburg Vodokanal" hereinafter referred to as ENTERPRISE, represented by the Deputy General Director Mr. Dmitry A. Karlick;

Share holding company "Aquatechservice", hereinafter referred to as SERVICE COMPANY, represented by the General Director Mr. Alexey V. Pyskin;

and autonomous non-profit organization "UNIDO North-Western International Cleaner Production Centre", hereinafter referred to as COORDINATOR, represented by the General Director Mr. Alexander A. Startsev,

concluded this Contract on the following premises and conditions.

1. Aims of the Contract

- 1.1. Performance of activities according to the Framework Agreement between the ENTERPRISE and COORDINATOR from June 27, 2007 in respect of the application of Chemical Leasing business models in order to reduce chemical impact onto the environment due to the development of the relating economic incentives and service-oriented relations;
- 1.2. Pilot implementation of the Chemical Leasing business model according to the current agreement between the ENTERPRISE and SERVICE COMPANY on providing services in the field of launching an environment friendly water purification process without free chlorine application at the ENTERPRISE facilities;
- 1.3. Preparation of the background for the establishment of new business relations between the Parties with the payment for services provided by the SERVICE COMPANY based on the amounts of supplied environmentally safe reagents as natural performances.

2. Subjects of the Agreement:

- development and extension of business relations between the ENTERPRISE and the SERVICE COMPANY performing services on the production of environmentally safe reactants (0.8% sodium hypochlorite solution and aqueous pulp of powdered charcoal) from the available raw materials for the subsequent application by the ENTERPRISE in the water preparation processes (drinking water purification and decontamination);
- providing the background conditions for the SERVICE COMPANY to optimize the reagents production due to resource saving technologies, increase of the energy consumption efficiency and minimization of yielded wastes with retaining the required end product quality. Determination and pilot implementation of the optimal conditions of payment for Chemical Leasing services supplied by the SERVICE COMPANY on the basis of natural criteria performances.

3. Responsibilities of the parties

3.1. The ENTERPRISE shall:

- 3.1.1. Provide the required organizational and technical conditions to the SERVICE COMPANY for the pilot implementation of the Chemical Leasing business models;
- 3.1.2. Assist the SERVICE COMPANY and COORDINATOR in the search for an optimum

basis and procedure of payment for Chemical Leasing services according to the amounts of the produced sodium hypochlorite solution and powdered charcoal pulp (measured in m³ or tons) as natural performances;

- 3.1.3. Intend to make long time and trustful relations with the SERVICE COMPANY and COORDINATOR in respect of performing Chemical Leasing services.

3.2. The SERVICE COMPANY shall:

- 3.2.1. Perform preparatory activities towards the establishment of service-oriented business relations with the ENTERPRISE on the basis of the Chemical Leasing business model;
- 3.2.2. Perform the optimization of the processes for sodium hypochlorite solution and powdered charcoal pulp production;
- 3.2.3. Develop, assess and optimize the procedure of payment for Chemical Leasing services according to the amounts of the produced sodium hypochlorite solution and powdered charcoal pulp (measured in m³ or tons);
- 3.2.4. Intend to make long time and trustful relations with the ENTERPRISE in respect of performing Chemical Leasing services.

3.3. The COORDINATOR shall:

- 3.3.1. Provide a methodological support to the Chemical Leasing project performance and perform an independent monitoring of the project in the course of the entire project duration;
- 3.3.2. Perform an expert assessment of the effect of the quality of the initial raw materials for the production of sodium hypochlorite solution and powdered charcoal pulp on the economic efficiency of the Chemical Leasing services supplied by the SERVICE COMPANY;
- 3.3.3. Provide an extended informational support and PR actions both in Russia and abroad, particularly using the United Nations Industrial Development Organization (UNIDO) potential, to demonstrate the successful implementation of the Chemical Leasing concept at the ENTERPRISE.

4. Agreement duration

This Contract is valid since the date of its signing by all the Parties until December 31, 2008 and can be prolonged for the next year unless otherwise decided by the parties.

5. Other conditions:

- 5.1. All disputes arising in the course of this Contract performance shall be resolved only by negotiations between the Parties.
- 5.2. Any additions and amendments to this Contract are only valid upon written execution and signing by authorized representatives of the Parties. Upon fulfillment of these conditions all additions and amendments to this Contract become intrinsic parts of this Contract.

- 5.3. This Contract is executed in three equally valid originals in Russian and English. Each party shall possess one Russian and one English original of this contract.
- 5.4. This Contract does not impose any financial obligations to all the Parties.

6. Addresses and signatures of the parties:

ENTERPRISE

SEU "St-Petersburg Vodokanal" (Municipal water supply enterprise)

42, Kavalergardskaya str.,

191015, St-Petersburg

account 40602810113000000094 in the "Vyborgsky"

affiliation of the Bank OAO "VTB Severo-Zapad"

corresponding account 30101810200000000791, BIC

044030791, INN 7830000426,

OKPO 03323809, OKOIX 90213, KPP 783430001

SERVICE COMPANY

Share holding company "Aquatechservice",

1933, Moskovsky prospect,

St-Petersburg, Account 40702810432000005712

Corresponding account 30101810900000000730

In the Commercial Department of OAO Bank St-

Petersburg, BIC 044030790, INN 7842340729

KPP 781001001, OKPO 76163324, OKATO

40298564000

COORDINATOR

Autonomous Non-Profit Organization "UNIDO North-Western International Cleaner Production Centre",

55 Shpalernaya str., 191015

St-Petersburg

Account 40703810107000003207

Corresponding account 30101810200000000733


INN 7825441182 KPP 784001001

BIC 044030733 OKPO 54269247

[Signature]
 Deputy General Director

[Signature]
 General Director

[Signature]
 General Director





International conference “Responsible Care: Business – Innovative technologies – Social responsibility”

22 May 2008, St. Petersburg, EC “Lenexpo” Bolshoi prospect, Vasilevskogo Ostrova, 103, pav. 6, 8

Organizers:



Russian
Chemists
Union



UNIDO North-Western
International Cleaner
Production Centre



European
Chemical
Industry Council

Program of the Conference

9.00 - 9.30 Registration
9.30 - 11.30 Plenary session
1.30 - 12.00 Coffee-Break



Opening remarks	V.P. Ivanov, President of the RCU
Responsible Care - New Challenges	Bernhard Theier, CEFIC
Practicalities of realization of the program Responsible Care in Russia	I.G. Kukushkin, executive director of the RCU
Chemical Leasing: Concept and Practical Experiences	Sonja Bauer, DiPRO (Beratungsgesellschaft für integrierte Problemlösungen)
REACH and UNIDO Chemical Leasing: Two concepts and their synergies	A. Startsev, UNIDO North-Western International Cleaner Production Centre

13.30 - 14.30 Lunch
12.00 - 18.00 Sessions
16.00 - 16.30 Coffee-Break

Organizers: Russian Chemists Union, Evonik, Rohm&Haas, LyondellBasell Industries

I Session:	«RC – Innovation technologies»
Improving energy efficiency – voluntary actions by Responsible Care program	Kastinen Aimo Chemical Industry Federation of Finland
UNIDO Chemical Leasing project: Russian experience of application to serviced-oriented business models.	A. Startsev, UNIDO North-Western International Cleaner Production Centre
The support decision of initiatives RC for chemical holdings and the enterprises.	E.V. Kozlova IBS
Adaptation of the program Responsible Care to conditions of developing countries	Wolfgang Bergstein Evonik
Responsible Care program and LyondellBasell Industries Company	I. Zaitsev LyondellBasell
Insight into Responsible Care	G.W. Harris Rohm&Haas
The integrated systems of management as one of tools of realization the program Responsible Care in Russia	O. Ositnyanko ISD Scheer
Application of cryogenic technology of surface cleaning in chemical industry: its potentials and advantages	I.O. Fumchenko, IctechRus

Official sponsor of the Conference

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Organizers: Russian Chemists Union, CEFIC, FarnioLogic

II Session:	«Safety and Quality Assessment System» (SQAS)
Introduction and welcome : Introduction to the SQAS seminar	I.G. Kukushkin , director of the RCU
Russian Chemical Logistics Practice : The culture of sustainable development in logistics (Pharmlogie)	Y. Sinyakov
Practical issues of chemical logistics «Features of work of a logistic department in Russian chemical company»	M. Kanaeva (Lanxess, Bayer)
Practical issues of chemical logistics (to be specified)	Y. Garipov (Polichem)
Practical issues of chemical logistics (to be specified)	A. Firsukov (NLK)
Cefic Logistics Introduction to Cefic & Logistics	J. Verlinden , CEFIC
Best Practices in Logistics	J. Verlinden , CEFIC
SQAS System Objectives of the Seminar & Introduction to SQAS	J. Verlinden , CEFIC
SQAS General Principles and the Assessment Process	J. Verlinden , CEFIC
The perspective of a Chemical Producer as users of the Assessment Reports	A. Karpman , Arkema D. Golsh , BASF
The perspective of a Transport Company	D. Belyakov , Nordex
SQAS – Questionnaire Features	J. Verlinden , CEFIC
Use of SQAS assessment results as an integrated part of the procurement process of logistics services	D. Golsh , BASF
SQAS Implementation in Russia Proposed way-forward	J. Verlinden , D. Golsh
Remaining Questions & Answers	Presenter team
Conclusions: Russian Committee Responsible Care	Y. Sinyakov

18.30 Evening reception

«Responsible Care» is a key instrument of chemical industry. It enables companies increasing their level in the field of safety engineering, labour and environment protection as well as improve products and production process. A program of UNO on environment (UNEP) approved RC as a main instrument of chemical industry achievement of sustainable development.



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PROGRAMME
of the Nevsky International Ecological Congress

9 December 2008

Saint Petersburg
Tavrishesky Palace

December, 8

Arrival of participants and accommodation in hotels of St. Petersburg

16.00–16.30 Meeting of the Organizing Committee of the Congress

December, 9

8.30–10.00 Registration of participants

10.00–11.30 **Inauguration of the Congress**

Plenary session (Duma Hall)

Introduction by the Chairman of the Organizing Committee of the Congress, Chairman of the Council of the Interparliamentary Assembly of Member Nations of the Commonwealth of Independent States, Chairman of the Federation Council of the Federal Assembly of the Russian Federation, Sergey MIRONOV

Report of the Co-chairman of the Organizing Committee of the Congress, Deputy Chairman of the Government of the Russian Federation, Igor SECHIN

Speeches by the Congress participants:

Deputy Minister of Natural Resources and Ecology of the Russian Federation, Semyon LEVI

States-Secretary – Deputy Minister of Industry and Trade of the Russian Federation, Stanislav NAUMOV

Member of the IPA CIS Permanent Commission on Agrarian Policy, Natural Resources and Ecology, Chairman of the Permanent Commission of the House of Representatives of the National Assembly of the Republic of Belarus on Problems of the Chernobyl Disaster, Ecology and Nature Management, Mikhail RUSYI

Head of the Federal Service on Control over the Sphere of Nature Management of the Ministry of Natural Resources and Ecology of the Russian Federation, Vladimir KIRILLOV

Head of the Federal Service on Control over the Sphere of Protection of Customer's Rights and Welfare of Population of the Ministry of Health and Social Development of the Russian Federation, Gennadiy ONISHCHENKO

Head of the Federal Agency of Water Resources of the Ministry of Natural Resources and Ecology of the Russian Federation, Rustem KHAMITOV

Greeting of UNIDO Managing Director Mr. Dmitry Piscounov towards participants and guests of the congress, readed by Alexander STARTSEV, General director of the UNIDO North-Western International Cleaner Production Centre

Head of the Federal Agency on Subsoil Management of the Ministry of Natural Resources and Ecology of the Russian Federation, Anatoliy LEDOVSKIKH

Secretary General of the General Confederation of Trade Unions, Vladimir SHCHERBAKOV

11.30–12.00

Break

12.00–13.00

Plenary session (continuation)

Speeches by the Congress participants:

Minister of Ecology and Natural Resources of the Republic of Tatarstan, Aglyam SADRETDINOV

Desk Officer of the EC Environment Directorate-General, Enlargement and Neighbouring Countries, Jaime REYNOLDS

Head of the project "Harmonization of Ecological Standards II – Russia" (German Association on Technical Cooperation), Han DIETRICH

Deputy Head of the Federal Agency on Technical Regulation and Metrology of the Ministry of Industry and Trade of the Russian Federation, Evgeniy PETROSYAN

Member of the Committee of the Moscow Region Duma on Agrarian Policy, Land Management, Natural Resources and Ecology, Oleg PRIYMAK

Director General of the St. Petersburg Public Organization "Ecology and Business",
Chairman of the Group of the Helsinki Convention on Land Pollution Sources, Leonid
KOROVIN

Advisor to the Director General of the State Corporation on Atomic Energy "Rosatom",
Vladimir GRACHYOV

Representatives of state and legislative bodies, business, science and public
organizations of the CIS states and of the world

13.00–14.30

Lunch

14.30–17.00

Sessions of roundtables

Roundtable № 1

"Protection of environment as a factor of global security for coming generations"

Roundtable № 3

Comprehensive use and protection of water resources

Roundtable № 4

**Trans-border cooperation in the sphere of nature management and protection of
environment**

Roundtable № 5

Ecological security of major cities

Roundtable № 6

Civil society for environmental sanitation

16.00–16.30

Break

16.30–17.30

Concluding plenary session of the Congress (hall № 1)

Speeches of chairs of the roundtables

Adoption of the final paper