

E-296
VOL. 5

MATERIALS
FOR ENVIRONMENTAL ASSESSMENT
OF THE OZONE DEPLETING SUBSTANCE
PRODUCTION CLOSURE PLAN
AT THE RUSSIAN RESEARCH CENTER
"APPLIED CHEMISTRY"

(St.-Petersburg)

St.-Petersburg, 1999

The present materials for Environmental Assessment (EA) of the Ozone Depleting Substance (ODS) Production Closure Plan has been made basing on the information supplied by experts of the Russian Research Center (RRC) "Applied Chemistry" (St.-Petersburg) and the international consulting firm Arthur D. Little, Inc. (USA) during the pre-appraisal mission of the World Bank and CPPI experts from on July 8 to July 9, 1999 (Attachment 1) within the framework of the Special initiative on ODS production shut down in the Russian Federation.

The Special Initiative is a program, under which the ODS producing Enterprises gets the indemnification for fulfillment of the set task. RRC "Applied Chemistry" is one of seven Enterprises of the Russian Federation, at which this program will be realized. RRC "Applied Chemistry" has presented a Plan of ODS Production Closure and Organization of the Center of Ozone-safe Production at the Second Site (Closure Plan).

The objectives of environmental assessment of the Closure Plan during meetings and negotiations with the experts of RRC "Applied Chemistry" (Attachment 2) were:

- revealing of ODS production sources impact on the environment and measures on its closure;
- confirmation of availability of technical possibilities on Closure Plan implementation at the Enterprise and elimination of related impacts;
- evaluation of the completeness of revealing of environmental and related social consequences of the Closure Plan implementation;
- evaluation of completeness and sufficiency of measures provided for environmental quality management at the Closure Plan implementation;
- evaluation of reliability of the proposed environmental monitoring system of ODS production closing;
- evaluation of environmental risks, remaining after the Closure Plan implementation.

EA materials have been prepared with the help of RRC "Applied Chemistry" specialists, specialists of Arthur D'Little International Inc. and other organizations (attachment 3).

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I. GENERAL CHARACTERISTICS OF THE ENTERPRISE

1. **History of creation.** The Russian Institute of Applied Chemistry (RIPKh) was founded in 1919 in St.-Petersburg for creation of chemical industry of the country, which was just beginning. At that time all chemical and petrochemical processes were developed at RIPKh before transfer them for industrial application. In accordance with a development of this or that chemical direction, leading laboratories, which later became specialized research institutes, were detaching from the State Institute of Applied Chemistry (GIPKh since 1925). The most intensive growth of GIPKh has taken place in after-war years; as a result, on both sites of the Institute (one in St.-Petersburg and the other in the settlement of Kapitolovo) up to 650 different installations and stands were simultaneously operated. Thus, from the moment of the foundation and up till now, technological processes with diverse environmental impact were being developed at RRC "Application chemistry" (since 1993).

2. **Location.** RRC "Application Chemistry" is located on the territory of Petrograd district of St.-Petersburg, in the historical part of the city and occupies a federal property plot of 10.6 ha, which is located 30 m from the bank of the Small Neva River. It bounds the Military-space Cadet Corps, which occupies a monument of architecture of federal importance "Tuchkov Buyan" and comfortable green territory of sports palace "Yubileiny" (Attachment 4). In the northeast and east, at a distance of 65 m, apartment houses are located, separated from the Enterprise by Dobrolyubov Avenue and Mytninsky Quay. The sanitary-protective zone of the Enterprise is determined by historical conditions and makes 50 m.

3. **Major activity.** Now studies of the Center are oriented on the development of the following main directions:

- chemistry and technology of fluorinated compounds;
- lubricating-refrigerating fluid;
- technological lubricants and covers;
- membranes, sorbents, catalysts for ecological and technological purposes;
- substances and intermediate products for pharmaceuticals;
- technology of basic organic synthesis;
- technology of environmental and industrial safety of chemical productions; and
- chemistry of defensive and space-rocket complex, conversion, utilization of products of military purpose.

4. The industrial production of chlorfluorcarbons is one of RRC "Application Chemistry" developments and, after closing in 1991 of institutes of leading sector organizations of heavy organic synthesis, the Center produced and realized in the market up to 150 t/year of ODS, which supported its economic well-being. After the acceptance of the Viennese Convention on ozone layer protection, Montreal Protocol and other international agreements on ODS phase-out, which party was the Soviet Union (and then Russia), RRC "Application Chemistry" began preparations and since November 1998 has begun closing all ODS productions, having suffered significant economic loss from it.

5. **Condition of the environment in the area of the Enterprise.** The main environmental problems of RRC "Application Chemistry" related to ODS production are conditioned by that site, on which Freon R115, halons 1211, and halon 1301 are produced. ODS production in building 23 initiated in 1963 and was carried out down to recent time within the framework of

requirements of the operating regulatory documents, which regulate emissions and discharges of pollutants into the environment. Up to the early 60ths, other chemical products were produced in place of building 23 (freon-142, 1,1-difluorethane, hydrogen bromide – on the place of the installation for production of freon-1211 and freon-1301; trifluorpropene – on the place of the installation for production of freon-115 and 502; freon-23, fluor monomeres including tetrafluorethylene, 1-fluorethylene, hexafluorpropylene on the other sites of the building). As a result, a situation occurred, at which closing of ODS production, probable alienation of the given land and its allocation for another economic activity (for example, for a construction of a business center, motorway, etc.), highlights the problem of soil pollution by chemical substances and its rehabilitation. However, up to the moment, no decision was accepted concerning other use of the land in region of building 23, except for operational activity of RRC "Applied Chemistry",.

Dear Rick,

The ODS production in building 23 is stopped for two years already. Now this building contains litter, which must be removed and it will be removed. The Enterprise wants to sell a part of its industrial site to the city as it is in the historical center of St. Petersburg. The scope of rehabilitation will be clear when a customer appears. At the moment there is no customer. But frankly, it is not related to the Closure Plan. And let us stop on it.

6. Now on the industrial site of the Enterprise, where closing object is located, the condition of the environment can be evaluated at the moment as rather safe due to availability of a small number of industrial installations of the Center and strict environmental control of their impact by the nature protection services of the city. The RRC "Application Chemistry" has no serious claims from the State Committee on Environmental Protection of St.-Petersburg and Leningrad oblast.

7. *Atmospherin air.* There are more than 60 sources (stack chimney of the boiler-house, ventilation of laboratories and pilot installations) of air emissions (wood dust, nitrogen oxides, carbon monoxide, paraffin hydrocarbons, etc.) on the industrial site, from which 13 are equipped with duct and gas catchers. On the boundary between the Enterprise and the residential area, are following concentrations of pollutants were registered (Table 1.1).

Table 1.1

**POLLUTANT CONCENTRATIONS
(MAC shares)**

Polluting substance	On the boundary of the Enterprise	On the boundary of residential area
Wood dust	0.61	0.62
Carbon oxide	0.39	0.18
Nitrogen a dioxide	0.26	0.21
Saturated hydrocarbons	0.20	0.12
Solid matter, total	0.13	0.13
Other substances	0.05 and less	0.05 and less
Nitrogen and sulfur dioxide sum	0.27	0.21

This table is to prove that the modern environmental impact of the industrial site of GIPKh is insignificant.

8. The share of the Enterprise in pollution of free air makes for nitrogen dioxide 0.21 MAC and for carbon oxide 0,18 MAC. The maximum concentrations of pollutants on the territory of industrial site with consideration of the background are presented in Table 1.2.

Table 1.2

**MAXIMUM CONCENTRATIONS OF POLLUTANTS
ON THE INDUSTRIAL SITE AND BACKGROUND**

Polluting substance	Maximum concentrations	Background
Nitrogen dioxide	0.26	0.21
Saturated hydrocarbons	0.20	0.12
Solid matters in sum	0.13	0.13
Other substances	0.05 both less	0.05 and less
Sum of nitrogen and sulfur dioxide	0.27	0.21

9. The zone of air pollution around the sources of Enterprise emissions is absent, as the density of pollutants in the near-surface layer of the atmosphere on all the considered territory does not exceed maximum allowable values and makes in main 0.1 to 0.2 MAC for residential areas.

10. Wastewater. Now sources of water pollution on the territory of RRC "Application Chemistry" are some of objects (cooling water of pilot production and waste water of laboratories). Actual concentrations of pollutants in wastewater in outlets into the Small Neva River (the Enterprise has two of them) are shown in Table 1.3.

**Table 1.3
PARAMETERS OF WASTEWATER
DISCHARGED BY RRC "APPLICATION CHEMISTRY" (MG/L)**

Polluting substance	Outlets		Water quality in the river		MAC (mg/l)
	No 2	No 3	Higher RRC	Below RRC	
BOD total	8.68	7.40	3.75	4.16	3.00
COD	-	-	26.45	22.68	7.50
Suspended matter	6.60	7.20	6.40	6.50	7.25
Iron	0.66	0.61	1.04	0.38	0.10
Sulfates	12.50	12.14	13.88	12.25	100
Nitrite nitrogen	0.07	0.076	0.06	0.02	0.02
Ammonia nitrogen	0.78	1.050	0.66	0.38	0.39
Fluorine ion	0.12	0.27	0.07	0.13	0.75
Synthetic surfactant	0.06	0.09	0.05	0.08	0.50
Chlorides	8.30	0.21	8.63	8.59	300
Nitrate nitrogen	0.28	9.40	0.19	0.33	9.10
Phosphorus of phosphates	0.31	0.30	0.18	0.27	0.20
Petroleum	0.60	2.01	0.05	0.13	0.05

11. Water at the Enterprise is mainly used for cooling the process equipment and comes from the water intake in the Small Neva River. Background pollution of water in this place

already exceeds MAC specifications on main parameters. Therefore, quality of wastewater discharged by the Center exceeds the MAC specifications:

- on general sanitary parameters (on BOD_{total}) - 2.7 times;
- on iron - 6-7 times;
- on ammonia nitrogen – 2.5 times;
- on nitrite nitrogen – 3.8 times;
- on phosphate phosphorus – 1.5 times.

12. *Soil.* The soil pollution is the most serious environmental problem. During all the history of the Enterprise development, soil and ground were exposed to the most intensive pollution and, as against other natural components, the pollutants accumulate in soil/grounds. In the data of soil analyses made by the order of the city's administration, the RRC "Application Chemistry" territory is polluted with heavy and non-ferrous metals: mercury, lead, zinc, bismuth, etc. However, the territory of the Enterprise is polluted nonuniformly - from common levels of pollution for the city center up to extremely high levels (around building 3) in western and northern parts.

13. The industrial site of the Center is 1.5-3 times more polluted with mercury, cadmium, zinc, and copper (Class 1 of danger) than usual industrial sites, but in as many times it is less polluted by toxic elements of classes II and III of danger. The high level of pollution by zinc and copper is fixed, but that is explained in main by extremely high level of pollution of a small plot near to building 3, where galvanic operations were carried out, which are terminated now. However, such levels of pollution by heavy metals are not unique and are revealed in other industrial zones of the city as well.

14. The territory of the Center, especially east of building 23, is polluted with almost all priority organic pollutants. A fair quantity of phenochlors is present in soil, especially in well 1 (building 3), where the phenochlor contents 6 times exceeds the limit. The complete quantitative and quality structure of pollution of soils/grounds by organic compounds, including CFC and products of their transformation was not determined in soil. On the conclusion of the Town-planning and Architecture Committee of the Administration of St.-Petersburg such territories could only be used, alongside with the industry, for road construction.

15. *Solid waste.* The volume of solid waste generated at RRC "Application Chemistry" is insignificant. The data on maximum allowable waste storage limits on the territory of the Enterprise before exportation to a specialized landfill are indicated in Table 1.4.

Table 1.4

**LIMITS OF WASTE STORAGE
AT THE URBAN SITE OF RRC "APPLICATION CHEMISTRY"**

No	Substance and class of danger	Unit of measurement	Amount
	I class of danger		
1.	Spent mercury lamps	t	1.24
	Total:	t	1.24
	II class of danger		
2.	Waste of not regenerated oil (liquid combustible)	t	0.006

3.	Black breakage metal	t	52
	Total:	t	52.006
	IV class of danger		
4.	Wood waste (raspings)	t	20
5.	Wood waste (lumpy)	t	30
6.	Ferrous metals (scrap)	t	2.5
7.	Base metals (scrap)	t	0.5
8.	Base metals (chips)	t	0.2
9.	Waste of welding electrodes	t	0.05
10.	Oily fabric	t	0.05
11.	Household waste	t	36
12.	Tires with fabric cord	t	1.8
13.	Tires with steel wire	t	1.1
14.	Spent accumulators	t	0.7
15.	Rags	t	0.2
16.	Paper for recycling	t	2.5
	Total:	t	95.6

16. Landfills and storages of waste are absent on the St.-Petersburg site of RRC "Application Chemistry". There are 6 sites, where about 40 containers for provisional storage of household and equivalent waste before removal to specialized municipal landfills for solid waste. Toxic industrial waste is removed to the Kapitolovo site (about 12.8 t/year).

17. *Nature protection activity of the Enterprise.* RRC "Applied Chemistry" inspects completely the impact of the Enterprise on the environment. The volumes of MAE (Attachment 4) and MAD (Attachment 5) specifications have been developed and authorized, and the Permit for air emissions and limits for discharges have been received. The draft limits for waste storage were also developed and a Permit for Storage (Attachment 6) was received. The Sanitary-industrial Laboratory carries out monitoring of discharges and emissions of pollutants according to authorized by Lencomecology schedules and accounting of quality and amount of discharges/emissions. Quarterly and annual reports are made. The calculation of payments for environmental pollution, which make about 7,000 Rbl/year, is made on their basis.

Brief Characteristics of ODS production

18. Within the last 30 years, production of the following ODS was conducted in GIPKh:

- Freon R115;
- Freon R502 (mixture of Freon R115 and Freon R22);
- Halon 1211;
- Halon 1301.

19. The production of Freon R115 is based on gas phase catalytic hydrofluorination of coolant 113 at a temperature of 450-550°C and a pressure up to 0.7 bar. The products of synthesis are refined from chloride and fluorine hydride by neutralization, dried on zeolites, compressed, condensed and separated by rectification. The intermediate product (coolant 114)

is returned for synthesis. Freon R115 is directed for filling and further for preparation of Freon R502 by a weight method.

20. The production of halons 1211 and 1301 is based on interaction of Freon R22 or R23 with bromine in a gas phase at a temperature of 500-700°C and pressure up to 0.7 bar. The stayed bromine is condensed from products of synthesis, and, after purification, returned for synthesis. The products of synthesis are neutralized from hydrogen bromide, dried on zeolites, compressed, condensed and directed for rectification, where halon 1211 or 1301 is separated and supplied for filling.

21. *Sources of ODS production impact on the environment.* Sources of air impact at ODS production in building 23 are:

- Freon R113 vapor;
- Freon R22 vapor;
- Freon R23 vapor;
- fluorine hydride;
- hydrogen chloride;
- hydrogen bromide;
- bromine; and
- vapor of finished products (Freon R115, halons 1211 and 1301).

22. Wastewater from ODS production directly participating in technological process was processed in building 23 and solid waste of processing were removed to city's landfill "Krasny Bor". The water from washing the equipment, building and structures was neutralized by alkaline solution to pH 6.5-8.5 in building 23 and after check for the contents of halogens was discharged into the Small Neva River. The monitoring of effluents is conducted on the daily basis by the Sanitary Laboratory of the Enterprise. The Inspection of Lenoblcomecology controls analytical data of the Sanitary Laboratory of the Enterprise. There was no incompliance in wastewater discharges in recent years.

23. Solid waste from ODS production, which is spent catalysts and solid sorbents, was directed to the landfill "Krasny Bor", and residues from distillation and rectifying installations - to the Kapitolovo site for processing.

Safe Management of Operations

24. The management of all operations in ODS production is carried out according to the technological rules of State Mining and Technical Supervision, authorized by the management of RRC "Applied Chemistry" in regular order. All ODS production process control was carried out remotely from the control board, that provided safety of attendants at normal mode of production, in case of deviations from it, and at emergencies. All staff was supplied with means of individual protection.

II. CLOSURE PLAN CHARACTERISTICS

25. The Closure Plan consists of the following stages:

1. stop of production;

2. collection and removal of all raw products, reactionary environments and finished products;
 3. washing and neutralization of equipment and communications;
 4. dismantling of equipment, technological pipelines, control facilities and other engineering systems;
 5. transfer of dismantled and cleaned equipment to other productions of RRC "Application Chemistry" or delivery of the dismantled equipment in scrap; mounting of a part of dismantled equipment on installations at the Kapitolovo site of RRC "Application Chemistry";
 6. organization of control after carrying out of operations on dismantling and cleaning of the equipment;
 7. collection and removal of waste of dismantle of the equipment, insulation, general engineering systems;
 8. cleaning and rehabilitation of building 23 and adjacent area; and
 9. organization of industrial environmental monitoring of buildings and adjacent territories.
26. The list of measures included in the Closure Plan is a complete and sufficient complex of measures, which the Enterprise began to realize in November 1998. The measures listed in Items 6 through 9 are left for implementation of the ODS production closure at RRC "Application Chemistry".

Now operations are suspended because of absence of funds. The substantiation documentation for the proposed complex of measures on ODS production closure is being finished by preparation at RRC "Application Chemistry".

III. ENVIRONMENTAL AND RELATED SOCIAL CONSEQUENCES OF THE CLOSURE PLAN IMPLEMENTATION

27. The Closure Plan implementation at RRC "Applied Chemistry" will apparently result in:
- exception of ODS supply into the air according to requirements of international agreements (Viennese Convention on Ozone Layer Protection - 1985, Montreal Protocol - 1987, London addendum to the Montreal Protocol – 1990, etc.), which party is the Russian Federation, and also the Resolution of the Government of the Russian Federation No 490 dated May 05, 1999 "On Strengthening the Measures of State Regulation of Production and Consumption of Ozone Depleting Substances";
 - termination of emissions of raw material and by-product vapors into the environment of St.-Petersburg;
 - melioration of the territory of the Enterprise located in the center of St.-Petersburg due to evacuation of chemical installations, including on ODS production, from the city;
 - preservation of jobs at RRC "Application Chemistry" due to creation of production of ozone-safe substances at the Kapitolovo site;
 - improvement of working conditions at ozone-safe substances production at the Kapitolovo site, which meets modern requirements on industrial sanitary.
28. 230 persons were occupied in production of CFC and halons in 1997, by the end of 1998 there were 75 persons. More than a half from those who was compelled to change the

place of operation because of production closure were transferred to other sites of the Enterprise. 75 persons have left the Enterprise.

IV. EVALUATION OF ENVIRONMENTAL MANAGEMENT AT THE CLOSURE PLAN IMPLEMENTATION

29. **Mitigation measures.** The following measures directed on environmental quality management at the Closure Plan implementation are carried out:

- neutralization of main and auxiliary process equipment used for ODS production;
- processing of wastewater formed at washing of main and auxiliary process equipment;
- processing of provisionally stored unused raw products, intermediates and finished ODS;

The list of mitigation measures at the ODS Closure Plan implementation (CFC-115, halon-1211 and halon-1301 at the Russian Research Center "Applied Chemistry" is indicated in Attachment 8.

They are already fulfilled!!!! Yuri

30. **Environmental monitoring.** The Enterprise is going to realize the following measures to monitor fulfillment of environmental requirements and conditions of the ODS Production Closure Plan implementation:

- to organize a stationary station for inspection of the environmental condition at realizations of closing operations;
- to equip the station with stationary and portable instruments for continuous and periodic monitoring of the contents of chlorine, fluorine, organochlorine and organofluorine compounds and other pollutants in free air;
- to equip boundaries of the site with devices signaling overflow of threshold concentrations of pollutants during management of closing operations; and
- to maintain continuous or periodic monitoring of changes of the environmental condition during closing operations with corresponding records in the book of observations in the established order.

Rick, these measures will be fulfilled by the Enterprise anyway. Otherwise nobody will by the site they are going to sell. If you consider them harmful for the Bank, delete them by yourself. Yuri.

31. **Schedule of inspection.** The schedule of inspection of fulfillment of mitigation measures at the ODS Closure Plan implementation (CFC-115, halon-1211 and halon-1301 at the Russian Research Center "Applied Chemistry" is indicated in Attachment 9.

V. ENVIRONMENTAL RISKS

32. The environmental risks at Closure Plan implementation can arise at:

- realization of preparatory measures for rehabilitation of soil on the territory of closed ODS production (removal of buildings and structures and cleaning of the territory);
- processing of provisionally stored unused raw products, intermediates and finished ODS;
- rehabilitation of soil (ground) on the territory of closed ODS production; and

- neutralization of solid waste formed at preparation of the territory to rehabilitation and at rehabilitation of territory.

By emergencies at realizations of the set forth above operations can be getting of polluting substances into water bodies, air and on adjacent areas, that in turn can result in toxic impact on the attendants and population living in the residential zone. A significant pollution of ground waters and water bodies is possible.

33. The indicated operations will be executed by the Enterprise according to the operating standards and rules of the State Mining and Technical Supervision of Russia and will be also inspected by the Labour Safety Service of RRC "Application Chemistry". Taking into account a high level of organization of these operations, environmental risks of emergencies connected to violation of safety regulations should be evaluated as insignificant and the Enterprise as capable to supervise them.

VI. CONCLUSIONS

34. The realized environmental assessment of the Closure Plan at RRC "Applied Chemistry" has allowed to make conclusions that:

- sources of impact of ODS production on the environment at the St.-Petersburg site are revealed completely;
- the Enterprise has technical possibilities for elimination of residual sources of environmental impact;
- the generated List of Environmental Requirements of the Closure Plan implementation looks complete and sufficient and its coordination in Lencomecology and fulfillment of environmental requirements will allow to realize closing without unacceptable environmental consequences;
- the system of industrial environmental monitoring of the Closure Plan implementation assumed to realization can be evaluated as sufficient for fulfillment of similar kind of operations; and
- the degree of controlability of all foreseen measures is rather high.

35. All this testifies that the fulfillment of measures, foreseen by the Closure Plan will result not only in impossibility of renovation of ODS production at RRC "Applied Chemistry", but also will promote melioration of the historical part of St.-Petersburg, on which territory the Enterprise is located.

VII. RECOMMENDATIONS

40. The Enterprise should:

- prepare documentation on the substantiation of the Closure Plan and to submit it for the State Environmental Review to the State Committee on Environmental Protection of St.-Petersburg and Leningrad oblast; and
- during preparation of the substantiation documentation, it is necessary to ensure public participation in discussion of the decisions on ODS production closing and rehabilitation of the territory, according to the operating standards and rules.

"AGREED":

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Chief Engineer
RRC "Applied Chemistry"

Yu. Maksimenko
Candidate of Technical Sciences
Deputy Executive Director
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**ATTACHMENTS TO MATERIALS
FOR ENVIRONMENTAL ASSESSMENT
OF THE DRAFT OF ORGANIZATION OF MEASURES ON OZONE DEPLETING
SUBSTANCE PRODUCTION CLOSURE
AT THE RUSSIAN RESEARCH CENTER
"APPLIED CHEMISTRY"**

(St.-Petersburg)

STRUCTURE
of the World Bank Pre-appraisal Mission
to RRC "Application chemistry" on July 8-9, 1999.

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LIST

of participants to meetings and conversations at RRC "Applied Chemistry" during the Pre-appraisal Mission of the World Bank on July 8-9, 1999.

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Leading Researcher of RRC "Applied Chemistry"	Igor G. Trushkin	812 238-98-60
Chief Sanitary Doctor of Medical Department 24 Federal Department of Medbioextrem – a branch of the Central Medical Department of 122 Federal Medbioextrem	Valeri T. Lyamin	

LIST
of materials used at realization of Environmental Assessment
of the Draft ODS Closure Plan
at RRC "Applied Chemistry"

1. Closure Plans of ozone depleting substance production in the Russian Federation. Arthur D.Little International, Inc. Acorn Park, Cambridge, Massachusetts. USA, 1999. No 02140-2390;
2. Preparation of the initial town-planning and engineering documentation for the area 7.8 ha near the RRC "Applied Chemistry" (GIPKh) for consideration of a possibility of project implementation in 1998-2000. Committee on Town-planning and Architecture of the Administration of St.-Petersburg. Office of General Plan. St.-Petersburg, 1998.

**LOCATION PLAN
OF RRC “APPLIED CHEMISTRY”**

**COPY OF THE LETTER OF LENEKOLOGY
ON APPROVAL OF MAE LIMITS AND
LICENSE FOR EMISSION**

**COPY OF THE LETTER OF LENEKOLOGY
ON APPROVAL OF MAD LIMITS AND
LICENSE FOR DISCHARGE**

**COPY OF THE LETTER OF LENEKOLOGY
ON APPROVAL OF WASTE DISPOSAL LIMITS
FOR RRC "APPLIED CHEMISTRY"**

LIST OF MITIGATION MEASURES
AT IMPLEMENTATION OF CFC-115, HALON-1211 AND HALON-1301
PRODUCTION CLOSURE PLAN AT THE RUSSIAN RESEARCH CENTER
“APPLIED CHEMISTRY”
(St.-Petersburg)

No	Measure	The description	Term
1.	Removal of industrial waste	<p>All residual waste of production will be identified (analyzed, if necessary), packed and sent for safe storage or disposal according to the Russian norms and rules and at availability of the sanction of State Committee on Environmental Protection of St.-Petersburg and Leningrad oblast (Lenoblcomecology). In particular, the waste includes:</p> <ul style="list-style-type: none"> • contents of 30 (40) liter cylinders of CFC-115, which will be burnt in highly effective incinerator. The sanction of nature protection bodies for incinerator operation is available; • small amounts of diverse chemicals, pitches and contents of gas cylinders, which will be identified, classified and are disposed according to the Russian standards and rules. 	IV quarter of 1999.
2.	Removal of asbestos insulation materials and general waste	<p>Approximately 1.3 t of asbestos polluted materials (isolation and general dust) from building 23 will be located in double polyethylene sacks and buried on regional range of toxic industrial waste (Krasny Bor).</p>	IV quarter of 1999.
3.	Consultations with a public and staff	<p>Among the local population (St.-Petersburg) public consultations will be held on closing production including representatives of local non-governmental organizations and Lenoblcomecology. The consultations will include the announcement of the Closure Project, public hearings and distribution of information. A special attention will be given to the contribution of public discussion of the future development of the industrial site of building 23 in St.-Petersburg and also impacts of the past and future development on cultural and historical values of the area. The realization of regular meetings with staff affected by the Closure Plan will proceed.</p>	Proceed

4.	Deriving of the sanctions of local nature protection organs	Submission of documentation to the Lencom-ecology for the State Environmental Review (SER) on the project of closing. The documentation will include Technical substantiation and Environmental Assessment of the Closure Plan. The issue of the SER sanction is a condition of coming of the Sub-grant Agreement into force	II quarter of 2000.
Additional measures beyond the framework of the Closure Plan			
5.	Sampling and analyses	Sampling and analysis of soil and ground waters around of building 23.	IV quarter of 1999.
6.	Plan of rehabilitation of the industrial site	Development of the site rehabilitation plan according to requirements of state management and monitoring bodies	IV quarter of 1999.

**SCHEDULE OF INSPECTION
OF MITIGATION MEASURES FULFILLMENT AT THE CFC-115, HALON-1211
AND HALON-1301 PRODUCTION CLOSURE PLAN IMPLEMENTATION
AT THE RUSSIAN RESEARCH CENTER "APPLIED CHEMISTRY"
(St.-Petersburg)**

No	Measure	Description
1.	Removal of industrial waste	To inspect identification of all residual industrial waste (and analysis, if necessary), their packing and removal for safe disposal or storage according to requirements of the Russian legislation and at availability of the license of Lenoblcomecology. To study the records related to the above. To receive confirmation of state management and monitoring bodies that the disposal was made according to requirements of the Russian legislation. To study the information on operating characteristics of wastewater treatment facilities.
2.	Removal of asbestos insulation materials and general waste	To check up packing and removal of all asbestos materials (isolation and general dust) from building 23 for disposal at regional landfill of toxic industrial waste "Krasny Bor".
3.	Consultations with public and staff	To analyze proceeding measures on holding public consultations on closure of building 23 and development of new industrial activity on the site in Kapitolovo, including contacts (if necessary) with local government bodies, non-governmental organizations and staff. The discussions will be focused on monitoring of interests the external participants concerning the use of the site in St.-Petersburg and related impacts on cultural heritage.
4.	Social consequences	To analyze current employment records at the St.-Petersburg site and transfer of staff in other productions (if necessary).
5.	Conformity to the operating standards and rules	To consult the permits issued by state management and monitoring bodies, with reference to industrial sites in St.-Petersburg and Kapitolovo. To consult with representatives of Lenoblcomecology on observance of issue permissions related to these sites, and waste management facilities under the closing of the site in St.-Petersburg.
6.	Sampling and analyses	To study results of the conducted analyses of samples for the purpose of creation of a base for development of the rehabilitation plan
7.	Rehabilitation plan platform	To evaluate the rehabilitation plan of the industrial site in St.-Petersburg and to hold discussion on acceptability of the plan with the state power representatives.