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**MATERIALS
FOR ENVIRONMENTAL ASSESSMENT
OF THE OZONE DEPLETING SUBSTANCE
PRODUCTION CLOSURE PLAN
(CFC-11 AND CFC-12)
AT THE OJSC "KAUSTIC"**

Volgograd

Volgograd, 1999

Environmental assessment (EA) of the Ozone Depleting Substance (ODS) Production Closure Plan has been made based on the information supplied by experts of the OJSC "Kaustic" (Volgograd) and the international consulting solid Arthur D. Little Inc. (USA) during the pre-appraisal mission of the World Bank and CPPI from July 11 to July 12, 1999 (Attachment 1) and in subsequent discussions with the enterprise, within the framework of the Special initiative on ODS production shut down in the Russian Federation.

According to the Resolution of the Government of the Russian Federation "On prime measures on fulfillment of the Viennese Convention on ozone layer protection and Montreal Protocol" dated May 24, 1995, and under the London Addendum to the Montreal Protocol on ozone layer polluting substances, OJSC "Kaustic" begins realization of the ODS Production Closure Plan (CFC-11 and CFC-12). During the EA Mission, a number of meetings and conversations was conducted with the experts OJSC "Kaustic" (Attachment 2).

The objectives of environmental assessment were:

- revealing of sources of ODS production impact on the environment and evaluation of their "contribution" in forming the environmental situation at the plant and in the city;
- consolidation of availability of technical possibilities on ODS production closure and elimination of related environmental impacts;
- evaluation of completeness of revealed 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;
- development of the Environmental Management Plan at implementation of the Closure Plan;

The Order of Goscomecology No 306 dated June 07, 1999 assigned the monitoring of ODS production closure at OJSC "Kaustic" to the Volgograd Oblast State Committee on Environmental Protection.

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1. GENERAL CHARACTERISTIC OF THE ENTERPRISE

History of creation. OJSC "Kaustic" (Krasnogvardeisky district of Volgograd) is one of the leading enterprises of Russian chemical industry. The construction of capacities began in 1961. The source of raw material was an underground deposit of mineral salt and products of the neighboring refinery.

Major activities. In 1967, the enterprise has begun the production of insecticide chlorophos and goods of household chemistry. After chlorophos, the productions of chlorine and caustic soda by a mercury method, polyvinylchloride resin, food packing film, hydrochloric acid, bleaching agents, and other household goods. In 1980 productions of chlorine and caustic soda by a diaphragm method, granulated caustic soda, herbicides and CFC-11/12 were created. Despite of sales decrease, the CFC-11/12 remained one of the most profitable directions of OJSC "Kaustic" till 1998. Now the Enterprise produces about 3,000 t/year of CFC-11/12

II. DESCRIPTION OF ODS PRODUCTION AT OJSC "KAUSTIC"

Production of CFC-11 and CFC-12 includes direct chlorination of gas phase and fluorination of methane in fluid catalytic bed at the temperature of $450\pm 20^{\circ}\text{C}$ and pressure 6-8 bar. The fluorine-aluminum catalyst from the Italian firm "Ausimont", which is supplied in 200-liter polyethylene barrels. The process of production consists of 10 main phases:

- preparation of raw materials;
- synthesis of CFC-11 and CFC-12;
- separation and secondary use of circulating intermediate compounds;
- separation of CFC-11/12 mixture;
- reduction and purification of hydrochloric acid;
- purification of crude CFC-11/12 mixture;
- compression and drying of CFC-11/12 mixture;
- separation of CFC-11/12 in pure components – CFC-11 and CFC-12; and
- storage, filling and shipment of finished products;
- handling of production process and emergency emissions.

The technology of CFC-11/12 was developed by the "Montedison", and the whole system was supplied by "Technimont" (nowadays known as "Ausimont") in 1974. All primal equipment was mainly brought in from Italy and other European countries.

III. EVALUATION OF THE OJSC "KAUSTIC" ROLE IN ENVIRONMENTAL POLLUTION OF VOLGOGRAD

OJSC "Kaustic" bounds with the enterprises of the southern industrial node, which are located within the limits of its sanitary-protective zone (Attachment 1):

- JSC "Volgograd Factory of Technical Carbon" (northeast, 600 m);
- HPP-3 (southeast, 600 m);
- VNPZ (northeast, 200 m).

The area the Enterprise is 430 ha. The sanitary-protective zone for the Enterprise is established at 3 km^{*/} (Attachment 3). OJSC "Kaustic" is the Enterprise rendering negative impact on all components of the environment - air, surface and ground waters, soils, land resources.

Air pollution. The total volume of gross emissions from OJSC "Kaustic" has made 1,138.626 tons in 1998. The Enterprise is characterized by exceedance in MAE values on such emissions as sulfuric acid, chlorinated hydrocarbons, nitrogen oxide, and ammonia. The total emission of hydrogen chloride has made 13.539 t/year at MAE 26.7 t/year (Attachment 4). The Enterprise makes air emissions of pollutants according to the Permit issued by the State Committee on Environmental Protection of the Volgograd oblast (Attachment 5).

The total emission of fluorine hydride makes 0.627 t/year at MAE 2.5 t/year. The area of distribution is up to the boundary of sanitary protective zone.

The Enterprise emits pollutants into the air according to the Permit issued by the State Committee on Environmental Protection of Volgograd oblast (Attachment 4).

Pollution of water basin. Each production at OJSC "Kaustic" is supplied with local treatment facilities. The final phase of wastewater treatment at the Enterprise is neutralization in the neutralization shop. Household sewage of the Enterprise mixes up with neutralized wastewater and in volume of 19,900 m³/day is transmitted to biological treatment facility of continuous action, that is why the Enterprise has no authorized MAD (Attachment 6). The effluents contain:

- chlorides – 640 mg/l;
- sulfates - 1000 mg/l;
- suspended matter - 1000 mg/l;
- phenols - 0,7 mg/l.

Biological treatment facility of OJSC "Kaustic" was constructed in 1967 with capacity 140,000 m³/day. and includes:

- mechanical cleaning of a household sewage;
- mechanical cleaning of industrial wastewater;
- biological cleaning of wastewater; and
- processing of sediments (sludge compactors, methanetanks, sludge ponds) (Attachment 6).

After fulfillment of all steps of cleaning, the treated wastewater is directed by a pipeline for accumulation on sludge beds with total area 6.15 km², located in Svetloyarsky district of Volgograd, close to ponds-accumulators of OJSC "Kaustic" and Volgograd Refinery. The wastewater quality monitoring at sludge beds is realized by the nature protection service of OJSC "Kaustic" (Attachment 7). The Enterprise has no effluent disposal in open bodies of fishery assignment.

Industrial waste generation. 27,631.409 t of waste were generated at the Enterprise in 1998. Out of them 12.157.860 t was removed to a landfill, the rest was utilized at the Enterprise. Among waste of the Enterprise:

^{*/} It is authorized by the Order of the Council Ministers of the USSR No1942-r dated August 19, 1966

- 2,093.260 t - waste of classes I and II of danger (mercury-containing substances, spent petroleum, spent sulfuric acid);
- 115.400 t - waste of classes I and II of danger (distillation residues of vinyl chloride rectification system); and
- 14,591.156 t - waste of class IV of danger (spent alkalis, sludge of lime milk after neutralization, solid industrial waste, etc. (Attachment 8).

Spent oils are partially used at the Enterprise and partially are transferred to other enterprises. Sulfuric acid, as a rule, is transmitted to other enterprises, the rest is removed for disposal.

The waste handling is carried out according to Instruction No 25 "On the order of the collection, storage, transportation, disposals and accounting of solid and liquid waste at OJSC "Kaustic" (Approved by the Chief Engineer of OJSC "Kaustic" on March 29, 1999). The monitoring system of all waste directed to the pond-accumulator, organized with the help of specially designed reporting (Attachment 9, 10) acts at the Enterprise.

The liquid and solid industrial wastes of classes II to IV of danger arrive on bed 1 of section 2 of the pond-accumulator of OJSC "Kaustic" located 4-5 km southeast of the Enterprise. The capacity of the pond-accumulator is:

- building waste 4,408 t/year;
- liquid and past-like – 15,456.85 t/year;
- spent sulfuric acid – 2.400 t/year;
- spent alkalis 7.100 t/year;

The area of section 2 is 2.11 km². Under the existing technology, liquid and paste-like substances arrive under a bed of wastewater filling the dirty section of pond-accumulator. The pond-accumulator is made by protection dams 6 m high. The compacted core from sandy clay and a spur from "chocolate" clay are made in the body of dam for prevention of filtration. The dam foundation and pond bottom are formed by waterproof "chocolate" clays over 3 m thick. From the outside part of dams an antiferfiltration screen is made of local sandy clay.

Waste is removed to bed 1 and their storage is made under the operating scheme, except for building waste, calcium-alkali containing waste and acids. The separation dams are erected from building waste, the mutative filter is executed from calcium-alkali containing waste ensuring neutralization of acids, removed to the landfill. The mutative filter is a bank lime production waste. On the edge of the wet slope of bed 1 a punched pipeline is laid, by which a uniform distribution of acid waste is made and its submission to the mutating filter is ensured, where their complete neutralization occurs. At depletion of neutralizing ability of the mutation filter, its residues are shifted by a bulldozer to the northern edge of a bed, and a new filter is made. For prevention of gypsum formation, the sulfuric acid is diluted up to the concentration of 0,6 % with waste water from the liquid section of the pond-accumulator.

The technology of solid waste disposal is based on the method of their compaction and level-by-level filling by neutral solid waste (building waste) with a consequent filling by soil and levelling of the surface. The disposal of solid waste is carried out sections in the direction from the dam to the center of section 2. *Operations on section 2 expansion proceed now. The design executed by Rostov Vodokanalproekt, has received a positive conclusion of the State Environmental Review (Attachment 11).*

Ground water in region of pond-accumulator are at a depth of 3-7 m, and separate spots perched water were registered in the central part of the pond. For monitoring the filtration from the pond-accumulator, a net of hydroregime wells was drilled in 1988. The profiles are

perpendicular to channel of the Volga River and linear depressing of Sarpinsky Lakes (Attachment 20). The filters of wells were mainly made in the Khazar aquifer, depths of wells reach 40 m. The data of hydro-geological drilling confirm impermeability of the pond-accumulator foundation, as well as the body and foundation of the dam. This shows that the probability of pollution of underground waters by infiltration from section 2 is excluded. Besides, at inspection in July of 1997 outside the protection dam of the pond-accumulator by OJSC "Kaustic" no filtration was revealed. In an open pit 7-8 m deep, located northeast of the pond, all grounds have appeared to be dry, the data of drilling also confirms complete impermeability of the protection of the pond - accumulator.

Till 1996 industrial waste of the Enterprise was disposed in a pond-accumulator (landfill) located 1.6 km west of section 2 of the pond-accumulator (Attachment 1). The area of the landfill is 1.5 ha. Uncontrollable disposal of dangerous industrial waste, including waste of classes I and II of danger (mercury-containing waste, oil and hydrochloric acid), have resulted in appearance of elevated contents of petroleum, BOD-5 and COD in water of the Khazar horizon. According to the decision of 9-th Session of Volgograd Oblast Soviet of 21 Convocation, this landfill was liquidated and OJSC "Kaustic" has undertaken to make reclamation of its territory.

The location of waste is carried out according to the Permit issued by the State Committee on Environmental Protection of the Volgograd oblast (agreed with the Goscomecology of Volgograd on April 30, 1998) (Attachment 12). All the activity of OJSC "Kaustic" related to utilization, storage, transportation and disposal of industrial waste (solid and liquid) is carried out on the basis of the License (Attachment 13).

Nature protection activity of the Enterprise. The management of nature protection activity at the Enterprise is realized by the service of Chief Engineer, by the Nature Protection Department and the laboratory of biological treatment facility. The nature protection policy OJSC "Kaustic" is directed on the gradual elimination of all kinds of technogenous environmental impact. Every year, the Enterprise develops the Plan of environmental protection measures, which is agreed with the State Committee on Environmental Protection of Volgograd oblast. The ODS closure and liquidation of accumulated waste of this production is one of directions of nature protection policy (Attachment 14).

As agreed with the Inspection of Goscomecology of Volgograd oblast, the Sanitary Laboratory realizes monitoring of the Enterprise's impact on the environment. For this purpose, the joint schedules of analytical monitoring are developed:

- air on the territory of Enterprise, in sanitary protection zone, in industrial premises (Attachment 15,16,17),
- harmful emissions at sources of pollution (Attachment 18)
- wastewater from shops of OJSC "Kaustic" (Attachment 19).

Section 2 of the pond-accumulator is subject to a special monitoring. The Enterprise inspects the condition of underground water along the main streams at depths of 14 m (Khvalynsky horizon) and 40 m (Khazar horizon). The scheme of inspection wells around of the pond-accumulator is presented in Attachment 20.

The State Committee on Environmental Protection of Volgograd oblast has evaluated the operation of nature protection services of OJSC "Kaustic" as satisfactory.

Nature protection payments. OJSC "Kaustic" makes payments for environmental pollution. In 1998, according to accounting documentation, they have made 111,900 Rbl (Attachment 12), including 58,171 Rbl for air pollution and 1,058,520.2 .

IV. ENVIRONMENTAL IMPACT OF ODS PRODUCTION AT OJSC "KAUSTIC"

Sources of environmental impact from ODS production at OJSC "Kaustic" are:

- reactors of CFC synthesis;
- scrubber;
- shop of acid wastewater neutralization; and
- industrial waste landfill.

The documentation on monitoring of CFC production environment impact makes part of general plant documentation.

Air emission of pollutants. The emissions from CFC 11/12 production contain chlorine, hydrogen chloride, and fluorine hydride. Under the Certificate of Verification of Nature Protection Activity of OJSC "Kaustic" by the Goscomecology of Volgograd, the emissions of pollutants from all productions of the Enterprise meet the established limits (of August 15, 1998, No 209).

Acid wastewater from CFC 11/12 production is neutralized and directed with general plant wastewater stream to the biological treatment facility.

Solid waste from CFC production and includes residues of hydrochloric acid (class II of danger), spent catalyst, spent activated charcoal, spent zeolite (classes IV of danger). All of them are stored in section 2 of the pond-accumulator.

Safe Management of Operations

The management of all operations on ODS production is carried out according to the technological rules of State Mining and Technical Supervision, authorized by the management of OJSC "Kaustic" in regular order. All process control of ODS production 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. The Enterprise has developed and introduced the instructions ensuring safe management of operations (Duty Regulations of engineers of 1 and 2 categories, Order of Interaction of Attendants at Pumping-out and Reception of Waste Water, Standard of the Enterprise (STP 6-01-05-67-95), General Instruction on the order of collection, storage, transportation, disposal and accounting of solid and liquid waste at OJSC "Kaustic", etc.).

V. CHARACTERISTICS OF ODS PRODUCTION CLOSURE PLAN AT OJSC "KAUSTIC"

The OJSC "Kaustic" proposes to stop CFC-11/12 production with capacity of 30,000 t/year and to transfer the facility to production of new products, including production of HCFC-152a and, probably, of HCFC-134a. To ensure complete closure of CFC-11/12 production, the process of closing will include the following phases:

- disabling of the system of methane cleaning;
- cutting off of chlorine supply lines to evaporizers;
- transfer of CFC-11/12 synthesis reactors from operation in fluid bed to operation in solid bed, which is not used for synthesis of CFC-11/12;
- liquidation of cyclones of operational reactor used for CFC-11/12 production; and
- dismantling of the catalyst feeding system.

The measures on CFC-11 also CFC-12 production closing are presented in the ODS Production Closure Plan. The verification on both directions envisages:

- checking of removal (exportation) of AlF_3 catalyst, used for CFC-11/12 production;
- monitoring of HCFC-152a and HCFC-134a production; and
- monitoring of the inventory of stored CFC-11/12, stayed from former production.

VI. INFLUENCE OF THE ODS PRODUCTION CLOSURE PLAN ON THE ENVIRONMENT

The main environmental impact of the ODS Production Closure Plan at OJSC "Kaustic" is related to the increase of production waste amount. It includes:

- spent catalyst AlF_3 from two reactors of synthesis;
- up to 50 t of liquid scrubber condensate (mixture of different chlorinated hydrocarbons polluted with a dust of catalyst);
- 80 to 120 m^3 liquid alkaline waste from the reactor;
- 320 m^3 of flushing water containing alkaline waste from the process of industrial equipment cleaning ;
- 880 m^3 of acid flushing water formed during equipment cleaning (HCl and gas neutralization system) -;
- 1.7 tons of zeolite from absorbers;
- 20 t of silica gel from methane cleaning absorbers.

The processing and disposal of this waste will be made according to the Permits of the State Committee on Environmental Protection of Volgograd oblast.

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

The Closure Plan developed by OJSC "Kaustic" together with the Consultant was submitted by the Enterprise for consideration and coordination to the State Committee on Environmental Protection of Volgograd oblast (Attachment 22).

Social consequences of the Closure Plan implementation

Employment problems. 159 persons are now engaged in CFC-11/12 production. In conditions of proposed transfer to production of other kinds of non-ODS coolants and general industrial activity at the Enterprise, all workers and experts will be engaged. The Enterprise does not plan reduction of jobs.

Health impact. The risks of impact on health of workers from the Closure Plan implementation are only connected to probability of violation of labour safety rules. The responsibility for it bears the Enterprise, and the Labour Safety Service realizes the

monitoring. For example, removal of solid and liquid waste at the Enterprise is realized by specially equipped trucks of a specialized shop. After discharge of washing waters, the tank lorry is directed for washing. The washing is carried out till neutral reaction and absence of explosive concentration of air in the tank. The pH in washing water should be within the limits of 6.5-9.5, explosive substances in the air from the tank should be absent.

Public participation. At preparation of the Closure Plan, during pre-appraisal mission, the Enterprise has held a first meeting with the public representatives, during which the main aspects of the Closure Plan and possible environmental and social consequences of its implementation (Attachment 23) were discussed. The representatives of public organization of Krasnoarmeisky district "Ecology", urban and oblast Committees on Environmental Protection, Enterprises OJSC "Kaustic" and OJSC "Kaustic" have taken part in the meeting. The arrangements on realization of regular meetings with the representatives of public organizations Krasnoarmeisky and Kirovsky districts of Volgograd and inhabitants of neighboring settlements were made. A special interest can be shown by the inhabitants of the Svetloyarsky district of Volgograd oblast, on which territory section 2 of the pond-accumulator of OJSC "Kaustic" are located. The Enterprise has close enough contacts with public environmental association "Ecology".

Environmental Consequences of the Closure Plan Implementation

Besides the environmental effect related to closure of ozone depleting substance at OJSC "Kaustic", the positive environmental consequences of implementation of the given plan will be:

- termination of air emissions of pollutants related to ODS production;
- reduction of volumes of flushing wastewater and, as a consequence, reduction of technogenous load on the biological treatment facilities; and
- reduction of volumes of ODS-related solid industrial wastes arriving to the landfill.

Within the funds received for the Closure Plan implementation, the Enterprise plans to conduct reclamation of the closed landfill for storage of dangerous industrial wastes.

The negative environmental consequences of the Closure Plan implementation include a temporary increase of waste, both solid (1.7 tons of zeolite and 20 tons of silica gel), and liquid (alkaline and acid waste water, spent catalyst, liquid condensate), connected with dismantling and washing of the ODS equipment. However, EA has revealed, that the Enterprise is capable to manage this waste at available treatment facilities and landfills.

VIII. ENVIRONMENTAL MANAGEMENT PLAN AT THE CLOSURE PLAN IMPLEMENTATION

Mitigation measures. At implementation of the Closure Plan, the Enterprise is going to realize the following measures on the environment quality management at CFC-11/12 production:

- discharge of liquid condensate from the scrubber and washing of scrubber; the condensate in safe containers will be transported to the installation of reduction of different compounds for consequent sale or secondary use. The residues will be used by the Enterprise for production of roofing material;
- discharge of liquid alkaline waste from the reactor and its direction to section 2 of the pond-accumulator;

- collection of flushing water containing alkaline waste from the cleaning of industrial equipment for consequent direction to section 2 of the pond-accumulator;
- collection of acid flushing water formed during cleaning of equipment; it will be neutralized on-site by adjusting pH and directed to the biological treatment facility;
- removal of zeolite from absorbers in safe containers for storage, regeneration and further use; and
- removal of silica gel from methane cleaning absorbers; it will be stored in safe containers for regeneration and further use.

In addition to environmental aspects, the Plan includes such social aspects as obligatory employment of workers not required for ODS production shut down in successor production operations and other operations with the enterprise. During Closure, the enterprise will continue its present policy of regular information sessions with affected workers.

Within the framework of the Closure Plan preparation, the OJSC "Kaustic" should develop the justifying documentation (Plan of Organization of Operations and Environmental Assessment) and to submit it to the State Environmental Review. The issue of the conclusion of the state Environmental Review is a condition of coming into force of the Subgrant Agreement.

The indicated measures on environmental quality management are included into the Closure Plan, which will provide the integration of economic and nature protection activity of the Enterprise. The same purpose is also promoted by the List of Environmental Requirements (Attachment 26), designed by the Enterprise under the Closure Plan in line with the requirements of the Russian legislation.

Environmental monitoring. The ODS production closure monitoring at OJSC "Kaustic" is assigned to the State Committee on Environmental Protection of Volgograd oblast by the Order of Goscomecology No 306 dated June 07, 1999.

IX. ENVIRONMENTAL RISKS

The environmental risks at the Closure Plan implementation can arise at removal of waste for disposal – leakage from tank at an accident, as well as possible pollution of soils because of surface run off. However, these risks accompany all production at OJSC "Kaustic" and their removal is the responsibility of the Enterprise and inspecting services.

XI. CONCLUSIONS

The conducted environmental assessment of the Closure Plan at OJSC "Kaustic" allows to make conclusions that:

- sources of environmental impact of ODS production are completely revealed;
- measures included in the Closure Plan will allow the Enterprise to liquidate available sources of negative impact and to realize a number of nature protection measures;
- environmental consequences of the Closure Plan implementation are related to ODS production closure and to improvement of the environmental situation at the Enterprise and in Volgograd due to reduction of technogenous load on the environment;

- social consequences of the Closure Plan implementations related to the problem of employment of workers, occupied at ODS production, are resolved due to redistribution of the staff inside the Enterprise;
- Environmental Management Plan, designed within the framework of the ODS Production Closure Plan at OJSC "Kaustic" will allow Goscomecology of Russia to realize monitoring of the progress of realization of measures included in the Closure Plan.

XII. RECOMMENDATIONS

The Enterprise should finish preparation of the justifying documentation for closing the ODS production and to submit it to the State Environmental Review to the State Committee on Environmental Protection of the Volgograd oblast.

**ENVIRONMENTAL MANAGEMENT PLAN of the ODS PRODUCTION
CLOSURE PLAN AT OJSC "KAUSTIC"**

#	Measure	Description	Term of fulfillment
1.	Spent catalyst removal	Recovery of spent catalyst AlF_3 (class III of danger) from two reactors of synthesis (R-220a and R-220b), its removal in bulk in the closed truck for disposal on section 2 of pond-accumulator of OJSC "Kaustic". The records about the actual amount and removal should made according to the General Plant Instruction (Attachment). The Nature Protection Service of the Enterprise will monitor quality of underground water in the area of pond accumulator.	8/1/00
2.	Removal of condensate from a scrubber C222a	Removal of up to 50 t of liquid condensate (mixture of different chlorinated hydrocarbons polluted with dust of catalyst) by run off and washing of the capacity. It will be filled in safe containers and transported to installation of separation of different compounds for consequent sale or secondary use. The residues are used by the Enterprise for production of roofing material.	8/1/00
3	Removal of liquid alkaline waste from the reactor	Run off from 80 to 120 m ³ of liquid alkaline waste (class III of danger) for direction to section 2 of the pond-accumulator according to the rules of handling waste, set at the Enterprise.	8/1/00
4	Clearing the industrial equipment	<p>1. Collection of about 320 m³ of alkaline flushing water and removal them to section 2 of the pond-accumulator according to the rules of handling waste, set at the Enterprise.</p> <p>2. Collection of about 880 m³ of acid flushing water formed during cleaning the equipment. Water will be neutralized in the neutralization shop and directed to biological treatment facilities OJSC "Kaustic" with general plant stream of wastewater</p>	8/1/00
5.	Removal of a zeolite from absorbers (D-241a, D-241b)	Removal of 1.7 tons of zeolite will be made into safe containers for storage, regeneration and further use.	8/1/00

6.	Removal of silica gel from methane cleaning absorbers (D-501a, D-501b, D-501c and D-501d).	Removed 20 t of silica gel will be stored in safe containers for regeneration and further use.	8/1/00
7.	Consultation with public and workers of closed shops	Public consultations on closing will be held with local inhabitants (Krasnoarmeisky district of Volgograd) with engaging of representatives of local non-governmental organizations and Goscomecology of Volgograd. This should include informing on the course of Closure Plan implementation and reached environmental effects. The realization of regular meetings with workers of being closed shops will proceed to discuss their training for a new profession and further employment.	proceed
8.	Observance of the legislative requirements	<p>1. The Enterprise should submit the justifying documentation and environmental assessment of the Closure Plan to the Goscomecology of Volgograd for the State Environmental Review. The issue of the sanction of the State Environmental Review is a condition of coming into force of the Subgrant Agreement.</p> <p>2. The Enterprise should receive all necessary permits and licenses for disposal of waste related to closing of ODS production.</p>	9/1/00

**VERIFICATION of FULFILLMENT of the ENVIRONMENTAL MANAGEMENT
PLAN FOR ON CFC-11/12 PRODUCTION CLOSURE AT OJSC "KAUSTIC"**

#	Measure	Description
1	Spent catalyst removal	To study the waste exportation log-book of section 2 of pond-accumulator of OJSC "Kaustic" to check up removal of the spent catalyst. To inspect section 2 of pond-accumulator and to check up availability of the Permits of Goscomecology of Volgograd (Polling leaf). To study data of environmental monitoring, especially parameters of monitoring of underground water.
2	Removal of condensate from the scrubber	To check up safety of condensate storage. To see records of operations of separation of compounds from condensate and those of residue removal.
3	Removal of liquid alkaline waste	To study the "Log-book of Stationary Sources of Pollution and their Parameters" to check up removal and disposal of liquid alkaline waste. To inspect section 2 of the pond-accumulator and to check up availability of Permits of the Goscomecology of Volgograd (Polling leaf). To study data of environmental monitoring, especially parameters of underground water.
4	Cleaning the industrial equipment	To study records on pretreatment of wastewater and its removal to the biological treatment facility.
5.	Removal of zeolite from absorbers	To check up the storage of zeolite and records on its regeneration and secondary use.
6.	Removal of silica gel	To check up the storage of silica gel and records on its regeneration and secondary use.
7.	Consultations with public and workers of closed shops	To analyze the information on conducted public consultations on ODS production closure, including contacts (if necessary) with local government bodies, non-governmental organizations and staff.
8.	Social impacts	To analyze current records of staff employment of former CFC-11/12 production and its transfer to other productions.
9.	Observance of the rules of law	1. To check up availability of the conclusion of the State Environmental Review 2. To look through the permits related to CFC-11/12 production and any ODS banking. To consult with local representatives of Goscomecology concerning observance of conditions of the issued sanctions for former CFC-11/12 production and waste management facilities, used within the framework of its closing.