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COMITÉ EJECUTIVO DEL FONDO MULTILATERAL
PARA LA APLICACIÓN DEL
PROTOCOLO DE MONTREAL
Trigésima novena Reunión
Montreal, 2 al 4 de abril de 2003

PROPUESTA DE PROYECTO: INDIA

Este documento contiene los comentarios y la recomendación de la Secretaria del Fondo sobre la siguiente propuesta de proyecto:

Producción

- Eliminación gradual de CFC en el sector de producción: Programa anual de 2003 — Banco Mundial

DESCRIPCION DEL PROYECTO

1. El Banco Mundial presentó para que se aprobara en la 39ª Reunión el programa anual de 2003 para la puesta en ejecución del programa de eliminación gradual de CFC en el sector de producción en India, junto con el informe de verificación de la ejecución el programa de trabajo anual de 2002 (ambos documentos se adjuntan sin la porción de los datos). La presentación de este documento es en cumplimiento del acuerdo entre el Gobierno de India y el Comité Ejecutivo, que fue decidido en la 29ª Reunión.

Programa de trabajo para 2003

2. El programa de trabajo anual para 2003 comienza con un examen de la puesta en ejecución del programa de trabajo de 2002. El examen indica el logro del objetivo de reducción de CFC en 2002: la producción admisible de CFC en el país para 2002 se había establecido en 16,941 TM en el acuerdo (una reducción de 1,883 TM a partir del nivel de producción de 18,824 TM en 2001) y la producción actual para el año es de 16,890 TM, por debajo del objetivo fijado. De los EUA $6 millones que el Fondo desembolsó para el programa de trabajo de 2002, EUA $5.265 millones fueron pagados a las cuatro empresas en partidas conforme al avance hacia el logro del objetivo de reducción establecido para cada una de ellas y un saldo restante de EUA $0.585 millón se desembolsaría después de la verificación final de la producción de 2002. No hubo desembolsos del EUA $0.15 millón reservado para las actividades de asistencia técnica. La puesta en ejecución de las reducciones de producción está siendo administrada por un sistema de licencia de producción que recibe el apoyo de la Orden de cuotas de producción dictada por el Gobierno en noviembre de 1999.

3. La Segunda parte de la presentación describe el objetivo y las actividades del programa de trabajo de 2003. El limite de producción de CFC establecido en el acuerdo para 2003 es de 15,058 TM, lo que requiere una reducción de producción adicional de 1,832 TM del nivel de 16,890 TM en 2002. El objetivo es lograr mediante la aplicación del sistema de cuotas. Asimismo se trataría de finalizar la política de importación/exprtación de SAO que había sido presentada por el Gobierno para ser aprobada, preparar un plan de acción conjunto con la industria y el Gobierno para controlar el comercio ilegal y llevar a cabo el nuevo registro de productores de SAO y de concesionarios y usuarios. Además, el programa de trabajo da una lista de las actividades de asistencia técnica que deben llevarse a cabo en 2003, lo que incluye la capacitación, la operación de un sistema de gestión de información y actividades de concientizacion. El financiamiento que se solicita para el programa de trabajo de 2003 es de EUA $6 millones de los cuales EUA $5.85 millones se pagarán a las 4 empresas para que reduzcan su producción y EUA $0.15 millón se reserva para el programa de asistencia técnica. Además el Banco Mundial solicita EUA $450,000 como costo de apoyo relacionado al 7.5 % del programa de trabajo de 2003.

Informe de verificacion de la produccion para el ano 2002

4. La verificación se hizo en enero de 2003, y la llevó a cabo un nuevo equipo local de Deloitte Touche Tohmatsu India Private Limited y el Instituto Indio de Tecnología, de Delhi. El informe de verificación, tal como lo había solicitado la Secretaria, comienza con un resumen ejecutivo sobre los resultados generales de la verificación y luego se explaya sobre el proceso de los resultados de la auditoría para cada planta. Incluye detalles tales como un panorama de la planta, detalles de producción, relación de consumo de materias primas, licencias, consumo y adquisición de materias primas, pérdidas, análisis de muestras y otras cuestiones y cumplimientos. Finalmente como el informe utiliza el formato aprobado para la verificación de eliminación de producción de SAO, suministrando datos sobre el número de días de operación, consumo de materas primas y toneladas de producción de CFC.

COMENTARIOS Y RECOMENDACIONES DE LA SECRETARÍA

COMENTARIOS

Programa anual de 2003

5. La presentación suministra claramente el objetivo de producción de CFC que es coherente con el objetivo establecido en el acuerdo y los instrumentos de políticas destinados a asistir su logro. Hay un esfuerzo y compromiso continuos por parte del Gobierno para formalizar una política de importación y exportación de SAO en el ano del plan.

Informe de verificación de producción en 2002

Coherente con la Decisión 36/48 y las pautas aprobadas para la verificación de la eliminación de producción de SAO

6. El informe de verificación revisado presentado por el Banco Mundial, muestra una mejora significativa en el cumplimiento de las pautas aprobadas para la eliminación de la producción de SAO. No obstante, no se recibió hasta el 7 de marzo de 2003 justo antes del despacho de la documentación.

7. La Decisión 36/48 también solicita que el Banco Mundial "suministre información sobre el error del programa de asistencia técnica, específicamente la frecuencia con que se presenta la información financiera y la institución que realiza la auditoría". No obstante el Banco Mundial declaró que el proyecto se ejecutaba "conforme a las reglas corrientes del Banco y el Banco "examinó las prácticas de gestión financiera y adquisición del PNUMA para asegurar que cumplían con los requisitos del Banco Mundial." Esto no resuelve la cuestión de la solicitud de la decisión.

8. La Secretaria, conforme con la información que suministró al Comité Ejecutivo en su 36ª Reunión, no incluyó la parte de los datos del informe de verificación presentado a la 39ª Reunión. No obstante los datos podrían ponerse a disposición de cualquier miembro del Comité que así lo solicitara.

RECOMENDACIONES

La Secretaria recomienda que el Comité Ejecutivo pueda querer considerar:

1. La aprobación del programa anual para 2003 del programa de cierre de producción de CFC de la India al nivel de financiamiento solicitado de EUA $6 millones y los costos de apoyo asociado de EUA $450,000 para el Banco Mundial.

2. La solicitud al Banco Mundial de que presente los futuros informes de verificación a tiempo con el fin de facilitar el examen de los mismos por parte de la Secretaria.

3. La solicitud al Banco Mundial de que suministre información adicional sobre el error financiero del programa de asistencia técnica tal como lo establece la Decisión 36/48.

INDIA

CFC Production Sector Gradual Phaseout Project (ODS III)

2003 Annual Work Program

January 29, 2003

South Asia Environment and Social Unit
World Bank

INDIA

CFC PRODUCTION SECTOR
GRADUAL PHASEOUT PROJECT (ODS III)

CY2003 ANNUAL PROGRAM

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INDIA

CFC PRODUCTION SECTOR
GRADUAL PHASEOUT PROJECT (ODS III)

CY2003 ANNUAL PROGRAM

A. INTRODUCTION

Through the implementation of the CY2002 Annual Program of the *CFC Production Sector Gradual Phaseout Projec*t, India has met its 2002 CFC production quota level of 16,941 metric tons (MT).

In accordance with Decision 29/65 of the Executive Committee of the Multilateral Fund, the World Bank, as the implementing agency, is submitting an Annual Program for the period "1 January - 31 December 2003", for consideration at the March 2003 meeting of the Executive Committee. This Annual Program has been prepared in cooperation with the Project Management Unit (PMU) of the Ministry of Environment and Forests (MoEF), Government of India and the United Nations Environment Programme (UNEP).

This document verifies the successful implementation of the CY2002 Annual Program by India and details the planned program and activities for 2003. It is being submitted for approval and release of the fifth tranche of funds, amounting to US$ 6 million (including technical assistance component) for the implementation of the CY2003 Annual Program.

	Agreed Schedule		Actual		
Year	CFC Production not exceeding (MT)	Phaseout Amount (MT)	Verified CFC Production (MT)	Phaseout Amount (MT)	Annual Funding Level (US$ million)
1999	22,588	-	22,411	-	12.0
2000	20,706	1,882	20,407	2,181	11.0
2001	18,824	1,882	18,693	2,013	11.0
2002	**16,941**	1,883	**16,890**	1,934	6.0
2003	15,058	1,883			6.0
2004	13,176	1,882			6.0
2005	11,294	1,882			6.0
2006	7,342	3,952			6.0
2007	3,389	3,953			6.0
2008	2,259	1,130			6.0
2009	1,130	1,129			6.0
2010	0	1,130			6.0
Total Funding					**82.0**

B. CY2002 ANNUAL PROGRAM ACHIEVEMENTS

B.1 ODS Phase-out and Disbursement

CFC production in CY2002 amounted to 16,890 MT, against the quota of 16,941 MT, reflecting a reduction of 9.7% (1,803 MT) from the previous year. Disbursements to CFC producers in CY2002 amounted to US$ 5.265 million, reflecting 90% of the CY2002 tranche of the US$ 5.85 million, allocated for enterprise compensation. There was no disbursement to UNEP in CY2002 for the implementation of the TA component.

Year	Production Phase-out		Grant Tranches (US$ m)	
	Target (MT)	Achieved	Allocation (US$ million)	Status of Disbursements
2002	16,941	The independent Audit Teams appointed by MoEF and WB separately verified CFC production in CY2002. Total production of CFCs was ascertained by both teams as 16,890 MT.	5.85	US$ 5.265 million was disbursed to the beneficiary enterprises ▪ 60 % was disbursed in May (US$ 3.51million) ▪ 30 % was disbursed in December (US$ 1.755million) ▪ *The last 10% (US$ 0.585 million) is to be disbursed after final verification of CY2002 production is completed .*

B.2 Enterprise-Level CFC Production Phaseout targets (MT)

At the enterprise level, the performance with regard to meeting the quota allocations for CY2002 is summarized in the following table.

Name of company	(Metric Tons)	
	Quota	Achieved
SRF Limited	4,982	4,973
Gujarat Fluorochemicals	6,050	6,037
Navin Fluorine (Mafatlal)	4,464	4,440
Chemplast Sanmar Limited	1,445	1,440
TOTAL	**16,941**	**16,890**

** No quota trading was done between the enterprises in 2002*

The following table reflects the quota achievements by the four beneficiary enterprises between 1999 and 2002:

Name of company	1999 (Metric Tons)			2000 (Metric Tons)			2001 (Metric Tons)		2002 (Metric Tons)	
	Quota	Quota adjusted for trades	Achieved	Quota	Quota adjusted for trades	Achieved	Quota	Achieved	Quota	Achieved
SRF Ltd	6,644	6,271	6,267	6,090	6,146	6,053	5,536	5,518	4,982	4,973

Gujarat Fluorochem	8,067	7,482	7,415	7,395	7,482	7,352	6,722	6,615	6,050	6,037
Navin Fluorine	5,951	7,335	7,244	5,455	5,249	5,179	4,960	4,959	4,464	4,440
Chemplast Sanmar Ltd	1,926	1,500	1,485	1,766	1,829	1,823	1,606	1,601	1,445	1,440
TOTAL	22,588	22,588	22,411 (99%)	20,706	20,706	20,407 (98.5%)	18,824	18,693 (99%)	**16,941**	**16,890 (99.7%)**

B.3 Policy Measures

As detailed in CY2002 Annual Program, number of policy measures were adopted and implemented during the course of the year as summarized below.

Legislation	**Related Activity**	**Date**
Production Quota Regulation	Production Quota licenses issued for 2002 Receipt of quarterly reports on CFC production by beneficiary enterprises	January 17, 2002 Information received from enterprises
Quota trading	Receipt of annual trading of quotas from enterprises	No annual quota trading reported.
Trade Regulations	Draft guidelines for import and export of ODS including CFCs has been prepared and submitted for administrative approval.	October 2002
Control of illegal trade	A committee consisting of other line ministries has been constituted to look into the matter of illegal trade	November 2002
Review of ODS Rules, 2000	Rules for registration and phase out of CFC have been reviewed.	Completed Dec 2002.
Implementation of ODS Rules (Regulations)	Renewal of registration of CFC producers Renewal of Registration of CFC stockists and dealers Review of import -export licenses	April 2002 April 2002 March 2002
	Registration of additional ODS using enterprises, dealers, stockists etc.	July 2002

B.4 Technical Assistance Activities

To ensure the timely establishment of the PMU and to implement the technical assistance activities, the following steps have been taken :

- From February 2001 until March 2002, the PMU was staffed by professional staff contracted from a management consulting firm, S. B. Billimoria & Co. In March, a Government official was appointed as the Project Coordinator of the PMU. Upon his

subsequent resignation in August 2002, the MoEF appointed the Joint Director of the Ozone Cell MOEF as Project Coordinator. The other staff of the PMU remain as originally recruited in CY2001.

- The PMU was registered as a Society under the Society Registration Act, 1860 in December 2001. To widen its scope of activities, the society was re-registered in July 2002, and is now officially called the Project Management Unit for phaseout of Ozone Depleting Substances (ODS) in India.

Key activities undertaken by the MoEF as indicated in the Annual Program CY2002 are detailed in table below :

Activity	**Key Actions and Status**	**Target Dates**	**Date Completed/ New Target date**
Awareness of ODS phaseout	**Monitor and review implementation of national level public awareness activities being undertaken by Communications Agency** Hindustan Thomson (HTA) was selected out of four shortlisted agencies to implement the strategy. The contractual agreement was signed between the PMU and HTA in August. The first national print media campaign was launched on Ozone Day in all the regional languages. The next advertisement campaign was launched in November 2002. Information dissemination organized during exhibitions related to the Climate Change summit and national Trade Fairs.	2002	Completed
	Organized and implemented public awareness workshops in the 11 states and Union Territories Workshops were held in 7 states and 4 UTs. (Andhra Pradesh, Uttar Pradesh, Haryana, Goa, Mizoram, Tripura, Himachal Pradesh and Chandigarh, Delhi, Dadra & Nagar Haveli, Pondicherry, Daman & Diu).	June 2002	August – Dec 2002
	Develop regional action plans for networking based on feedback at state level workshops States have been requested to submit state-specific ODS phaseout plans and action plans for implementing ODS Rules, training of officials and implementation of ODS phase out in servicing and chiller sector. The regional action plans will be finalized on completion of the national workshop.	April 2002 February 2002	*Sept 2003*
	Organize national follow-up workshop with state focal points on progress of implementation of regulations and other ODS phase-out activities.		*February 2003*
	Develop a concept note on establishment of national networking system at zonal level		*Sept 2003*

Activity	Key Actions and Status	Target Dates	Date Completed/ New Target date
	A Draft concept note has been prepared which will be further developed in consultation with IAs. **Develop and disseminate technical information on CFC and ODS phase-out** A bi-monthly technical information bulletin (VATIS) has been published in collaboration with APCTT and is circulated to 2000 targeted users.		Ongoing
MIS Implementation	**Database maintenance and reporting** **Develop and implement online quarterly data reporting by CFC producing enterprises**. Training for the enterprises on data entry conducted in August 2002 and enterprises have commenced online data entry. User manual with screen shots sent in September to enable them to start online data entry, along with login and password. **Develop and implement Internet based data retrieval and reporting system.** All reports are now web-based **Implementation of information system for facilitating chiller sector phaseout strategy** *(to be linked with WB chiller study database)* Data on chiller sector received in Dec. 2002 and to be converted into a format which can be aligned with existing MIS. **MIS module replication for CFC production phaseout projects in other A5 countries.** Final Guidelines Manual completed.	2002 July 2002 June 2002 June 2002 August 2002	Ongoing Completed Completed *2003* Completed
Training/ Workshops	**Training of PMU staff members on CY2002 Annual Program and MIS implementation.** A need based training module has been developed for ongoing training. **Workshop for CFC producers on implementation issues faced in CY2001** **Training of enforcement officers** One workshop organized at Kolkata for enforcement officers (at trainer level). Training modules and materials have been developed and resource persons for further training have been identified. **Capacity building of state level nodal officers on**	March 2002 March 2002 June-October 2002	Completed March 2002 Completed August 2002 December 2002

Activity	Key Actions and Status	Target Dates	Date Completed/ New Target date
	Montreal Protocol implementation activities It is proposed that this be clubbed with National follow up workshop with state focal points on progress of ODS phaseout activities. **Interactive sessions with small and medium scale enterprises institutes (SISIs) and beneficiaries on ODS phaseout.** **Preliminary discussions with CFC producers on Environment management Plan (EMP) and closure procedures** As the enterprises are now producing HCFC-22, the issue of dismantling and closure of existing plants is not of immediate concern to enterprises.	June-October 2002 May-Nov 2002 April-October 2002	*Jan/Feb 2003.* *June 2003* Activity to be deferred
Operations of PMU	**Implement ongoing PMU operations** **Half-yearly technical audits of CFC producing enterprises**	2002 June 2002 & January 2003	On-going Completed
Studies	Studies to be chosen and initiated in 2002: **i) Study on Market based Instruments** Final report received **ii) Market study on preparedness of refrigeration food processing industry** Consulting firm recruited in November and study being undertaken. **iii) Assessment of demand supply of ODS** Administrative procedures in process for hiring consulting firm. Study to be initiated when this is complete.	August 2002 November 2002	Completed *April 2003* *June 2003*
Other activities	Ongoing monitoring of implementation of CFC production phaseout project. **Preparation of draft CFC import-export policy** Draft ODS import and export policy document prepared and circulated for comments. Final draft has been submitted for administrative approval in October.	2002 March 2002	Ongoing *June 2003*

B.5 Monitoring and Reporting Activities

The reporting mechanism is detailed below:

Report	Submitted by	Target Date	Comments
Progress report	UNEP	July 2002	Detailed reports received from PMU and reviewed

		January 2003	during supervisions mission in September 2002
Financial Audit	UNEP	June 2002	Unsatisfactory and incomplete report received. To be resubmitted by UNEP
Disbursement Report	IDBI	July 2002 January 2003	Satisfactory reports received
Financial Audit	IDBI	September 2002	Satisfactory report received October 2002
Performance Audit	Auditor/ MoEF	January 2002	Report received, March 2002
Technical Audit	Auditor/ MoEF	July 2002 January 2003	Satisfactory reports received
Technical Audit	Auditor/ WB	January 2003	Satisfactory reports received
Supervision report	WB	January 2002 August 2002 January 2003	Supervisions were undertaken in January and October 2002. Satisfactory reports prepared and disseminated. Next supervision postponed to March 2003

C. CY2003 ANNUAL PROGRAM: OBJECTIVES AND ACTIVITIES

C.1 ODS Phase-out Objectives and Disbursement Allocation

The objective of the CY2003 Annual Program is to ensure that CFC production does not exceed **15,058MT**. The Bank, on behalf of the Government of India, is requesting the release of the fifth installment of **US$ 6 million** to achieve this objective, which is to be disbursed to the following categories:

- US$ 5.85 million (excluding will be disbursed to the four beneficiary CFC producing enterprises for reducing production levels in accordance with the annual production quota established for CY2003; and

- US$ 0.15 million for implementation of the TA component.

C.2 Enterprise-Level CFC production phase-out targets (MT)

In accordance with the Production Quota Order, the four CFC producers have submitted applications for the CY2003 quota. Given that CFC production is well within the CY2002 quotas, quotas will be issued to each enterprise by January 31, 2003, as follows:

Name of company	**2003 Quota (MT)** (before trades)
SRF Limited	4429
Gujarat Fluorochemicals	5377
Navin Fluorine (Mafatlal)	3968
Chemplast Sanmar Limited	1284
Total	**15,058**

C.3 Policy Measures

Activity	**Key Actions**	**Target Dates**
Production Quota license	Applications for a CY2003 Production Quota license received from all four CFC producers will be examined	No later than January 31, 2003.

	by MoEF for issuance of licenses.	
Monitoring of illegal trade	National Action plan will be prepared to monitor and control illegal trade. The newly constituted Committee will provide recommendations to the Empowered Steering Committee, which is the apex body for policy and implementation decisions regarding the Montreal Protocol in India.	September 2003
Registration of producers	Applications submitted for renewal of each CFC producer, as required by the Ozone Rules, will be examined by MoEF and processed for renewal of registration.	By April 2003.
Implementation of other provisions of ODS Rules.	1. Applications for registrations from sellers, stockists, dealers and buyers of CFC will be examined and submitted to Ozone Cell, MOEF. 2. Applications for import and export of CFCs will be examined by PMU. Based on PMU's recommendation, the Ozone Cell will submit recommendations for issuance of bulk licenses for export by CFC producers and licenses for import to DGFT. DGFT will track use of bulk licenses through quarterly reports from producers.	June 2003 Throughout the year for import and export license, as and when received
Review of existing regulation development of new policy measures	• A review of the existing Rule has been made and a few amendments to these Rules have been proposed. Necessary amendment of Rules will be proposed, if necessary • Finalization of Export and Import Policy.	December 2003 June 2003

C.4 Technical Assistance Activities

Proposed technical assistance activities to be undertaken during 2003 are summarized in the following table. These activities have been decided based on the priorities of the Government of India with regard to national ODS phase out :

Activity	**Key Actions**	**Target Dates**	**Estd Budget (US$ '000)**
Awareness of ODS phaseout	▪ Monitoring of public awareness activities (School Package, Television spots, Press Ads, short films) for ODS users as undertaken by Communications Agency ▪ Organize and implement public awareness workshops in remaining 3 states (Manipur, J&K and Jharkhand) and 2 UT (Andaman & Nicobar and Lakshadeep) ▪ Finalize a concept note on establishment of national networking system at zonal level, based on feedback received from state level workshops	2003 By June 2003 Sept 2003	118
Training/ Workshops	▪ A National Follow-up capacity building workshop with State focal points ▪ Regional workshops to review the implementation and enforcement of ODS Rules. This will be a	Jan/Feb 2003 By Sept 2003	106

Activity	Key Actions	Target Dates	Estd Budget (US$ '000)
	training and awareness programme for officials of State Government, Pollution Control Board, local authority and other stakeholders		
	▪ 5 training workshops for customs & excise para-military forces, judicial authorities and government departments. Equipment to be supplied to customs officials of port and customs check point, para-military forces, placed in borders (such as BSF and coast guards).	Feb - Dec 2003	
	▪ DCSSI to organize a national interactive session for all 28 small and medium scale enterprises institutes (SISIs) and their beneficiaries on ODS phaseout. This session will include issues such as registration of small units under ODS Rules and implementation and monitoring of ODS phase out projects	June 2003	
	▪ 2 capacity building workshops to be held by NACEN for training of trainers at field level. Target group are NACEN officials, key ministries and agencies (DGFT, MOEF)	Sept 2003	
Operations of PMU	▪ Half-yearly technical audits of CFC producing enterprises	July 2003 January 2004	117
	▪ Meetings with CFC producers to initiate the follow up action on suggestions/recommendations from audit findings.	March 2003	
	▪ Monitoring of CFC production phaseout project and other ODS phase out projects in other sectors	Ongoing	
MIS Operation	▪ Updation of database and MIS	2003	5
	▪ A state-of-art report from 1999-2002 on ODS phase out program to be prepared	By Dec 2003	
	▪ In-house development of database of import-export data on ODS, based on license, exemption certificates etc.	By Dec 2003	
	▪ Implementation of information system for facilitating chiller sector phaseout strategy	September 2003	
Studies	▪ Development of low-cost technology, equipment for charging of non-ODS refrigerant and for recovery, recycling and reclamations in servicing sector. (A proto-type equipment will be developed. Technology for conversion of ODS to non-ODS or destruction will also be attempted.)	To be initiated by June 2003	60
	▪ Assessment of demand and supply of substitutes and impact on conversion activity.	To be initiated by June 2003	
	▪ Completion of Market study on preparedness of refrigeration food processing industry	April 2003	
	▪ Completion of study on assessment of demand supply of ODS	June 2003	

Activity	Key Actions	Target Dates	Estd Budget (US$ '000)
Total			**406**

C.5 Monitoring And Reporting Activities

The monitoring and reporting schedule for CY2003 will be undertaken in accordance with the reporting mechanism specified in Section B.5 above.

ANNEX III

ANNUAL PRODUCTION PHASEOUT TARGETS AND ANNUAL GRANT TRANCHES

CY	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Production ceiling (ODP MT)	22,588	20,706	18,824	16,941	15,058	13,176	11,294	7,342	3,389	2,259	1,130	0
Grant Tranche (US$ million)	12.0	11.0	11.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	0
Of which: TA	0.29	0.27	0.27	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.12	0

ANNEX IV

MoEF Letter Confirming ODS Production Levels

CFC PRODUCTION VERFICIATION REPORT FOR THE CALENDAR YEAR 2002

JANUARY 2003

Executive Summary

CFC production sector gradual phaseout project for India (ODS III) is aimed at assisting the Government of India (GOI) to meet its international obligation under the Montreal Protocol, which requires India to phaseout production of Chlorofluorocarbons (CFCs) by 2010. The Project was approved by the Executive Committee of the Multilateral Fund in 1999. The project provides for a gradual phaseout of CFC production, ahead of the specified time frame provided by the Montreal Protocol.

There are four beneficiary enterprises under ODS III project, namely:

- Chemplast Sanmar Limited.
- Gujarat Fluorochemicals Limited.
- Navin Fluorine Industries.
- SRF Limited.

The disbursement of funds under this project to these beneficiary enterprises is contingent on independent verification of CFC production by these enterprises and confirmation that the production levels are within the annual quota allocated.

The verification team from Deloitte Touche Tohmatsu India Private Limited along with Indian Institute of Technology, Delhi, visited the four CFC producing enterprises between 6 – 11 January 2003 to perform verification of CFC production of the year 2002.

The verification methodology for CFC production has been detailed later in this report. The verification was carried out based on data provided by the enterprises and the relevant operational and statutory records maintained by the enterprises. Random checks and laboratory tests were also carried out for verification.

Based on the above tests, results of the CFC production verification for the year 2002 is given in the table below.

Particulars	Chemplast Sanmar Limited	Gujarat Fluorochemicals Limited	Navin Fluorine Industries	SRF Limited	Total
Quota	1445	6049	4464	4982	16940
Opening Stock	48	42	202	161	453
Gross Production	1444	6091	4494	5049	17078
Losses	4	54	54	76	188
Net Production	1440	6037	4440	4973	16890
Acquired Stock	0	53	28	45	126
Sales	1462	6093	4543	5112	17210
Closing Stock	26	39	127	67	259

Particulars	Chemplast Sanmar Limited	Gujarat Fluorochemicals Limited	Navin Fluorine Industries	SRF Limited	Total
Percentage of Quota	99.65%	99.80%	99.46%	99.82%	99.70%

The net saleable production level of CFC production for the calendar year 2002 aggregates to 16,890 MT.

N.Balaji
Senior Manager

Prof. R.S.Agarwal
Professor – Mechanical Engineering
Indian Institute of Technology, Delhi

1. Background

The manufacture and use of CFCs is controlled under provisions of Montreal Protocol. As substances categorized under Annexure A Group I, production and consumption of these substances have to be completely phased out by Article 5 paragraph 1 parties by 1 January 2010. India is a signatory to the Montreal Protocol and CFC production is regulated by the Ozone Cell, Ministry of Environment and Forests.

There are four CFC producers in India, namely:

- Chemplast Sanmar Limited.
- Gujarat Fluorochemicals Limited.
- Navin Fluorine Industries.
- SRF Limited.

REGMA is an association of these CFC producing enterprises and represents the interests of CFC producing enterprises.

CFC production sector gradual phaseout project for India (ODS III) is aimed at assisting the Government of India (GOI) to meet its international obligation under the Montreal Protocol, which requires India to phaseout production of Chlorofluorocarbons (CFCs) by 2010. The Project was approved by the Executive Committee of the Multilateral Fund in 1999. The project provides for a gradual phaseout of CFC production, ahead of the specified time frame provided by the Montreal Protocol. World Bank is the implementing agency which monitors implementation of this project. Funds are disbursed through Industrial Development Bank of India (IDBI), which is the financial intermediary.

CFC production control, as per the above agreement, is implemented through a Quota Order issued by the Ozone Cell. The production levels of each of the enterprises for a particular year are defined through this quota order and the enterprises monitor and control CFC production based on these CFC production quota. Production is defined as “Net saleable production”, this definition having been agreed between REGMA, MoEF and the Ozone Cell in January 2001.

2. CFC production process

All four enterprises adopt the same manufacturing process for producing CFCs. Carbon tetrachloride (CTC) and Anhydrous hydrogen fluoride (AHF) or hydrogenfluoride (HF) are reacted in the presence of antimonychlorofluoride catalyst. This reaction results in a mixture of CFC-11 and CFC-12, commonly referred to as CFC crude. The crude is distilled to separate CFC-11 and CFC-12. Each plant has minor differences in plant layout and raw material manufacturing or procurement process.

One of the enterprises, Navin Fluorine Industries, produces CFC-113. The raw materials used for CFC-113 are perchloroethylene (PCE), Chlorine and HF. However, this substances is produced in small quantities compared to CFC

production. For verification, CFC-113 production is considered to be a part of the CFC production quota.

HCFC-22 is produced by a process similar to CFC production, in which chloroform (CFM) and HF are reacted. In India, all plants that produce CFCs are designed to produce HCFCs. Such change in production is referred to as "swing operation".

3. Verification Methodology

The data examined include:

- Raw material purchase and issues records
- Production logs and production records
- Stock transfer and sales records
- Process parameter records
- Quality control analytical records
- Records prepared for excise authorities

Depending upon the operational pattern of the plant, dates were selected at random for both CFC and HCFC production periods. The production log books and laboratory and analytical records were correlated for the sample days. Further, samples from the existing stocks were taken for vapor pressure and gas chromatographic analysis.

4. Observations and results

The results of verification process for the enterprises are presented in the sections below.

CHEMPLAST SANMAR LIMITED

Enterprise	Chemplast Sanmar Limited
Office Addresses	8 Cathedral Road, Chennai – 86. Tel No. 044-8273333 Fax No. 044-
Plant Address	Plant No.1, Mettur Dam
Contact Person	V. Ramachandran Executive Vice President
CSL Personnel:	S.Vasudevan Palaniappan
Verification Team:	Mr. N.Balaji/Dr.R.S.Agarwal/Mr. Girish
Date:	7 January 2003

Plant overview

CFC and AHF production facilities in the plant were established in 1988 on an existing CSL site at Mettur Dam, Tamil Nadu, India. In addition to CFCs, CSL produces other chemicals at their facility in Mettur Dam. CTC and CFM are procured from the neighbouring site. AHF is procured from a domestic supplier.

The plant is a swing plant i.e., is capable of producing CFCs and HCFCs. While the reactors for CFC and HCFC production are different, the down stream purification and distillation process is common for CFC and HCFCs. For achieving the swing, the raw material feeds for one product are stopped, purification and distillation systems are purged and raw material feed from the other reaction system are started.

Production details

A summary of production of CFCs of CSL is given below.

Production quota for the year 2002 *(Government Order dated 17 January 2002)*	**1445 MT**
Production quota traded in 2002	Nil
Plant operation days - CFC-11/12 - HCFC-22 - Not operating	 231 92 42
Production of CFCs - CFC-11 - CFC-12	**1440 MT** 284 MT 1156 MT
Percentage of quota used	**99.66%**

Raw material consumption ratio

	CFC-11	**CFC-12**
Carbontetrachloride (tons/ton of product)	1.288	1.485
Hydrogenfluoride (tons/ton of product)	0.184	0.392

The details of the production of CFCs, as per Decision 32/70, is presented in Annexure.

Licenses

CSL has obtained license from Ozone Cell for production of CFCs at their plant. The license is valid upto 18 October 2003. The clearance from State Pollution Control Board (SPCB) was valid upto 31 March 2000. Though a new application dated 21 March 2002 has been filed with the SPCB, the renewal has not been yet been received. CSL informed that SPCB has not cleared their application as it requires additional measures such as waterharvesting, afforestation etc. to be taken by industrial units in this area and CSL has not implemented these measures. However, CSL informed that SPCB has permitted them to produce different products without renewal.

Raw material procurement and consumption

Raw materials consumed by the CFC production plant include CTC and HF. While CTC is consumed for CFC production only, HF is consumed for production of CFCs and HCFC-22. CTC is produced at another unit of CSL. HF is procured from TANFAC in containers. The raw materials are stocked at the CFC production plant.

Total CTC consumption for the year 2002 aggregates to 2096 MT. Of this, 2083 MT was consumed for CFC production and about 13 MT was used during the months of February, July, October and December in 2002 as a cleaning agent for cleaning distillation columns in the plant.

Total HF consumption aggregates to 721 MT. Of this, 216 MT was consumed for HCFC-22 production and 505 MT was consumed for CFC production.

Losses

CFC production as recorded in the main product storage tanks is treated as gross production. CFC filled into cylinders is treated as net production. The difference between the above is treated as filling losses. In the year 2002, CSL has reported 0.605 MT of CFC-11 and 2.957 MT of CFC-12 as filling losses. The losses of CFCs in CSL are low as filling section has a back suction system, which circulates the excess gas into production operations.

Sample analysis

Samples from domestic and HCFC-22 export cylinders were taken for analysis. While gas chromatographic analysis was carried out for the sample from domestic cylinder, pressure test was carried out on both the domestic and export cylinders.

On a sample basis, the production of CFCs and HCFCs were checked for:

- raw material inputs,
- production logs,
- storage logs, and
- quality control test report records.

The sample included 3 days of HCFC-22 production and 2 days of CFC-12 production distributed in different months during the year.

The results of such sample verfication were found to be in order.

Others

- During the year 2002, no stock returns or extraordinary losses or repurchase of smuggled CFCs into the country, were reported by CSL.

- The specific consumption of CTC and HF for CFC production for the last four years is given in the table below.

Particulars	1999	2000	2001	2002
CTC for CFC-11/12	1.40	1.36	1.41	1.45
HF for CFC-11/12	0.33	0.32	0.34	0.35

CSL has a higher specific consumption norm for CTC and this, according to CSL, is primarily due to higher levels of recycling of CFC-11 to produce CFC-12 and choking problems encountered in the distillation column. Towards this, CSL has taken corrective actions in November 2002, which has in turn translated to lower specific consumption norms for CTC.

- Except for regular maintenance in the distillation columns to eliminate choking, no modifications/additions were made in the plant.

- CSL uses "Metron" and "Metrosol" brand name for CFC-11, CFC-12 and HCFC-22 sales in the domestic market. For the export market, the company uses generic names i.e., R-11, R-12 and R-22.

Compliance

- With production of 1440 MT of CFCs in the year 2002 against a quota of 1445 MT for the year 2002, CSL is in compliance with the quota of CFC production.

NAVIN FLUORINE INDUSTRIES

Enterprise	Navin Fluorine Industries
Office Addresses	Bhestan, Surat – 395023. Tel:0261-8690325-29 Fax:0261-8690288
Plant Address	-do-
Contact Person	P.Roy Chowdhury General Manager – Finance and Accounts (Chemicals)
NFI Personnel:	D.S.R.Raju M.G.Nakrani P.A.E.S.Srinivas
Verification Team:	N.Balaji/ Dr.R.S.Agarwal/ Nandan Jhaveri

Date: 9 January 2003

Plant overview

NFI have two separate production units, both capable of swing operation between CFCs and HCFCs. The first unit was set up in 1967 at Surat, Gujarat, India. NFI informed that given the low level of requirement of CFCs compared to their production capacity, the lines are separately maintained for CFCs and HCFCs. AHF is produced on site for CFC/HCFC production and for sale. CTC and CFM are purchased from both domestic and import sources.

CFC-113 is produced in small quantities in a separate facility at NFI. Perchloroethylene and AHF are key raw materials used for producing CFC-113. Some of CFC-113 is isomerised to CFC-113a and this CFC-113a is used for producing certain other chemicals in their facility.

Production details

A summary of production of CFCs of NFI is given below.

Production quota for the year 2002 *(Government Order dated 17 January 2002)*	**4464 MT**
Production quota traded in 2002	Nil
Plant operation days - CFC-11/12 - CFC-113 (Crude production) - HCFC-22	 156.833 17.462 Not Available
Production of CFCs - CFC-11 - CFC-12 - CFC-11/12 mixtures - CFC-113/113a	**4440 MT** 836 MT 3496 MT 73 MT 35 MT
Percentage of quota used	**99.45%**

Raw material consumption ratio

The raw material consumption ratio for CFC-11 and CFC-12 are given below.

	CFC-11	**CFC-12**
Carbontetrachloride (tons/ton of product)	1.180	1.341
Hydrogenfluoride (tons/ton of product)	0.164	0.368

The raw material consumption ratio for CFC-113 (crude) is given below.

Hydrogenfluoride (tons/ton of product)	0.467
Perchloroethylene (tons/ton of product)	0.993

The details of the production of CFCs, as per Decision 32/70, is presented in Annexure.

Licenses

NFI has obtained Gujarat State Pollution Control Board Clearance for production of CFCs. They have a license from Ozone Cell as required under the Ozone Rules, 2000 for production of CFCs, which is valid upto 18 October 2003.

Raw material procurement and consumption

Raw materials consumed for production of CFCs is given in the table below.

Products	**Raw materials consumed**
CFC-11	Carbon tetrachloride Hydrogen fluoride
CFC-12	Carbon tetrachloride Hydrogen fluoride
CFC-113	Hydrogenflouride Perchloroethylene Chlorine

Note: For production of pure CFC-113 and CFC-113a, crude CFC-113 is used.

NFI produces AHF in their own premises. They procure CTC from domestic and international suppliers. Perchloroethylene is procured from domestic and international suppliers and chlorine are procured from domestic suppliers. The raw materials are stocked at the production plants and at the port, in case of imported raw materials.

Total CTC consumption for the year 2002 aggregates to 5765 MT. Of this, 1031MT was consumed for CFC-11 production and 4734 MT was consumed for CFC-12 production. In addition, NFI has also consumed 28 MT of CTC for consumption for cleaning of cylinders.

NFI has reported 65 MT of CTC losses in transshipment, handling and loss in accidents and this was verified against the surveyors report. These losses include loading losses, losses during handling at port and filling losses. NFI informed that losses upto about 1% of the imports do occur during transportation and transfer of CTC.

Total HF consumption for different products by NFI is given in the table below.

Products	**HF consumption MT**
CFC-11	142.970
CFC-12	1298.130
CFC-113	18.859
HCFC-22	1452.700
Others	6850.222
Total	**9762.881**

Losses of finished products

CFC production as recorded in the main product storage tanks is treated as gross production. CFC filled into cylinders is treated as net saleable production. The difference between the above is treated as filling and handling losses. NFI measures and reports process losses on a monthly basis.

In the year 2002, NFI has reported 22 MT of CFC-11 and 32 MT of CFC-12 as filling and handling losses. This translates to losses of 2.44% for CFC-11 and 0.91% for CFC-12, respectively. NFI informed that higher percentage loss for CFC-11 is primarily due to the filling of CFC-11 drums.

No losses have been reported in production of CFC-113.

Sample analysis

Samples from domestic and HCFC-22 export cylinders and HFC-134a repacked cylinders were taken for analysis. For all the three samples, analysis through gas chromotograph and pressure test were carried out.

On a sample basis, the production of CFCs and HCFCs were checked for:

- raw material inputs,
- production logs,
- storage logs, and
- quality control test report records.

The sample included 6 days of HCFC-22 production and 2 days of CFC-12 production distributed in different months during the year. Production records of CFC-113 for both purification and production of CFC-113a were also reviewed.

The results of such sample verfication were found to be in order.

Others

- During the year 2002, NFI procured 15 MT of CFC-12 from CSL. No specific commercial or other reasons were provided by NFI. NFI informed that this was an “inadvertent purchase” made by their Delhi office.

- The specific consumption of CTC and HF for CFC production for the last four years is given in the table below.

Particulars	**1999**	**2000**	**2001**	**2002**
CTC for CFC-11	1.174	1.181	1.184	1.180
CTC for CFC-12	1.346	1.349	1.342	1.341
HF for CFC-11	0.163	0.163	0.166	0.164
HF for CFC-12	0.370	0.365	0.367	0.368

The current year’s consumption norms are in line with past trends.

The specific consumption of HF and PCE for CFC-113 (crude) for the years 2001 and 2002 are given in the table below.

Particulars	2001	2002
HF for CFC-113	0.426	0.467
PCE for CFC-113	1.110	0.993

- Except for regular maintenance, no modifications/additions were made in the CFC production plant. NFI however mentioned that there were modifications made in their other production facilities (i.e., non-CFC chemicals) during the year 2002.

- Due to lower levels of production of CFCs and HCFCs, separate lines are maintained for producing CFCs and HCFCs and separate production logs are separately maintained for CFCs and HCFCs.

- NFI uses “Mafron” brand name for CFC-11, CFC-12, CFC mixtures, CFC-113 and HCFC-22 sales in the domestic market and export markets.

- NFI has reported production of CFC-113 as given in the table below.

Products		Figures in MT
Production of CFC-113 pure	A	9.005
Add: Production of CFC-113a	B	31.359
Less: Issues of CFC-113 crude from production of the year 2001 for production of CFC-113 pure as given above	C	(5.046)
Total production	A+B-C	35.318

Crude CFC-113 produced during the year 2002 aggregates to 40 MT. If this is considered as CFC production, as crude is subject to refinement or isomerisation, the total CFC production of NFI aggregates to 4445 MT, which is below the allocated quota of 4464 MT. ***It is recommended that the crude production of CFC-113 be considered as net production for the purposes of CFC production verification.***

Compliance

- With production of 4440 MT of CFCs in the year 2002 against a quota of 4464 MT for the year 2002, NFI is in compliance with the quota of CFC production.

GUJARAT FLUOROCHEMICALS LIMITED

Enterprise	Gujarat Fluorochemicals Limited
Office Addresses	ABS Towers, 2nd Floor, Old Padra Road, Vadodara – 390 007. Tel:0265-2330057. Fax:0265-2310312.
Plant Address	Survey no. 16/3, 26, 27, Ranjit Nagar – 389 380.
Contact Person	Deepak Asher Vice President – Corporate Finance
GFL Personnel:	D.K.Sachdeva Joseph Titus Naganath K. Iyer Rajendra Gujjar
Verification Team:	N.Balaji/ Dr.R.S.Agarwal/ Nandan Jhaveri
Date:	10 January 2003

Plant overview

Production of AHF, CFCs and HCFCs was established in1989 on a green field site in a rural area in Gujarat, India. All AHF is produced insite for consumption and CTC and CFM were purchased from domestic producers and international suppliers. CFC and HCFC plant has a single reactor feeding into a single purification / distillation system. The reactor is connected to two catalyst tanks, one for CFC catalyst and the other for HCFC catalyst. For changing from CFC production to HCFC production, feed for CTC and AHF are stopped, the catalyst is transferred to the respective holding tank and the system is purged.

Production details

A summary of production of CFCs of GFL is given below.

Production quota for the year 2002 *(Government Order dated 17 January 2002)*	**6050 MT**
Production quota traded in 2002	Nil
Plant operation days - CFC-11/12 - HCFC-22	 111 206
Production of CFCs - CFC-11 - CFC-12	**6037 MT** 821 MT 5216 MT
Percentage of quota used	**99.79%**

Raw material consumption ratio

The raw material consumption ratio for CFC-11 and CFC-12 are given below.

	CFC-11	**CFC-12**
Carbon tetrachloride (tons/ton of product)	1.162	1.320
Hydrogen fluoride (tons/ton of product)	0.161	0.365

The details of the production of CFCs, as per Decision 32/70, is presented in Annexure.

Licenses

GFL was requested to provide copies of GSPCB consent order and license for production of CFCs as required under the Ozone Rules, 2000. GFL informed that they would communicate the same through REGMA. Ozone Cell has issued a license to GFL, which is valid upto 18 October 2003.

Raw material procurement and consumption

Raw materials consumed for production of CFCs is given in the table below.

Products	**Raw materials**
CFC-11	Carbon tetrachloride Hydrogen fluoride
CFC-12	Carbon tetrachloride Hydrogen fluoride

GFL produces AHF in their own premises. They procure CTC from domestic and international suppliers. The raw materials are stocked at the production plants and at the port, in case of imported raw materials.

Total CTC consumption for the year 2002 aggregates to 7733 MT. GFL has also reported losses of CTC aggregating to 104 MT, which includes import loss of 61 MT, transit loss of 2 MT due to minor accidents and dormant losses of 41 MT. GFL informed that import loss normally occurs from the exporters end to the local port storage stations. Transit and dormant loss primarily occurs while transfer of material to trucks and from trucks to the storage tanks. GFL informed that such losses are within the industry norms and difficult to reduce.

Total HF consumption of GFL for CFCs and HCFCs aggregates to 5705 MT. Of this, 2037 MT is consumed for CFCs and 3668 MT is consumed for HCFCs. The total production of HCFCs, as verified from their production records, aggregates to 6744 MT. Based on the above, the specific consumption of HF for HCFC production works out to 0.51, which is line with industry specific consumption norms.

Losses of finished products

CFC production as recorded in the main product storage tanks is treated as gross production. CFC filled into cylinders is treated as net salable production. The difference between the above is treated as filling and handling losses. These losses are measured and reported on a daily basis.

In the year 2002, GFL has reported 13 MT of CFC-11 and 41 MT of CFC-12 as filling and handling losses. This translates to losses of 1.54% for CFC-11 and 0.795 % for CFC-12, respectively. GFL has taken measures to reduce filling losses of CFCs by modifying the filling lines at the filling stations.

Sample analysis

Samples from domestic and HCFC-22 export cylinders and HFC-134a repacked cylinders were taken for analysis. For all the three samples, analysis through gas chromatograph and vapour pressure test were carried out.

On a sample basis, production of CFCs and HCFCs were checked for:

- raw material inputs,
- production logs,
- storage logs, and
- quality control test report records.

The sample included 3 days of HCFC-22 production and 2 days of CFC production distributed in different months during the year.

The results of such sample verification were found to be in order.

Others

- During the year 2002, GFL has purchased 5 MT of seized CFC-12 cylinders from Customs Department. Such receipts were recorded in the plant stocks and excise records.

- GFL has also reported stock returns of 5 MT of CFC-11 and 43 MT of CFC-12 during the year 2002. These materials were appropriately received at the factory and the relevant customs/excise authorities were informed. GFL has explained that these returns were primarily due to differences in commercial terms with the specific customers.

- The specific consumption of CTC and HF for CFC production for the last four years is given in the table below.

Particulars	1999	2000	2001	2002
CTC for CFC-11	1.175	1.174	1.179	1.162
CTC for CFC-12	1.335	1.334	1.340	1.320
HF for CFC-11	0.164	0.165	0.165	0.161
HF for CFC-12	0.372	0.375	0.375	0.365

  The current year's consumption norms are in line with past trends.

- Except for regular maintenance, no modifications/additions were made in the CFC production plant.

- GFL uses "Refron" brand name for CFC-11, CFC-12 and HCFC-22 sales in the domestic market and export markets. GFL also sells these products unbranded and brand names requested by importers, when specific customer requests arise for the same.

SRF LIMITED (FLUOROCHEMICALS DIVISION)

Enterprise	SRF Limited
Office Addresses	Indian Express Building, Bahadurshah Zafar Marg, New Delhi. Tel:011-2 Fax:011-2
Plant Address	Bhiwadi, Rajasthan.
Contact Person	Ravinder Kaul Senior Vice-President
SRF Personnel:	Vibash Trehan Pratap Singh K. Chalam
Verification Team:	N.Balaji/ Dr.R.S.Agarwal/ Ashish Agarwal
Date:	11 January 2003

Plant overview

Established in 1989 in Rajastan, India, the site produces both AHF and chloromethanes. While AHF is primary used for production of CFCs and HCFCs, CTC from choromethane plant is used for producing CFCs. The refrigerant gases plant has twin reactors, one for CFCs and the other for HCFCs, both feeding into a single purification and distillation system. Thus, only CFCs or HCFCs can be produced at any one time. For changeover, one reactor has to be shut down, the purification and distillation system has to be purged and the other reactor has to be started.

Production details

A summary of production of CFCs of GFL is given below.

Production quota for the year 2002 *(Government Order dated 17 January 2002)*	**4982 MT**
Production quota traded in 2002	Nil
Plant operation days - CFC-11/12 - HCFC-22	 97.37 Not Available
Production of CFCs - CFC-11 - CFC-12	**4974 MT** 1709 MT 3265 MT
Percentage of quota used	**99.83%**

Raw material consumption ratio

The raw material consumption ratio for CFC-11 and CFC-12 are given below.

	CFC-11	**CFC-12**
Carbon tetrachloride (tons/ton of product)	1.168	1.326
Hydrogen fluoride (tons/ton of product)	0.165	0.372

The details of the production of CFCs, as per Decision 32/70, is presented in Annexure.

Licenses

SRF was requested to provide copies of RSPCB consent order and license for production of CFCs as required under the Ozone Rules, 2000. Ozone Cell has provided a license to SRF for production of CFCs, which is valid upto 18 October 2003.

Raw material procurement and consumption

Raw materials consumed for production of CFCs is given in the table below.

Products	**Raw materials**
CFC-11	Carbon tetrachloride Hydrogen fluoride
CFC-12	Carbon tetrachloride Hydrogen fluoride

SRF produces AHF and CTC in their own premises. They also import CTC from international suppliers. The raw materials are stocked at the production plants and at the port, in case of imported raw materials. In their stock records, SRF declares materials stocked at the plant for the verification purposes.

Total CTC consumption for the year 2002 is given in the table below.

Products	**Consumption in MT**
CTC used for CFC production	6324
CTC sold for other purposes	4518
Total use of CTC	10842

Note:

1. SRF declares stock of CTCs at factory and hence, losses of CTC are not shown separately. SRF informed to the verification team that there were CTC losses occurring at port, which is a normal business operation loss and there were no other abnormal losses during the year.

Total HF consumption of SRF for CFCs, HCFCs and others aggregates to 4295 MT. Of this, 1498 MT is consumed for CFCs and 2748 MT is consumed for HCFCs. About 49 MT was consumed for production of dilute hydrofluoric acid, which is also sold by SRF.

The total consumption of HF for CFCs was verified from the production logs. ***The HCFC production data was not disclosed by SRF to the verification team and hence, verification of HF production for HCFC consumption was not carried out.***

Losses of finished products

SRF does not have separate tanks for storage of final products by the plant and for filling cylinders. Hence, SRF does not measure gross production and as a result, SRF has not reported losses of CFCs produced.

For loss measurement, SRF had tried installing flow meters in the filling lines. But flow meter, which was installed, does not operate effectively as the finished product is in dual phase before the filling and as a result, the flow meter installed is unable to measure the quantities of finished product filled.

In the current situation, it is not possible to report production losses for SRF. As no major changes are made in the filling system, the agreed upon loss figure as reported last year i.e., 1.5% of gross production, was used for estimating gross production.

Sample analysis

Samples from domestic and HCFC-22 export cylinders and HFC-134a repacked cylinders were taken for analysis. For all three samples, analysis through gas chromatograph and vapour pressure test were carried out.

On a sample basis, the production of CFCs and HCFCs were checked for:

- raw material inputs,
- production logs,
- storage logs, and
- quality control test report records.

The sample included 5 days of HCFC-22 production and 2 days of CFC production distributed in different months during the year.

The results of such sample verification were found to be in order.

Others

- During the year 2002, SRF has retained in its safe custody 2800 cylinders of CFC-12 seized by the Calcutta Police and 63 cylinders of CFC-12 seized by the Delhi Police at their request. There are no instructions given to SRF on how these cylinders need to be disposed.

- SRF has also reported stock returns of 11 MT of CFC-11 and 34 MT of CFC-12 during the year 2002. These materials were appropriately received at the factory and the relevant customs/excise records were appropriately maintained.

- The specific consumption of CTC and HF for CFC production for the last four years is given in the table below.

Particulars	**1999**	**2000**	**2001**	**2002**
CTC for CFC-11	1.180	1.173	1.181	1.168
CTC for CFC-12	1.336	1.332	1.341	1.326
HF for CFC-11	0.161	0.161	0.163	0.165
HF for CFC-12	0.366	0.362	0.367	0.372

The current year's consumption norms are in line with past trends.

- Except for regular maintenance, no modifications/additions were made in the CFC production plant.

- SRF uses “Floron” brand name for CFC-11, CFC-12, CFC-11/12 and HCFC-22 sales in the domestic market and export markets. They also sell products in generic names and brand names of customers on request.

- HFC-134a is packed in cylinders for domestic and export markets at SRF. As this information is commercially sensitive, no specific data relating to these cylinders except test checking was provided.