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COMITÉ EJECUTIVO DEL FONDO MULTILATERAL
PARA LA APLICACIÓN DEL
PROTOCOLO DE MONTREAL
Cuadragésima Séptima Reunión
Montreal, 21 al 25 de noviembre de 2005

PROPUESTA DE PROYECTO: MÉXICO

Este documento contiene los comentarios y las recomendaciones de la Secretaría del Fondo en la siguiente propuesta de proyecto:

Producción

• Plan sectorial para eliminar CFC-11 y CFC-12 del sector de producción (cuarta partida)	ONUDI

DESCRIPCIÓN DEL PROYECTO

1. El Gobierno de México, a través de la ONUDI, solicitó el financiamiento de 11,85 millones $EUA y costos de apoyo para el programa anual de ejecución de 2006 del plan sectorial para eliminar CFC-11 y CFC-12 del sector de producción.

Antecedentes

2. El Comité Ejecutivo en su 40ª Reunión, en 2003, aprobó, en principio, un total de 31,85 millones $EUA para la aplicación del Acuerdo para el sector mexicano de producción de CFC, y desembolsó la primera partida de 5,3 millones $EUA para el proyecto. Según los términos del Acuerdo, el Gobierno de México se compromete a una doble condición de un nivel máximo de producción total de CFC de 22 000 toneladas métricas para el período de 2003 a 2005, y al mismo tiempo el respeto del límite máximo permitido de producción, especificado en el Acuerdo para cada uno de esos tres años. Posteriormente, el Comité Ejecutivo liberó las partidas de financiamiento 2004 y 2005, de 10,7 millones $EUA, en su 42ª Reunión, y de 4,0 millones $EUA, en su 45ª Reunión después de haber verificado satisfactoriamente los niveles de producción de CFC de 2003 y 2004, que confirmaron que el país había producido un total de 8 694 y 8 044 toneladas métricas de CFC-11 y de CFC-12, en 2003 y 2004, respectivamente, y, por lo tanto, había satisfecho las dos condiciones especificadas en el Acuerdo.

3. En respuesta a una solicitud de la ONUDI, el Comité Ejecutivo decidió, en la 45ª Reunión, "considerar liberar el tramo final de financiación del proyecto mexicano de eliminación de producción de CFC en la 47ª Reunión tras llevarse a cabo la verificación satisfactoria de la producción de CFC en México, correspondiente a 2005, siempre y cuando lo permita la corriente de efectivo del Fondo Multilateral para esa fecha." La ONUDI informó que Quimobásicos, el único productor de CFC, cerró su producción de CFC en agosto de 2005 y, por lo tanto, presenta a la 47a Reunión el programa anual de trabajo para 2006, que contiene una propuesta para la supervisión continua de la planta de producción de CFC hasta 2009, después del cese de producción de CFC, y un pedido de liberación de la partida de 2006, de 11,85 millones $EUA, más los gastos de apoyo asociados de 888 750 $EUA, para la ONUDI.

4. Conforme a las condiciones del Acuerdo de que la liberación de las partidas de financiamiento posteriores a 2003 requieren la presentación, por parte de la ONUDI, de la verificación independiente de la producción en el año precedente para satisfacer el requisito del Protocolo de Montreal y estar dentro de los límites totales admisibles de producción del Acuerdo, junto con un programa de trabajo para el año pertinente, la ONUDI presenta en esta ocasión la verificación de producción mexicana de CFC en 2005. Se adjuntan a este documento el programa anual de trabajo para 2006 y el informe de verificación sobre la producción de CFC de 2005. Los datos pertinentes sobre el Acuerdo y el programa anual de trabajo para 2006 son los siguientes:

País	México
Título del proyecto:	Plan sectorial para eliminar CFC-11 y CFC-12 del sector de producción
Año del plan	2006
N° de años terminados	3
N° de años restantes bajo el plan	0
Producción Máxima Admisible de CFC en el Acuerdo entre 2003-2005	22 000 TM
Producción Máxima Anual Admisible de CFC en 2003 y 2004	12 355 TM
Producción efectiva de CFC en 2003	8 694 TM
Producción efectiva de CFC en 2004	8 044 TM
Producción Máxima Admisible en el Acuerdo en 2005	5 262 TM
Financiamiento total aprobado en principio para el plan de eliminación de CFC	31,85 millones $EUA
Financiamiento total liberado al mes de marzo de 2005	20 millones $EUA
Nivel de financiación solicitado para el plan anual de 2006	11,85 millones $EUA

Verificación de la producción de 2005 CFC en México

5. La verificación fue realizada en septiembre de 2005 por Ess Jay Consultants, la misma empresa de consultores que había realizado las verificaciones de 2003 y 2004. El informe incluyó un resumen ejecutivo, el informe mismo y los datos presentados en el formato prescrito por las directrices para verificar la eliminación de la producción de SAO, aprobado por el Comité Ejecutivo en 2000. El informe describió primero brevemente la historia de la planta de CFC, Quimobásicos, que tenía dos aparatos de producción con capacidad para producir CFC y HCFC-22. No obstante, debido a la escasa demanda de CFC y al modo relativamente largo y poco económico de cambiar entre las dos series de productos, sólo una planta continuó produciendo CFC después de 1995, mientras que la otra se dedicó a la producción HCFC-22. El equipo de verificación se dedicó sólo al aparato de producción de CFC, y visitó la planta de HCFC para confirmar que únicamente producía HCFC.

6. La planta funcionó entre enero y agosto de 2005 y cerró su producción el 25 de agosto. Debido a la demanda reducida de CFC-11 en el mercado, la planta decidió modificar el reactor de proceso para reciclar CFC-11 en CFC-12 y, en consecuencia, convirtió 382,8 toneladas métricas de CFC-11 a 326,43 toneladas métricas de CFC-12.

7. Se informó que el equipo de verificación tuvo acceso a todas las instalaciones de la planta y a los documentos necesarios, inclusive los expedientes de las compras de materias primas y registros emitidos; registros diarios de producción; transferencia de inventario y registros para el almacenamiento; facturas de ventas; devoluciones mensuales del IVA enviadas a la autoridad de réditos correspondiente; y cuotas de importaciones e importaciones efectivas de CTC y de HF. Como muestras de comprobación los auditores seleccionaron al azar algunos días de los 4 meses del año. El equipo comenzó haciendo la auditoría del inventario inicial de CFC-11 y CFC-12, y de los volúmenes de CTC y HF para materia prima a partir de datos financieros y de almacenamiento correspondiente al año 2005. Luego el informe describió la verificación de la adquisición de materias primas, verificando la lista de compras del departamento de finanzas y haciendo una doble verificación con un número determinado de facturas, dado que todo el CTC y HF se importó bajo el control del sistema gubernamental de cuotas. Se hizo una descripción del proceso diario de producción y del movimiento del producto final dentro de la planta, el registro

de producción efectiva, la producción neta y las pérdidas por llenado. Se comprobó también el cociente de consumo de materias primas comparándolo a los registros anteriores y las normas de la industria, y se informó que era aceptable.

8. A esto siguió un examen del empaquetado de los productos de CFC y una descripción del proceso en la planta. Se hizo una comprobación de muestras de los registros contables de los paquetes, una comprobación del peso de los diversos paquetes y de la calidad del gas mediante el método de cromatografía de gases. La verificación finalmente examinó las facturas de ventas y las comparó con l os registros de ventas y las devoluciones del IVA, y con el inventario al cierre de los productos de CFC y las materias primas. El informe también incluyó 8 apéndices con copias de los registros originales que se habían examinado.

9. El resultado de la verificación fue que Quimobásicos produjo 5 201 toneladas métricas de CFC, en 2005, desglosadas en 278 toneladas métricas de CFC-11 y 4 923 toneladas métricas de CFC-12. Esto estaba por debajo de las 5 262 toneladas métricas para 2005, el nivel restante de producción partiendo de las 22 000 toneladas métricas para el período de 2003 a 2005, o sea el objetivo establecido en el Acuerdo después de deducir las 8 694 toneladas métricas, producidas en 2003, y las 8 044 toneladas métricas, producidas en 2004. La planta registró 4 toneladas métricas como pérdidas de llenado que se justificaron en la producción total admisible.

10. Los datos recopilados por el equipo de verificación se presentaron en el formato dado en las directrices para verificar la eliminación de la producción de SAO, que incluye la producción mensual de CFC y HCFC-22, el número de días de producción, la relación de consumo de materias primas a producción CFC y HCFC-22, el cambio de inventario en el CTC y el HF para materias primas como manera de validar la producción de CFC.

Cese de producción de CFC

11. Los auditores examinaron el proceso del cese de la producción de CFC en Quimobásicos y confirmaron el inventario restante de productos de CFC y de materias primas al mes de agosto de 2005:

CTC:	48,4	TM
HF:	231,3	TM
CFC-11:	355,7	TM
CFC-12:	3 783,6	TM

12. Los auditores recibieron la siguiente información sobre el compromiso de un cierre permanente de la capacidad de producción de CFC: confirmación escrita del Director General de Quimobásicos del cese de producción y la carta del Gobierno de México revocando la licencia de importación de CTC otorgada a Quimobásicos. Hubo una nota de los auditores sobre los cambios ya realizados en los equipos y los que se realizarían para cambiar la planta con el fin de adecuarla a la producción de HCFC-22.

13. Los auditores recomendaron otras auditorías anuales para asegurar la sustentabilidad del cierre y sugirieron los siguientes parámetros para las auditorías futuras:

- Ninguna entrada de CTC en la planta después de la fecha de cierre de producción de CFC;
- Verificación de inventario, compras y uso de HF para HCFC-22;
- Verificación de la producción de las dos plantas de Quimobásicos;
- Verificación del inventario de CFC-11 y de CFC-12 y reducciones del inventario a través de los años;
- Verificación de las normas de consumo de cloroformo y HF para la producción HCFC-22;
- Cambios realizados en la planta, equipos incorporados y modificaciones;
- Cualquier otra prueba necesaria para saber si el cumplimiento se lleva a cabo totalmente.

Programa de trabajo para 2006

14. El programa de trabajo para 2006 tiene tres partes: un resumen del proyecto, los logros de los programas de trabajo en 2004 y 2005 y los objetivos y las actividades del programa de trabajo para 2006 y años siguientes. El resumen del proyecto contiene el objetivo y el nivel de financiamiento del programa de trabajo para 2006. Según el Acuerdo, no se debe producir CFC en 2006 y años posteriores. El foco del programa de trabajo es sostener el cierre de la producción de CFC.

15. El informe sobre los logros de los programas de trabajo para 2004 y 2005 incluye las medidas de políticas, las actividades de asistencia técnica y la supervisión realizada para la ejecución del programa de eliminación de producción. Especialmente es digno de mencionar el esfuerzo en curso, en 2005, de introducir la interdicción sobre la producción y las importaciones de CFC.

16. El programa seguirá supervisando la producción en Quimobásicos para asegurar el cierre permanente, mediante una auditoría anual financiera y técnica, que realizarán el Gobierno y la ONUDI en el primer trimestre de cada año, entre 2006 y 2009. Los resultados se presentarán bajo la forma de informes de auditoría a la Secretaría del Fondo, para que ésta los examine, y al Comité Ejecutivo, para su información. Las auditorías se realizarán siguiendo las recomendaciones de los auditores indicadas en el párrafo 12 de este documento.

17. De 11,85 millones $EUA para la partida 2006 se asignarán 11 603 300 $EUA para compensar al productor de CFC por el cierre de su producción y el saldo de 246 700 $EUA más el sobrante de 124 436 $EUA de programas anuales anteriores financiarían el programa de asistencia técnica entre 2006 y 2009. Las actividades previstas de asistencia técnica se presentan en la tabla 9 del programa de trabajo para 2006.

COMENTARIOS Y RECOMENDACIONES DE LA SECRETARÍA

COMENTARIOS

18. La verificación de la producción de CFC de 2005 en Quimobásicos establece una producción en 5 201 toneladas métricas, lo que está por debajo de la producción máxima admisible, o sea 5 262 toneladas métricas establecidas en el Acuerdo. En total, la producción de CFC entre 2003 y 2005 es 21 939 toneladas métricas (8 694 toneladas métricas, en 2003, 8 044 toneladas métricas, en 2004, y 5 201 toneladas métricas, en 2005), lo que representa 61 toneladas métricas por debajo del objetivo de 22 000 toneladas métricas establecido en el Acuerdo. Por lo tanto, México ha satisfecho los objetivos del Acuerdo.

19. La planta terminó su producción de CFC en agosto de 2005, como indican los auditores, y ha tomado medidas para cambiar a la producción de HCFC-22, que está permitida en virtud del Acuerdo. La planta tomó medidas de ingeniería para asegurar el cierre permanente de su capacidad de producción de CFC y el proceso continuará aún. El Gobierno de México también tomó medidas para asegurar la sustentabilidad del cierre, como la revocación del permiso de importación de CTC, una materia prima clave para la producción de CFC.

20. El programa anual para 2006 propone la supervisión continua de la planta de CFC por parte de la ONUDI y el Gobierno de México, entre 2006 y 2009, sobre varios de los parámetros recomendados por los auditores para asegurar que el cierre de producción de CFC es permanente. Ésta es una conducta altamente recomendable, propuesta por el Gobierno y la ONUDI, que se debería seguir en otros cierres similares de plantas de producción financiados por el Fondo Multilateral. El programa de 2006 informa nuevamente sobre otras medidas de políticas previstas, que incluyen la interdicción gradual del CFC en todos los sectores, la interdicción de equipos que utilizan CFC y la prohibición de importaciones de CFC. Las iniciativas facilitarían el proyecto de cierre de producción de CFC y el programa nacional de eliminación de CFC, que también está ejecutándose. No obstante, no proporciona ninguna fecha de terminación y promulgación para dichas medidas.

21. La verificación de la producción de CFC en 2005, en Quimobásicos, se realiza conforme a las directrices del Comité Ejecutivo sobre la verificación de la eliminación de la producción de SAO, y contiene una descripción razonable de la metodología utilizada y la documentación examinada para confirmar el logro de los objetivos de reducción de la producción anual. También proporciona los pasos recomendados para supervisar posteriormente la eliminación del inventario restante de materias primas y productos de CFC.

22. De acuerdo con la práctica de presentar los informes de verificación de la eliminación de la producción de CFC, la Secretaría incluye sólo los datos agregados y no los apéndices ni los datos mensuales sobre la producción y el consumo de materias primas. No obstante, los apéndices y los datos mensuales pueden ponerse a disposición de cualquier miembro del Comité Ejecutivo que los solicitase.

RECOMENDACIONES

23. La Secretaría recomienda que, en vista de la verificación satisfactoria que indica que el programa de cierre de producción de CFC en México ha alcanzado el objetivo de reducción de producción de CFC en 2005 y el objetivo total de producción de CFC para 2003- 2005, en virtud de lo indicado en el Acuerdo, y en vista de que Quimobásicos ha cesado la producción de CFC y ha comenzado a desmontar su capacidad de producción de CFC, el Comité Ejecutivo puede querer:

a) Encomiar al Gobierno de México y a la ONUDI por la buena aplicación del Acuerdo de cierre de producción de CFC y cierre permanente de la capacidad de producción de CFC en Quimobásicos;

b) Solicitar al Gobierno de México y a la ONUDI que continúen la supervisión del cierre de producción de CFC en Quimobásicos entre 2006 y 2009, según lo propuesto en el programa anual de trabajo para 2006; y

c) Aprobar el programa de trabajo para 2006 del Acuerdo sobre la eliminación de producción de CFC en México, en 11,85 millones $EUA y 888 750 $EUA como gastos de apoyo para la ONUDI; sin embargo, dado que esto es un pago anticipado programado para el plan anual administrativo de 2006, el nivel de desembolso en esta reunión dependerá de la corriente de efectivo del Fondo, después de que hayan cumplido con los compromisos de 2005, según los términos de la Decisión 45/62.

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ANNUAL IMPLEMENTATION PROGRAMME

Sector Plan for Phasing out CFC-11 and CFC-12 Production Sector, Mexico
MEX/PRO/40/INV/115

1. PROJECT SUMMARY

1.1 Project data

Country:	Mexico
Year of plan:	2006
# of years completed:	3
# of years remaining under the plan:	0
Substances:	Annex A Group I and Annex B Group I
Target ODS production of the preceding year (maximum):	5,262 metric tonnes
Target ODS production of the year of plan (maximum):	0 metric tonnes
Target ODS aggregate production for the years 2005 and 2006 (maximum):	5,262 metric tonnes
Level of funding requested:	US$ 11,850,000
National coordinating agency:	SEMARNAT[1]
International implementing agency:	UNIDO

1.2 Project target

Target:	0 METRIC TONNES

Indicators	**Actual in preceding year (2005)**	**Year of Plan (2006-2009)**	**Total in years in 2005 and onwards**	**Total in years 2003 to 2005**
Production, metric tonnes	5,201	0	5,201	22,000

The CFC production in 2005 according to the findings of the technical and financial audit was **5,201** metric tonnes. As per the Agreement (see Section 2), the aggregate CFC production in years 2003 to 2005 shall not exceed 22,000 metric tonnes. In the years 2003-2004 the aggregate

[1] Secretaria de Medio Ambiente y Recursos Naturales

CFC-11 and CFC-12 production of Mexico amounted to 16,738 MT. The remainder of the 22,000 MT allocation amounts to 5,262 MT.

Further in accordance with the Montreal Protocol obligations of Mexico, the CFC production in 2005 shall not exceed 50 % of the baseline production of 12,355 metric tonnes, i.e. 6,739 metric tonnes. Accordingly, the 2005 CFC production in Mexico was limited to maximum **5,262** metric tonnes and no production is allowed in 2006 and after.

2. BACKGROUND

The Agreement for the Sector Plan for Phasing out CFC-11 and CFC-12 Production Sector, Mexico (first tranche) was approved at the 40th Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol in July 2003[2].

By approval of the Agreement, Mexico agrees that in exchange for the funding level specified in Table below, it will reduce its total production of the substances of Group I Annex A and Group I Annex B in an accelerated manner as compared to the allowable production indicated in the same Table 1.

Table 1. Agreement for the Sector Plan for Phasing out CFC-11 and CFC-12 Production Sector

Year	2003	2004	2005	2006	2007	2008	2009	2010	Total
Maximum allowable production (metric tonnes)	12,355	12,355	6,739	6,739	2,808	2,808	2,808	0	
Maximum production levels agreed (metric tonnes)	22,000*			0	0	0	0	0	22,000
Verified actual CFC production (metric tonnes)	8,694	8,044	5,201	-	-	-	-	-	21,939
MLF funding US$ million	5.3	10.7	4.0	11.85	0	0	0	0	31.85
Agency fees US$	397,500	802,500	300,000	888.750	0	0	0	0	2,388,750

* Total maximum production for the years 2003 to 2005. It is understand that Mexico may not exceed its allowable production limit during any one year.

Through the implementation of the 2005 Annual Program of the Sector Plan for Phasing out CFC-11 and CFC-12 in the Production Sector (third tranche), Mexico has met its year 2005 Annual Implementation Programme target of containing the maximum CFC production level

[2] Decision 40/54 (h), UNEP/Ozl/Pro/ExCom/40/50 Annex V

below **5,262** metric tonnes, since the actual production of CFC-11 and CFC-12 was kept at the level of 5,201 metric tonnes.

In accordance with the Agreement, UNIDO, as the implementing agency, is submitting an Annual Program for the period "1 January 2006 - 31 December 2009" for the consideration at the 47th Meeting of the Executive Committee. This Annual Program has been prepared in cooperation with SEMARNAT.

This document describes the achievements of the 2005 Annual Program by Mexico and details the planned program and activities for 2006 - 2009. It is being submitted for approval and release of the fourth (last) tranche of funds amounting to US$ 11.85 million including the enterprise compensation and the technical assistance (TA) component for the implementation of the 2006-2009 Annual Programme.

3. 2004 ANNUAL PROGRAM ACHIEVEMENTS

3.1 CFC Production phase-out and disbursement

CFC production in 2005 amounted to 5,201 metric tonnes, against the target production of 5,262 metric tonnes set in the 2005 Annual Implementation Programme.

The disbursement to a CFC producer, Quimobasicos, in 2005 amounted to US$ 4,000,000 , allocated for enterprise compensation.

The disbursement to the Government of Mexico and the financial obligation on the project during 1 January 2003-31 August 2005 used for the implementation of the TA component was of US$ 478,864. This grant is has been allocated for the TA activities to be organized by the Government with the assistance of UNIDO:

Activity	**Cost, US$**
Project management, local experts	94,140
Design of an information collection system of ODSs	10,415
Equipment acquisition	4,481
Creation of the system to collect data and information of ODSs	217,215
Training, local and international travels	39,991
Awareness programme	49,394
Technical and financial audit of Quimobásicos	63,228
Total	**478,864**

Table 2. CFC Production phase-out and disbursement in 2003-2004

Year	Production Phase-out		Grant Tranche (US$)	
	Target (metric tonnes)	Achieved (metric tonnes)	Allocation (US$ million)	Status of Obligations
2003	12,355	8,694 *	5,300,000	5,300,000
2004	10,400	8,044 *	10,700,000	10,699,873
2005	5,262	5,201 *	4,000,000	3,859,394

* The independent audit team administrated by UNIDO verified CFC production in 2003 and in 2004.

3.2. Policy measures

Overview of the past activity

Mexico holds one of the most advanced CFC phase-out programs among Article 5 Countries. Actions started as early as in 1988 and have become a permanent effort of the Government of Mexico. These actions have been coordinated through the Ministry of Environment (currently SEMARNAT). The Mexican CFC policy framework has been focusing on the use and supply of CFCs rather than on actions to control production. Some of the most important measures implemented, include:

a) Monitoring on trade of CFCs: Starting from 1993, the Ministry of Environment has required the national CFC producing enterprises to voluntarily report domestic and international commercial activities such as production, imports and exports volumes. The industry is fully compliant with this requirement.

b) Import control on CFCs and CTC: SEMARNAT has set up an import licensing system on CFCs and CTC, using an inter-ministerial mechanism called CICOPLAFEST. The Ministry of Finance through the Customs Office enforces this regulation. Under the system, only the holder of import rights (namely Quimobásicos) is allowed to import the raw material (carbon tetrachloride) for the production of CFCs, and only the holders of import rights of CFC (namely Quimobásicos and Dupont) are allowed to import these substances. Allocation of rights is based on historical (1990) domestic sales data. Quotas are established according to the average sales of the years 1995-1997 and subjected to the internal goals of SEMARNAT.

c) Constraints for growth on industrial demand of CFCs: Since 1993, SEMARNAT has played an active role to circumvent the installation of any new CFC consuming facility in the Country, with emphasis on the original equipment manufacturer (OEM) sector. For the installation of any new production facility in the Country Mexican law requires an operation's license, which is granted by SEMARNAT, in order to manage related environmental impact and risks, and to establish emission prevention and control requirements, as well as to define operational conditions and growth. To enable compliance with the Mexican obligations under Montreal Protocol, SEMARNAT has been able to

discourage the use of CFCs, and negotiate in favour of CFC substitutes, thus avoiding new progress on CFC consumption in the OEM sector.

Notwithstanding the current degree of success of controlling and diminishing CFC consumption in the Country, the major concerns of the Government regarding further progress of the phase-out process enabling definite compliance with Montreal Protocol obligations are:

a) Prohibition of import of CFC containing equipment: Since 1998 the Government has been setting up temporary prohibitions on import of refrigeration, air conditioning and water cooling equipment using CFCs in order to halt new additional CFC demand, and complement efforts in controlling manufacturing industry's demand. Permanent control measures will be established by SEMARNAT to prohibit import of equipment using CFC, including also used cars in addition to refrigeration equipment.

b) Controlling availability of CFCs on the Mexican market: Although collaboration with CFC producers/importers have provided major advancements on control of CFC availability, an agreement on a definite CFC production and import phase-out schedule will be formalized as an integral part of the present project. Nevertheless, the Government of Mexico is concerned about the uncontrolled introduction of CFCs to the Country, and to that end, is preparing actions to strengthen regulations and enforcement to control illegal trade. Support from the international community is being received as part of this project to enhance and speed-up the implementation of such regulations and enforcement.

Planed activities

The Government of Mexico established additional supporting measures to promote CFC production phase-out in the Country, while considering domestic remnant necessities and consumption phase-out concerns as discussed in the previous chapter. The main objective of the formulation of the regulatory instruments is the strengthening of a policy framework to achieve complete ODS phase-out complying with the obligations under the Montreal Protocol in a gradual and orderly manner to minimize adverse economic affects to all sectors involved.

a) Ozone Depleting Substances (ODS) Regulations: The Mexican Government has initiated formulation of a detailed regulation to monitor and control the production and uses of Ozone Depleting Substances in the Country. Proposed regulations include control mechanisms for several Ozone depleting substances, such as CFCs, carbon tetrachloride, halons, methyl chloroform, and methyl bromide. Salient features of the proposed regulation regarding CFCs are:

(i) Gradual abandonment of the use of substances that deplete the Ozone layer in all sectors consistent with the Montreal Protocol obligations. The official norm would be compulsory for all producers, importers, exporters, distributors, vendors and commercial and industrial consumers of CFCs.

(ii) From the date of implementation of the official norm, authorized commercialization of CFCs will be only permitted to satisfy basic internal needs and essential uses in the Country. The regulation will include schedules with maximum allowable quantities permitted for such uses on a yearly basis until 2010.

(iii) From the date of implementation of the regulation, it will be prohibited to produce or import all kinds of refrigeration equipment, air conditioning equipment, propellant formulations, plastic foam or solvent cleaning operations that use or contain CFCs, except those related to essential uses as defined by the Montreal Protocol.

(iv) The regulation will establish rules to control the commercialisation of recycled or reprocessed CFCs.

Achievement in 2005

A series of policy measures were adopted and implemented during the course of the year 2003 as summarized below.

a) Production Quota: The Government of México established a CFC production quota to the CFC producing enterprise, Quimobásicos. The production quota system is in place from January 2004.

The monitoring and enforcement mechanism for the production plan involve:

(i) Quota system operation is established as a production cap issued to the Production Sector by SEMARNAT (production quota);

(ii) Mandatory reporting of Production Sector on actual production figures to the National Ozone Unit;

(iii) Monitoring and supervision of implementation of CFC production cap, and on import of raw material (carbon tetrachloride);

(iv) Sanctioning of the production sector in case of exceeding its and/or import quota; in such cases the quota is correspondingly reduced for the following year taking into consideration also the production Sector phase-out Agreement with the ExCom (ANNEX IV).

b) Regulation for control of ban of production and import of CFCs: The Government of México is promoting an agreement between the CFC importers to close the importation, and only use in the next years the stockpiles produced during the period of 2003-2005.

Table 3. Policy measures achievement in 2005

Legislation	**Related Activity**	**Planned Timing in project proposal**	**Achievement in 2004**
Production Quota	Introduction of production quota	2003 - 2004	Production Quota was put in place. CFC Production has been controlled by import regulation of CTC. Since September 2005 the import of CTC as raw material has been banned, and the possible remnant stockpiles should be returned to the country of origin
Regulation for control and ban of production and import of CFCs	Enactment	By 2005	Draft regulation prepared

3.4 Technical assistance activities

Implementation modality

Following steps have been taken in order to execute the technical assistance activities.

- Project approval: July 2003
- Allocation of the grant for the compensation for the enterprise and the technical assistance activities determined: September 2003
- Detailed technical assistance activities determined: October 2003
- Budget allocation for each activities determined: October 2003
- Mechanism for the grant transfer determined: December 2003
- Recruitment of a national expert initiated: December 2003

Planned key activities and achievement in 2005

Table 4 summarizes achievements and the status of key activities until now.

Table 4. Achievements and the status of key TA activities by August 2005

Activity item	**Planned timing as per Project Document**	**Achievement and status in 2004**
a) Design of public awareness campaign to promote phase-out of CFCs.	2003 - 2005	Design of and awareness strategy was designed and approved by the social communication office of SEMARNAT. Video was prepared and demonstrated. Printed materials, advertisements in specialised journals were produced and are in preparation. The official closure of the CFC production in Mexico was organised on 9 September 2005. It was attended by the government, academia, business and industry circles, NGO's, Ozone and Fund Secretariat, representatives from some Latin American countries, UNIDO and other UN agencies.
b) Design and conduct market study to fully characterize remnant demand of CFCs in Mexico.	2003 -2004	Contract of the national expert that will develop the National Strategy for CFC Management in México was issued. Implementation is continuous in 2005 and years after based on the grant to be provided in the 4th tranche.
c) Prepare consumer sector phase-out plan to submit to MLF for approval of funds necessary for phase-out.	2003 - 2004	Refrigeration sector CFC phase-out plan (NPP) submitted to the 42nd ExCom and was approved.
d) Customs training programme to control illegal trade in harmony with NPP.	2003 - 2004	The relevant project was included in the NPP submitted to the 42nd ExCom for assistance from the Multilateral Fund. The training program is being organised to take place in September 2005.

Activity item	Planned timing as per Project Document	Achievement and status in 2004
e) Creation of an information and monitoring system on the production, consumptions imports, exports of CFCs and other ODS including a remote communication system via internet.	2003 - 2004	The information and monitoring system has been designed by an information technology company under a contract awarded last year; The development of the software, procurement of the equipment, installation of the system have been completed, trials were run, system operation was demonstrated to SEMARNAT, Customs, UNIDO etc. The training campaign to all users of this system (Customs, Health Ministry and SEMARNAT) is going on.
f) Regular training programmes for the Government and Industry on regulations and enforcement regarding CFC phase-out matters.	2003 - 2004	Organization of Workshops for Government officials in Health, Agriculture, Economy and Environmental Ministries. Execution planned in 2005 using the third tranche of the grant.

3.5. Monitoring and reporting activities

The monitoring and reporting mechanism undertaken in 2004 is detailed in Table 5.

Table 5. Monitoring and reporting activities in 2005

Activity	By	Timing	Remarks
Financial and technical audit of the 2004 CFC production of Cydsa / Quimobásicos	UNIDO	January 2005	Satisfactory report received. It was submitted to MFS for consideration and was approved at the 45th ExCom
3rd Tranche approval	45th ExCom	April 2005	Completed
Contract with Cydsa Quimobásicos enterprise for compliance, reporting as well as other obligations.	UNIDO Quimobásicos	May 2005	UNIDO Contract No. 2005/069
Progress report to UNIDO based on the contract above	Quimobásicos	May 2005	Satisfactory report received

Activity	By	Timing	Remarks
Financial and technical audit of the 2005 CFC production of Cydsa / Quimobásicos	UNIDO	September 2005	Satisfactory report received. It was submitted to MFS for consideration and approval at the 47th ExCom
4th Tranche approval	47th ExCom	November 2005	Submitted to the Fund Secretariat
Contract with Cydsa Quimobásicos enterprise for compliance, reporting as well as other obligations.	UNIDO Quimobásicos	Upon approval	Planned for December 2005
Supervision	UNIDO SEMARNAT	2005	Several supervision visits were undertaken by SEMARNAT in 2005 and two times by UNIDO (in conjunction with the audits and CFC production cessation.

4. 2006 ANNUAL PROGRAM: OBJECTIVES AND ACTIVITIES

4.1 ODS Phase-out objectives and disbursement allocation

The objective of the 2006 Annual Program is to ensure, monitor and verify that the cessation of CFC production is permanently maintained.

UNIDO, on behalf of the Government of Mexico, is requesting the release of the fourth instalment of US$ 11.85 million to achieve this objective, which is to be disbursed to the following categories:

- US$ 11,603,300, which will be disbursed to the beneficiary CFC producing enterprise for reducing keeping the production level in accordance with the annual production allowed for 2005 as well as for the permanent and sustainable cessation of CFC production; and

- US$ 246,700 for implementation of the TA component.

4.2 CFC production phase-out target

As of 25 August 2005 the Government of México will not authorize any CFC production and CTC import quota to Quimobásicos, the only CFC producer in México.

4.3 Policy measures

A series of policy measures is going to be implemented during the course of the year 2005 as summarized below.

Production Quota: The production quota system is in place from January 2004. The import Quota system of the ODS raw material, CTC is being continued to doubly control the cessation of CFC production in the production sector.

Regulation for control and ban of production and import of CFCs: The Government of México continues promoting an agreement between the CFC importers to close the importation, and use in the next years only the stockpile produced during the period prior to the cessation of CFC production at Quimobásicos.

Table 7. Policy measures to be carried out in 2006

Legislation	**Related Activity**	**Planned timing in project proposal**	**Plan in 2004**
Production Quota	Continue application of the production quota system	2005 onwards	Production Quota system will be used to continue to control cessation of CFC production through imposition of import Quota on CTC and ban of import for the production of CFCs
Regulation for control and ban of production and import of CFCs	Enactment	As of 2005	Proceeding for the approval by the Parliament

4.4 Technical assistance activities

Proposed technical assistance activities to be undertaken during 2006 and the following years are summarized below. These activities have been decided based on the priorities of the Government of Mexico with regard to the national ODS phase out strategy.

a) ODS Information monitoring system.

This system consists of an instrument to monitor permanently the flows and related information of ODS that are imported and exported through all the Mexican customs. It will register the gross sales and use of ODS inside the country and will be capable to follow up the movements in the quota established for the importers of ODS.

The major activities of this item are:

- Regular operation of the ODS information and monitoring system;
- Collection and input of data;
- Supervision and maintenance of the operation of the information system;
- Provision of training on the use of the system, as required;
- Processing import licences through the system;
- Daily use of remote communication system via internet to facilitate training activities and linkage with stakeholders involved.

b) Technical assistance and training of relevant ministries and agencies.

It consists of technical workshops for officials of governmental agencies related to ODS management (Environmental Federal Attorney, Customs, etc.) with the aim to train them in ozone layer protection issues and specifically in detection and identification of ODS.

In the courses the participation of national and international experts is envisaged. It will utilize the specific material developed by UNEP.

c) Technical audit, supervision

It is a planned to carry out technical and financial audits at Quimobásicos in the first quarter of each year during the period of 2006-2009, to authenticate compliance with the Agreement between Mexico and the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol. The audits will review compliance of the previous year.

The audits will focus on and verify:

i) There has been no entry of CTC into the plant after the closure date of CFC production;

ii) Verification of stock, purchase and use of HF for HCFC-22;

iii) Production verification of Plants 1 & 2,

iv) Stock verification of finished goods, CFC-11 and CFC-12, and reduction over the year;

v) Verify consumption norms of Chloroform and HF for the production of HCFC-22;

vi) Changes carried out in the plant, equipment additions, modifications, etc;

vii) Any other checks to be made to confirm full compliance.

Through this instrument SEMARNAT with the assistance of UNIDO will annually verify the cessation of CFC produced in Mexico and take the necessary measures to ensure compliance with the Montreal Protocol.

The results of the verification audits will be submitted in form of audit reports to the Fund Secretariat and for the information of the ExCom.

d) Development and implementation of a communication strategy

This item will allow the Government of Mexico and SEMARNAT through the National Ozone Unit to communicate to specific publics the advances of México in the process of implementation of the Montreal Protocol and in particular, the closure of CFC production in México. This program is implemented in close coordination with the Social Communication Office of SEMARNAT.

The major activities are:

- Design and development of a communication strategy;
- Design and publication of materials in different media;
- Special events.

e) Local and international travels

This item is related to the local travels of the national experts, governmental officials and national ozone unit personnel for the different activities related to this technical assistance program.

f) General project management

Assist the Ozone Protection Unit in coordinating and managing the technical assistance project for the CFC Production Sector Phase–out Plan, specifically in the preparation of reports, design, development and implementation of the different programs included in this project, development and management of databases for ODS and support the technical audits of CFC production closure.

Major activities:

- Recruitment of national experts
- Following up on the Monitoring system, the National Strategy for CFC Management and other related programs.

g) Time schedule

The planned activities will be implemented on continuous basis, except the technical and financial audits, which will be carried out annually in the first quarter of the year with reporting to the second meeting of the ExCom on the compliance of the previous year.

g) Estimated costs of activities

The estimated cost of the project by activity is listed in the table below.

Table 9. Estimated costs of TA activities, US$

	Activity	**2003-2004**	**2005**	**2006 - 2009**
A	**ODS Information and Monitoring System**			
	Elaboration of Terms of Reference of the project for ODS Information and Monitoring System	3,500		
	Design, implementation and operating of the ODS Information and Monitoring System	227,000	40,000	46,700
	Acquisition of Remote communication system via internet to facilitate training activities and linkage with stakeholders involved.	30,000		
B	**Technical assistance and training of relevant ministries and agencies**			
	Training workshop	37,300	10,000	10,000
C	**Technical Audit supervision**			
	Audit to a CFC production factory	16,000	16,000	70,000
D	**Development and implementation of a Communication strategy**			
	Implementation of the communication strategy	37,500	89,000	70,000
E	**Local travels**	12,000	5,000	20,000
F	**General project management**			
	Recruitment of a national experts	50,000	30,000	30,000
	TOTAL	413,300	190,000	**246,700**
G	**Carry-over from previous approvals** (to be used for awareness, monitoring and national experts over the period)			124,436
H	**GRAND TOTAL**			371,136

4.5. Monitoring and reporting activities

Annual progress reports on the implementation of the programme and cessation of CFC production will be prepared by SEMARNAT and UNIDO for the consideration of the Secretariat and the ExCom prior to the second Meeting of the ExCom each year in 2006-2009.

Table 10. Monitoring and reporting activities in 2006 -2009

Activity	Responsible	Timing	Remarks
Approval of 4th Tranche and Implementation Programme 2006 - 2009	ExCom	November 2005	47th ExCom
Contract with the enterprise for compliance, reporting as well as other obligation	UNIDO Quimobásicos	December 2005- January 2006	Modality for preparation of the contract and the contractual obligation will follow the previous modality with the addition of the clause of permanent cessation of CFC production.
Progress report to UNIDO based on the contract above	Enterprise	To be decided in the Contract	-
Audit for verification of CFC production phase-out	Auditor	1st Quarter of each year 2006 – 2009	-
Supervision and regular monitoring	UNIDO SEMARNAT	During 2006 – 2009	Periodically

Technical and Financial Audit of the CFC plant of Cydsa / Quimobásicos Monterrey, Mexico (Year 2005)

Project: MEX/PRO/40/INV/115, "Sector Plan for Phasing out of CFC-11 and CFC-12 in the Production Sector" fourth tranche)"

ESS JAY CONSULTANTS: Mr. T. K. Padmanabhan, Team Leader
Mr. V. K. Trehan, Engineer, Technical Expert
Mr. H. Mahajan, Chartered Accountant, Financial Expert
SEMARNAT: Mr. A. Sanchez-Guevara, Ozone Protection Unit Coordinator
UNIDO: Dr. T. Gróf, Unit Chief, Project Manager

Date of submission: 23 September 2005

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EXECUTIVE SUMMARY

BACKGROUND

1) The Executive Committee entered into an Agreement with Mexico, by which the only plant producing CFCs in Mexico will be assisted with funds to meet international obligations under the Montreal Protocol.

2) The Agreement (UNEP/OzL.Pro/ExCom/40/50) stipulates the CFCs production that is permissible to Mexico for specified years and the funding that will be made available for compliance.

3) The cited Agreement uses the following terms to describe the CFC production permitted for the plant.

   a) "**Maximum Allowable Production**" 2003 to 2010. Annual production limit in accordance with the Montreal Protocol.

   b) "**Maximum Production Levels Agreed**" 2003 to 2005. This stipulates the maximum production (22,000 MT) permitted under the cited Agreement for the Mexican - Production Sector. The Plant will cease CFC production thereafter.

4) The Agreement stipulates a "Maximum Allowable Production" of 6,379 MT in 2005, which is a part of the "Maximum Production Levels Agreed" limit of 22,000 MT in the years 2003-2005.

5) As certified by earlier audits approved by the Ex-Com, the plant produced 8,694 MT of CFCs in 2003 and 8,044 MT of CFCs in 2004 against the "Maximum Production Levels Agreed" of 22,000 tonnes for the years 2003-2005. Hence, the permitted total production for CFCs in 2005 is 5,262 MT. With this production in 2005, the "Maximum Production Levels Agreed" of 22,000 MT for 2003-2005 has been utilised and hence the plant is not eligible for CFC's production in future.

6) The disbursement of funds under this Agreement to the beneficiary enterprise is contingent on independent verification and report of CFC production.

7) The management of Quimobásicos Factory, Monterrey, Mexico has declared the closure of the plant for CFCs production and their desire to switch over to HCFC-22 production.

OBJECTIVE OF THE AUDIT

8) To establish the CFC-11 and CFC-12 production level of Cydsa/Quimobásicos Factory, Monterrey, Mexico for the period 1 January 2005 - 31 August 2005 and verify its compliance with the Agreement, UNEP/Ozl.Pro/ExCom/40/50.

VERIFICATION TEAM

9) The audit was carried out by Ess Jay Consultants who were accompanied by UNIDO and SEMARNAT staff to ensure the right process under Ex-Com Guidelines was followed.

PLANTS PRODUCING ODS

10) The Quimobásicos Plant at Monterrey has two refrigerant production units of Allied Signal Technology. Both plants have a common control room with sophisticated PLC based integrated control systems. Plant 1 (commissioned in 1963) produces only HCFC- 22, and Plant 2 (commissioned in 1983) produces CFC-11 and CFC-12.

11) Both plants have a swing-over capability but are running in the modes indicated, since 1995. The average swing-over time from CFC-11/CFC-12 to HCFC-22 or vice versa is 15 days and the plant deems the swing over time as uneconomical and has decided to dedicate product manufacture in Plants 1 & 2 as indicated above.

12) Thus, only the plant producing CFCs (Plant 2) was audited in detail whereas the audit of Plant-1 (producing HCFC-22) was carried out solely to confirm that it produced only HCFC 22.

SUMMARY OUTCOME OF AUDIT

13) The plant produces the following ODSs:

    CFC-11, CFC-12 and HCFC-22.

14) Though, only CFC-11 and CFC-12 is produced by the plant, there is import of other CFCs e.g. CFC-113, CFC-114, CFC-115, CFC- 124 etc. to cater to domestic demand.

15) The field verification of January-August 2005 CFCs production at Quimobásicos factory confirms the production, inventory and sales data submitted by the Plant in response to the questionnaire.

16) Quimobásicos has produced **5,201 MT** of CFC-11 and CFC-12 in the current audit period.

17) The actual production of CFC-11 and CFC-12 is within the "Maximum Allowable Production", (i.e., the CFC Production Freeze Target for Mexico under the Montreal Protocol) of **6,739 MT** for the year 2005.

18) The plant has also adhered to a total production of maximum 22,000 MT in the period 2003-2005 under the Agreement. Against this commitment, the production was:

    a) 8,694 MT in 2003;

    b) 8,044 MT in 2004; and

    c) 5,201 MT in 2005.

    A total of **21,939 MT**, which is **61 MT less** than the 3-year "Maximum Production Levels Agreed" limit of **22,000 MT**.

19) The company produced 5,201 MT from January 05 to 25 August 2005 and has permanently ceased CFC production.

20) The CFC-11 & CFC-12 closing stock verified at the end of August 2005 is 4,140 MT. It was reported that there was no incident or occurrence leading to major loss of raw material/ finished product. The auditors verified this by examining relevant records.

21) The plant was stopped in the month of June to carry out a modification in the reactor to make it capable of producing a higher ratio of CFC-12 to CFC-11. The critical part of the reactor was lined with Hastelloy C to minimise excessive corrosion in the reactor as a result of the more corrosive nature of CFC-12 production.

22) The management of the Plant informs that they plan to produce HCFC-22 in Plant 2 after carrying out necessary modifications. The management indicated their decision to carry out the necessary plant modifications (as mentioned in Para 4.g) and commence production in HCFC-22 mode by the end of September 2005.

23) The field verification confirmed and found adequate, the activities planned by the Government and the enterprise for the permanent cessation of CFC production

24) The swing over of the operation of Quimobásicos Plant 2 for HCFC-22 production is permitted under the Agreement.

25) The Auditors recommend to UNIDO to continue annual monitoring of the plant. Yearly audits in the future will focus on checking and confirming from financial and technical perspectives:

    i) There has been no entry of CTC into the plant after the closure date of CFC production;

    ii) Verification of stock, purchase and use of HF for HCFC-22;

    iii) Production verification of Plants 1 & 2,

    iv) Stock verification of finished goods, CFC-11 and CFC-12, and reduction over the year;

    v) Verify consumption norms of Chloroform and HF for the production of HCFC-22;

    vi) Changes carried out in the plant, equipment additions, modifications, etc;

    vii) Any other checks to be made to confirm full compliance.

C-11 AND CFC-12 PRODUCTION AUDIT SUMMARY (January 2005 – August 2005), MT

Table 1: Annual production data

	Item	Data	Remarks
A	Maximum Production Level Agreed for 2005 (MT)	5,262	(Production freeze target for Mexico) **(F-D)**
B	Actual Production 2005 (MT)	5,201	(Gross production)
C	Difference +/- (MT)	-61	(Under produced)
D	Actual Production in 2003 & 2004 (MT)	16,738	
E	Total Production in 2003-2005 (MT)	21,939	
F	Max. Allowable Production 2003-2005 (MT) under the Agreement (MT)	22,000	(In accordance with the Agreement)
G	Unutilised quota of 2003-2005 "Maximum Production Level Agreed" (MT)	61	
H	Opening Stock as of 1st January 2005 (MT)	2,435	
I	Other additions	0	
J	Total opening stock as of 1st January 2005 (MT)	2,435	**(H+I)**
K	Gross production (MT)	5,201	
L	Filling & other losses (-)/ Surplus(+)*(MT)	-4	Filling loses are accounted as part of gross production and adjusted against Max Production Level Agreed
M	Net production (MT)	5,197	Gross Production minus Losses **(K-L)**
N	Domestic Sales (MT)	839	
O	Export sales (MT)	2,653	
P	Total sales (MT)	3,492	**(N+O)**
Q	Closing stock August 2005 (MT)	4,140	Opening stock plus net production minus sales. **(J+M-P)**

DETAILED REPORT ON THE AUDIT

AUDIT TEAM, DATES OF SITE AUDIT, BROAD VERIFICATION STEPS

26) The audit was undertaken in line with the Guidelines of Executive Committee for verification of ODS production phase out (UNEP/Ozl.Pro/ExCom/32/33, dated 24th October 2000).

a. Site audit team:

27) Ess Jay Consultants:

i) Mr. V. K. Trehan, Engineer: Technical expert;

ii) Mr. Hitesh Mahajan, Chartered accountant. Financial expert;

28) The following persons from the Government of Mexico and UNIDO accompanied the audit team to ensure that the right process was conducted in terms of ExCom Guidelines for verification of CFC production phase-out and the Agreement:

i) Mr. A. Sanchez-Guevara, Ozone Protection Unit Coordinator, SEMARNAT

ii) Dr. T. Gróf, Unit Chief, Multilateral Environmental Agreement Branch, UNIDO.

b. Dates of audit:

The Audit was undertaken on 5th, 6th and 7th of September 2005 (three days on site).

29) UNIDO prepared a Terms of Reference for the verification mission. The Auditor was selected according to UNIDO's financial rules and based on the Terms of Reference.

c. Broad methodology adopted for audit:

30) Prior to the field visit UNIDO made available to the selected Auditor the Production Sector Closure Agreement, the Guidance Document UNEP/Ozl.Pro/ExCom/32/33, dated 24th October 2000, the results and data of the previous audit, the baseline information and annual data reported by the enterprise.

31) Cydsa / Quimobásicos duly completed the Questionnaire prepared by UNIDO and Ess Jay Consultants in line with UNEP/Ozl.Pro/ExCom/32/33, dated 24th October 2000 and returned it to the auditors prior to the site inspection.

32) During the site visit, the enterprise made available to the team of auditors the services of required managers and experts who answered all queries in an open and professional way. Access was provided to all premises of the Plant and to all documents, daily production logs, sales and financial records requested by the auditors for the purpose of the audit and validation of the data provided by the Plant in the Questionnaire.

33) A round of the Plant was taken for precise understanding of operations and record keeping. The system of measurement for raw material receipt and issues, production, sales and closing stock were reviewed. The following operational and statutory records for the year 2005 up to August 2005 were examined:

a) Raw material purchase and issue records;

b) Daily production logs and production records;

c) Process parameters records;

d) Quality control records;

e) Stock transfer and record for storage of stocks at strategic location (storage on contractual basis outside the Plant), consignment storages - storages at all points of sales (Monterrey and Mexico City);

f) Stock register in value as per books of accounts for the year 2004 to check the opening stock and also Audited Balance Sheet for the year 2004 for cross checking;

g) Sales invoices;

h) Monthly VAT returns filed with revenue authority for claim of IVA, which gives the monthly purchase of raw materials and sales of finished goods;

i) Import quotas issued for CTC and HF and actual import entered into Mexico based on the records of Customs.

34) The verification of the data provided by the enterprise was carried out as follows. The data is annexed as a part of this report.

a) Random dates in January, February, June & August were selected for studying in-process parameters, laboratory and analytical records for both plants;

b) Volume and value of opening and closing stock was verified;

c) Purchase invoices (all invoices for CTC and HF in the year 2005), on randomly selected dates, incoming and issues from plant stores were checked;

d) On randomly selected dates in January, February, June & August 05 hourly production records were cross checked and compared with the reported daily production;

e) Technical norms were checked for consistency;

f) From filled CFC and HCFC stocks, samples were taken to check vapour pressure, weight and gas chromatography analysis.

VERIFICATION OF PLANT RECORDS AND PROCESS ADOPTED

a. Overview of plant and its production activities

35) A brief presentation was made by the enterprise about the systems of operation and maintenance. Plant visit was taken for precise understanding of operations and record keeping in various Departments.

36) Each department is maintaining material accounting records, and the final consumption of raw materials is arrived through purchase, opening and closing stock at the enterprise level. The overall method of record keeping is found satisfactory. Entries in books of account are matching with the plant record that was ascertained through random verification.

37) The enterprise has two plants located in the same premise. The plant is ISO 9001 and ISO 14001 certified. Both plants are very well maintained. CFC-11 and CFC-12 are co-produced by CTC and HF reaction from a single reactor.

38) The raw material storage of HF (Hydrofluoric Acid) is common for both plants. However, flow meters are installed to measure the quantity sent to each plant. HF handling is carried out in an enclosed chamber. HF sensors are installed at various points for sounding alarm signals to detect leakage for timely action.

39) One plant (Plant 1) was commissioned in 1963 and the other (Plant 2) was commissioned in 1983. Each plant has the capacity to produce 11,826 Tonnes / year of CFC11/12. Both plants have a common control room with sophisticated PLC based control system. The hazardous material handled in the plant's equipment and pipelines are located in a closed chamber connected to a central absorption system to handle any emergency safely.

40) Though each plant can be operated in both modes, CFC-11/CFC-12 or HCFC-22, since 1995, the old plant (Plant 1) is being operated solely on HCFC-22 and the new plant (Plant 2) on CFC-11/CFC-12. The feedback from the Plant personnel is that swing-over time is 15 days to get the right quality material. Based on the requirement and economics of operation the enterprise decided to operate the plants in a product-dedicated mode.

41) The Plant 2, which was operating on CFC-11/CFC-12 in 2005, has produced 5,201 MT until August 24, 2005 and thereafter ceased production of CFCs. This is about 66 % of capacity utilization of this plant, for that period. (5,201 /11,826 / 12*8 months).

42) The ratio of CFC-11 and CFC-12 can be varied as per requirement.. The enterprise took trials in 2004 for production of CFC-12 only, by recycling CFC-11.

43) There has been an increase in the ratio of CFC-12 to CFC-11 in 2005. This is the result of a management decision taken in view of the projection of low demand in the future for CFC-11. The plant was stopped in the month of June/July 2005 to carry out a modification in the reactor to make it capable of producing a high ratio of CFC-12 to CFC-11, based on the experience of the trials in the previous year. The critical part of the reactor was lined with Hastelloy C to minimise corrosion in the reactor as a result of the high proportion of CFC-12 in the mix. The MOC of the original reactor was prone to high levels of corrosion that could affect the safety of the plant. After the reactor was lined to withstand higher levels of corrosion, the plant converted 382.8 MT of CFC11 to 326.43 MT of CFC-12. This was necessitated by the steeply falling demand for CFC-11 in comparison to CFC-12.

44) The management of the plant declared cessation of CFC 11 and CFC 12 production on 25th August 2005 and commenced conversion activities to shift the plant to HCFC-22 production. The management made a presentation to the auditors on the activities to be carried out for permanent changeover from CFC to HCFC. The auditors found them satisfactory and verified the ongoing modification activities till the date of audit.

45) The plant manufacturing CFCs was audited in detail. The methodology adopted and the process verification along with the copies of documents are listed below:

b. 2005 Opening Stock Verification

46) The closing stock of December 2004 was verified for both CFC-11 and CFC-12. The stock records in the plant warehouse were checked.

47) Balance Sheet & Statement of operations Account duly audited by an external auditor for the year ending December 2004 was checked and co-related with inventory valuations (both in quantity and value) with the stock records as per the company's books of account.

48) The financial records verified for CFC-11 and CFC-12 for the month of December 2004 are the Audited balance sheet, stock register and last year's data audited by Ess Jay Consultants.

49) Based on these financial records and verification of raw material purchases, issues and inventory, the following are the accepted stock values in tons.

50) Attached, as Annexure 1 is the audited Balance Sheet for the year 2004 showing the inventory valuations as on January 1, 2005.

Table 2: Opening stock at 1 January 2005

Opening Stock of raw material CTC	763.3 MT
Opening Stock of raw material HF	277.9 MT
Opening Inventory of CFC-11	593 MT
Opening Inventory of CFC-12	1,841 MT

51) Attached, as **Annexure 1** is the audited Balance Sheet for the year 2004 showing the inventory valuations as on January 1, 2005.

c. 2005 Raw Material (RM) Procurement Verification

52) Both the major raw materials HF and CTC used for manufacture of CFC-11/CFC-12 are procured from outside. The material procured is unloaded in raw material tanks, but if there is no space, the cargo is not unloaded but kept waiting; the stock at any given point of time includes stock in raw material tanks and the cargo waiting to be unloaded.

53) The list of total raw material (CTC and HF) purchases was taken from the finance department based on the approved quota from Government of Mexico to import the same. All the invoices for import of raw materials were checked; the quantity on the invoices was cross checked with the purchase figure in the purchase account and also the amount shown in the VAT returns submitted by the company to Revenue Authorities to claim IVA back from the Government and were found to be consistent. The system for raw material consumption accounting was also reviewed and found satisfactory.

54) The monthly consumption is calculated as the difference in inventory and purchases made during the month. The allocation of raw material consumption (combined) for CFC-11 & CFC-12 is done by readings on flow meters. The allocation of raw material consumption between CFC-11 and CFC-12 is done by way of norms. The monthly raw material accounting report for the entire year is enclosed as **Annexures 2A & 2B**.

Table 3: Raw material purchases

Total Purchase of CTC in the year 2005	11,219 MT
Total Purchase of HF in the year 2005	7,356 MT

d. CFC Production Verification**:**

55) The hourly feed on the randomly selected days (26th January, 20th February, 11th June and 25th August 2005), was integrated on a day-basis to verify the daily production, which is stocked in a 'day tank' and was found to be consistent with records.

56) The daily production is recorded by reading the level gauge installed on day-tanks. The day-tanks have a level measurement facility and with the help of a pre-calibrated level-to-weight chart for each tank, production is calculated for every shift. Daily production is recorded by cumulating such records for all three shifts of the day. Each product has two-day tanks and before transfer to the main tank, quality is approved by quality control lab.

57) All final records are based on month-end accounting. The monthly reported production comes from inventory difference in the day tanks, main tanks and the material transferred from plant to filling station. This is counted as gross production. Saleable filled stock is counted as net production and difference is considered as loss / surplus.

58) Gross production is measured at the main tank and net production on the sales and final inventory. The enterprise has a good recovery system in the filling station for CFC-12 and HCFC-22, which ensures losses of only insignificant quantity (0.29%).

59) The Plant has an excellent recovery system of residual gases in the filling pipeline, returned packages for refilling and the sampling point. Such gases, which are sucked back, are accounted as part of production.

60) On these dates, (26th January, 20th February, 11th June and 25th August 2005) verification of process parameters and quality analysis data were checked and found satisfactory. Sample sheets of production logbook, quality records are included as **Annexures 3A & 3B**.

61) The raw material consumption norms for HF and CTC were verified and found to be consistent in 2005 over the months. The raw material consumption norms for the year are comparable to the past years.

Table 4: Raw material consumption ratios

Raw Material	CFC-11	CFC-12
Carbon tetrachloride (tones / ton of product)	1.1489	1.3121
Hydrogen fluoride (tones / ton of product)	0.1638	0.3739

62) The norms are comparable to good plants in the world.

63) The trends of production of CFC-11 and CFC-12 plotted against CTC and HF consumption up to August 2005 is shown graphically at the end of the **Ex-Com Form 4**.

e. Production to packaging transfer

64) Based on requirement, various packages are filled and transferred to the warehouse immediately. No stock is maintained in the filling station. The packaging bottles and cylinders are first evacuated and filled with the required gas. The system is connected for recovery of held up gas in tubes and pipelines. The following non-returnable packagings are used:

Jugs - 15 lbs, 30 lbs & 50 lbs

Bottles / cans 340gms, 1kg

65) The recycled packaging materials are cylinders, tonners and ISO containers for filling bulk quantities. The process for filling bulk containers is the same except that the package is first cleaned, inspected and painted if needed.

66) The enterprise's products brand name is Genetron. However, for export purpose, generic packaging is also used.

67) The filling system is semi-automatic. Records of filled material with different packaging are maintained on daily basis and entered in the system the next day. The cumulative figure at the end of the month gives the total quantity of material filled during the month. This figure is used for calculating the monthly net production.

68) A sample review of the system of record keeping for filled material was carried out at stores and filling station and found to match.

69) Samples of filled material was taken, one each of CFC-11, CFC-12 and HCFC-22. The pressure, weight and gas chromatography analysis was done and the auditors found the results match physical characteristics of the product. A copy of the GC analysis is enclosed as **Annexure 4.**

f. Sales and Closing Stock

70) The actual invoices raised in the month are accounted as sales. The monthly statement of sales is enclosed as **Annexure 5** (Month wise break-up of product wise CFC sales for Domestic and Export markets).

71) Verification was done by random selection of invoices and verifying their account in the sales register and VAT returns.

72) Closing Stock of raw materials and finished goods are computed and verified based on data given and verified as per the stock records and the un-audited balance sheet prepared by the company. The closing stock figures in financial records were then crosschecked with the quantities audited by the technical consultant. They are shown in **Annexure 6** (Monthly plant report, quantity and value of closing stock as per un-audited balance sheet).

Table 5: Closing stock on 31 August 2005

Closing Stock of raw material CTC	48.4 MT
Closing Stock of raw material HF	231.3 MT
Closing Inventory of CFC-11	355.7 MT
Closing Inventory of CFC-12	3783.6 MT

g. VAT Returns

73) The company files VAT returns on a monthly basis with the Revenue Authorities. An external auditor duly audits this every month. The return is being filed to claim the difference between tax 'paid' and 'tax to-be-collected' from the Government for extra taxes paid by the company.

74) The month of January 2005 was chosen for detailed verification of all the sales invoices to check authenticity of the data and record keeping systems. VAT returns for the month of January 2005 was checked by the auditors during the course of the audit and found that the data for purchase and sales match the figures shown in the books of account. Copy of the duly audited monthly VAT returns for the month of January to May 2005 is attached as **Annexure 7**. (Till the date of audit, June, July & August 2005 VAT returns were not audited by the external auditor).

75) The data confirms the sales (both domestic and exports), purchases (both domestic and imports) made by the company during the month. **Attachment 1** shows the checklist of the audit process followed in keeping with the Guidelines and step taken in addition to the Guidelines.

CESSATION OF CFC PRODUCTION AND PLANT TO BE MADE SUITABLE FOR HCFC-22 PRODUCTION

76) The Agreement between the Executive Committee and the Government of Mexico pertaining to the sole CFC producer contains two major stipulations:

a) The 'maximum production level agreed' for the plant is 22.000 MT of CFCs

b) This quantity of CFCs production is permitted in the period 2003-2005 only.

77) The results of this audit show that the Quimobásicos plant in Mexico has completed CFC production to the permissible level (21,939 MT), in the period January 2003 to 25 August 2005.

78) Having done so, they will, from that date, fully comply with the Agreement and cease all production of CFCs.

79) The plant will, however, avail the benefit of the proviso in the Agreement allowing it to convert the CFC producing plant to the production of HCFC.

80) As a measure of their compliance to the cessation of production stipulation in the Agreement the audit team has obtained the following documents.

a) Written confirmation from the Director General of Quimobásicos that they have ceased production of CFCs. (**Attachment 6**)

b) Equipment changes made/and to be made to make the plant compatible to HCFC-22 production (**Attachment 2**). The auditor's note on this subject is presented in **Attachment 5**.

c) The Ministry of Environment (SEMARNAT) revoked the CTC import licence on 6 September 2005 and banned the import of CTC with immediate effect, including any shipments in transit through the customs authorities. All responsible authorities were duly informed of this decision. Letter from the Government of Mexico confirming that Quimobásicos will not, henceforth, be given a license to import CTC is attached (**Attachment 3**).

d) The physical stock of CTC at the plant is 47.155 MT which will be sold as CTC in the market by Quimobásicos, rendering the stock level of CTC as NIL at the plant (**Attachment 4-2, 4-4 & 4-5**). (The difference in CTC stock reported in Ex-Com Form-4 is because the book stock figures are based on dipstick readings whereas the stock for disposal is based on actual weight.)

RECOMMENDATION

81) Perform yearly audits in the future to check and confirm:

a) There has been no entry of CTC into the plant after the closure date of CFC production;

b) Verification of stock, purchase and use of HF for HCFC-22;

c) Production verification of Plants 1 & 2,

d) Stock verification of finished goods, CFC-11 and CFC-12, and reduction over the year;

e) Verify consumption norms of Chloroform and HF for the production of HCFC-22;

f) Changes carried out in the plant, equipment additions, modifications, etc;

g) Any other checks to be made to confirm full compliance.

The above will be carried out from financial and technical perspectives.

EXECUTIVE COMMITTEE FORMATS & COMMENTS

82) The Formats as given in Doc No 32/33 dated 24 October 2000 were filled and submitted by the plant prior to the physical verification and were verified at the time of site audit.

Major observations:
(Ex-Com Forms 1, 2, 3 and 4 annexed)

a) The present verification audit of the 2005 production at Quimobásicos plant was carried out with the aim to verify the implementation of the Agreement between Mexico and the Executive Committee for the phase-out of CFCs in the production sector.

b) Data on plant location, names of respondents etc. were given by the plant;

c) The combined annual capacity of both plants in CFC terms is 23,652 MT.

d) Both plants have equal capacity in CFC terms.

e) Both plants are in good condition and well maintained.

f) Data submitted for CFC-11 and CFC-12 from 1995 onwards are for Plant 2, as Plant 2 has been producing CFCs, whereas Plant 1 produces only HCFC-22 and there has been no swing over in the two plants since 1995.

g) HF in-house production was discontinued from Dec. 2001.

h) CTC was always imported with import license issued by the Government of Mexico.

i) The Ministry of Environment (SEMARNAT) revoked the CTC import licence on 6 September 2005 and banned the import of CTC by Quimobásicos with immediate effect, including any shipments in transit, through the customs authorities (see Attachment.3).

j) The average production per day for the year 2005 has been higher than the average production per day for the year 2004. The plant has been operated at 34.9 TPD against the level of 30.69 TPD in 2004 and the nominal rate of production of 36 TPD (11,826 TPA/330 days).

k) The enterprise has reduced production in 2005 by around 35% against the year 2004. (2005 production: 5,201 MT; 2004 production: 8,044 MT; 2003 production: 8,694 MT).

l) The decrease in production in 2005 was achieved by limiting the number of operating days (closing CFC production in August 2005) with the aim to remain within the allocated quota.

m) Net Loss is 4 MT, which is 0.08% of Gross Production. This loss is comparable to the best plants in the world. The loss is taken as a part of gross production and accounted against the 'Maximum production Agreed'.

n) CTC and HF norms are consistent over the years and comparable to good plants in the world.

Table 6: CTC and HF norms

Raw Material Consumption ratio	**CFC-11**	**CFC-12**
Carbon tetrachloride (tones/ ton of product)	1.1489	1.3121
Hydrogen fluoride (tones/ton of product)	0.1638	0.3739

o) The ratio of production of CFC-12 to CFC-11 in the years 2003, 2004 & 2005 are shown in Table 7. The change in the ratio of CFC-12 to CFC-11 in 2005 is the result of a management decision taken in view of projected low future CFC-11 demand.

Table 7: Annual ratio of production of CFC-12 to CFC-11

Year	CFC-11 (MT)	CFC-12 (MT)	Ratio (CFC-12 / CFC-11)
2003	1,291	7,401	5.73
2004	1,177	6,867	5.83
2005	278	4,923	17.71

p) The total year 2005 consumption of CTC by the end of August 2005 was verified as 6,791 MT.

q) In 2005 the production was accounted in both gross and net basis and the losses were calculated as the difference between the two.

r) Data of Plant 1 producing HCFC-22 is included in Sheet Ex-Com Form 4. The HF consumption balance was verified for both plants as they have a common storage of the raw material.

s) The consumption of HF until the end of August 2005 (CFC & HCFC) as verified was 4,446 MT. Verification of consumption of the 2 plants is given in the detailed portion of the report

t) Based on the data supplied by the enterprise and random checks, review of norms, logbooks and cross-check calculations carried out by the auditors during the verification visit, Ess Jay Consultants confirm the monthly and annual production, sales and inventory data as given in Ex-Com formats attached as Forms 1, 2, 3 & 4.