



United Nations Environment Programme



Distr.
LIMITED



UNEP/OzL.Pro/ExCom/5/6
31 October 1991

ENGLISH
ORIGINAL: SPANISH

Executive Committee of the
Interim Multilateral Fund for the
Implementation of the Montreal Protocol

Fifth Meeting
Montreal, 18-22 November 1991

MEXICO COUNTRY PROGRAMME

UNDERSECRETARY OF ECOLOGY
GENERAL DIRECTION FOR THE
PREVENTION AND CONTROL OF
ENVIRONMENTAL POLLUTION.
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We would like to present you, for consideration of the Executive Committee for the Multilateral Fund, the Mexican Programme for the implementation of the Montreal Protocol.

This program includes a politic and strategy proposal for the implementation of the Protocol during the next 10 years. An action plan and a budget for the activities through the end of 1993 is described; this plan is subject to subsequent action proposals, depending on the alternative technology and environmental requirements evolution.

The implementation of this program represents an important step in complying Mexico's efforts for the protection of the ozone layer, and we hope that it will also be useful as a help guide for other countries to develop their own programmes, by which we will increase the efforts to protect the ozone layer.

Sincerely
ARQ. RENE ALTAMIRANO PEREZ.

c.c.p.- Fís. Sergio Reyes Luján. Subsecretario de Ecología - Presente
c.c.p.- Biól. Catalina Mosler Garcia. Coordinadora del Centro de Información
Tecnológica-Presente
c.c.p.- Archivo de la Dirección

RAP/CMG/SCG/rmv

**MEXICO'S PROGRAM OF ACTIVITIES TO BE SUPPORTED
BY THE MONTREAL PROTOCOL INTERIM MULTILATERAL FUND**

1. INTRODUCTION

This country program presents the strategy and policy framework for implementing the Montreal Protocol in Mexico over the next ten years. An action plan and a budget are presented for the specific activities Mexico plans to undertake with the support of the Fund. The action plan and the budget correspond to activities through the end of 1993 -- a time frame consistent with the initial time span of the Fund (three years beginning on January 1, 1991). The strategy and policy framework for implementing the Protocol in Mexico will evolve and new action plans and budgets will be submitted after 1993 to the Executive Committee for approval.

2. REVIEW OF PRODUCTION AND CONSUMPTION OF THE CONTROLLED SUBSTANCES

CFCs

Total CFC production (which consists entirely of CFC-11 and CFC-12) in Mexico was estimated at 9,465 metric tons for 1989. Of this 7,684 metric tons was for domestic use and the rest was exported. Domestic use dropped to an estimated 6,981 metric tons in 1990, but would have been expected to resume growth and reach 7,470 metric tons in 1993 if Mexico were not undertaking effective programs to phase out ozone depleting substances. The country imports CFC-113 (400.3 metric tons in 1988) and CFC-114 (44.3 metric tons in 1988). CFC-115 is neither produced nor imported.

Two manufacturers produce CFC-11 and CFC-12 in three facilities. Both of the manufacturers have swing plants which are capable of shifting production from CFC-11 and CFC-12 to produce HCFC-22. Such a shift results in approximately a 50 percent reduction in the production capacity of the plants. Two of the facilities have a production capacity of approximately 14,000 metric tons. A third facility has a capacity of 4,000 to 7,000 metric tons per year. No facilities are under construction to produce CFCs, halons, methyl chloroform, or any other controlled substances.

The distribution of total CFC consumption by type of CFC and by use is shown in Exhibit 1.

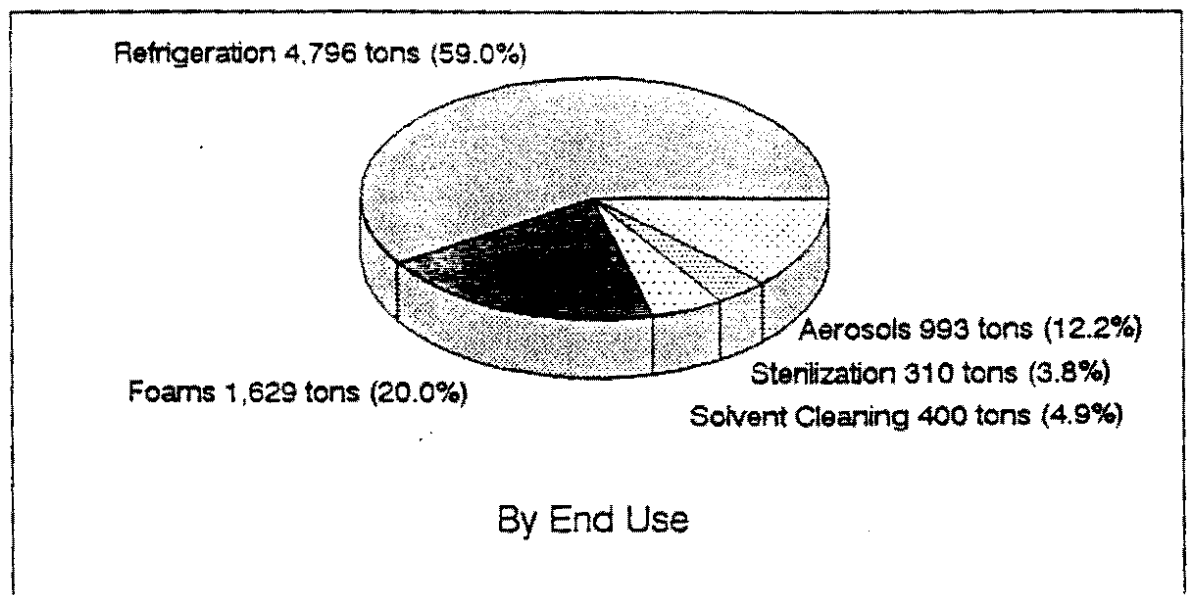
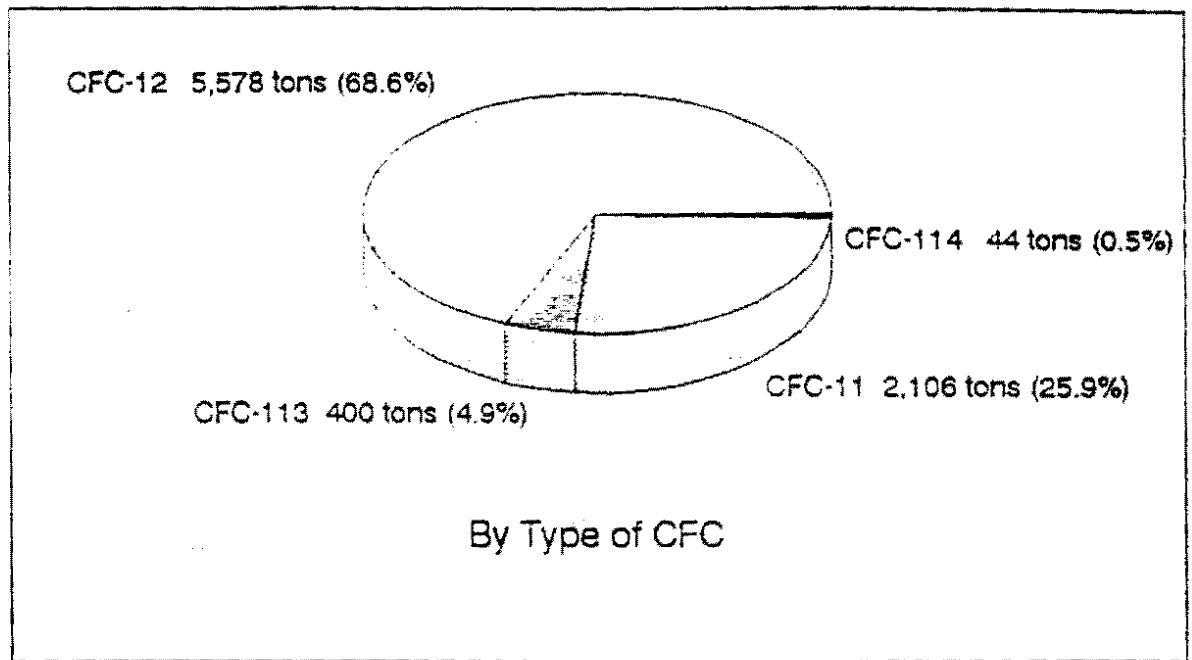
Exhibit 2 shows the distributions of consumption by use for CFC-11 and CFC-12. CFC-114 is used exclusively in the commercial and industrial refrigeration sector, and CFC-113 is used exclusively in electronics and metal cleaning.

** Mexico Country Program **

Exhibit 1

Mexico: Distribution of CFC Consumption

(Based on Actual Tons Consumed in 1989)



Total: 8,128 Tons Consumed in 1989

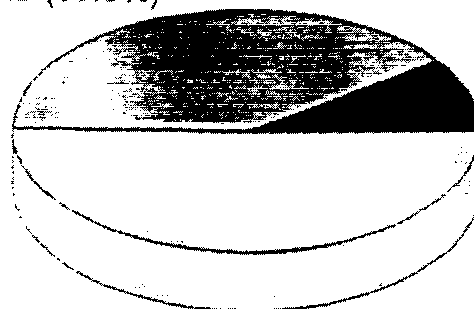
** Mexico Country Program **

Exhibit 2

Mexico CFC-11 Consumption by End Use

(Based on Actual Tons Consumed in 1989)

Refrigeration 840 tons (39.9%)



Aerosols 207 (9.8%)

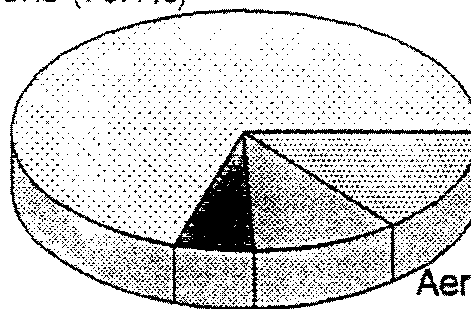
Foams 1,059 tons (50.3%)

2,106 Tons Consumed in 1989

Mexico CFC-12 Consumption by End Use

(Based on Actual Tons Consumed in 1989)

Refrigeration 3,912 tons (70.1%)



Aerosols 786 tons (14.1%)

Sterilization 310 tons (5.6%)

Foams 570 tons (10.2%)

5,578 Tons Consumed in 1989

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Halons

Halons are imported to Mexico for fire extinguishing equipment. Imports in 1989 were estimated at 200 metric tons of Halon-1211 and 60 metric tons of Halon-1301, with expected growth to 293 metric tons and 88 metric tons, respectively, in 1993. These figures might be reduced by taking the necessary measures to eliminate non-essential uses.

Carbon Tetrachloride

Approximately 4,200 metric tons of carbon tetrachloride were produced in 1989 (all by Petroleos Mexicanos, or PEMEX, the state-owned oil company) and 5,000 metric tons were imported. All the carbon tetrachloride is consumed in the manufacture of CFC-11 and CFC-12.

Methyl Chloroform (MCF)

Consumption of MCF in 1988 was approximately 9,000 metric tons, and was distributed among end-uses as shown in Exhibit 3. Because 75 percent of this use is by electronics firms operating near the Mexico-U.S. border, future demand will reflect the future needs of those operations and the success of efforts already underway to phase out their use. All of the MCF is imported, mostly from the United States.

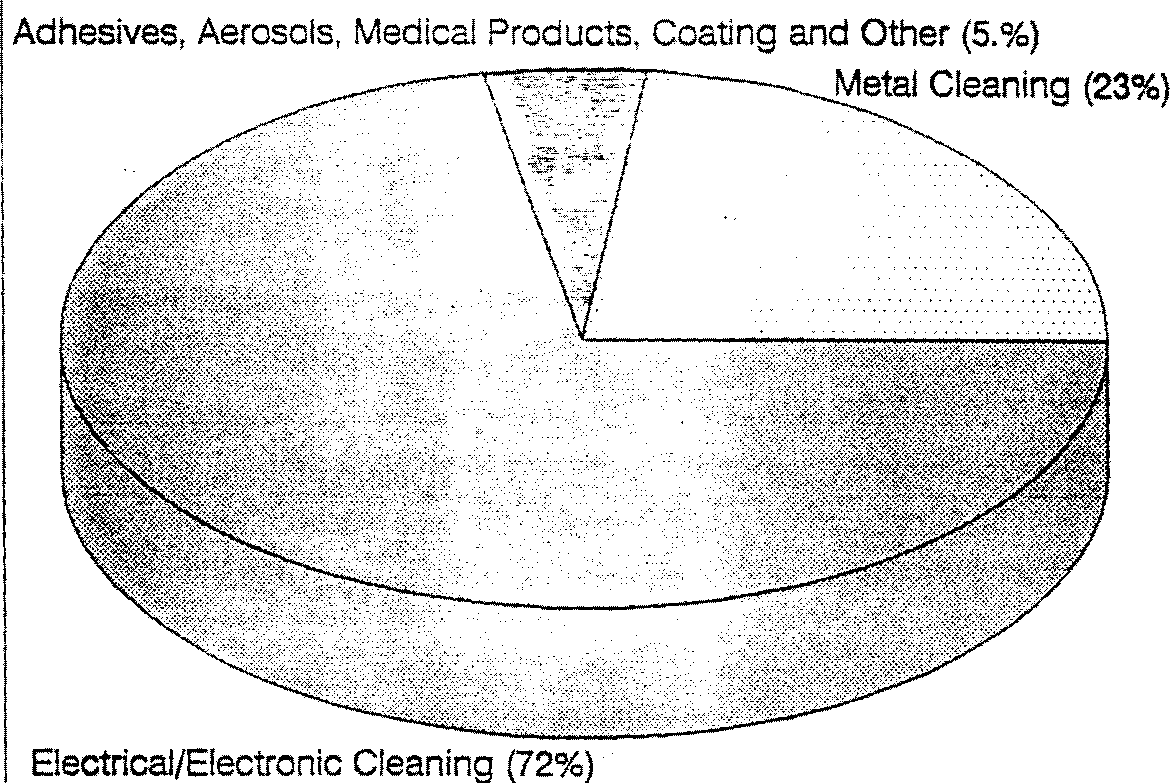
3. REVIEW OF ACTIVITIES ALREADY UNDERTAKEN

Mexico has been an active participant in efforts to protect the stratospheric ozone layer. In 1985, the Mexican Secretariat for Urban Development and Ecology (SEDUE) met with the two CFC manufacturers in Mexico. During these meetings, the CFC producers agreed to collaborate with SEDUE in controlling the production and emissions of ozone-depleting substances. In that year, Mexico helped author the Vienna Convention for the Protection of the Ozone Layer and was a key participant in negotiations leading to the Montreal Protocol. Mexico was the first country to ratify the Montreal Protocol -- March 31, 1988.

As shown in Exhibit 4, several voluntary agreements have been signed between SEDUE and CFC producers, halon distributors, and industry associations of user firms, for the control of substances covered by the Protocol. These agreements, which have been negotiated since 1988, include measures to reduce consumption of the controlled substances in aerosols, flexible polyurethane foams, and fire protection. The agreements indicate specific reductions or activities leading to their substitution and typically require the industrial party to report its progress to SEDUE each quarter.

Exhibit 3

Consumption of Methyl Chloroform in Mexico by End Use



1988 Demand = 9,000 Metric Tons

Source: Chem Systems 1989

** Mexico Country Program **

EXHIBIT 4

VOLUNTARY AGREEMENTS WITH THE MEXICAN INDUSTRY TO REDUCE CFC AND HALON USE

End Use	Agreement Signatories	Nature of Organization	Measures
Polyurethane Foams	DuPont	CFC Producer	■ Phase out CFC use by 1990 in flexible foams
	Quimobásicos	CFC Producer	■ Update information on development of CFC substitutes for adoption in rigid foam systems
	Mexican Polyurethane Institute	Industry Association	■ Facilitate technology transfer
Aerosol Products	DuPont	CFC Producer	■ Cut non essential CFC use by 50% in 1989
	Quimobásicos	CFC Producer	■ Phase out remaining 50% non-essential use by 1990
	National Chamber of Industries	Association of Manufacturing Industries	■ Medicinal, electronic cleaners, and spray products used in aircraft cabins are considered essential
	Mexican Aerosol Institute	Industry Association	
	Chamber of Perfume and Cosmetics Industry	Industry Association	■ Recommend labeling of ozone-safe aerosols
Halons	DuPont	Halon Importer/Distributor	■ Provide users with information on halon conservation measures
	CAISA	Halon Importer/Distributor	
	ICI	Halon Importer/Distributor	■ Keep users informed of progress in development of alternatives
Miscellaneous	National Board of In-Bond (Maquiladora) Industries	Association of Export Industries Neighboring the U.S./Mexico Border	■ Promote reduced use of ozone-depleting substances

SEDUE and the Mexican Chamber of Industries (CANACINTRA) have organized various conferences and seminars to exchange technical information on new developments to replace ozone depleting substances. In the summer of 1989, SEDUE, in cooperation with the U.S. Environmental Protection Agency, prepared a case study of the costs to Mexico of implementing the Montreal Protocol. The study describes the production and consumption of ozone-depleting substances in Mexico, including projections for future demand. The study also presents the characteristics of the current technology used in industry end uses and describes the practices, technologies, and substitute technologies and chemicals that can be used to reduce or eliminate such consumption in each end use and estimates the associated costs.

In addition, the case study also highlights cost-effective technologies that could be implemented in the short term in specific end-uses (e.g., CFC recycling in mobile air conditioning, solvents, and refrigeration). The study received strong support from the Mexican Chamber of Industries (CANACINTRA) and technical advice from the U.S. Environmental Protection Agency.

Based on the technologies highlighted in the case study, SEDUE identified and prepared two project proposals which were presented for discussion during the April 15-19 meeting of the Executive Committee of the Interim Multilateral Fund. The creation of the Ozone Protection Technical Information Center was also proposed as a dedicated unit within SEDUE to assist in implementing the Montreal Protocol. (A more detailed discussion of this unit is presented in section 4 below).

The first proposal presents a program to demonstrate CFC-12 recycling from mobile air conditioning systems (MACs). The program consists of a pilot recycling project and a recycling technology training and public outreach program. The pilot project provides recycling equipment and training to a large mobile air conditioning recycling facility in Mexico City. This pilot facility will provide hands-on training to technicians from other mobile air conditioning recycling facilities. The program will be supplemented with a public education campaign about proper service and maintenance procedures that minimize CFC-12 emissions from mobile air conditioning systems. If this demonstration is successful, recycling will become common practice in this sector. It is expected that the expanded use of this technology in Mexico could result in an overall savings of 25 to 30 percent of the CFC-12 used in the MAC sector.

The second proposal is for safety evaluation, engineering, and training to support the safe elimination of CFC aerosol propellants in Mexico and to assure the safe use of flammable substitute hydrocarbons. Aerosols in Mexico are produced without

CFCs except for medical and other CFC-dependent uses where no safe substitutes are approved. The experience gained from implementing the program and the existing technical expertise in Mexico can be transferred to other Article 5 countries.

SEDUE, in cooperation with the Environmental Protection Agency and Northern Telecom, has also announced a program to expedite the elimination of CFC-113 solvent consumption from Mexico's electronic manufacturing industries. Northern Telecom, a manufacturer of telecommunications equipment, will provide technical expertise for these efforts. The program will be implemented in four stages: project planning, training, demonstration, and plant conversion. Moreover, Northern Telecom and other member companies of the Industry Cooperative for Ozone Layer Protection (ICOLP) have agreed to make available to the Mexican electronic industries an on-line, international database called OZONET, which is designed to provide users of CFC compounds with information on alternative processes, materials, and technologies.

In addition, initial terms of reference have been prepared for the following new projects:

- centralized CFC recycling system
- low CFC foam insulation
- centralized CFC-113 and MCF recycling plants
- halon conservation training program
- support for plant conversions in the electronics industry
- support for expanded use of recycling in MACs
- training seminar for service contractors on handling new refrigerants
- coordinated efforts to eliminate requirements for CFC or halon use in production standards, building codes, or vehicle fire protection guidelines.

Detailed proposals will be documented for each of these projects in a similar form as the MACs and aerosols proposals presented to the Executive Committee in April.

4. INSTITUTIONAL AND POLICY FRAMEWORK GOVERNING CONTROLLED SUBSTANCES

SEDUE's Office of Pollution Prevention and Control has been the lead office participating in ozone protection activities in Mexico. As its plan for an accelerated phaseout unfolds, SEDUE will find itself more deeply involved in program implementation including time-consuming tasks such as negotiating voluntary agreements, attending international meetings and technical conferences, providing information in response to public requests, and leading the preparation and execution of technical cooperation projects.

The Ozone Protection Technical Information Center within SEDUE will respond to the increasing demand for SEDUE's involvement in these ozone protection activities. The Center's dedicated technical and administrative staff will support SEDUE by:

- assisting in the implementation of SEDUE's ozone protection program to monitor and facilitate industry's conversion to alternative technologies;
- supporting the identification of projects and negotiation of voluntary agreements;
- acting as a liaison between Mexico, bilateral and multilateral agencies (e.g., the World Bank, UNDP, and UNEP) and other Latin American countries to promote both technical cooperation and information exchange;
- building public awareness of, and support for, products and service procedures that are safe for the ozone layer.

The Center will generate concrete results in response to each of the above goals. These include:

- technical and institutional support for project proposals to obtain funding from the Interim Multilateral Fund of the Montreal Protocol;
- technical and institutional support as follow-up to funded proposals to insure that reductions are achieved;
- monitor compliance with voluntary agreements and Mexico's plan for compliance with the Protocol;
- Spanish technical manuals on substitute chemicals, technologies, and practices that reduce the use and/or emissions of ozone-depleting substances;
- Spanish language training programs to support ozone protection projects; and
- public education and outreach programs which will include press releases on important developments, brochures on specific technologies, and a newsletter for industry coordination.

In addition to the existing voluntary agreements and technical support, Mexico will (1) develop additional agreements in the area of solvent use and refrigeration and (2) will announce specific targets for reduction in the overall

consumption of the controlled substances through the year 2000. For this purpose, a system for limiting the production and imports of these substances will be necessary. This timetable will seek to require phaseouts on a timetable as close to that of developed countries as possible. The Government of Mexico is exploring the possibility of using market mechanisms for implementing the phaseout. A specific system for production and import controls will be defined and implemented in coordination with Mexico's Ministry of Commerce and Industrial Development, the Treasury Ministry, and other ministries with relevant expertise and jurisdiction.

5. ROLE OF THE THREE IMPLEMENTING AGENCIES

World Bank

As part of this country program, Mexico is working with the World Bank to identify a mechanism for transferring resources from the Montreal Protocol Multilateral Fund. This mechanism shall allow rapid implementation of the activities described in Section 7 (Budget). The World Bank is:

- supporting Mexico's establishment of a domestic financing mechanism to expedite funding of the phaseout program; and
- helping to strengthen Mexico's institutional capabilities to manage ozone protection activities.

United Nations Development Programme (UNDP)

Mexico will work with UNDP in the design of training programs. Specifically, UNDP will develop Spanish language training program components for several of the investment projects identified in Section 7. SEDUE's Pollution Prevention and Control Office will work with UNDP to prepare terms of reference for these activities.

United Nations Environment Programme (UNEP)

In addition to its activities with the World Bank and UNDP, Mexico will work with UNEP to facilitate the dissemination of information regarding replacement technology for ozone-depleting substances to other Spanish-speaking countries. The Ozone Protection Technical Information Center will liaise with UNEP's Industry and Environment Office (IEO) to achieve the following goals:

- disseminate Spanish technical manuals on ODS substitute chemicals, technologies, and practices that reduce the use and/or emissions of ozone-depleting substances; and

create public education and outreach programs such as press releases and brochures on specific technologies.

Detailed terms of reference will be prepared by SEDUE's Pollution Prevention and Control Office.

6. ACTION PLAN AND TIMETABLE FOR FIRST THREE YEARS OF IMPLEMENTATION

Mexico will undertake a series of activities through 1993 to establish a solid basis for the implementation of a 10-year ozone protection program. This program will be managed by the Ozone Protection Technical Information Center and will include activities which will fall under two categories: program management and industry support.

Program Management

A successful implementation of the Montreal Protocol in Mexico will result in a cost-effective elimination of ozone depleting substances in the shortest time frame possible. Mexico's goal is to eliminate these substances as fast as industrialized nations. Thus, Mexico's ability to meet this goal depends to a large extent on the establishment of a sound management plan which will include the following elements:

- a timetable for interim reductions and final phaseout date;
- a system for implementing import and production controls;
- a system for monitoring progress;
- update existing agreements and negotiate additional agreements with industry in support of the above reduction targets; and,
- coordinate institutional arrangements for the transfer of funds from the Multilateral Fund.

Industry Support Activities

To continue and expand existing activities to support industry's transition to alternative technologies, SEDUE will undertake the following activities:

- define an initial three-year workplan (which can be updated and extended periodically) for the Ozone Protection Technical Information Center including the following elements:

**** Mexico Country Program ****

- project proposals
 - supervision of project implementation
 - training seminars
 - demonstration of alternative technologies
 - public education and outreach programs
 - joint projects with other Article 5 countries
- support implementation of technical projects already proposed to the Executive Committee of the Interim Multilateral Fund (i.e., CFC-12 MACs recycling demonstration project, aerosols safety and training program).
 - participate in international fora and contribute to UNEP technical assessments.

7. BUDGET

The budget for Mexico presented in this document covers activities through the end of 1993 -- a time frame consistent with the first three years of operation of the Interim Multilateral Fund.

The three-year budget is estimated at \$9,820,930. The specific line items for the budget are described below:

- \$1,411,610 for the operation of the Ozone Protection Technical Information Center during the second and third years (see Appendix A);
- \$177,700 for a CFC-12 recycling demonstration project to expand the use of recycling in mobile air conditioning and for an aerosols safety and training program (see Appendix B);
- an estimated \$8 million for investment in various projects:
 - centralized CFC recycling plant for refrigerants
 - training for new refrigerant handling
 - low CFC foam insulation
 - centralized CFC-113 and MCF recycling plants
 - halon conservation training program
 - support for plant conversions in the electronics industry
 - support for expanded use of recycling in MACs
 - training seminar for service contractors on handling new refrigerants
 - support for chiller conversion to HCFC-123
 - engineering and retrofit of MACs compressor plant
 - conversion of polyurethane foam from CFC-based to HCFC-based

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The \$8 million estimate is based on the range of costs over three years estimated in the Mexico Case Study. This amount is broken out by year and end use category in Appendix D.

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APPENDIX A

BUDGET FOR THE OZONE PROTECTION TECHNICAL INFORMATION CENTER

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ONE-TIME SETUP COSTS	FIRST YEAR	SECOND YEAR	THIRD YEAR
OFFICE EQUIPMENT COMPUTER • FAX BOARD SOFTWARE • PHOTOCOPY MACHINE QUALITY PRINTER • TELEPHONE FAST MODEM	20,300	16,000 (2)	-----
OFFICE REMODELING SCREENS AND ITS MOUNTING ELECTRICAL INSTALLATION TELEPHONE SWITCHBOARD INSTALLATION PAINTING	3,100	-----	-----
FURNITURE DESKS AND CHAIRS • ARCHIVES MEETING TABLE AND CHAIRS • BOOKCASE	3,400	5,000 (3)	-----
ANNUAL OPERATING COSTS	FIRST YEAR	SECOND YEAR	THIRD YEAR
SALARIES TECHNICAL COORDINATOR INSTITUTIONAL COORDINATOR ADMINISTRATIVE ASSISTANT BENEFITS	34,400	136,470 (5)	162,690
TRAVEL AND CONFERENCES DOMESTIC TRAVEL INTERNATIONAL TRAVEL CONFERENCES	26,000	52,000 (6)	62,400
COMMUNICATIONS MAIL PHONE SERVICE AND MAINTENANCE	6,000	7,200 (4)	8,640
OFFICE SUPPLIES PAPER FOR THE PRINTER, TELECOPY, PHOTOCOPY MACHINE TONERS FOR THE PRINTER AND PHOTOCOPY MACHINE DISKETTES BUSINESS CARDS	3,800	4,560 (4)	5,480
COMPUTERIZED TRACKING SYSTEM SEE APPENDIX C FOR DETAILS	-----	64,750	-----
SHORT-TERM EXPERT FUND BUDGET FOR SHORT TERM EXPERTS WHO WILL ASSIST THE OZONE PROTECTION TECHNICAL AND INFORMATION CENTER ON SPECIFIC ASSIGNMENT RELATED TO THE TECHNICAL EVALUATION OF INDUSTRY PROJECTS. THESE EXPERTS MAY BE LOCAL OR INTERNATIONAL, DEPENDING ON THE EXPERTISE REQUIRED FOR EACH PROJECT.	-----	180,000	180,000
PUBLIC EDUCATION AND OUTREACH PROGRAM CONTINUOUS PROGRAM TO INFORM AND EDUCATE THE GENERAL PUBLIC AND INDUSTRIES THAT USE CONTROLLED SUBSTANCES, ABOUT THE ACTIVITIES UNDERWAY TO PROTECT THE OZONE LAYER. THIS BUDGET WILL ALLOW THE PRODUCTION OF SPECIAL BROCHURES, PRESS RELEASES, MANUALS, AND THE ORGANIZATION OF SPECIAL EVENTS, CONFERENCES AND OTHER MEETINGS.	-----	200,000	200,000
CONTINGENCIES (10% OF OPERATING COSTS)	7,020	64,500	61,920
TOTAL	104,020 (1)	730,480	681,130

** Mexico Country Program **

FOOTNOTES

- (1) The budget for the first year will be provided by the United States as part of its contribution to the Multilateral Fund. For this reason it is excluded from the overall \$9,820,930 budget.
- (2) Budget for another computer and printer, scanner and necessary software for its operation.
- (3) Budget for 2 desks, 2 chairs and 4 archives.
- (4) This cost increased by 20% over the previous year because of an increasing inflation rate.
- (5) Budget for a general coordinator, 2 technical coordinators, an institutional coordinator and 2 assistants.
- (6) Higher than first year due to the increased travel brought upon by public outreach programs and follow-up projects.

**** Mexico Country Program ****

APPENDIX B

COMPLETED PROPOSALS SUBMITTED TO THE EXECUTIVE COMMITTEE¹

PROPOSAL	KEY COMPONENT	BUDGET
CFC-12 Recycling from MACs: Demonstration Program	· Pilot Recycling Project	\$47,780
	· Training and Outreach Program	\$26,620
		=====
Subtotal		\$74,400
Elimination of CFC Aerosol Propellants: Manufacturing Safety Program	· Workshop	\$7,150
	· Plant Safety Review	\$36,615
	· In-Plant Training	\$42,235
	· Project Administration	\$15,900
Subtotal		=====
		\$102,900
TOTAL BUDGET		\$177,300

¹As presented at the Third Meeting of the Executive Committee of the Multilateral Fund Under the Montreal Protocol, April 15-19, 1991.

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APPENDIX C

TASKS AND BUDGET FOR COMPUTERIZED TRACKING SYSTEM

TASKS	HOURS	BUDGET ²
Systems Option Briefing	25	\$1,250
Requirements Analysis	75	\$3,500
Computer Program and Coding	750	\$31,500
Reporting Forms	150	\$6,500
Guidance Document (Spanish & English)	300	\$13,000
Software Testing and Adaptation	100	\$4,500
User Manual (Spanish & English)	100	\$4,500
TOTAL	1500	\$64,750

² The budget estimate is based on a mix of hours from local and international consultants. Local experts are estimated at \$40/hour and international experts are estimated at \$50/hour.

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Appendix D

Budget and Timeline for Ozone Protection Investment Projects

Sector	Project	Year 1	Year 2	Year 3	Total
Refrigeration	- centralized CFC recycling and material handling system	0.8	0.2		1.0
	- training for new refrigerant handling		0.05	0.05	0.1
Cooling/Air Conditioning	- expanded recycling in MACs	0.15	0.35		0.5
	- engineering & retrofit of MACs compressor plant		0.4	0.1	0.5
	- chiller conversion to HCFC-123		0.5	0.75	1.25
Foams	- low CFC foam insulation	0.05	0.1		0.15
	- flexible polyurethane foam conversion from CFC to HCFC			0.6	0.6
Cleaning Operations	- centralized CFC-113 recycling	0.4	0.5		0.9
	- centralized MCF recycling	0.4	0.5		0.9
	- plant conversions training and engineering		0.6	0.75	1.35
Fire Protection	- Halon conservation training	0.5	0.25		0.75
TOTALS		2.3	3.45	2.25	8.00

Note: All amounts are in millions of U.S. dollars