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

Eleventh Meeting
Bangkok, 10-12 November 1993

WORLD BANK WORK PROGRAMME AMENDMENTS

This document includes:

- Comments and recommendations of the Fund Secretariat
- World Bank Work Programme amendments

COMMENTS AND RECOMMENDATIONS OF THE FUND SECRETARIAT

Comments

1. The World Bank has submitted a request for four supplemental activities costing below US \$500,000 as amendments to its 1993 work programme:

User-Sector Pre-Investment Studies (India)	US \$100,000
User-Sector Project Identification and Preparation (Philippines)	US \$150,000
Country Programme and User Sector Pre-Investment Studies (Slovenia)	US \$150,000
Aero Pharma Aerosol Conversion	<u>US \$ 87,520</u>
Total request	US \$487,520

2. The request for Slovenia contains three main components: country programme, workshop, and sub-project preparation. This will be the first activities funded for Slovenia.

3. At the current level of expenditures of project preparation in India, the US \$400,000 allocated in the original work programme will be exceeded, in fact, by US \$18,000 by the end of the year.

4. Unlike the India project preparation request, the current level of expenditures (US \$42,000 since last meeting) will not exceed the funds allocated by the end of the year for the Philippines project preparation request. However, unlike project preparation in previous years, project preparation funds approved as pre-investment studies will be carried-over to next year and will not be reconciled at the end of the year like the Bank's administrative budget and project supervision activities. Therefore, funds approved this year will be available for expenditure in 1994 and beyond.

5. The Aero Pharma Aerosol Conversion project contains costs for the provision of land for an open air filling room for safety reasons associated with hydrocarbon propellant filling. The Committee has not taken a decision on funding the purchase of land. Furthermore, there is currently no ODS phase-out strategy for aerosol sector in India. Such a strategy might produce cost-effective options for addressing relocations and the purchase of land issue. Also, the OORG technical reviewer stated "the implementation time for these projects cannot be set until there is an adequate supply of aerosol grade HAP (hydrocarbon aerosol propellants) in India. This timetable will have to be set by the Bank".

Recommendations

6. It is recommended that the costs for the Aero Pharma Aerosol Conversion project should be funded excluding the cost of land with the provision that this project is considered in light of an overall aerosol sector phase-out strategy and implemented taking into consideration the availability of an adequate supply of aerosol grade HAP as recommended by the OORG technical reviewer. Therefore, US \$62,520 is recommended for funding.

7. It is recommended that the Committee approve all of the other work programme amendments in the amount of US \$400,000 and direct the Treasurer to transfer a total of US \$462,520 to the World Bank for work programme amendments.

**ATTACHMENT B: WORK PROGRAM AMENDMENTS FOR CONSIDERATION AT
THE 11TH MEETING OF THE EXECUTIVE COMMITTEE OF THE
MULTILATERAL FUND**

This attachment consists in the Bank's formal requests for additions to its Work Program budget for project preparation for the following countries and amounts:

- (i) India: User sector pre-investment studies (\$100,000)

Pipeline development activities are continuing in India and additional resources are required to maintain the present pace of activities. A substantial portion of the work is being coordinated and undertaken locally by the Tata Energy Research Institute (TERI) therefore providing for increased efficiency in the use of the funds. TERI is coordinating its activities closely with the Ministry of Environment and Forest and is collaborating with UNDP on the Country Program. This request is a supplement.

- (ii) Philippines: User-sector project identification and preparation (\$150,000)

With the first grant agreement to be signed by the end of September, about 6 months after EC approval, the Government of the Philippines has requested the Bank to initiate the identification and preparation of the second group of sub-project, which will most likely be processed through an umbrella agreement. The Bank will be initiating these activities in the Philippines by the end of the year. The Project will involve the preparation of about 20 technologically sound, cost effective ODS phaseout sub-projects based on strategies outlined in the country program approved at the 10th Meeting of the Fund Executive Committee. A list of sub-projects will be prepared, from which DENR will endorse sub-projects for further development and final submission through the World Bank for MP financing. DENR and the World Bank will agree on the most effective project execution arrangement upon approval of the project preparation funds.

- (iii) Slovenia: Country Program and User sector pre-investment studies (\$150,000)

The Republic of Slovenia has, upon presentation of its ODS consumption data to UNEP, been confirmed as eligible for assistance from the Multilateral Fund for the Implementation of the Montreal Protocol as its per-capita consumption has been reported to be less than 0.3 kg. These funds will be used to provide assistance to Slovenia's Ministry of the Environment for the following activities: (1) preparation of Slovenia's Country program, (2) preparation of sub-sector project preparation workshops, and (3) undertaking of the identification and preparation of sub-projects which will form the first multicomponent ODS phaseout project.

**THE MONTREAL PROTOCOL ON
SUBSTANCES THAT DEplete THE OZONE LAYER
PROJECT COVER SHEET**

COUNTRY	India
SECTORS COVERED	Aerosol
ODS CONSUMPTION IN AFFECTED SECTOR	1,100 Tons CFC-11/12 (1,100 ton ODP)
PROJECT TITLE	Aero Pharma Aerosol Conversion
PROJECT DURATION	12 Months
PROJECT IMPACT	Phaseout 36 tons per year of CFC-12 and CFC-11/12 Mixture (36 tons ODP).
Unit Abatement Cost (UAC)	\$0.39 per kg./Year
PROPOSED BUDGET	Total Project Cost \$87,520
PROPOSED OTF GRANT	\$87,520
IMPLEMENTING ENTERPRISE	Aero Pharma Pvt. Ltd.
IMPLEMENTING AGENCY	THE WORLD BANK/IDBI
NATIONAL COORDINATING AGENCY	MINISTRY OF ENVIRONMENT AND FORESTS MOEF

PROJECT SUMMARY

This project will accomplish the conversion to hydrocarbon (HC) propellants at Aero Pharma Pvt. Ltd. The company has good machinery, completely explosion proof, but some additions are required to fill HAPs.

Their existing facility is completely enclosed, with very little unoccupied space, which cannot be made safe for filling HCs. They will require a new lot. Management is in agreement that "open air filling room" ("OAFR") should be used, so that is not much additional expense.

This project will install permanent storage tanks and increase fire protection to improve overall plant safety. The local FDA regulations requires that aerosol concentrate be prepared on the premises and finished product to be packed there. Safety training will be done by a foreign expert.

TECHNICAL ASSESSMENT: This subproject has been reviewed and supported by OORG technical reviewer Mr. H. McCain. His comments are attached.

PROJECT OBJECTIVES. Phase out the use of 36 tons of CFC-12 annually by completing the conversion process from CFCs to HAPs.

SECTOR BACKGROUND. India has four suppliers of CFCs. List prices for CFC are over US\$3.50/kg., but due to the current over-capacity and a local recession, CFC is selling to some customers at \$2.00/kg., which historically is a very good price.

Fillers therefore feel very little incentive to change. Also it is estimated that there are over 200 fillers of aerosols in India, so that competition is very keen, and there is a general fear of switching to HC before the competition, and losing market share due to poor quality.

A government task forces has estimated aerosol fillings at over 40,000,000 units per year, and a consumption of over 1,400 metric tons of CFC (1993). These were preliminary figures, but they were substantially verified during the recent sectoral workshops. Aero Pharma is certainly a major factor in the aerosol market.

ENTERPRISE BACKGROUND. Aero Pharma Pvt. Ltd., forms part of the Aero Pharma group of 4 limited companies dealing with pharmaceutical, cosmetics, and personal products. Their largest individual product fillings are non-aerosol, the bottling of baby oil.

Proof of this company's seriousness is supplied by the fact that they are the only approved contract packager for "Johnson Baby Oil" by Johnson & Johnson Ltd., and the fact that they have won awards from this very strict multinational for their quality and service.

Aero Pharma currently fills about 1,000,000 cans per year and uses about 36 metric tons of CFC.

PROJECT DESCRIPTION. Aero Pharma has enough space for ongoing operations, but they cannot fill HC propellants at this plant. It is far too small, and their neighbor on the only side where aerosol filling could be moved has outside welding right on the other side of the wall.

They therefore need to purchase a lot to install an open air filling room ("OAFR"). The OAFR is very inexpensive, but local FDA regulations require that concentrate be prepared on the premises and finished product packed there. The lot must also be walled.

As pharmaceutical and cosmetics must be filled indoors under Indian law, and their machine crimps and gasses at the same time, they cannot have it both indoors and outdoors in an open air filling room. They will need a new crimper so that their actual gasser can be outside in the OAFR.

They are not currently leak testing their production. Safe filling procedures for hydrocarbons requires this, and that they have inspection gauges to do quality and safe work with.

Safety equipment must be purchased and safety training provided, initially by a foreign expert until a local Indian firm is trained to provide this service.

JUSTIFICATION FOR ALTERNATE TECHNOLOGY SELECTION. Hydrocarbon aerosol propellants have been the principal alternatives to CFC-12 employed worldwide. They are approved by the 1991 UNEP Technical Options Report on Aerosols, Sterilants, and Miscellaneous Uses and Carbon tetrachloride.

Aerosol grade hydrocarbon propellant is not now available in India, but at least 2 investment subproject proposals are addressing this need and will resolve the lack of this propellant.

PROJECT COST. The total project incremental cost of \$87,520.00 was calculated as the economic capital cost (see "Recurring Costs/Savings" below).

Capital costs. \$87,520.00 for the above specified equipment and training.

Recurring Costs/Savings. There is a slight increase in maintenance cost when using HAPs. There will, however, be some initial operational savings that occur with Aero Pharma's captive brands (Aero Pharma does about 90% contract packaging and 10% or less of their own brands) before competition reduces prices and these savings disappear. These 2 very small quantities are considered as zero and as equal.

It should be noted that Aero Pharma does mostly contract packaging, and that no client will accept the change from CFCs to HC without a reduction in price. Thus on contract filling Aero Pharma will never receive even a short-term savings. Here these savings will go to the marketer, the owner of the brand.

This works in the following manner. The contract packager today charges U.S. \$0.10-0.15 per can plus the cost of CFC-12 or of CFC-11/CFC-12 mixture. When he converts to HAPs, he charges U.S. \$0.10-0.15 plus the cost of HAPs. No savings are involved.

This project considers that short-term savings will cover some of the increased maintenance cost, and that thereafter Aero Pharma is willing to absorb these extra costs. Therefore operating costs and operating savings are considered to be equal for this project.

UNIT ABATEMENT COSTS. \$0.39 per kilogram (see Annex 2).

IMPLEMENTATION SCHEDULE. This is a very simple project to implement, as it can be completed during 4 quarters:

Task	Q1	Q2	Q3	Q4
Purchase equipment and wall lot	XXXX			
Build filling rooms		XXXX		
Install propellant tank			XXXX	
Training visit/start-up				XXXX

PROCUREMENT. Procurement will be in accordance with Bank/IDBI guidelines. Provisions would be made for the trainer to be fully prepared concerning aerosol filling plant safety (preferably with OAPR experience), and tank and piping installation. Experience with HC aerosol formulations would be useful.

REQUIRED REGULATORY ACTIONS. Once all aerosol manufacturers have had an opportunity to convert, and once the technical expert contracted to do the training has certified that plant personnel are fully trained, the use of CFC in aerosols in India should be prohibited.

ANNEX 1

AERO PHARMA PROJECT CONVERSION COSTS:

The project costs are as follows:

1)	1 ea. 800 sq. meter lot	US \$ 25,000
2)	1 ea. 5000 kg. propellant tank	6,000
3)	1 ea. Vacuum crimper complete w/vacuum system	14,000
4)	1 ea. Concentrate preparation room 30 mtrs.2	5,000
5)	1 ea. Packing room 50 mtrs.2	5,000
6)	Compound wall	10,000
7)	1 ea. Leak test tank (hot water bath)	9,000
8)	1 ea. Set of quality control gauges (crimp, pressure, vacuum)	1,520
9)	Additional safety equipment	4,000
10)	Shipping and handling	<u>4,000</u>
	Sub total equipment	US \$ 83,520
11)	Plant safety training	<u>4,000</u>
	Total	US \$ 87,520

UNIT ABATEMENT COSTS:

The unit abatement costs of the Aero Pharma aerosol conversion project are calculated as follows:

Using the formula $A = \frac{C(F) + (OC-OS)}{W}$

where C = \$87,520

OC = 0

(C)F = \$14,222

OS = 0

W = 36,000

Doing the calculation, unit abatement cost = \$ 0.39/kg.

ANNEX 3

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The substitute propellant, a mixture of butane and propane, does not damage the ozone layer. It does not contribute to acid rain, nor is it carcinogenic, mutagenic, or toxic. The butane/propane mix does not pollute the soil or ground water. This mixture is a volatile organic compound (voc) that contributes somewhat to ground level contamination. This mixture does have a global warming potential, albeit very low.

Hydrocarbons are extremely flammable, and explosive. The storage of the hydrocarbon propellants must be accomplished by strict adherence to the U.S. National Fire Protection pamphlet #58, Standard for the Storage and Handling of Liquefied Gases, as well as all applicable local codes and regulations.



C O R P O R A T I O N

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TO : Don Brown FAX: 202-477-6619
Country Operations
Industry & Finance Division
The World Bank

FROM : Harry B. McCain

SUBJECT : India Project Review / 18 Aerosol Fillers

• SCOPE

The project under review covers the development and justification for selection of alternative technology for the replacement of CFC-11 and CFC-12 in the aerosol industry in India. The alternative technology discussed is Hydrocarbon Aerosol Propellant (HAP) and (18) aerosol filling enterprises.

• RECOMMENDATION

The following projects are supported:

Aero Pharma	Danmet	✓ Stella Industries
Aerol Formulations	Maja Cosmetics	✓ Sunder Chemicals
✓ Aerosols d'Asia	Midas Care	Texas Industries
Asian Aerosol	Mistair Home Products	Vimson
Chem-Verse	Ruby Aerosols	

The above projects will require the best effort of supervising personnel to insure quick and safe conversion to HAP. The conversion's success is also a function of adequate supplies of aerosol grade HAP that can be expeditiously distributed to the "eighteen" aerosol fillers. Therefore, the implementation time for these projects cannot be set until there is an adequate supply of aerosol grade HAP in India. This timetable will have to be set by the bank.

NGL Aerosol Propellants • Industrial Chemicals

The following projects are not supported:

- Anand Engineers/UAC \$2.6 USD Kg
- ✓ Indian Aerosols/UAC \$3.33 USD Kg
- ✓ Natural Beauty Cosmetics/UAC \$3.67 USD Kg
- Molyshield Aerosols/UAC \$3.67 USD Kg

Reasons: UAC cost is too high. This cost can be lower by obtaining less expensive filling equipment. \$42,000 USD for one semi-automatic filling machine to fill an average unit number of 15,000/year is totally unnecessary. This could be done by single head hand-operated machinery at a cost of less than \$10,000 USD each.

● RELEVANCE AND ADEQUACY OF INFORMATION

Each supported project should be reviewed following this criterion: Fillers which fill 500,000 cans per year are justified in having a \$72,000 USD modular safe room. Those who fill below 500,000 units should consider spending \$50,000 USD per modular safe room. There are options enough among modular safe rooms to allow this decrease in price.

● TECHNICAL SOUNDNESS

A small filler must be as knowledgeable as a large filler of HAP. Therefore, the technical transfer of information quantitatively must be the same. This transfer of technology and necessary training must be properly supervised. This will be a large task. One cannot assume that each small filler will take the initiative and do it for themselves. Presently one can assume the small filler has little if any technical knowledge.

● LESSONS FROM EXPERIENCE

If CFCs were banned in India one would have some assurance that the small filler would more actively pursue conversion from CFCs to HAP.

● ENVIRONMENTAL ISSUES

The total ODS involved for the 16 aerosol fillers is 1,100 tons. However, some of the fillers are so small and the UAC so high that one wonders if the very small filler (less than 15,000 units/year) is worth the

• inse. The non-supported project represents 18 tons ODS at a cost of approximately \$364,000 USD. This cost precludes environmental effectiveness.

• SAFETY ISSUES

Small fillers represent a significant training burden. Special arrangements will have to be made to satisfy this safety issue requirement.

• COST EFFECTIVENESS

The mean UAC for the 18 filler projects is approximately \$1.50 USD/Kg. The range of these costs is from \$0.20 USD/Kg to \$3.67 USD/Kg. Cost effectiveness must be determined by ODS/UAC in relation to units filled. This analysis leads one to not support the four projects sighted earlier.

• OTHER

None