UNITED NATIONS

EP

United Nations Environment Programme

Distr.
LIMITED

UNEP/OzL.Pro/ExCom/38/27
25 October 2002

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Thirty-eighth Meeting
Rome, 20-22 November 2002

PROJECT PROPOSALS: CHINA

This document consists of the comments and recommendations of the Fund Secretariat on the following project proposals:

Foam

- Sector plan for the phase-out of CFC-11 in the foam sector (2003 Annual Implementation Programme) — World Bank

Halon

- 2003 Annual programme - Halon sector — World Bank

Process agent

- Sector plan for phase-out of ODS in the process agent sector — World Bank

Production

- 2003 Annual programme - CFC production sector — World Bank

Refrigeration

- Sector plan ODS final phase-out: domestic refrigeration and domestic refrigeration compressors — Italy/UNIDO

Solvent

- 2002 annual progress report on the implementation of solvent sector plan for ODS phase-out in China and 2003 annual implementation programme — UNDP

PROJECT EVALUATION SHEET
CHINA

SECTOR: Foam ODS use in sector (1999): 19,162 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Title:

(a) Sector plan for phaseout of CFC-11 in the China foam sector (2003 Annual Implementation Programme)

Project Data	**Multiple-subsectors**
	PU Sector Plan
Enterprise consumption (ODP tonnes)	19,162.00
Project impact (ODP tonnes)	2,500.00
Project duration (months)*	12
Initial amount requested (US $)*	12,570,000
Final project cost (US $):**	92,200,000
Incremental capital cost (a)	76,027,400
Contingency cost (b)	
Incremental operating cost (c)	13,935,959
Total project cost (a+b+c)	115,300,000
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US $)*	12,570,000
Cost effectiveness (US $/kg.)	5.03
Counterpart funding confirmed?	
National coordinating agency	SEPA
Implementing agency	World Bank

Secretariat's Recommendations	
Amount recommended (US $)	
Project impact (ODP tonnes)	
Cost effectiveness (US $/kg)	
Implementing agency support cost (US $)	
Total cost to Multilateral Fund (US $)	

* Project impact, duration and requested amount relate to the corresponding data and funding requirements of the 2003 implementation programme only.

** (a+b+c) does not match with the total project cost since the total project cost was calculated on a different basis. The total project cost does not include cost of technical assistance estimated to be US $3.5 million.

PROJECT DESCRIPTION

2003 Annual Implementation Programme of the China Polyurethane Foam Sector Phase-Out Plan and Progress Report on the 2002 Annual Implementation Programme

Background

1. The Agreement on CFC phase-out in the polyurethane foam sector in China was approved at the 35th Meeting of the Executive Committee in December 2001 at a total cost of US $53.846 million. At the same meeting the Executive Committee approved the first implementation programme for the period December 2001-December 2002 together with funding of US $9.94 million (plus support cost of US $886,600) for activities to be undertaken in 2002. The phase-out plan provides annual control targets for CFC-11 consumption in the polyurethane foam sector in China and equivalent funding from 2002-2009.

2. Under the agreement, China's 2003 national CFC-11 consumption will be limited to 15,500 tonnes, while in the polyurethane foam sector it will be limited to 13,830 tonnes. The 2003 phase-out target will be 2,500 tonnes.

3. Release of the agreed funds is subject to confirmation that:

- all agreed phase-out targets and consumption limits for the previous year have been achieved;
- it has been verified that the activities planned for the previous year were undertaken in accordance with the annual implementation programme;
- CFC phase-out contracts have been signed amounting to at least 50% of the current year contract targets and 100% of the previous year contract targets.

4. Confirmation of performance through verification by site inspection of a minimum of 15% of the conversion activities accounting for a minimum of the CFC consumption of the annual implementation programme is required.

5. The Government of China also agreed to ensure accurate monitoring of the phase-out, provide regular reports as required by its obligations under the Montreal Protocol and the Agreement. Consumption figures provided under the agreement will be consistent with China's reports to the Ozone Secretariat under Article 7 of the Montreal Protocol.

2003 Annual Implementation Programme

6. The World Bank has submitted the 2003 annual implementation programme (a copy of which is attached) for consideration by the Executive Committee at the 38th Meeting. The document is in two parts:

- Status of implementation of the 2002 annual programme (Part A).
- 2003 Annual Implementation Programme (Part B)

7. In addition, the World Bank submitted a verification report on CFC-11 consumption of enterprises funded in the 2002 annual programme.

Implementation Status of the 2002 Annual Programme

8. The report describes start-up activities undertaken by the Government to initiate implementation of the sector plan. These included selection of a Domestic Implementation Agency (DIA) to assist SEPA in the management of the sector plan, training workshops and development of an implementation manual.

9. The report also describes policy measures in force which may be reinforced to support the plan's implementation, technical assistance activities and work undertaken at the enterprise level, primarily work done towards the signing of CFC reduction contracts. The report gives the assurance that the consumption limits, phase-out targets and contract targets of the 2002 programme will be met by the end of 2002 and that the annual grant of US $9.94 million will be allocated to PU foam enterprises for conversion.

Enterprise activities

10. The World Bank reports that China will embark on restructuring of foam enterprises as a means of achieving the phase-out objectives. Three to four restructuring projects are expected to be covered under the annual programme. Two contracts accounting for 1,188 tonnes of the 2000 contract target have been signed by SEPA. Contracts covering the remaining 812 tonnes are expected to be signed before mid-2003. The World Bank has verified CFC-11 consumption of enterprises in the group which have signed reduction contracts with the government covering CFC11 consumption of 552 tonnes which constitutes 25% of the consumption phase-out target. World Bank also indicates that three to four groups of enterprises are expected to be covered in the 2002 programme. Hence the one group of enterprises with which contracts have been signed constitutes 25% of the enterprises under the terms of the agreement. A verification report summarized below has been presented and is available.

Verification Report of the 2002 Annual Programme

11. The following is a summary of the verification report submitted by the World Bank.

12. The 2002 report shows verification of the production status of the seven enterprises for the period 1997-2001 as evidenced by the existence of necessary production equipment and consumption of foam chemicals. It provides information on prices of all the chemicals used by the enterprises except those of the blowing agents, CFC-11 and methylene chloride of seven enterprises which are to be restructured with Chengdu Jinjiang Polyurethane Foam Plant as the lead company. Based on the average consumption of the years 1997-1999 used as the baseline in the sector plan, the consumption of CFC-11 verified for the enterprises amounted to a total of 552 tonnes.

13. The report shows that:

(a) Four of the seven enterprises verified were actively producing foam during the

period 1997-2000, however in 2001 some of the companies ceased foam production for one reason or another. One company (Chendgu Quianjin) had gone into bankruptcy and its assets frozen by court order since August 2001. A second company Chengdu Dongzikou had dismantled its foam plant, and left the foam production business since 2001 under agreement with Chengdu Jinjiang. The third Duocai was not fully utilizing its capacity;

(b) As part of the process of restructuring under the Chengdu project, Chengdu Jinjiang has bought Dongzikou's baseline equipment and is negotiating with the local district court to buy Qianjin's baseline equipment and has merged with Duocai. In addition, it owns one enterprise and formed a joint venture with three others. After the implementation of the project, Chengdu Jinjiang will take the responsibility of disposing of all baseline equipment located in the seven enterprises and promise not to use any ODS;

(c) All baseline equipment in the seven enterprises were verified and certified as in usable condition. Photos of the baseline equipment are available with the World Bank;

(d) The report confirms that all seven participating enterprises are using both CFC-11 and methylene chloride. Methylene chloride is widely used because it is much cheaper than CFC11. CFC-11 is still in use in production of flexible foam claimed by the companies as having or requiring better quality. All CFC-11 is obtained from the same local company and from imports from one company in Italy;

(e) The verification mission was satisfied with CFC-11 procurement records provided from 1997 to 1999. Hence the consumption of 552 tonnes CFC-11 to be phased out through this project was considered verified. However, records of CFC-11 for 2000 and 2001 from these enterprises were not found fully satisfactory. More than 30% of purchases did not have receipts, while 28% were found to have receipts considered to be highly irregular;

(f) The report provides prices of all foam chemicals used except CFC-11 and methylene chloride. That the prices of these principal chemicals were not provided seems highly anomalous.

2003 Annual Implementation Programme

14. Under the 2003 annual programme, an amount of US $12.57 million should be released to China and US $1,115,300 to the World Bank as support cost. China should meet national consumption limit of 15,500 tonnes CFC-11, PU foam sector consumption limit of 13,830 tonnes and phase-out target of 2,500 tonnes.

15. The programme activities of the 2003 annual programme includes policy and government actions, enterprise activities and technical assistance. The policy and government actions

essentially comprise actions in other on-going approved activities such as the production sector plan, institutional strengthening or existing regulatory measures all of which could impact the achievement of the objectives under the PU foam sector plan.

16. The phase-out target of 2,500 tonnes is expected to be met through identification of enterprises for three to four large regional projects. A minimum of 50% of the CFC-11 reduction contracts is expected to be signed by mid-2003 and another 50% not later than mid-2004.

17. Six technical assistance activities are foreseen including the 2002 performance audit and preparation of a manual on substitute technology in the PU foam sector. Other activities are continuation of activities initiated in the 2002 annual programme.

Other Activities

Data reporting

18. Information available to the Secretariat at the time of writing showed that China had not reported its production and consumption data for 2001 to the Ozone Secretariat. China had also not reported breakdown of its consumption data to the Fund Secretariat. The Secretariat requested the World Bank to advise on the status of China's data reporting and indicate, if available, the current level of China's CFC consumption. As at the time of writing this report, no response had been received by the Secretariat.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

19. Based on the CFC-11 consumption used as the baseline for calculating the funding level of the PU foam sector plan, i.e. 1997-1999, the conditions of verification of the consumption as contained in the PU foam sector phase-out plan as contained in the PU foam sector phase-out plan has been met. The total amount of CFC consumed by the seven enterprises in 2001 of 502 tonnes is lower than their verified 1997-1999 consumption of 552 tonnes. The verified consumption of 552 tonnes is consistent with the consumption in the sector plan which was 551.97 tonnes.

20. China has not met its obligations regarding reporting of its production and consumption data to the Ozone Secretariat in accordance with Article 7 of the Protocol. Although the Agreement does not specify CFC consumption limits for 2001 availability of such data would further provide further assurance of progress being made by China in the CFC phase-out. In future without timely reporting of these data the evaluation of China's performance under the PU foam sector plans and other related actions will be constrained.

RECOMMENDATIONS

21. The Executive Committee may wish to consider release of the amount of US $12,570,000 and US $1,115,300 as support cost for the World Bank for the implementation of the 2003 programme of China polyurethane foam sector phase-out plan, against the background of the information provided above.

22. The Executive Committee may also wish to request China to report its 2001 production and consumption data, to the Ozone Secretariat as required under the agreement and endeavour in future to meet this obligation, as much as possible, on time i.e. by 30 September of each reporting year and endeavour also to report its consumption broken down by substance to the Fund Secretariat to enable verification of CFC-11 consumption both at the national and sectoral level as required under the Agreement.

PROJECT EVALUATION SHEET
CHINA

SECTOR: Halon

ODS consumption in sector (2000): 14,780 ODP tonnes
ODS production in sector (2000): 16,214 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Titles:

(a) 2003 Annual programme - Halon sector

Project Data	**Banking**
Enterprise consumption (ODP tonnes)	n/a
Project impact (ODP tonnes)	2,292 (consumption) and 1,992 (production)
Project duration (months)	12
Initial amount requested (US $)	5,900,000
Final project cost (US $):	
Incremental capital cost (a)	
Contingency cost (b)	
Incremental operating cost (c)	
Total project cost (a+b+c)	5,900,000
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US $)	5,900,000
Cost effectiveness (US $/kg.)	n/a
Counterpart funding confirmed?	n/a
National coordinating agency	SEPA
Implementing agency	IBRD

Secretariat's Recommendations	
Amount recommended (US $)	
Project impact (ODP tonnes)	
Cost effectiveness (US $/kg)	
Implementing agency support cost (US $)	
Total cost to Multilateral Fund (US $)	

PROJECT DESCRIPTION

23. In accordance with the Executive Committee's approval of the Sector Plan for Halon Phase out in China (Decision 23/11), China is requesting the release of the sixth tranche of US$5.9 million for the implementation of the year 2003 Annual Programme. With this funding, China halon 1211 production and consumption will be reduced to a maximum of 1,990 MT and 1,890 MT respectively. The halon 1301 production will be maintained at a maximum level of 600 MT and consumption will be maintained at 150 MT. Details of the annual programme are provided in the request submitted by the World Bank that is available from the Fund Secretariat's web site (www.unmfs.org). The 2003 Annual Programme includes the following activities:

(a) US $1.57 million to be used for buying back quotas and will result in reducing halon 1211 production;

(b) US $1.7 million to be used for closing and converting 10-15 fire extinguisher manufacturers;

(c) US $2.4 million to be used for converting 8-10 halon 1211 fire extinguishing system manufacturers; and

(d) US $230,000 to be used for technical assistance activities in order to support the halon phase-out programme and ensure that existing fire protection requirements can be met.

24. The Government of China will continue to implement and improve bidding for closure/conversion contracts for halon phase-out activities based on the experiences gained from the first five annual programmes. It will continue to implement tradable production quotas and strengthen the ban on new installation of halon extinguishers for non-essential uses through a gradual tightening of the definition of essential uses. In order to support local enforcement of the ban on non-essential uses, the Government will ensure that the details of the ban will be disseminated to prospective consumers through the news media, bulletins, etc.; local fire bureaux and environmental protection bureaux will inspect consumers on a regular basis, and submit regular reports to the Ministry of Public Security (MPS) and the State Environmental Protection Agency (SEPA); and introduce stricter control the sale of halons.

25. Through a combination of production quotas, bidding systems and administrative measures, enterprises will be granted funds for closure and conversion activities.

26. Technical assistance activities planned for the year 2003 include: national standard formulation for the general technical conditions of aerosol fire extinguishing apparatus; training of personnel involved in phase-out activities and performance audit for 2002 annual programme enterprises.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

27. Decision 23/11 established a schedule of production and consumption reductions for the duration of the China Halon Phase-out project through the year 2010. The reductions indicated in the 2003 Annual Programme correspond to the established schedule.

Technical audit

28. For the third consecutive year, the World Bank commissioned an independent technical audit. A copy of the technical audit is available to the Executive Committee members upon request.

Major Findings

29. The technical audit confirms that China's production and consumption was significantly below the targets for 2001 for both halon 1211 and 1301. China produced 199 metric tonnes (MT) less of halon 1211 and 405 MT less of halon 1301 than allowed under the agreement.

Implementation of Decision 34/9(i)

30. The Government and the World Bank informed the 34th Meeting of Executive Committee of the possibility that the consumption targets might not be met, and the Committee noted, in Decision 34/9(i) the agreement of China and the World Bank on measures to remedy the export issue with regard to the China halon sector plan and the agreement to reduce the 2001 quotas for the halon plan by an amount equivalent to the excess in national consumption in 2000 to be determined by the independent technical audit. The reduced halon 1211 production in 2001 is also below the agreed level minus the excess consumption in 2000. The technical audit also confirmed the initiation of an export quota system to prevent a recurrence of the situation of lower exports that resulted in China not achieving its 2000 consumption target.

Falling price of halon 1211, stockpiling and halon recycling/banking

31. The technical auditors indicated that the price of halon 1301 had fallen from US $8.48/kg. to US $6.37/kg. and the price of halon 1211 was US $3.08/kg. The World Bank subsequently indicated that the price of halon 1211 had also fallen to US $2.84/kg. The auditors stated that this was indicative of lower demand as there was in fact lower production than allowed. However, a higher price would be more helpful in sustaining the use of alternatives and halon banking efforts in China and to reduce the world's supply of halon 1211 and 1301.

32. The technical auditors also noted that the stocks of halon 1211 have increased from 117.6 MT in 1999, to 720.5 MT in 2000 and 1014.1 MT in 2001. The World Bank stated that its understanding was that the present stock with the producers were 1,070 MT of halon 1211 and 691 MT of halon 1301.

33. The Secretariat noted the falling prices and growing stocks to the World Bank in light of the fact that the 2002 work programme includes contracts for demonstration projects to collect, recycle and reclaim used halons. The Bank indicated that the halon recycling and banking activities will function as pilots to determine whether or not it makes economic sense to continue any such activities at current levels of production and demand. The Bank stated, however, that it may be possible to advance the phase-out of halon production in China because of the overall reduced national and global demand for halons. The Bank indicated that it would raise the issue with China during its next supervision mission and see if there is any interest in advancing the production phaseout schedule of halons.

Requirement of fire extinguisher production by 2005

34. Decision 23/11(e) stipulates that 3.5 million CO2 or equivalent fire extinguishers would be produced in China in 2005. The decision indicates that if this requirement is not met, funds would be requested to be returned to the Multilateral Fund based on a rate of US $3.08 per unit shortfall of CO2 or equivalent fire extinguisher. In reviewing the submission and the original plan, the Secretariat accounted for a CO2 capacity of at least 683,000 units per year including 83,000 units that were produced in 1995 plus the new capacity of 600,000 units for CO2 cylinders that is under implementation.

35. The World Bank indicated that Decision 23/11 refers to the aggregate number of CO2 extinguishers or equivalents to substitute for the sale of halon 1211 extinguishers over the phase-out period from 1998 through 2005. In addition to the annual capacity accounted for by the Secretariat, the Bank indicated that Fund projects have already enabled an additional capacity of 200,000 units per year. The World Bank and China plan to conduct a survey during 2003-2004 to ascertain the number of CO2 or equivalent fire extinguishers produced since 1998.

Agency Fees

36. Decision 23/11(j) indicates that the agency fee for the implementation of annual programmes would be agreed between the Executive Committee and the implementing agency. In previous years, this fee included the costs of the technical audit. The Bank is requesting an agency fee of 10 per cent, US $590,000.

37. The Secretariat pointed out to the Bank that the Executive Committee approved agency fees of 7 per cent for the China CFC Production Sector annual work programme. The Bank replied that it would not be possible to implement the halon sector plan for less that 10 per cent taking into account that the Bank is carrying out and paying for the annual halon sector technical audit and there are fixed costs equal to 3 per cent of the sector plan to be paid to China as the domestic implementing agency.

38. The World Bank received 10 per cent for the 2002 plan in support cost (US $370,000 based on the annual plan of US $3.7 million).

RECOMMENDATIONS

39. The Executive Committee may wish to:

(a) Approve the 2003 work programme of the China Halon Plan at the agreed level of US $5,900,000.

(b) Consider approving a 7 per cent agency fee for the World Bank (US $413,000), including the costs of the technical audit.

PROJECT EVALUATION SHEET
CHINA

SECTOR: Process agent ODS use in sector 1999 3,808 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Titles:

(a) Sector plan for phase-out of ODS in the process agent sector

Project Data	**Process conversion**
Enterprise consumption (ODP tonnes)	3,952.00
Project impact (ODP tonnes)	3,952.00
Project duration (months)	12
Initial amount requested (US $)	79,800,000
Final project cost (US $):	
Incremental capital cost (a)	
Contingency cost (b)	
Incremental operating cost (c)	
Total project cost (a+b+c)	129,200,000
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US $)	79,800,000
Cost effectiveness (US $/kg.)	32.69
Counterpart funding confirmed?	
National coordinating agency	SEPA
Implementing agency	World Bank

Secretariat's Recommendations	
Amount recommended (US $)	
Project impact (ODP tonnes)	
Cost effectiveness (US $/kg)	
Implementing agency support cost (US $)	
Total cost to Multilateral Fund (US $)	

PROJECT DESCRIPTION

Background

40. The World Bank submitted to the 37th Meeting a sector plan for the phase out of ODS in the process agent sector in China. The stated objectives were:

(a) Based on the current consumption in the 25 applications of ODS process agents approved in Decision X/14, to formulate a sector plan for phase-out of consumption of ODS process agents in China consistent with Decision X/14;

(b) With financial support from the Multilateral Fund, to implement phase-out of the sector on schedule;

(c) To establish policies and set up a monitoring and management system to guarantee that phase-out activities are fully implemented in the most cost-effective manner.

41. A total of 3,202 ODP tonnes of CTC and 17.2 ODP tonnes of CFC-113 were proposed to be phased out at a total cost of US $115.41 million and a cost effectiveness of US $38.2 per kg.

42. The plan noted that a further 5,764 ODP tonnes of CTC is used in applications considered by China to be process agent applications but which are not included as such in Decision X/14. Phase out of this consumption was not addressed under the plan.

43. The complete sector plan as submitted to the Executive Committee was attached to the Secretariat's evaluation sheet, document UNEP/OzL.Pro/ExCom/37/32.

44. The Secretariat noted in its comments that as presented, the sector plan did not provide for compliance with the Protocol control measures, specifically the 85% percent CTC reduction by 2005, and that the Executive Committee had not so far provided funds for a programme of which non-compliance was an integral part. In Decision 37/20, the Executive Committee decided, inter-alia, that pending any decision by the Meeting of the Parties:

(a) that project proposals in which a country would be in non-compliance with the control measures of the Montreal Protocol should not be approved by the Executive Committee until the underlying issue of non-compliance had been dealt with by the Parties, through the Implementation Committee; and

(b) to invite the Secretariat and the World Bank, and interested Executive Committee members, to continue working on the sector plan for phase-out of ODS in the process agents in China to resolve technical issues and eligible incremental costs for consideration at a future meeting, when the underlying non-compliance issues were resolved.

Current Situation

45. On 26 September 2002 the Secretariat received from the World Bank a document entitled China: Process Agents Sector Plan, Compliance Scenario (copy attached). The document proposes a modified sector plan under which China indicates it will meet the 85 percent reduction target for CTC consumption by 2005. The total proposed cost of the modified sector plan is US $129.2 million (an increase of US $13.8 million) with a proposed first tranche payment of US $79.8 million for activities to be carried out in 2003.

46. China has indicated that in order to meet its Montreal Protocol obligations, it will implement CTC phase-out in the process agent sector as follows:

(a) China will reduce its supply of CTC for process agent consumption by 85% by January 2005 and forward.

(b) Assuming that Funds would be available from the MLF in 2003, all eligible enterprises in the CR, CP-70 and CSM sub-sectors would be invited to sign conversion or closure contracts latest by the end of December 2004.

(c) The annual consumption of CTC up to 2010 would also be limited through a quota system.

(d) China will concurrently establish a quota system for CTC production to ensure that the supply of CTC for feedstock and process agent consumption conforms to Montreal Protocol requirements. (This assumes that the CTC production sector plan will be approved not later than 2004).

(e) The Government will set up a monitoring system for CTC producers and process agent enterprises at the enterprise level to ensure that the national consumption of CTC will be in compliance with the Montreal Protocol.

47. CR and CP-70 manufacturers will convert to water based technology, the only known non-CTC substitute technology used globally. This would take three to four years, so enterprises would only be able to complete their conversion at the earliest by 2006. During the period of conversion, the enterprises will have to shut down their production temporarily until the conversion has been completed. The costs associated with this shut down are included in the proposal (Table IV in the document).

48. As no substitute technology is currently known for CSM and the pharmaceutical product Ketotifen, their CTC phase-out would be based on emission control. For CSM, it is expected that implementation of the emission control measures would take at least 3 years. China's understanding is that emissions reductions will have to be brought down to “insignificant” levels to be determined by the Executive Committee. The document indicates that if this involves further reductions by 2010 and any additional incremental costs to China, China would reserve the right to request additional funding for such reductions.

49. China has again based its calculation of incremental cost on a cut-off date for eligibility of enterprises of 1 January 1999, which it suggests is consistent with Decision X/14 of the Parties.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

50. China provided in the revised proposal figures for the consumption of CTC for the period 1997-2002. They are reproduced in Table I below:

Table I: CTC Consumption and Production Data for China (metric tonnes)

Year	Production	Import	Export	Feedstock for CFC production	Process agents		Consumption
					Decision X/14 (List of 25)	Other applications proposed by China[1]	
1997	34780	32679	105	60761	2909	4511	2082
1998	31900	45975	31	64782	2707	5387	7675
1999	30036	53226	23	53534	2986	5224	24481
2000	48193	26092	61	48227	3593	5952	20045
2001[2]	58320	1	2	44108	3952	6547	7664

Notes 1:These applications will be treated as feedstock until a decision is taken by the Parties.
2: Assumes that consumption of CTC used for process agents (list of 25 as well as other applications proposed by China) in 2001 increased by 10% compared with that in 2000.

51. The World Bank was requested to provide information about the unspecified uses of 21,493 metric tonnes of CTC in 1999 and 16,452 metric tonnes in 2000 appearing in the table. Because of this consumption the proposal appears not to have addressed the requirements of Decision 37/20 in regard to compliance. The total CTC baseline consumption as defined by the Protocol will need to be reduced by 85 percent however the proposal only addresses the process agent consumption.

52. The Secretariat pointed out also that the definition of feedstock in the Montreal Protocol includes amounts which are emitted during product manufacture or handling or which may be contained in the final product as well as feedstock quantities used in the manufacture of chemicals other than CFCs. These amounts can be very significant - as illustrated in the process agent sector. The World Bank was requested to clarify the quantities indicated in Table I after taking these issues into account.

53. Paragraph 11 of the revised proposal refers to a new category of costs: those for temporary shut down. These costs have not been requested previously for compensation from the Fund and may not be incremental. Additionally, the request in paragraph 13 reserving the right to submit proposals for further compensation for the sector is not consistent with the proposal for a sector phase-out plan.

54. The Secretariat also notes that the estimates referred to in paragraph 15 have not received any endorsement from the Secretariat, notwithstanding the initial discussions. In fact the Secretariat indicated that the information in the first submission did not provide a basis for determination of incremental costs.

55. In regard to consumption, the World Bank agreed that large unspecified quantities of CTC appeared within China in the years 1999 and 2000. There were no restrictions on the imports of CTC in these years, and China's own understanding is that these were stockpiles that were created ahead of the forthcoming 2001 ban on imports of CTC. Such stock could either be directed to feedstock use, or consumed in applications not yet audited by any process, or could remain as feedstock for consumption in later years. The World Bank suggested that reducing the consumption of process agents to the 15 percent level represented a conservative approach that seemed consistent with Decision 37/20.

56. The World Bank noted also that because the imports are coming from Article 2 countries, China and the World Bank had cross-checked with reported production and export of CTC globally. Limited information was available, but it appeared that the exporting countries has exported CTC under the assumption that the quantities would be used for feedstock applications and not for consumption.

57. In regard to reported CTC data the World Bank indicated that the CTC consumption reported for CFC production was based on actual CTC consumption by the CFC producers and as verified through the CFC production audit for the period 1998 to 2001. CTC consumption before 1998 was based on extrapolation from the CFC production audits. CTC consumption data for the process agent sector was based on the survey carried out and reflected actual procurements and uses of CTC by the companies covered by the survey.

58. Concerning the scope of the sector plan, the World Bank indicated that the sector plan addressed only the use of CTC as a process agent and did not represent all the measures that may need to be taken by China in order to meet the overall 85 percent CTC compliance target.

59. In regard to temporary closure, the World Bank acknowledged that such costs had not been requested previously for compensation from the Fund and may not be incremental. They represented a suggested solution presenting one of the possible options to enable a negotiation.

60. In regard to possible additional costs for emission control measures, the World Bank agreed that the request was not consistent with the proposal for a sector phase-out plan. However an approach had been suggested that would allow China to move forward and at the same time allow the Executive Committee to establish benchmarks for emissions levels.

61. Pursuant to Decision 37/20, the Secretariat held discussions with representatives of the Government of China in Montreal and Beijing. The Secretariat enquired whether the consumption being reported for controlled process agent uses (for example 3,593 metric tonnes in 2000, Table 1 above) represented the total consumption for all controlled uses reportable under Article 7. The Government of China was unable to confirm that this was the case. Until this issue is clarified, it cannot be confirmed that the proposed sector plan will enable China to meet its commitments under the Montreal Protocol.

62. To move the discussions forward, the Secretariat proposed a methodology by which the eligible incremental cost for phase-out of process agent consumption would be based on the cost-effectiveness established in approved projects in the process agent sector. China was unable to accept this methodology, citing the high cost for technology transfer for the manufacture of CP-70 and CR that needs to be provided to each of the operating enterprises.

63. China informed the Secretariat of its wish that discussion of its sector plan be resumed in Rome.

RECOMMENDATIONS

64. Pending.

THE CFC PRODUCTION SECTOR
2003 ANNUAL PROGRAMME

Project Description

65. In accordance with the Agreement for the China Production Sector, which requests that annual programmes be submitted for review at the last meeting of the year preceding the year of the programme, the World Bank submitted the year 2003 annual programme for the implementation of the Agreement (see attachment), with the understanding that funding for the 2003 programme will be approved at the first meeting in 2003 contingent on satisfactory implementation of the 2002 programme, as per the Agreement.

66. The submission included 2 parts:

(a) Part I is a summary report on the implementation by China of the Sector Phase-Out Agreement since its approval in 1999, including progress achieved in the implementation of the 2002 programme as of July 2002. The following are the most salient features of the summary report:

(i) Implementation of the China Production Sector Phase-Out Agreement between 1999 to 2001 has reduced the number of CFC-producing plants from 37 in 1999 to 7 in 2001, and the CFC production from 50,351 ODP tonnes to 36,200 ODP tonnes in 2001. The 2002 annual programme which is under implementation will further reduce the production to 32,900 ODP tonnes. The first six months of CFC production in 2002 was reported at 18,738 ODP tonnes, or 56 percent of the allowable quota issued by the Government. As distinct from the previous annual programmes, the current programme is being implemented by a combination of administrative measures and the tradable production quotas as the reduced number of producers and the continued demand in the market provide less incentive to the remaining producing plants to close production. The report provides a list of plants with names, CFC product, capacity and the status of the plant (closed or producing) in 2002. The result of implementing the 2002 programme will be verified by the World Bank and reported to the first meeting of the Executive Committee in 2003.

(ii) The progress report on the 2002 annual programme continues to list the policy controls that have been enacted by the Government of China, such as Circular on Implementing the Quota System for CFC Production issued by SEPA and the State Administration of Petroleum and Chemical Industry on 31 May 1999, Circular on Strengthening Management of ODS Import and Export issued in April 2000, and Circular on Control Mechanism of Import and Export of ODS" promulgated in December 1999. However what is worth mentioning is the Regulation on Implementing Site Supervision to CFCs Production Enterprises, issued by SEPA in December 2001. Under this regulation, technical professionals

from the remaining CFC producer are designated by SEPA as supervisors to be placed in the peer producers to carry out year-round on-site mutual monitoring. This was introduced in January 2002 as an effective monitoring mechanism.

(iii) An update is provided on the implementation of the technical assistance programme under which a total of 22 activities have been initiated out of 32 planned. Apart from the traditional activities such as training of custom officers, and personnel to conduct performance audit, the report covers the special initiatives undertaken in the study of ODS substitute production, such as cyclopentane, HCFC-141b and alternatives to methyl bromide in soil fumigation. There is also an update on the HFC-134a production facility under construction.

(b) Part II of the World Bank's submission is a description of the components of the 2003 programme, which includes policy actions, production reduction to be achieved by producing enterprises, and technical assistance activities. The key component, the production reduction quota would require a reduction of 2,900 ODP tonnes in 2003 to meet the Agreement target, i.e. the national CFC production should not exceed 30,000 ODP tonnes in 2003. China will continue to implement the reductions through a combination of bidding, allocation of production quota and administrative measures.

67. The submission of the World Bank includes a list of 18 HCFC producing enterprises in China as per the Agreement. One of the enterprises from the list in the 2002 annual programme, Jiangsu Changshu Refrigeration Plant is reported as closed and dismantled and Zhonghao New Chemical Materials Co. Ltd, a plant constructed in 2002 is added to the list.

68. The World Bank's submission requests disbursement of US $13 million for implementation of the year 2003 programme, which proposes to spend US $12 million on compensating the enterprises for reducing CFC production, and US $1 million on technical assistance activities and policy training of local authorities in co-operation with UNEP (Decision 34/37). The World Bank requests the release of the support cost associated with the 2003 work programme at the 39th Meeting.

RECOMMENDATIONS

69. The Secretariat recommends that the Executive Committee approve the 2003 work programme of the China CFC production closure programme and withhold the requested funding until World Bank submits to the 39th Meeting a satisfactory verification report on the implementation of the 2002 annual programme.

70. The Secretariat further recommends that the Executive Committee consider the appropriate level of support cost to be paid to the World Bank for implementing the 2003 annual work programme, bearing in mind Decision 36/47 which approved the 2002 work programme

which states “to approve the administrative fee for the World Bank at 7 per cent per year until the Executive Committee should decide otherwise”.

PROJECT EVALUATION SHEET
CHINA

SECTOR: Refrigeration ODS use in sector (1999): 15,953.80 ODP tonnes

Sub-sector cost-effectiveness thresholds: Domestic US $13.76/kg

Project Titles:

(a) Sector plan ODS final phase-out: domestic refrigeration and domestic refrigeration compressors

Project Data	**Domestic**
	Domestic Refrigeration and Compressors
Enterprise consumption (ODP tonnes)	1,099
Project impact (ODP tonnes)	1,099
Project duration (months)	54
Initial amount requested (US $)	21,920,943
Final project cost (US $):	
Incremental capital cost (a)	
Contingency cost (b)	
Incremental operating cost (c)	
Total project cost (a+b+c)	7,360,530*
Local ownership (%)	100%
Export component (%)	0
Amount requested (US $)	4,300,000*
Cost effectiveness (US $/kg.)	19.95
Counterpart funding confirmed?	Yes
National coordinating agency	SEPA
Implementing agency	UNIDO, Italy

Secretariat's Recommendations	
Amount recommended (US $) Project impact (ODP tonnes) Cost effectiveness (US $/kg) Implementing agency support cost (US $)	
Total cost to Multilateral Fund (US $)	

* Both the total project cost and the amount requested include the bilateral component for the Government of Italy at US $1,800,000.

PROJECT DESCRIPTION

Sector background

CFC (Annex A Group I) Consumption and Phase-out Profile

According to Decision 35/37 China has selected Option 1 as Starting Point amounting to:	**4,745.0 ODP tonnes**
- Remaining consumption of CFCs eligible for funding as at 38th Meeting (per Decision 35/57, proviso B)	3,508.7 ODP tonnes
- Impact of ALL CFC projects submitted for funding at the 38th Meeting	2,500.0 ODP tonnes
- Remaining consumption of CFCs eligible for funding following approval of projects submitted to 38th Meeting	1,008.7 ODP tonnes

Refrigeration Sector Profile

- Consumption of CFCs reported for the refrigeration sector in 1999*	15,953.8 ODP tonnes
- Amount of CFCs to be phased out in on-going refrigeration projects	7,410.4 ODP tonnes
- Impact of refrigeration projects submitted for funding at the 38th Meeting on remaining CFC consumption	1,099.0 ODP tonnes

* Based on data reported to the Fund Secretariat

71. As per Decision 35/48 the remaining fundable CFC consumption in China (the starting point) has been determined to be 4,745 ODP tonnes. Since then, several projects were approved by the Executive Committee at its 35th, 36th and 37th meetings resulting in remaining fundable consumption of 3,508.7 ODP tonnes.

72. An ODS Phase-out Plan in the Domestic Refrigeration and Compressor Sector was submitted to the 37th Meeting by UNIDO proposing conversion of the remaining domestic refrigeration and compressor manufacturers in China to non-ODS technologies. China is seeking flexibility to use sector funds for implementation of a rationalization scheme including closure of some of these enterprises. The total impact of the proposal would be phase out of 1,099 ODP tonnes. The conversion of Guizhou Haier, a domestic refrigerator manufacturer, is included in the sector plan as a bilateral project submitted by Italy for the phase-out 181 ODP tonnes.

73. A detailed account of the domestic refrigeration and compressor sector in China and the description of the Sector Plan was provided in pages 12 to 16 of document UNEP/Ozl.Pro/ExCom/37/32 submitted to the 37th Meeting of the Executive Committee.

74. The sector plan will be implemented by national institutions under supervision of UNIDO subject to an agreement between the Executive Committee and the Government of China. Management costs are requested to enable national implementation of the plan. The implementing agency support cost is calculated at the level of 11%. The implementation of the bilateral project (the conversion of Guizhou Haier) will be carried out by UNIDO on behalf of the Government of Italy.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

75. The Secretariat provided its initial comments on the proposal in document UNEP/Ozl.Pro/ExCom/37/32. Several issues were identified by the Secretariat in relation to the baseline production and consumption figures, date of installation of production capacity and eligible capital and operating costs. Those issues could not be resolved by the time of the meeting of the Sub-Committee on the Project Review prior to the 37th Meeting of the Executive Committee. It was agreed between the Secretariat, UNIDO, the Government of Italy and the Government of China to defer the proposal to the 38th Meeting of the Executive Committee.

76. The Secretariat undertook extensive additional discussions with the Governments of China and Italy as well as UNIDO on all the issues arising from the Secretariat's review. It was recognized that China has, in accordance with Decision 35/48 and subsequent decisions, a remaining fundable CFC consumption of 3,508.7 ODP tonnes. Therefore, the issue of data discrepancy could be dealt with within the context of the remaining fundable consumption.

77. Subsequently, an agreement has been reached to determine the level of incremental costs for the investment component on the basis of an average cost-effectiveness of recently approved sector and national phase out plans (US $6.47 kg ODP) to be applied to the consumption to be phased out in the domestic and compressor refrigeration sectors in China (1,099 ODP tonnes). On this basis, the total level of grant would be US $7,360,530, including US $250,000 as a project management component to enable national implementation of the project with assistance from UNIDO. The roles and responsibilities of local institutions and UNIDO are presented in the Sector Plan. The Secretariat has advised UNIDO that keeping in line with other sector plan agreements the agency support cost should be calculated on the basis of 9% for the investment component, and 5% of local project management component in total amounting to US $952,448.

78. A total of 1,099 ODP tonnes will be deducted from the remaining national aggregate CFC consumption of 3,508.7 ODP tonnes (as at the 37th Meeting) resulting in remaining fundable consumption of 2,409 ODP tonnes.

79. The sector plan requests flexibility for the Government of China in the use of the allocated resources. The funding will be used for conversion of a number of enterprises, to be determined by the Government of China, in the refrigerator manufacturing and compressor sub-ectors and for compensation for closure of the remaining enterprises as part of a rationalisation scheme for the manufacture of domestic refrigerators and hermetic compressors in China.

80. Final discussions are being held with the UNIDO, the Government of China and the Government of Italy to:

(a) draft an Agreement between the Government of China and the Executive Committee (along the lines of those previously submitted for Sector CFC phase-out plans) for the consideration of the Executive Committee at its 38th Meeting;

(b) complete the proposed distribution of funding of US $7,360,530 million in annual tranches;

(c) conclude discussion with UNIDO regarding its support cost for implementing the plan;

(d) prepare a first implementation programme to run from project approval until the end of 2003.

81. The distribution of funding and the two draft documents will be posted on the Secretariat's web-site for the 38th Meeting when completed and made available to Executive Committee members prior to the commencement of the meetings of the Executive Committee and its Sub-Committees.

RECOMMENDATIONS

82. The Executive Committee may wish to consider the Sector plan on final ODS phase-out of domestic refrigeration and domestic refrigeration compressors in light of the above comments.

Report on the Implementation of the 2003 Annual Programme under the China Solvent Sector Plan

PROJECT DESCRIPTION

Background

83. On behalf of the Government of China, UNDP has submitted for the consideration of the Executive Committee the 2002 Annual Progress Report on the Implementation of the Solvent Sector Plan for ODS Phase-out in China, together with a proposed implementation programme for 2003. The report on progress contains an overview of progress since approval of the first tranche in March 2000, a summary of activities carried out to date under the implementation plan for 2002 and a report of a performance audit on 2001 phase-out targets.

84. The Agreement on ODS phase-out in China's solvent sector was approved at the 30th Meeting of the Executive Committee in March 2000 at a total cost of US $52 million. At the same meeting the Executive Committee approved the first implementation plan for the period April 2000-December 2001 together with funding of US $6.75 million (plus 10 percent support costs) for activities to be undertaken in 2000.

85. At the 33rd Meeting, UNDP presented an interim report on progress and a request for the second scheduled payment of US $6,955,000 (plus 10 percent support costs) for the 2000-2001 annual programme. The report indicated that remedial action had been taken to ensure that all phase-out targets set in the first annual plan would be met. In Decision 33/46, the Executive Committee approved the requested funding, and included conditions that China should meet concerning n-propyl bromide the production of which had been funded through an amendment to the first implementation plan submitted to the 32nd Meeting.

86. At its 35th Meeting the Executive Committee considered and subsequently approved the 2002 annual implementation programme (Decision 35/51). However the Committee directed that disbursement should not occur until China and UNDP had fulfilled the condition in the agreement to prepare annually a list of the quantities of CTC purchased by specific plants for exempted feedstock and process agent use.

The 2002 Report on Progress

Release of funding approved for 2002 programme

87. The 2002 report on progress is attached to this document. The report provides in Section D1 (page 9) a list, by enterprise, of all CTC used for process agent uses in the year 2000. The total quantity used is below the maximum level of 5,500 ODP tonnes specified in the Agreement. UNDP advised that China had fulfilled its obligation under the Agreement and that UNDP could proceed with subsequent disbursement of approved funding.

Report on annual implementation programmes

88. The reporting format adopted by UNDP provides information according to the type of activity. Section B provides details on the ODS phase-out activities that took place in 2000 (Section B1), 2001 (Section B2) and 2002 (Section B3). Summary details of the ODS reduction contracts for each year are provided in Table 1 on page 5. An outline of the experience gained and problems encountered in the contracting process during 2002 appears in Section B3 on pages 4 and 5. It is indicated that a shortfall in CTC phase-out contracts of some 34 ODP tonnes is anticipated in 2002. It is also indicated that regulations to control ODS consumption from ODS production sources were issued in June 2002.

89. Section C of the Report provides a review of the technical assistance activities undertaken under the first (2000 & 2001) and the 2002 implementation programmes. It is indicated that there has been no expenditure yet of the US $2 million diverted under an amendment to the first implementation programme for production of n-propyl bromide.

Control targets

90. Section D of the report deals with the control targets specified in the Agreement. Section D1 indicates that as reported to the 36th Meeting of the Executive Committee, China has met the 2001 consumption limits for CFC-113, TCA and CTC under the agreement. Section D2 states that China has met the requirements of the agreement in relation to limits for 2002 (see Table 3). Section D2 also includes information as required in the Agreement on the enterprise-level reporting of CFC-113 and CTC consumption for feedstock and process agent uses. It is reported that the required limits have been met except for CFC-113 where the feedstock use is 655 ODP tonnes compared to the required limit of 10 ODP tonnes.

Verification and audit

91. Section E of the report is entitled Performance Audit of 2001 Phase-out Targets. It is indicated that UNDP included the China Solvent Sector Plan in its regular annual management and financial audit in 2001 and 2002 undertaken by the National Audit Office of the Peoples Republic of China (CNAO). The audit covered:

(a) financial operations and controls;

(b) adequacy of the management structure;

(c) equipment use and control;

(d) monitoring evaluation and reporting;

(e) project execution rate.

92. The conclusion appears in Section E2 on pages 12 to 15. The auditors noted inter alia that phase-out contracts cannot meet the 18 month implementation time; some enterprises used approved funds for unauthorised purposes such as consultants fees; no comments have been

provided on enterprise phase-out because none of the 16 enterprises had completed implementation at the time of the audit (July 2002).

93. Section E3 indicates that UNDP also commissioned an independent technical audit. The technical audit was undertaken by UNDP's international and national sector experts in August 2002 at the three enterprises where implementation had been completed. The audit findings, which were all positive, appear on pages 15 and 16.

Continuation of UNDP as implementing agency

94. In Section F it is indicated that SEPA and UNDP have agreed that UINDP should remain as the implementing agency for the remainder of the project.

Performance Indicators

95. Section H of the report on progress indicates that China has been able to achieve all the performance indicators included in Table 5 of the 2000-2001 first implementation programme as amended (presented originally as an attachment to document UNEP/OzL.Pro/ExCom/32/30/China)

2003 Annual Implementation Programme

96. The 2003 Annual Implementation Programme will phase out 600 ODP Tonnes of CFC-113, 78 ODP Tonnes of TCA and 55 ODP Tonnes of CTC. Phase-out activities at the enterprises level will be achieved through ODS reduction contracts for larger enterprises and the voucher system for SMEs. To enable phase-out activities under the 2003 programme to be completed by the end of 2004, bidding for the 2003 ODS Reduction Contracts will be initiated early in 2003. ODS reduction contracts will be signed by June 2003. Vouchers for the SMEs will be issued by October 2003. The completion of these activities by the end of 2004 will contribute to the phase-out targets in 2005.

97. The programme includes a continuation of the technical assistance activities currently under implementation. Together with the enterprise level phase-out activities and the necessary policy framework, the combined actions will facilitate the smooth and orderly phase-out of solvent consumption to achieve the annual phase-out targets stipulated in the Agreement. The consumption of CTC as cleaning solvent will be completely phased-out by 2004.

98. The Government of China and UNDP are requesting approval of the 2003 Annual Implementation Programme of the China Solvent Sector Plan at the 38th Meeting, as the basis for consideration of the release of the 2003 funding level of US $5,755,000 plus agency support costs at a future Executive Committee Meeting.

99. The 2003 Annual Implementation Programme is included in full as an annex to UNDP's 2002 Report on Progress (attached).

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Release of funding approved for 2002 programme

100. The list of 17 enterprises using CTC as a process agent in 2000 provided by UNDP, to complete the information required for release of the approved 2002 programme funding, indicates a total consumption of CTC for this purpose as 3,232 metric tonnes. The Secretariat asked UNDP to clarify the consumption indicated, because the total in Chapter 2 of the China process agent sector plan submitted to the 37th Meeting (Attachment to document UNEP/OzL.Pro/ExCom/37/22) was indicated as 3593 metric tonnes.

101. The process agent sector plan also indicates (in Table 2.1) that there are another 21 enterprises consuming CTC for applications that are not at this stage eligible for funding as process agents under Decision X/14. However these applications are also exempted uses and, under the Solvent Sector Agreement, should be reported on at the enterprise level as feedstock. The listing of consumption for each of these enterprises, which totals 5,867 ODP tonnes has not been included in the information provided.

102. The addition of 5,867 ODP tonnes to the feedstock total (54,674 ODP tonnes) would not breach the limit in the Agreement of 66,000 ODP tonnes. However it appears that the conditions for release of the approved funding for the 2002 implementation programme will not be met until the additional enterprise-level information is provided.

The 2002 Report on Progress

103. In regard to 2002 ODS reduction contracts, the report on progress states in the second paragraph of section B3 that to achieve the required reductions in consumption of CFC-113, China will promulgate regulations controlling consumption because of the difficulty in attracting bidders to take up reduction contracts. However in the next paragraph, it is indicated that 35 bidding enterprises were successful and that the target level of CTC consumption was met. UNDP was requested to clarify the apparent inconsistency in these two statements and provide details on the timing and methodology to be adopted to issue what appear to be quotas for CFC-113 consumption.

104. In Section B3 of the report on progress (page 5) it is indicated that quantity of CTC to be phased-out from reduction contracts entered into in 2002 will be 33.69 metric tonnes less than the target established in the annual plan. UNDP was invited to indicate the remedial action that was planned and to provide more detailed explanation of, and corroboration for, the statement in the final paragraph of section B3 (page5) that it is believed that many of the CTC-using enterprises have phased out at their own cost and therefore the consumption of CTC will meet the phase-out target.

105. In regard to meeting the control targets for 2001, the same level of information about the enterprise consumption of CTC for exempted feedstock and process agent uses is required as was

the case for the year 2000. Once again, China has provided information concerning enterprise-level consumption for approved process agent uses but has not included information about the 21 additional enterprises listed in the process agent sector plan which need to be accounted for as feedstock uses. This information will need to be provided before the terms of the agreement can be considered to have been complied with. UNDP has been invited to clarify this information and also to confirm that the feedstock figures are identical to those reported by the World Bank for the production sector.

106. In regard to the performance audits, it is noted that although the title of Section E of the report on progress is "performance audit on 2001 phase-out targets", no information is provided about the audit of the 2001 national consumption limits specified in the Agreement. The three 2001 national consumption figures for CFC-113, TCA and CTC are provided in Table 3 (page 10) and are indicated as being the same as the limits specified for that year in the Agreement (2,700, 613 and 110 ODP tonnes, respectively). The audit report does not appear to have included verification of these figures. UNDP was requested to clarify this issue.

107. It is also noted that the principal performance evaluation function has been undertaken by the China National Audit Office, with UNDP's 'independent' evaluation limited to technical audits of three enterprises by three solvent sector experts.

2003 Annual Implementation Programme

108. The 2003 annual implementation programme proposes a series of phase-out contracts similar to those contained in earlier annual implementation programmes. Two issues appear to have emerged from earlier programmes. The first is that implementation times appear to have lengthened from 18 months to two years (as indicated in the CNAO's performance audit report). The second is that the 2002 report on progress indicated that there may have been difficulties in finding sufficient enterprises to take up the contracts (subject to a query in respect of CFC-113 contracts and confirmed in respect of CTC contracts). UNDP was invited to include in the proposal an assessment of the effects of this experience on the activities proposed for 2003.

109. The CNAO's performance audit report also indicated a number of administrative issues that needed to be addressed, including: strengthening training and increasing the supervision of use of the funds provided to enterprises, and: adjustment of reduction contracts to reflect changes in use of the funds provided. UNDP was requested to indicate how this and other relevant issues identified in the performance audit are to be addressed in the 2003 programme.

110. Activities in 2003 will include completion of implementation of phase-out contracts entered into in either 2001 (if there are any additional delays) as well as all contracts signed in 2002. These objectives do not appear to have been listed as undertakings in the 2003 implementation programme. Similarly, the total actual phase-out expected to be achieved from all projects planned for completion in 2002 and the total actual phase-out planned to be achieved through voucher redemption need to be included as performance targets. Figures are included in Table IV of the 2003 programme (Performance Indicators) and UNDP was invited to clarify whether these figures represented actual phase-out planned from completed contracts and vouchers.

111. In regard to policy actions, (Section E and Tables III and IV) UNDP was requested to clarify the administrative measures that are to be taken to ensure that the consumption of CFC-113, TCA and CTC at the country level remain within the agreed limits of 1700, 580 and 55 ODP tonnes respectively. These measures would need to come into effect should the phase-out through reduction contracts in 2002 not be achieved (for instance if some of the enterprises that planned to cease consuming in 2002 continued to consume through 2003 because of project delays), risking an increase over the level of consumption planned in 2003. The possibility of project implementation delays has already been demonstrated in the current report on progress. Given the need to ensure that China does not fail to meet its consumption obligations under the agreement it would seem essential that supply management arrangements are provided for.

RECOMMENDATION

112. Subject to any advice provided by UNDP to the Sub-Committee on Project Review, the Executive Committee, might consider whether the 2003 annual implementation programme should be resubmitted to the 39th Meeting, together with a supplement to the 2002 Report on Progress addressing the outstanding issues.

THE CFC-11 POLYURETHANE FOAM SECTOR

IN CHINA

2003 ANNUAL PROGRAM

SEPTEMBER 12, 2002

TABLE OF CONTENTS

Introduction

1. In accordance with the Executive Committee's approval of the "Agreement for the China CFC-11 PU Foam Sector" (UNEP/Ozl.Pro/ExCom/35/19, Decision and Annex), China is hereby requesting release of the **second tranche of US$12.57 million** for the implementation of the 2003 Annual Program. With this funding, China's CFC-11 consumption in the PU foam sector will be limited to a **maximum of 13,830 ODP MT** by the end of 2003. Details of the 2003 annual program are provided in Section B.

2. ***China's CFC-11 phaseout obligations in the PU foam sector .*** Within the Sector Plan, China agreed to the following control targets for CFC-11 consumption in the PU foam sector.

Table 1. Control Targets for CFC-11 Consumption in the PU Foam Sector and Annual Grant

	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Annual National CFC-11 consumption limit	17,200	15,500	13,100	10,400	7,700	4,130	3,800	300	0	
Annual CFC-11 consumption in PU foam sector	14,143	13,830	11,666	9,646	7,164	3,821	3,553	102	0	
Annual CFC-11 phaseout targets in PU foam sector	2,000	2,500	2,500	2,500	600	551				10,651
Total annual funding	9,940	12,570	10,903	3,320	2,676	1,767	1,767			53,846

Part A

Implementation Status of the 2002 Annual Program

Phaseout Targets

1. By the end of 2002, national CFC-11 consumption target will be limited to 17,200 MT through the control of CFC-11 production in the CFC Production Sector being implemented, and the control of net import. At the same time, CFC-11 consumption in the PU foam sector will not exceed 14,143 MT through the completion of individual investment projects that were approved by ExCom and funded by the MLF in the past three to four years. For 2002, the CFC-11 phaseout targets in PU foam sector is 2,000 MT. All contracts for these 2,000 MT of CFC-11 will be signed in 2002, 50% of which will be phased out by the end of 2004 and another 50% by the end of 2005. It is envisaged that the annual grant of US$9.940 million will be allocated to PU foam enterprises to convert from CFC-11 foam production to non-CFC foam production and for technical assistance activities.

Initiation Activities.

2. Since approval of the Sector Plan, China has initiated the following activities to ensure that it will be able to sign contracts with enterprises with a total CFC phaseout amount of at least 2,000 MT in 2002.

a. ***Implementation mechanism***. A domestic implementation agency (DIA) was selected through a bidding process. The DIA will assist SEPA in the day to day management of the Sector Plan. Due to the large number of the PU enterprises in the sector, the small size of the enterprises, and the geographical spread of PU enterprises in the country, China believes that industrial restructuring is more effective to convert small CFC foam production to non-CFC production and this modality will be used whenever appropriate. At the same time, SEPA will select beneficiary enterprises through a competitive selection process, i.e. through public awareness activities, invitation to prospective enterprises to apply for grant fund, award grants to enterprises with the best proposals based on project proposals, evaluated by the SEPA project team.

b. ***Development of a Project Implementation Manual (PIM).*** A PIM has been developed. This laid out the implementation modality agreed with the World Bank, role and responsibilities of different stakeholders, and management, monitoring and evaluation of the program. This is a first draft and it will be revised whenever necessary. 300 copies were printed and almost all of these were distributed to stakeholders during different workshops discussed below.

c. ***Public awareness activities***. After approval of the Sector Plan, advertisements were placed in the China Plastics magazine, China Environment Newspaper, Ozone Actions in China, and Plastic industry internet website with details on the Foam Sector Plan, implementation modality, country commitment, the necessity of phaseout, related phaseout activities, and invitation to PU foam activities to participate. All these were also promoted in different workshops.

d. ***Seven training workshops were undertaken***. Since the approval of the Sector Plan, SEPA has conducted seven workshops for provincial and local environmental protection agencies, local sector bureaus, and PU foam enterprises. Agenda for all workshops were: policy instruments for the CFC-11 PU foam sector, Foam Sector Plan, PIM, substitute technology, and invitations to all foam enterprises to participate in the phaseout.

i The first workshop was held in Zhengzhou, Henan, in February 2002;

ii The second workshop was held in Shenzhen, Guangzhou, in April 2002;

iii The third workshop was held in Xinjiang in April 2002;

iv The fourth workshop was held in Jinan, Shangdong, in June 2002 for rigid foam enterprises;

v The fifth workshop was held in Nantong Jiangsu, in June 2002 for flexible foam enterprises;

vi The six workshop was held in Changzhou, Jiangsu in July 2002 for rigid foam enterprises; and

vii The seventh workshop was held in Lanzhou, Gansu for rigid foam enterprises in July 2002.

e. ***Start of a PU website.*** A website was developed in the SEPA project office with contents on the PU Foam Sector Plan, the PIM, policy measures, current phaseout activities, and substitute technology for enterprises to view over the internet. This activity was carried out in the past six months, and is in the initial stages of development. The web-site is available at *www.sino-pu.com.*

Policy Measures and Government Actions to support phaseout.

Ban on new construction of CFC-11 foam production. In November 1997, SEPA and other ministries have promulgated a " Circular on ban on establishment of new production sites for production and consumption of ODS" and was effective in January 1, 1998. The ban requires that:

a. all regions not to build, enlarge or renovate ODS-based production facilities

b. environmental bureaus not to approve environmental impact assessment reports for these projects,

c. governmental planning, and economic and trade administrations at all levels not to approve these production facilities to be set up or put in use.

3. However, this Ban has not monitored closely and may not be effective as it supposes to be. Realizing the importance of increasing awareness of the general public of this Notice and the ODS phaseout program, SEPA has been emphasizing this Notice in all the workshops that it has organized in the past six months. These have helped increased understandings of the local government offices, enterprises, and other stakeholders.

4. **Production control of CFC-11.** The key policy instrument of this program is the regulation promulgated for the introduction and implementation of an annual tradable quota system, entitled "Circular on Implementing the Quota System for CFC Production", by the State

Environmental Protection Administration (SEPA) and the State Administration of Petroleum and Chemical Industry (SAPCI) on May 31, 1999. Under this Circular, CFC production by substances is strictly controlled by the Government. From a total number of nine CFC-11 producers and a total of CFC-11 production of 22,684 MT in 1999, only three CFC 11 producers remain in 2001 with a total CFC-11 production of 14099 MT. With this control mechanism and the export and import control discussed below, national CFC-11 consumption is under control.

5. **Export and import control of ODS.** In addition to the continued implementation of the CFC Production Quota System which controls production of CFC-11, a study on options for export/import management for halons and CFCs, which would help China to monitor trade in CFCs and prevent illegal CFC trade, was completed in July 1999. A "Circular on Control Mechanism of Import and Export of ODS" and a "Circular on Strengthening Management of ODS Import and Export" were promulgated on December 3, 1999 and in April, 2000. The mechanism is implemented by the Management Office of ODS Import-Export Control jointly administered by SEPA, the General Administration of Customs (GAC), and the Ministry of Foreign Trade and Economic Cooperation (MOFTEC), and helps China to monitor trade in ODS and eliminate illegal ODS trade. Two batches of *Export/Import Control List of ODS in China* have been promulgated in January 2000 and January 2001 respectively. Among other ODS controls, import of CFC-11 is regulated by a permit system administered by the MOFTEC.

6. Control of import is essential to ensure that the national consumption does not exceed the agreed target. A CFC-11 import quota system has therefore been established to control import of CFC-11. Import of CFC-11 now requires an import license from the Management Office of ODS Import-Export. The quota available for year 2002 is 2,000 tons.

7. **Consumption control of CFC-11 in other sectors.** Together with the PU foam sector plan, the tobacco sector plan and the industrial and commercial refrigeration sector plan are also under implementation. The domestic refrigeration sector plan is being considered by the ExCom. Thus, CFC-11 consumption for these sectors are under control on an annual basis under each sector plan. Consequently, the foam sector is able to limit its national CFC-11 consumption limit to the agreed targets.

8. **Government actions to support the CFC-11 phaseout activities**. Some local Governments (such as Shanghai and Beijing) have required the use of HFC 141b for insulation in some of their construction projects; thus eliminating the use of CFC-11 foam for insulation. The Ministry of Science and Technology has conducted some research on CFC- 11 substitutes.

Enterprise Activities.

9. **Reduction contracts signed and to be signed.** There will be three to four restructuring projects in the 2002 annual program. These projects will comprises about 26 PU foam enterprises in different provinces of China. The status of implementation of enterprise activities are as follows:

a. ***Chengdu and Henan flexible foam projects for 1,188 MT.*** These two projects were prepared in 1999 and were originally submitted for funding as umbrella projects in the 32nd ExCom meeting in December 2000. Later on, they were incorporated into the 1st implementation plan of the Sector Plan (the 2002 annual program). SEPA has signed two

contracts with these enterprises in August 2002. The Chengdu Project will phaseout 552 MT of CFC-11 in seven enterprises and the Henan Project will phaseout 636 MT of CFC-11 in eight enterprises. Under these two projects, a total of 1,188 MT of CFC-11 consumption will be eliminated by the end of 2004 (Table 1).

b. ***Preparation status of the remaining projects in the 2002 annual program for 812 MT.*** As of August, three to four restructuring projects are being considered for inclusion in the annual program, but only one or two will be selected. Project evaluation is underway and final selection is expected to be by October 2002. One to two contracts are expected to be signed for 812 MT before mid-2003. These two projects are expected to be completed before the end of 2005.

10. **World Bank verification of CFC-11 consumption in signed reduction contracts (Table 1).** In August 2002, the Bank has verified and confirmed that CFC-11 consumption in the Chengdu project which consumed a total of 552 MT. This is one of the three to four contracts in the 2002 annual program. This Chengdu Project constitutes about 25% of the 2000 MT phaseout targets, and 25% of the contracts signed (if there are four contracts).

Technical Assistance Activities.

11. **Technical assistance (TA) activities**. TA activities envisaged under the Sector Plan concentrate on strengthening: (a) the overall institutional framework for phaseout; (b) substitute chemical development; (c) management, monitoring & evaluation capabilities of participating institutions; (d) skills of enterprise managers involved in CFC-11 consumption phaseout activities; and (e) information exchange. These are all essential to the success of the phaseout. All terms of reference and detailed work programs will be agreed with the World Bank before implementation. Most of these activities are expected to be completed within two years. Proposed 2002 TA activities include:

a. F-02-TA1 – *Equipment for MIS in the Foam Sector*. A MIS is under development for the foam sector. It will be an important management tool for the SEPA foam project team to manage sector phaseout effectively. Considering that the project will last until 2010, the voluminous data involved, and the management tables that will be necessary, it is important to develop the MIS early and properly, and have the necessary equipment to run the system efficiently. Equipment proposed include desktop and portable computers, printers, portable and other data management systems, digital cameras, etc..

b. F-02-TA2 – *Technical investigation*. Selection of substitute technology is one of the most important elements in the implementation of the Sector Plan. China intends to develop a guide book for local PU foam manufacturers. Technical investigation is planned for local experts to visit equipment suppliers whose equipment use substitute chemicals in other countries and see how these substitutes could be applicable to China. The investigation team will go to Europe and the United States to (i) visit the enterprises using LCD and equipment manufacturers in order to study the application method of LCD equipment, (ii) study variable pressure foaming process for the box foam substitute, (iii) visit related chemical companies and equipment suppliers so as to study the development and current situation of PU rigid substitute technology; and (iv) collect standards of substitutes produced.

c. F-02-TA3 – *Establishment of a PU Foam Sector ODS phaseout Action Web Site.* The SEPA foam team has already started development of a website, which needs to be completed as soon possible, and will need daily maintenance and improvement. Public awareness and training are two key activities to help smooth execution of PU foam phaseout. The China foam team believes that with the advance of the internet and with the size of the country, a foam website will be the most effective tool in wide dissemination of information to all stakeholders instantly and any update will be available to all interest parties promptly as well. The objective of establishing a website is to deliver foam sector information to as many enterprises as possible over a widespread distribution, on the following:

i Knowledge related to ozone layer production, the Montreal Protocol, China Country Program for ozone layer production, China ODS and CFC-11 phaseout schedule, ODS policies, local and international ODS phaseout news, particularly on CFC-11;

ii Introduction of the foam sector plan, PIM, project preparation and implementation procedures;

iii Provisions of standard format of project application form, enterprise questionnaire, project proposal, and contract;

iv Introduction of various important policies issued during foam sector plan implementation;

v Experiences of demonstration projects;

vi Report on project progress;

vii Introduction of substitute technology and promotion in their application;

viii Notification of working and training workshops, report on workshop; and notification of project bidding; and

ix Report on implementation status of conversion projects.

This is the proposed list of contents in the PU foam website. It will need to be updated and improved continuously over the life of the project to 2010.

d. F-02-TA4 – *Consultant services*. The China ozone unit will recruit three groups of local consultants.

i The first group of consultant will assist prospective enterprises in the preparation of project proposals. They will visit the enterprises, verify data and documentation provided by the enterprises, provide visit report to the China ozone visit, helped draft project proposals and project feasibility study;

ii The second group of consultants is responsible for the assessment of project proposals and submit evaluation reports to the ozone unit; and

iii The third group of consultants is to provide technical assistance during implementation of conversion projects. Services include review of bidding document and participation of bid evaluation, supervision of project progress.

e. F-02-TA5 – *Preparation for the Revision of Existing Standard of PU foam*. Some of the existing standards for PU foam are for CFC-11 as a foaming agent. Since there is no

national product standards for products using non-CFC-11 as foaming agents, foam enterprises are faced with difficulties in non-CFC product acceptance which affect their market share and expansion. This prevents substitute products to be used more widely. This TA will review the existing standards for PU foam in China, and serve as preparation for future revision of standards for PU foam. Work involves to

i collect, categorize and analyze the existing standards for PU foam , and to collect standard for non-CFC foam standards in other countries for references;

ii visit enterprises with non-CFC foam products, conduct studies on non-CFC products and their production situation with a view of laying foundation for the amendment of new standard;

iii exchange views with sector authorities and experts, institutions which drafted the existing standards, and enterprises; and

iv propose an action plan for a revision of existing standard and establishment of new standard.

f. F-02-TA6 – *A Research on IOC Management for Rigid Foam Chemicals*. This TA will propose a proper compensation of IOC for rigid foam conversion. Most Chinese rigid foam enterprises will buy pre-blended poloyol after conversion. If pre-blended poloyol is insufficient after conversion and if price differences between CFC poloyol and 141b poloyol is substantial, there is a risk of reverting to using CFC-11 poloyol after conversion. As most rigid foam enterprises are small, and there are a lot of them which are spread all over the country, it is difficult for the ozone unit to monitor them after conversion. Thus it is important to develop a non-CFC pre-blend chemical market in China, and together with appropriate policies and technical assistance to enterprises, China can ensure that the conversion is sustainable. Scope of work includes :

i Investigation, categorization, and analysis of chemical use in the rigid foam producing enterprises, utilization of IOC in individual projects, and study of the non-CFC chemical markets,

ii Analysis on the feedback to the questionnaire and findings from the investigation; and

iii Final report on a proposed compensation method on rigid foam chemicals.

g. F-02-TA7 – *Training*. The training objectives are to : (i) promote the foam sector plan to PU enterprises; (ii) familiarize enterprises with the application and implementation process, and encourage enterprises to participate; (iii) familiarize selected experts on the process and the requirements of the sector plan; and (iv) train enterprises included in the annual program so that the enterprises understand implementation schedule and their responsibilities; and (v) improve management capability of ozone unit and DIA staff. There will be three workshop to be organized: (i) The first one is for staff in the foam team in the ozone unit, local experts, prospective beneficiaries in the 2002 annual program; (ii) The second workshop is for potential beneficiary enterprises for the 2003 annual program; and (iii) the third workshop is for the DIA, procurement agency, general contractor, and enterprises which have signed reduction contracts.

h. F-02-TA8 – *International forum on Phasing Out CFC-11 in PU Foam Sector in China*. The foam sector is the largest ODS consuming sector in China and accounts for one third of

national ODS consumption. There are about 1,100 foam enterprises producing foam with CFC-11. Most of them small enterprises, spread all over China, not well managed, backward in terms of technology, and less capable of further development. These lead to difficulties to complete phaseout in the foam sector. Thus an international forum is planned in 2003. Technology suppliers and equipment suppliers from other countries and all domestic stakeholders will be invited to this forum. The objectives are to: (i) introduce and promote the general policy framework of CFC phaseout and the foam sector plan; (ii) introduce the application process of sector plan projects, and project management requirements of the MLF and the World Bank; and (iii) introduce the 2002 annual program and tasks for the future years, and to invite enterprises to actively apply for grant fund; and (iv) introduce advanced CFC substitution technologies adopted in other countries, promote exchange, and cooperation on substitution technologies and equipment suppliers between domestic and international enterprises.

i. F-02-TA9 – *Survey of water (CO_2) foam technology*. Since the ODP of HCFC-141b is 0.11 and HCFC is a transitional phaseout technology, it is also limited in application due to its flammable and explosive characteristics, China will decrease the application of HCFC 141b when suitable alternative technology is available. Even the ODP of CO_2 foam is zero and the cost of conversion with water blowing technology is comparatively lower, the operation is safer, yet its application in the past is limited due to the relatively higher thermo-conductivity and its products could not match those of CFC-11 products. With the progress of ODS phaseout and with the revisions of standards of foam products in the next few years, it is critical that to explore alternative technology, like the CO_2 foam technology. The scope of this study include: (i) conduct a survey of the application of the CO_2 foam technology, and compare the cost, product quality and investment among different alternatives; (ii) review current demand and forecast future market demand. Review technical requirements in the fields of furniture, decoration finishes, sound insulation, packaging, integral skin and pipe-in-pipe products; (iii) collect product samples for examination and testing; and (vi) complete a report with a proposal on the application of water blowing technology in the China foam sector.

The above TA activities are summarized in the Table 2 below.

Table 2. 2002 Annual Program Technical Assistance Activities

(Amount in US$ million)

Technical Assistance Activities (all TORs have been agreed with the Bank)				
TA#	Activities	Funding [1/] (US$ Million)	Performance Indicators	Key Dates
F-02-TA1	Equipment for MIS in the Foam Sector	0.034	1. List of equipment with specification confirmed 2. Procurement signed 3. Equipment delivered 4. All equipment being in use	1. 4Q2002 2. 4Q 2002 3. 1Q 2003 4. 2Q2003
F-02-TA2	Technical investigation	0.030	1. Detail work plan completed 2. Recruitment of technical investigation team 3. Completion of technical evaluation 4. Final report of technical investigation	1. 4Q2002 2. 1Q2003 3. 3Q2003 4. 4Q2003
F-02-TA3	Establishment of a PU Foam Sector ODS phaseout Action Web Site	0.024	1. Recruitment of consultants to work on the site 2. Completion of all information retries	1. 3Q2002 2. Throughout 2002
F-02-TA4	Consultant services	0.073	1. Recruitment of consultants	1. Throughout 2002/2003
F-02-TA5	Preparation for the Revision of Existing Standard of PU foam	0.015	1. Forming the work team 2. Complete data collection and analysis 3. Proposal for standard revision	1. 4Q2002 2. 3Q2003 3. 4Q2003
F-02-TA6	A Research on IOC Management for Rigid Foam Chemicals	0.020	4. Recruitment of consultants 5. Complete investigation and analysis 6. Final report	1. 4Q2002 2. 3Q2003 3. 4Q2003
F-02-TA7	Training	0.039	1. Conduct all workshops	1. Throughout 2002
F-02-TA8	International forum on Phasing Out CFC 11 in PU Foam Sector in China.	0.179	7. Complete all arrangement for the forum 8. End of the forum 9. Final report on the forum	1. 1Q2003 2. 2Q2003 3. 3Q2003
F-02-TA9	Survey of water (CO_2) foam technology	0.048	1. Complete work plan 3. Complete survey and testing 4. Final report on CO_2 study	1. 4Q2002 2. 3Q2003 3. 4Q2003
TOTAL		0.462		

[1/] These are estimated costs. After bidding for TA contractors and consultants, these costs will be adjusted to reflect contractual amounts for each TA. All TA activities are expected to be completed on schedule.

PART B

2003 ANNUAL PROGRAM

Phaseout Objectives

12. The phaseout objectives of the 2003 Annual Program are to ensure that : (i) the national CFC 11 consumption limit of 15,500 MT will not be exceeded; (ii) the CFC-11 consumption limit of 13,830 MT will not be exceeded; and (iii) the CFC-11 phaseout target of 2,500 MT in PU foam sector has been met. China is requesting the release of the **second annual tranche** of **US$12.57 million** as agreed in the Sector Plan for phaseout of CFC-11 consumption in the PU foam sector to achieve these objectives. It is envisaged that the US$12.57 million will be allocated to PU foam enterprises to convert from CFC-11 foam production to non-CFC foam production and for technical assistance activities.

Program Activities During the Year

13. ***Policy and government actions***. In 2003, the following government actions will continue to support program activities and are considered necessary for the success of total CFC 11 phaseout in the PU foam sector in China.

a. ***Ban on new construction of CFC-11 foam production*.** The Notice has been effective since 1997 and will remain effective. Continue public awareness activities on the sector phaseout plan will help effective implementation of this Notice.

b. ***Production control of CFC-11*.** The regulation on Tradable Production Quota has been under implementation since 1999 and will continue. Production of CFC-11 will be under control.

c. ***Export and import control of ODS***. The Management Regulation on Export/Import Control of ODS, promulgated in December 1999 by SEPA in collaboration with Ministry of Foreign Trade and Economic Cooperation (MFTEC) and General Administration of Customs (GAC), covers all ODS as well as related equipment and facilities that produce or consume ODS. ODS Export/Import quota and permit systems have been adopted, and all enterprises wishing to export or import ODS must hold both a quota issued by SEPA and MFTEC, as well as specific export/import permits. GAC supervises exports and imports of ODS. China has also promulgated the Export/Import Control List of ODS in China, the First Group in January, 2000, and the Second Group in January 2001 . Under this regulation, China has introduced quota and permit requirements exports and imports of CFC-11.

d. ***Consumption control of CFC-11 in other sectors*.** All other sector plans will continue implementation and CFC-11 in those sectors will be contolled.

e. ***Substitute development.*** Government will continue support development of substitutes and research for non CFC chemicals for foam production. And

f. ***Institutional strengthening.*** Government will hold workshops and training sessions to improve knowledge and capabilities of CFC-11 foam enterprises in the use of substitute and understanding of substitute technologies.

g. ***CFC-11 Production Quota.*** China will limit the production quota for CFC-11 to ensure it is consistent with the overall CFC-11 consumption limit established in this sector plan.

14. **Enterprise activities**. SEPA will identify PU foam enterprises with total CFC-11 consumption amounting to 2,500 MT. A minimum of 50% of the reduction contracts are expected to be signed by mid-2003, and another 50% to be signed not later than by mid-2004. Based on the current preparation status, SEPA expects three to four large regional projects to be included in the 2003 annual program.

15. **Technical assistance (TA) activities**. The following activities are proposed for 2003:

a. **F-03-TA1-*Training of personnel involved in implementation of phaseout activities***. To implement the phaseout plan effectively, it is necessary to train staff and raise awareness of the: (i) CFC 11 foam manufacturers; (ii) local environment protection agencies and sector bureaus, and (iii) audit agencies. Training is also needed for enterprises to understand all policies related to CFC 11 consumption phaseout, and the sector plan implementation mechanism. This type of training will need to be repeated every year in the first few years of implementation. This activity is expected to be completed in 2003.

b. **F-03-TA2-*PU foam products standard revision***. Revision of existing foam products standard based on the final report from the technical assistance activity (F-02-05) in the 2002 annual program. This activity is expected to be completed by the end of 2004.

c. **F-03-TA3-*The 2002 performance audit***. A yearly performance audit is required under the Foam Sector Plan. The 2002 Performance Audit will be carried out in April of 2003. The activity will be completed by end of June 2003.

d. **F-03-TA4-Website improvement and management**. The foam website will continue to be improved and managed. This activity will be completed by the end of 2003.

e. **F-03-TA5-*A manual on substitute technology in the PU foam sector***. A manual will be prepared on substitute technology in the PU foam sector in China based on the experience in the past 10 years in foam conversion and a review of substitute technologies that are suitable for and applicable in China. And

f. Other TA activities that are necessary for effective phaseout may be developed during the year.

16. The above policy and government actions, enterprise-level and technical assistance activities are summarized in Table 3 below.

Table 3. World Bank Verification of Eligibility and CFC 11 Phaseout Amounts in August 2002

Name of Enterprises	Date of establishment	CFC-11 Consumption				Verified
		1997	1998	1999	1997-99	
Chengdu Industrial Restructuring PU Flexible foam project – The Chengdu Jinjiang Foam General						
Duocai Co. Ltd.	1993	67	74	88	76.33	Verified
Huiyu Co. Ltd.	1994	76	86	95	85.67	Verified
Hongyang Foam	1994	68	75	84	75.67	Verified
Liuli Foam	1991	70	75	96	80.33	Verified
Qianjin Foam	1992	69	81	87	79.00	Verified
Dongzikou Foam	1989	78	71	89	79.33	Verified
Chongqing Jinjiang Foam	1994	57	71	99	75.67	Verified
Total		**485**	**533**	**638**	**552**	
Henen Industrial Restructuring PU Flexible Foam Project						
Yanshi Foam Plant	1994	82	85	91	86.17	
Zhengzhou Development Zone Foam Plant	1994	78	73	87	79.33	
Huixian Zijinshan Foam Plant	1994	77	82	94	84.33	
Yiyang Jinjiu Foam Plant	1993	73	89	94	85.33	
Luoyang Jinling Foam Plant	1999	81	93	88	87.33	
Wuzhi Fuli Foam Plant	1992	73	60	88	73.67	
Shangqiu Foam Plant	1994	58	79	89	75.33	
Shangqiu Yongfeng Foam Plant	1995	60	59	77	65.33	
Total		**582**	**620**	**708**	**636.67**	

Table 4. The 2003 Annual Program

(Amount in US$ Million)

CFC-11 control targets			
Control targets in 2003	**CFC-11 in MT ODP**	**Performance Indicators**	**Key Dates**
National CFC 11 consumption limit	15,500	1. Government confirming that two national CFC 11 consumption limits for 2002 are met. 2. Remaining 2002 annual program ODS reduction contracts amounting to at least 812 MT of CFC 11 to be signed. 3. ODS reduction contracts amounting to at least 1,250 MT of CFC 11 in the 2003 annual program to be signed before mid-2003. 4. Implementation of TA activities to help phaseout.	1. June 2003 2. June 2003 3. June 2003 4. Throughout the year
National CFC 11 consumption limit in PU Foam Sector	13,830		
CFC 11 phaseout targets in PU foam sector	2,500		

Policy Measures			
Measures	Funding	Performance Indicators	Key Dates
1. Ban on new construction of CFC-11 foam production	Incl .in training TA	1. Training workshops to be held for local government officers and all stakeholders	1. Throughout the year
2. Tradable production quota for CFC producers	n.a.	1. Establish 2003 annual CFC 11 production quota 2. Issue annual production quota to CFC 11 producers for 2003	1. Feb. 2003 2. Feb. 2003
3. Import/export trade management	n.a.	1. Implement the import/export trade management mechanism.	1. January 2003-December 2003
4. Consumption control of CFC-11 in other sectors	n.a.	1. Other CFC 11 sectors will continue implementation as per their sector plans	1. January 2003-December 2003

Enterprise activities			
	Funding (US$ million)	Performance Indicators	Key Dates
Conversion of CFC-1 PU foam enterprises	12.330	1. Training workshops to be held to invite participation of prospective enterprises for 2003 and 2004 annual programs 2. Project proposals prepared and evaluated 3. To determine grant funds after project evaluation 4. Selection of enterprises to be included in the annual program 5. 50% of the 2003 AP Reduction contracts signed 6. Implementation of projects start	1. Jan.-August 2003 2. Throughout the year 3. Throughout the year 4. Throughout the year 5. Throughout the year 6. Throughout the year

Table 4. 2003 Annual Program (cont.')

(Amount in US$ million)

Technical Assistance Activities				
TA#	Activities	Funding [1/] (US$ Million)	Performance Indicators	Key Dates
F-03-TA1	Training of Personnel Involved in Implementation of Phaseout Activities	0.06	1. TOR to be agreed with the Bank 2. Workshops to be conducted.	1. 1Q2003 2. Throughout 2003
F-03-TA2	PU Foam Products Standard Revision	0.04	1. TOR to be agreed with the Bank 2. Start process in recruiting consultant firm 3. Recruitment of consultant firm 4. Review standard proposal 5. Standard proposal completed	1. 1Q2003 2. 2Q2003 3. 2Q2003 4. 4Q2003-1Q2004 5. 3Q2004
F-03-TA3	The 2002 Performance Audit	0.03	1. TOR to be agreed with the Bank 2. Training of auditors 3. Audit 4. Completion of audit	1. 1Q2003 2. 1Q2003 3. 2Q2003 4. June 30, 2003
F-03-TA4	Website Improvement and Management	0.04	1. TOR to be agreed with the Bank 2. Appointment of consultants 2. Website management & improvement	1. 1Q2003 2. 1Q2003 3. Throughout 2003
F-03-TA5	A Manual on Substitute Technology in the PU Foam Sector	0.03	1. TOR to be agreed with the Bank 2. Recruitment of consultants 3. Work plan completed & formation of work team 4. Review of draft manual 5. Final draft manual completed	1. 1Q2003 2. 1Q2003 3. 2Q2003 4. 2Q2004 5. 3Q2004
	TA to Be Determined	0.04		
Subtotal		0.24		
Total for phaseout activities		**12.570**		

[1/] These are estimated costs. After bidding for TA contractors and consultants, these costs will be adjusted to reflect contractual amounts for each TA. All TA activities are expected to be completed on schedule.

THE HALON SECTOR

2003 ANNUAL PROGRAM

August 23, 2002

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The Halon Sector
2003 Annual Program

BACKGROUND

1. In accordance with the Executive Committee's approval of the Sector Plan for Halon Phaseout in China (UNEP/Ozl.Pro/ExCom/23/68), China is hereby requesting release of the sixth tranche of US$5.9 million for implementation of the year 2003 Annual Program. With this funding, China's halon 1211 production will be reduced to a maximum of 1,990 MT and its consumption to a maximum of 1,890 MT in 2003. The halon 1301 production will remain within the agreed maximum of 600 MT and, consumption will remain within the agreed maximum of 150 MT in 2003. Details of the annual program are in Part B.

2. After the approval of the China Halon Sector Strategy at the 23rd meeting of the ExCom and release of funds for the first (1998) Annual Program, China began implementation of the Halon Sector Strategy. Since the start of the program, China has developed supporting policies and regulations. From the initial number of 14 Halon plants, 12 halon 1211 production plants have been closed and dismantled completely, and production and capacity has been reduced at the 2 remaining halon 1211 production plants. Out of a total of 72 halon fire fighting extinguisher manufacturers originally identified as potential beneficiaries, 7 enterprises have signed contracts to close their extinguisher production, and 35 enterprises have signed contracts to convert their manufacturing lines for fire extinguishers from halon to non-ODS extinguishers. 37 of the 42 enterprises have completed their closure/conversions projects, and the rest are presently implementing their conversions. Four additional equipment manufacturers were located and were found to be operating without valid licenses, and were shut down in 2001 by administrative measure without any funding,. Out of a total of 22 originally identified halon fire fighting systems manufacturers, four enterprises have signed contracts to convert their manufacturing of halon fire extinguishing systems from halon to non-ODS extinguishing systems; three of these have been completed, and one is implementing its conversion. There are currently 30 remaining fire extinguisher manufacturing enterprises and 18 fire extinguishing system enterprises who have not started conversion. A total of 36 technical assistance activities have been taken up, including activities for strengthening implementation capacity, and preparation of standards to ensure quality and reliability of halon substitute fire extinguishers and fire extinguishing systems. 24 out of these projects have been completed.

3. The national production level of halon 1211 allowed for 2002 is 2,654 MT, a reduction of 663 MT from the allowable production level of 3,317 MT in 2001. Compared to the actual production level of 11,644 MT in 1997, (the baseline year), the total production reduction of halon 1211 by the end of 2002 will be at least 8,990 MT. Production of halon 1301 for 2002 has been reduced to a maximum of 600 MT, a reduction of 18 MT from 1997 levels. The 2001 annual production was well below these allowed maximum levels. A detailed implementation status is provided in Part A.

4. As far as the other halons are concerned, halon 1202 is generated as a by-product during the production of halon 1211. According to information provided by the three largest

halon 1211 producers, the amount of halon 1202 generated averages between 20 and 30 kg per ton of halon 1211 produced. This halon 1202 is neither vented, nor sold, but is recycled into halon 1211 production. A ban on sales of halon 1202 in the market has been promulgated by the Ministry of Public Security (MPS). China is confident that, based on its regulations and monitoring, there is no halon 1202 sold in the market. China has never produced halon 2402, and has never had plans to do so. In accordance with national regulations, a new halon 2402 production facility would require a new production license, and such a license can no longer be obtained because of a ban on setting up new halon production facilities or expanding existing halon production facilities.

5. These phaseout results have been achieved through close cooperation between the State Environmental Protection Administration (SEPA), the Ministry of Public Security (MPS), China National Chemical Construction Corporation (CNCCC) and the concerned enterprises. The experience from the implementation has confirmed the necessity of strong policy enforcement and monitoring of the halon phaseout program. Because of the number and geographical distribution of the enterprises involved, the success of the program depends to a large extent on the cooperation and support from provincial and local Environmental Protection Bureaus and Fire Fighting Bureaus. Training and public awareness therefore continue to be key elements in the halon sector plan implementation.

6. The rapid reduction of halon 1211 makes it imperative and important for fostering the supply of alternative fire extinguishing agents and fire fighting equipment in order to maintain the national fire protection and fire fighting capability. Special initiatives have been taken up to strengthen the supply of light-weight high pressure CO_2 cylinders, ABC powder, and vegetable protein foam. A halon bank is also being established. Details of these initiatives are provided in Part A.

7. The production and consumption of halons in China since the start of the halon sector plan is described in Table 1 below. Consumption in this table was determined in accordance with the ExCom approval conditions as total annual production plus imports, minus exports. As indicated above, China has reported that no other halons were produced in China, including halon 1202 and halon 2402. All production and consumption data (including 2001 production) has been verified by an annual international audit commissioned by the World Bank.

Table 1: Annual Production and Consumption of Halons under the Sector Plan

	Halon 1211				Halon 1301			
	Production		Consumption		Production		Consumption	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
1997 (baseline year)	9,950	11,644	NA	10,849	618	618	NA	NA
1998	7,960	7,842	7,160	7218	618	450	300	-152 [1/]
1999	5,970	5,965	5,370	5280	618	484	300	304
2000	3,980	3,978	3,580	3650 [2/]	618	428	300	377 [2/]
2001	3,317	3118	3,117	2,832	618	213	300	180
2002	2,654		2,654		600		150	
2003	1,990		1,890		600		150	
2004	1,990		1,890		600		150	
2005	1,990		1,890		600		150	
2006	0	0	0		150		100	
2007	0	0	0		150		100	
2008	0	0	0		150		100	
2009	0	0	0		150		100	
2010	0	0	0		0			

[1/] The negative consumption of Halon 1301 in 1998 (–152 MT) reflects the export of 602 MT, which included part of the stock (328MT) from the previous year's production. Therefore, the total consumption in 1998 (Consumption=Production +Import - Export) is negative.

[2/] Remedial action for the excess consumption in 2000 was taken by appropriately reducing consumption quota in 2001.

Part A

Implementation Status Of Previous Annual Programs

1998-2001 Annual Programs

1. ***Phaseout targets and objectives.*** As described in Table 1, production and consumption of halons has been reduced annually under the halon sector agreement. While production has consistently been retained below the agreement levels, the consumption of halons (production adjusted for net export) exceeded the targets twice (for 1998 and 2000) as exports of halons turned out to be lower than expected, and this was discovered only when the final export figure became available in the beginning of the following year. These developments were promptly reported to the ExCom, and corrective measures were taken as follows:

(a) reduction of excess consumption from the next year's consumption limit (for 2000);
(b) confiscation of excess production to not allow its consumption within the following year (described in detail in the 2001 annual program); and
(c) strengthening of the controls on the national consumption target from 2001 onwards by limiting the initial total national production quota to the consumption target for the year. Any additional production quota (for export) can only be requested retroactively, so that an enterprise requesting such additional quota would have to provide documentation to prove that the export has already taken place.

2. The consumption data for 2001 confirms the effectiveness of this arrangement.

3. ***Implementation of policy instruments.*** The production quota regulations became effective in December, 1997. National annual halon production quotas are issued to individual producers for halon 1211 and halon 1301.

4. The quota system is the main tool for the implementing the halon phaseout and is supported and enforced fully by MPS. The production data reported by the producers is periodically verified by SEPA and MPS. MPS has simultaneously strengthened its enforcement of the regulation on use of halon 1211 fire extinguishers, which has further reduced the demand for halon 1211. As described above, the halon quotas are now administratively split up into production quotas for domestic consumption and for export. Utilization of the export component is allowed retroactively, and requires proof of export orders having been carried out. Licensing is another important control measure. Only licensed enterprises are allowed to produce and/or sell halon and/or and halon containing products. After a halon closure/conversion project is completed, the enterprise's production license for halon and/or halon containing products is withdrawn by MPS.

5. There is also a ban on production and sale of halon and/or halon-containing products to enterprises who have been funded under and completed projects under previous annual programs. When the conversion is completed and the project is commissioned by MPS and

SEPA, the license to produce and sell halon fire extinguishers and systems are withdrawn.

Other enterprise-level phaseout activities

6. ***Closure of halon production facilities.*** Full closure contracts were signed with bid winners in various annual programs. Their production facilities were dismantled and halon-producing equipment was completely dismantled and disposed. Partial closure contracts were also signed with some bid winners, and their production quota and capacity was reduced accordingly. Details by year are provided in Annex II.

7. ***Closure and conversion of halon fire extinguisher manufacturers.*** Likewise, contracts were signed under each annual program with extinguisher and system manufacturers for reducing halon 1211 consumption to match the declining supply of halons. Some extinguisher manufacturers selected closure and the other selected conversion. All the closure and conversion activities have been completed on schedule and were commissioned by SEPA and MPS. Details are provided in Annex III.

Technical assistance (TA) aactivities

8. All activities under TA projects of 1998 and 1999 have been completed. Two TA activities of the 2000 annual program have been completed, and one is under implementation. . Two TA activities were taken up in 2001; one has been completed and the other is under implementation. Details of all these activities are in Annex IV (A-D).

Special Initiatives

9. Another main objective of the Halon Sector Plan is to ensure that the level of fire protection capability in China is not compromised as a result of halon phaseout activities, and that adequate quantities of suitable quality substitutes are available. Special initiatives have been taken up under various annual programs to address this requirement. The special initiatives undertaken so far are summarized in Annex V and described below.

10. ***ABC dry chemical powder.*** To maintain the required level of fire fighting capacity in China, the Foshan Electro-chemical General Plant was selected to establish an ABC dry powder production line with an annual capacity of 3000 MT. The grant contract was signed in May 1999 and the project has been completed and commissioned in November 2001. Commercial production has already started.

11. ***Light weight high pressure CO_2 cylinders.*** Weifang Dongming Fire-fighting Equipment Co., Ltd was selected as the beneficiary for manufacture of light weight CO_2 cylinders with the capacity of 600,000 units per year. The contract was signed in November 2000. Since the equipment needed had to be specifically designed and manufactured it took a long time to finalize the specifications, before the transaction could be settled. The purchased equipment will arrive in the first half of 2003.

12. ***Halon banking***. The Panyu Shengjie Fire-fighting Equipment Co., Ltd. was selected as the beneficiary to set up a halon bank in Guangdong with an annual recycling capacity as

500 MT. The grant contract was signed in August 2000. The equipment was delivered to the beneficiary in December 2001.

13. ***Plant-protein based foam.*** The Honsen Fire-fighting Hi-tech company was selected as the beneficiary to establish a test laboratory for plant-protein-based foam. The contract was signed in April 2000. The project has been completed by December 2001.

14. ***National conference.*** A national halon conference was held in November, 2000, and was attended by various institutions and entities related to halon phaseout activities . The conference provided a valuable opportunity to look back on experiences and lessons, look forward to future tasks, and to share the lessons of successful experience.

2002 Annual Program

15. ***Phaseout targets and objectives.*** The phaseout target is (see Table 1) to reduce halon 1211 production to a maximum of 2,654 MT; to reduce halon 1211 consumption to a maximum of 2,654 MT; to reduce halon 1301 production to a maximum of 600 MT; and to reduce halon 1301 consumption to a maximum of 150 MT. Production quotas have been issued consistent with these targets.

16. ***Implementation of policy instruments.*** The quota system continued to be the main tool for the implementing the halon phaseout and is supported fully by MPS. A catalogue of ban on production and sale for the phased out products including halon extinguishers and agents was issued by SETC. The deadline for halon and halon extinguisher production is in line with the sector plan timetable. Like previous years, a ban on sales and production for the commissioned project enterprises was issued.

Enterprise-level phaseout activities

17. ***Closure of halon production facilities.*** **total c**losure contract was signed with one halon1211 producer and quota reduction (partial closure) contract signed with one halon 1301 producer. The total halon phased out will be 780 MT of halon 1211 and 18 MT halon 1301, thereby ensuring that the 2002 national targets for halon production level are met. Both projects have completed the closure activities. Details are in Annex II.

18. ***Closure & conversion of halon fire extinguisher manufacturers.*** China has conducted an assessment of the number of contracts that have already been signed in the first three years for closure and conversion of equipment manufacturers to review whether the pace of conversion is appropriate, given the projected availability of halon 1211 in the next three years. This assessment has now been concluded, and eight to ten contracts will be signed by the end of October, 2002.

Special initiatives

19. ***Development of 3,600 MT plant-protein foam fire fighting agent production line.*** The development of a 3,600 MT Honsen L119 plant-protein based foam plant is under way (while the overall designed plant capacity is larger at 10,000 MT, the special initiative will only support this limited capacity in keeping with the requirement that halon sector funding should not result in any incremental increase in national fire-fighting capacity in China). The beneficiary's feasibility study is being reviewed by Government.

20. ***Halon banking*** Contracts for demonstration projects will be signed with two Halon recycling centers to collect, recycle and reclaim used halons if up to 240 MT. The recycle centers are at Panyu in Guangdong Province and in Dalian, Liaoning Province.

Technical assistance activities

21. Eleven TA projects were identified for the 2002 annual program, including training and auditing, and are at various stages of implementation. Details are in ANNEX IV.

PART B
2003 ANNUAL PROGRAM

Objectives

1. The phaseout target for the 2003 annual program is to (a) reduce halon 1211 production from the level of 2,654 MT to a maximum of 1,990 MT and consumption to a maximum of 1,890 MT and, (b) to maintain halon 1301 production at a maximum of 600 MT, with consumption being maintained at a maximum of 150 MT. The 2003 program will also continue actions to ensure that the fire fighting capacity is not undermined as the result of an insufficient supply of substitutes of satisfactory quality.

2. China is requesting the release of the approved amount of US$ 5.9 million for the 2003 annual program as agreed in the overall Halon Sector Phaseout Plan. To achieve these goals, the following activities are envisioned:

a. US$1.57 million to be used for buying back quotas and as a result reduce the halon 1211 production;
b. US$1.7 million to be used for closing and converting 10-15 fire extinguisher manufacturers;
c. US$2.4 million to be used for converting 8-10 halon 1211 fire system manufacturers; and
d. US$0.23 million to be used for technical assistance activities in order to support the halon phaseout program and ensure that existing fire protection requirements can be met.

Policy instruments during the Year

3. ***Policies to be continued.*** In 2003, the following policies and measures will continue to be implemented by the Government. These policies are considered necessary for the success of a total halon phaseout in China.

a. Bidding -- The bidding system will continue to be improved based on the experiences gained from the 1998, to 2002 annual programs. Preparatory work will be finished by the end of 2002. Bidders with the lowest evaluated unit prices will be awarded grant funds. The Government will sign closure/conversion contracts with the winning enterprises.
b. Tradable production quota – The regulation will continue to be implemented.
c. The ban on new installations of halon extinguishers for non-essential uses and a gradual tightening of the definition of essential uses will continue.

4. In order to support local enforcement of the ban on non-essential uses of halons in the most effective manner, the Government will ensure that:

a. SEPA/MPS will disseminate details of the ban to all prospective consumers through various channels (news media, bulletins, propaganda, etc.);
b. Local fire bureaus and environmental protection bureaus will jointly inspect

consumers on a regular basis. If any consumer is found to be using the newly-installed halon fire extinguishers in non-essential areas, the consumer will be required to change to non-halon systems within a defined time.

c. Joint inspection teams of the local fire bureaus and environmental protection bureaus will be required to submit regular reports to MPS and SEPA about the situation and measures in implementation of the ban.
d. Stricter control the sales of halon will be enforced by making use of the output of projects for three demonstration centers and replicating the experience to other provinces in order to reach phaseout goals.

5. As usual MPS will withdraw production licenses for manufacturing halon and halon-containing products from beneficiaries after their projects are completed.

Enterprise-level activities

6. Through a combination of production quotas, bidding systems and administrative measures, enterprises will be granted funds for closure and conversion activities. All contracts for closures are expected to be signed by the end of 2002. Closure projects (for halon agent producers) are expected to take effect from January 1, 2003 and all the closure projects to be completed within the program year. All contracts for conversion projects are expected to be signed in the second half of 2003 and implementation may take one and half years.

Technical assistance (TA) activities

7. ***National Standard Formulation for the general technical conditions of aerosol fire extinguishing apparatus.*** It is necessary to work out unified national standards to (a) develop national capacity in this field, (b) define the limitations for the production and application of aerosols firefighting products, and (c) to encourage the application of aerosol fire extinguishing technology to help ensure phase-out of halons.

8. ***Training of Personnel Involved in Phaseout Activities:*** As in the previous year, it is considered necessary to train staff of local environmental protection bureaus, local fire fighting bureaus and halon enterprises in order to implement the phaseout plan effectively. Training is needed to prepare enterprises to bid in the following year, to supervise halon production and consumption, to manage the tradable production quota system and to learn operation procedures in the halon sector phaseout approach. In addition, as the sector approach requires financial and performance audits, training has to be provided for audit agencies on the sector approach and the annual plan.

9. ***Performance Audit for 2002 Annual Program enterprises.*** As in previous years, CNAO will conduct a performance audit for sector plan activities in 2002 to ensure the effective implementation of the annual program.

10. The above policy initiatives, enterprise-level and technical assistance activities are summarized in Table I below.

Table I. 2003 Annual Program

Halon phaseout targets & policy instruments				
	Start of program (MT)	End of program (MT)	Key Actions Required	Key Dates
Halon 1211 Production ceiling	2,654	1,990	1. Quota reduction of halon agent producers 2. TA activities to help phaseout	1. Jan-Dec. 2003
O/w export		100		
Consumption ceiling	2,654	1,890	1. Closures of extinguishers manufacturers 2. Conversion of halon fire extinguishers to non-halon extinguishers	1. Jan.-Dec. 2003 2. To start conversion by second half of 2003
Halon 1301 Production ceiling	600	600	1.Policy controls.	1. Jan-Dec. 2003
O/w export	450	450		
Consumption ceiling	150	150	1. Policy controls.	1. Jan-Dec. 2003

Continuation of policy instruments		
Policy Instruments	Actions Required	Key Dates
1. Bidding system for fire extinguisher and system manufacturers	1. Training for the 2003 bidding 2. Bidding started 3. Bidding completed 4. Bid winners awarded for 2003 5. Contracts signing with winners 6. Implement closure/ conversion contracts.	1. Apr.- 2003 2. May 2003 3. Jun..2003 4. Jul. 2003 5. Jul. 2003 6. (a) Closure – Jul .to Dec. 2003 (b) Conversion—starting July for a 12 month Period
2. Tradable production quota for halon producers	1. Establish 2003 halon production quota ; 2. Issue 2003 production quota to halon producers	1. Dec. 2002 2. Dec. 2002
3. The ban on halon extinguisher uses in non-essential areas	1. Promotional campaign on the ban, through various channels; 2. Joint supervision of ban by local Fire Fighting Bureaus and Envir. Protection Bureaus.	1. Through 2003 2. Through 2003

Table I: 2003 Annual Program (Contd.)

Enterprise-level Activities						
	Funding Requested (US$ mill)	Existing Enterprises	# of enterprise targeted	# of enterprises at end of 2003	Key Actions Required	Key Dates
1. Reduction of halon 1211 production	1.57	2	2	2	Partial closure (quota reduction)	1. Contracts signed Dec. 2002 and completed in 12 months
2. Closure & conversion of halon extinguisher manufacturer	1.70	30	10-15	15-20	Selection through bidding process	1. Bid winners by July, 2003. 2. Contracts signed no later than July 31, 2003. 3. Completed in 12 months after signing contract
3. Conversion of halon fire extinguishing system manufacturers	2.40	18	8-10	8-10	Selection through bidding process	1. Bid winners and contracts signed no later than September. 2003 2. Completed in 12 months after signing contract
Subtotal	**5.67**					

Table II: 2003 Annual Program-Technical Assistance Activities

TECHNICAL ASSISTANCE ACTIVITIES			
Activities	MLF funding requested (US$'000)	Actions Required	Key Dates
1. National standard formulation for the general technical conditions of aerosol fire extinguishing apparatus	60	Selection of qualified institutions to formulate the standard	1. Contract signed no later than 3Q 2003. 2. Finish work within 24 months after signing contract
2. Training	100	Training workshops will be carried out	Training will be carried out through the 2003.
3. Performance Audit	70	Annual Performance audit of the 2003 production	
Subtotal	230		
TOTAL for phaseout activities	**5900**		

Table III: 2003 Annual Program - Proposed Performance Indicators

Halon Phaseout Targets			
Halon sector	Start of program (MT)	End of program (MT)	Performance Indicators
Halon 1211 Production ceiling	2,654	1,990	• Production levels (national aggregate halon 1211)
o.w. exports	0	100	
Consumption ceiling	2,654	1,890	• Consumption levels (national halon production plus import minus export)
Halon 1301 Production ceiling	600	600	• Production levels (national aggregate halon 1301 production)
o.w. exports	450	450	
Consumption ceiling	150	150	• Consumption levels (production plus imports minus exports)

Continuation of Policy Instruments	
Initiatives	Performance Indicators
Bidding system	• Enterprises trained for bid preparation for 2003 bidding by June 30, 2003 • bidding for 2003 annual plan by June 30, 2003 • Winning enterprises for 2003 selected by July 31, 2003
Tradable production quota for halon producers	• Annual production quota to halon producers for 2003 issued by March 30, 2003 • Production reports from enterprises received on quarterly basis
The ban on halon extinguisher uses in non-essential areas	• 2 training workshops conducted throughout the year in key provinces

Enterprise-level activities				
Activities	Funding requested (US$ mill)	Existing Enterprises	# of enterprises at end of 2003	Performance Indicators
Reduced Halon 1211 production	1.57	2	2	Halon production reduction contracts signed before Dec.31, 2002
Closure & conversion of halon extinguisher manufacturer	2.3	30	15-20	Halon consumption phaseout contracts signed by July 30, 2003
Conversion of halon fire extinguishing system manufacturers	1.7	18	8-10	Halon consumption phaseout contracts signed by July 30, 2003
Subtotal	5.57			Total disbursement to enterprises

Table III: 2003 Annual Program - Proposed Performance Indicators (Contd.)

Technical assistance activities		
Activities	Amount in US$'000	Performance Indicators
1. National standard formulation for the general technical conditions of aerosol fire extinguishing apparatus	60	Invitation issued by March 30,2003
2. Training	100	Workshops conducted by June 30, 2003
3. Performance Audit	70	Audit reports submission by June 30, 2003
Subtotal	230	
TOTAL for Phaseout Activities	**$5.9million**	

ANNEX I: Halon Phaseout Action Plan, January 1, 1998 to January 1, 2010

CHINA **Halon Sector Phaseout Action Plan, January 1,1998 to January 1,2010**															
		First Stage			**Second Stage**					**Third Stage**					**Total Funding Request**
Year	Base line production	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Halon 1211 (MT)															
Production target	9,950	7,960	5,970	3,980	3,317	2,654	1,990	1,990	1,990	0	0	0	0	0	
o.w. Export		800	600	400	200	0	100	100	0	0	0	0	0	0	
Import		0	0	0	0	0	0	0	0	0	0	0	0	0	
Domestic Consumption		7,160	5,370	3,580	3,117	2,654	1,890	1,890	1,890	0	0	0	0	0	
Production phaseout target		1,990	1,990	1,990	663	663	664	0	0	1,990	0	0	0	0	
Consumption phaseout target		1,790	1,790	1790	463	463	764	0	0	1,990	0	0	0	0	
Halon 1301 (MT)															
Production target[3/]	618	618	618	618	618	600	600	600	600	150	150	150	150	0	
o.w. Export		318	318	318	318	450	450	450	450	50	50	50	50	0	
Import		0	0	0	0	0	0	0	0	0	0	0	0	0	
Domestic Consumption		300	300	300	300	150	150	150	150	100	100	100	100	0	
Production phaseout target		0	0	0	0	150	0	0	0	450	0	0	0	150	
Consumption phaseout target		0	0	0	0	150	0	0	0	50	0	0	0	100	
Required funding from MLF ($'000)		1240	970	1060	450	370	590	120	180	1140	40	30	10		6200

ANNEX II
Closures of halon production facilities and lines

A. 1998 Annual Program

Table 1: Closure of Halon 1211 Plants with 1998 Production Quotas

Name of the plant	Halon phaseout (MT)	Closure date	Implementation status	Remarks
1.Zhedong No.1 Chemical Plant	347	January 1, 1998	Project completed. Equipment dismantled completely	Plant closure
2.Zhejiang Dongyang No.2 Chemical Plant	1,004	January 1, 1998	Project completed Equipment dismantled completely	Plant closure
3.Zhejiang Xiaoshan Fire-fighting Chemical Plant	387	January 1, 1998	Project completed Equipment for one production plant dismantled completely	Partial closure. One out of two production plant closed.
4.Foshan Electro-Chemical General Plant	300	January 1, 1998	Project completed. Production within reduced production quota.	Partial closure. Reactor pipes dismantled.
Total (Quotas sold back to Gvt.):	**2,038**			

Table 2: Closure of Halon 1211 plants not assigned 1998 production quotas

Name of the plant	Halon phaseout (MT)	Year of stop production	Implementation status	Remarks
1.Dalian Fire-extinguishing Agent Plant	165.9	1997	Project completed and equipment dismantled completely	Dismantling and destruction of equipment verified
2.Zigong Fijian Chemical Plant	54.0	1997	Project completed and equipment dismantled completely	Dismantling and destruction of equipment verified
3.Guangdong Don guan Fire-fighting Equipment Plant	320.0	1997	Project completed and equipment dismantled completely	Dismantling and destruction of equipment verified
4.Guangxi Bihar Ocean Chemical Plant	40.0	1997	Project completed and equipment dismantled completely	Dismantling and destruction of equipment verified
5.Wenling Salt Farm Chemical Plant	70.5	1997	Project completed and equipment dismantled completely	Dismantling and destruction of equipment verified
Total	**650.4**			

B. 1999 Annual Program

Name of the plant	Halon phaseout (MT)	Closure date	Implementation status	Remarks
1. Hewing Xiaoshan Fire-fighting Chemical Plant	400	January 1, 1999	Project completed and equipment dismantled completely	Plant closure
2.Shandong Hahira Group Shogun Fire-fighting Chemical Plant	500	January 1, 1999	Project completed Reactor pipes dismantled	Partial closure.
3.Wuxian Chemical Plant	388	January 1, 1999	Project completed Reactor pipes dismantled	Partial closure.
4. Hewing Dongyang Chemical Plant	654	January 1, 1999	Project completed Reactor pipes dismantled	Partial closure.
Total (Quotas sold back to Gvt.)	**1,942**			

C. 2000 Annual Program

Name of the plant	Halon phaseout (MT)	Closure date	Implementation status	Remarks
1. Hewing Dongyang Chemical Plant	779	January 1, 2000	Production based on reduced production quota	Partial closure.
2.Shandong Hahira Group Shogun Fire-fighting Chemical Plant	451	January 1, 2000	Production based on reduced production quota	Partial closure.
3.Wuxian Chemical Plant	170	January 1, 2000	Production based on reduced production quota	Partial closure.
4. Hewing fire-fighting Chemical Plant	130	January 1, 2000	Producing basing on reduced quota	Partial closure.
5.Foshan electro-chem. general plant	381	January 1, 2000	Production based on reduced production quota	Partial closure.
6.Zhejiang chemical research institute	79	January 1, 2000	Production based on reduced production quota	Partial closure.
Total (Quotas sold back to Gvt.)	**1,990**			

D. 2001 Annual Program

Name of the plant	Halon phaseout (MT)	Closure date	Implementation status	Remarks
1.Wuxian Chemical Plant	330	January 1, 2001	Project completed and equipment dismantled completely	Plant closure.
2. Zhejiang fire-fighting Chemical Plant	250	January 1, 2001	Project completed and equipment dismantled completely	Plant closure.
3.Zhejiang chemical research institute	150	January 1, 2001	Production quota for Halon 1211 cancelled and production line adjusted to disable ability to produce halon 1211.	Plant closure.
Total (Quotas sold back to Gvt.)	**730**			

E. 2002 Annual Program

Name of the plant	Halon phaseout (MT)	Closure date	Implementation status	Remarks
1. Foshan electro-chem general plant	780 (halon 1211)	January 1, 2002	Project completed and equipment dismantled completely	Plant closure.
2.Zhejiang chemical research institute	18 (halon 1301)	January 1, 2002	Production based on the reduced halon 1301 production quota.	Partial closure.

ANNEX III
List of beneficiary fire extinguisher manufacturers

A. 1998 Annual Program

Name of the manufacturer	Project starting date	Phaseout amount (MT)	Implementation Status	Completion date	Remarks
1.Zhejiang Xiangshan No.1 Fire-fighting Equipment Plant	1998.03.14	223.0	Project completed and commissioned Equipment dismantled.	1999.03.14	Plant closure
2.Zhejiang Yiwu Fire-fighting Extinguisher Plant	1998.03.14	162.2	Project completed and commissioned. Equipment dismantled.	1999.03.14	Plant closure
3.Changzhou Fire-fighting Equipment Plant	1998.03.14	47.5	Project completed and Commissioned	2000.03.14	Conversion
4.Dalian Jinzhou Fire-fighting Equipment Plant	1998.03.14	105.7	Project completed and Commissioned	2000.03.14	Conversion
5.Guangxi Wuzhou Fire-fighting Equipment Plant	1998.03.14	52.4	Project completed and Commissioned	2000.03.14	Conversion
6.Guangzhou Zhujiang Fire-fighting Equipment Plant	1998.03.14	138.4	Project completed and Commissioned	2000.03.14	Conversion
7.Jiangxi No.1 Fire-fighting Equipment Plant	1998.03.14	220.8	Project completed and Commissioned	2000.03.14	Conversion
8.Nanjing Heli Fire-fighting Equipment Plant	1998.03.14	146.4	Project completed and Commissioned	2000.03.14	Conversion
9.Ningxia Yongning Fire-fighting Equipment Plant	1998.03.14	23.0	Project completed and Commissioned	2000.03.14	Conversion
10.Panyu Shengjie Fire-fighting Equipment Plant	1998.03.14	435.1	Project completed and Commissioned	2000.03.14	Conversion
11.Shanghai Haishen Fire-fighting Equipment Plant	1998.03.14	149.6	Project completed and Commissioned	2000.03.14	Conversion
12.Shanghai Punan Fire-fighting Equipment Plant	1998.03.14	268.4	Project completed and Commissioned	2000.03.14	Conversion
13.Shanghai Qingpu Fire-fighting Equipment Plant	1998.03.14	169.9	Project completed and Commissioned	2000.03.14	Conversion
14.Shenyang Fire-fighting Equipment Plant	1998.03.14	153.7	Project completed and Commissioned	2000.03.14	Conversion
15.Xiangshan Fire-fighting Equipment Plant	1998.03.14	270.6	Project completed and Commissioned	2000.03.14	Conversion
16.Ningbo Sanyou Fire-fighting Equipment Ltd.	1998.03.14	50.0	Project completed and Commissioned	2000.03.14	System conversion
Total (Average halon 1211 consumption 1995 to1997):		**2,616.7**			

B. 1999 Annual Program

Name of the manufacturer	Project starting date	Phaseout amount (MT)	Implementation Status	Completion date	Remarks
1.Zhejiang Dongyang Fire-fighting Equipment Plant	1999.03.16	131.88	Project complete and commissioned. Equipment dismantled.	2000.03.16	Plant closure
2.Shanghai Global Fire-fighting Extinguisher Plant	1999.03.16	32.66	Project complete and commissioned. Equipment dismantled.	2000.03.16	Plant closure
3.Helongjiang Fire-fighting Equipment Plant	1999.03.16	23.4	Project completed and commissioned.	2001.03.16	Conversion
4.Guangzhou Fire-fighting Equipment Plant	1999.03.16	83.431	Project completed and commissioned.	2001.03.16	Conversion
5.Jiangsu Taixin Fire-fighting Equipment Plant	1999.03.16	336.6	Project completed and commissioned .	2001.03.16	Conversion
6.Chongqing Zhendan Fire-fighting Equipment Plant	1999.03.16	60.77	Project completed and commissioned.	2001.03.16	Conversion
7.Heilongjiang Shangzhi Fire-fighting Equipment Plant	1999.03.16	78.4	Project completed and commissioned.	2001.03.16	Conversion
8.Hubei jiangling Fire-fighting Equipment Plant	1999.03.16	194.78	Project completed and commissioned.	2001.03.16	Conversion
9.Shandong Weifang Fire-fighting Equipment Plant	1999.03.16	153.116	Project completed and commissioned.	2001.03.16	Conversion
10.Shunde Fire-fighting Equipment Plant	1999.03.16	192.72	Project completed and commissioned.	2001.03.16	Conversion
11.Guangzhou Fire-fighting Equipment Plant	1999.03.16	29.697	Project completed and commissioned.	2001.03.16	System Conversion
Total (Average halon 1211 consumption 1995 to1997):		**1317.431**			

C. 2000 Annual Program

Name of the manufacturer	Project starting date	Phaseout amount (MT)	Implementation Status	Completion date	Remarks
1.Guangzhou Baiyun luoyang Fire-fighting Equipment Plant	2000.02.24	183.608	Project complete and commissioned. Equipment dismantled..	2001.02.24	Plant closure
2.Zhejiang Linhai Fire-fighting Equipment Plant	2000.02.24	57.5	Project complete and commissioned. Equipment dismantled.	2001.02.24	Plant closure
3.Anhui Bengbu Fire-fighting Equipment Plant	2000.02.24	142.124	Project complete and commissioned. Equipment dismantled.	2001.02.24	Plant closure
4.Suzhou Fire-fighting Equipment Plant	2000.02.24	14.2677	Project completed and commissioned.	2001.02.24	Conversion
5.Shanghai No. 4 Fire-fighting Equipment Plant	2000.02.24	74.762	Project completed and/ commissioned	2001.02.24	Conversion
6.Lianyungang Tianyi Fire-fighting Equipment Plant	2000.02.24	52.35	Project complete and commissioned.	2001.02.24	Conversion
7.Tianjin Tanggu Fire-fighting Equipment Plant	2000.02.24	45.64	Project completed and commissioned.	2001.02.24	Conversion
8.Zhejiang Wananda Fire-fighting Equipment Plant	2000.02.24	56.5	Project complete and commissioned.	2001.02.24	Conversion
9.Zhenzhou Huanghe Fire-fighting Equipment Plant	2000.02.24	25.153	Project complete and commissioned.	2001.02.24	Conversion
10.Nanjing Honghu Fire-fighting Equipment Plant	2000.02.24	81.818	Project complete and commissioned.	2001.02.24	Conversion
11.Zhuhai Zhuzhou Fire-fighting Equipment Plant	2000.02.24	80	Project completed and commissioned.	2001.02.24	Conversion
12.Fujian Changle Fire-fighting Equipment Plant	2000.02.24	284.2	Project completed and commissioned.	2001.02.24	Conversion
13. Zhuhai Zhuzhou Fire-fighting Equipment Plant	2000.02.24	40.5	Project completed and commissioned.	2001.02.24	System Conversion
Total (Average halon 1211 consumption 1995 to1997):		**1138.423**			

D. 2001 Annual Program

Name of the manufacturer	Project starting date	Phaseout amount (MT)	Implementation Status	Planned completion date	Remarks
1.Fuzhou fire-fighting equipment plant	2001.07.10	22.52	The contract was changed from a conversion project to a closure project. The activities has been completed and the project will be commissioned by December 2002.	2002.12.31	Conversion
2.Zhenjiang fire-fighting equipment plant	2001.07.10	17.463	Conversion activities finished and project to be commissioned by December 2002	2002.12.31	Conversion
3. Nanjing jiangpu fire-fighting equipment plant	2001.07.10	84	Conversion activities finished and project to be commissioned by December 2002	2002.12.31	Conversion
4.Jiangsan fire-fighting equipment co.	2001.07.10	41	Conversion activities finished and project to be commissioned by December 2002	2002.12.31	Conversion
5.Wuhan jiangan fire-fighting equipment plant	2001.07.10	16.8	Conversion activities finished and project to be commissioned by December 2002	2002.12.31	Conversion
6. Jiangxi ship's valve plant	2001.07.10	40	Conversion activities finished and project to be commissioned by December 2002	2002.12.31	System Conversion
Total (Average halon 1211 consumption 1995 to1997):		221.783			

ANNEX IV

A. Implementation of Technical Assistance Activities in the 1998 Annual Program

Name of TA Projects	Implementing Agencies	Contract Date	Implementation Status	Completion Date	Remarks
1.Revision of Standards for ABC Powder	Tianjin Fire Research Institute	1998.04.28	Completed and commissioned	2001.6.30	
2.Design Codes for Gaseous Fire Extinguishing Systems	Tianjin Fire Research Institute	1998.04.28	The draft Code has been completed for approval.		To be fully completed by the second half of 2002
3.Standards for Components of Gaseous Fire Extinguishing Systems	Tianjin Fire Research Institute	1998.04.28	Completed and commissioned	2001.6.30	Completed
4.Halon Management Plan-Overall Management	Shanghai Fire Research Institute	1998.04.28	Completed and commissioned	1999.12.31	Completed
5.Halon Management Plan-Training Courses and Propaganda Materials	Shanghai Fire Research Institute	1998.04.28	Completed and commissioned	2000.12.07	Completed
6.Halon Management Plan-Provincial Promotions and Demonstration Centers	Shanghai Fire Fighting Bureau	1998.04.28	Completed and commissioned	1999.10.31	Completed
7.Halon Management Plan-Provincial Promotions and Demonstration Centers	Guangdong Fire Fighting Bureau	1998.04.28	Completed and commissioned	1999.08.31	Completed
8.Development of halon Management Database and Data collection System	Qinghua University	1998.04.28	Completed and commissioned	1998.09.28	Completed
9.Management Information System	Qinghua University	1998.04.28	Completed and MIS accepted by SEPA	1998.04.02	Completed
10.Training	SEPA		Four training workshops have been conducted	1998.12.10	Completed
11. Export/Import study	Beijing University	1998.09.28	Completed and commissioned	1999.11.30	Completed

B. Implementation of Technical Assistance Activities in the 1999 Annual Program

Name of TA Projects	Implementing Agencies	Contract Date	Implementation Status	Completion Date	Remarks
1.Halon management plan---establishment of demonstration centers	Beijing Fire Fighting Bureau	1999.11.10	1)The demonstration center has been established and are now in operation; 1) A series of local policies have been formulated and issued. 2) Halon consumption survey has been carried out. 3) Propaganda has been launched on newspaper, magazines and TV 5) Project completed and commissioned.	2001.10.10	Completed
2. Policy study of demonstrative halon bank	Guangdong Fire Fighting Bureau	1999.11.10	1) International Information on halon bank policies have been collected and reviewed; 2) The framework of Guangdong demonstrative halon bank has been formulated. 3) Recycle and reclaim procedure has been studying and testing. 4) Project completed and commissioned	2001.10.10	
3. Revision of national standard for CO_2 fire extinguishing agent	Tianjin Fire Research Institute	1999.11.10	1)Test equipment has been installed; 2) Information on similar international standards collected & reviewed. 3) Project completed and commissioned	2002.06.01	Completed
4. Study on test method and test equipment for CO_2 fire extinguishing agent	Tianjin Fire Research Institute	1999.11.10	1) Test equipment has been nstalled; 2) Information on similar international standards collected & reviewed. 3) Project completed and ommissioned	2002.06.01	Completed
5. Revision of the design code of CO_2 fire extinguishing systems	Tianjin Fire Research Institute	1999.11.10	1) Test equipment has been installed; 2) Information on similar international standards collected & reviewed. 3) Project completed and commissioned	2002.06.01	Completed
6. Study on the scope of use of CO_2 extinguishers	Shanghai Fire Research Institute	1999.11.10	PCR submitted , Project completed and commissioned	2002.06.01	Completed
7. Study on the standard and test method of CO_2 extinguishers with light cylinders	Shanghai Fire Research Institute	1999.11.10	PCR submitted , Project completed and commissioned	2002.06.01	Completed
8. Formulation of national standard for HFC227 agent	Tianjin Fire Research Institute	1999.11.10	Project completed and commissioned	2002.06.01	Completed
9. Study on the disposal standard for Halon 1211 extinguishers	Shanghai Fire Research Institute	1999.11.10	Project completed and commissioned	2002.06.01	Completed
10.Trianing	SEPA		Four training workshops have been conductedActivities completed	1999.31.12	Completed

C. Implementation of Technical Assistance Activities in the 2000 Annual Program

Name of TA Projects	Implementing Agencies	Contract Date	Implementation Status	Planned /Actual Completion Date	Remarks
1.Design code for Water Mist Fire extinguishing System					Cancelled
2. Performance test Method of Components of Water Mist Fire Extinguishing Systems					Cancelled
3. Propaganda for halon sector approach and halon alternative technology	Shanghai Aozhen Technology Development Company	2000. 10.15	The book was finished, published and handed out to relevant parties. Project completed and commissioned	2000.12.31	Completed.
4. Design Code for Dry Powder Fire Extinguishing System					Cancelled
5. Tests equipment for light weight CO2 Cylinders	Shanghai Fire Research Institute	Oct. 2001	Contract signed in 2001. Project being implemented.	2003.12.31	Ongoing
6. Future requirements for essential uses, Special places					Cancelled
7. Standards for Mechanic foam extinguishers					Cancelled
8. Standards for portable dry powder extinguishers					Cancelled
9. Nitrogen system					Cancelled
10. Training	DIA		Four training workshops were carried out	Within 2000	Completed

D. Implementation of Technical Assistance Activities in the 2001 Annual Program

Name of TA Projects	Implementing Agencies	Contract Date	Implementation Status	Planned /Actual Completion Date	Remarks
1. Formulating Design Code for Mist Water Fire Extinguishing System					Cancelled
2. Revision of Design Code for Installation of Fire Extinguishers for Buildings					Cancelled
3. Feasibility Study on Substitutes for Halon Fixed Fire Extinguishing Systems					Cancelled
4. Studies of Market Prospect for Closure Enterprises	Seven enterprises were chosen to carry out the project	2001.4.10	1 project completed; others ongoing	December 2002	Ongoing
5. Training	DIA		Four training programs were carried out	2001.12.31	Completed

E. Implementation of Technical Assistance Activities in the 2002 Annual Program

Name of TA Projects	Implementing Agencies	Contract Date	Implementation Status	Planned Completion Date	Remarks
1. Study on Evaluation Method of Engineering Application of Heptfluoride Propane Fire-fighting System	Selected bidder	By the end of 2002	General Procurement Notice is being published in UNDB for shortlisting interested consultants	24 months after contract signing	Under preparation
2. Study on Evaluation Method of Engineering Application of Inert Gases Fire-fighting System	Selected bidder	By the end of 2002	Short-listing under way	36 months after contract signing	Under preparation
3. National Standards Formulation for Inert Gas Fire Extinguishing Agent	Selected bidder	By the end of 2002	Short-listing under way	18 months after contract signing	Under preparation
4. Study on the Testing Equipment and Technology of Inert Gas Fire Extinguishing Agent	Selected bidder	By the end of 2002	Short-listing under way	18 months after contract signing	Under preparation
5. National Standard Formulation for General Specifications of Low-pressure Carbon Dioxide Fire-fighting System and Parts	Selected bidder	By the end of 2002	Short-listing under way	18 months after contract signing	Under preparation
6. Study on Testing Equipment and	Selected bidder	By the end of 2002	Short-listing under way	18 months after contract	Under preparation

Technology of Heptfluorid Propane Fire Extinguishing Agent				signing	
7. Liaoning Halon Management Plan	Selected bidder	October, 2002	Bidder selection under way	18 months after contract signing	Under preparation
8. National Standard Formulation for Aerosol Fire Extinguishing Agent	Selected bidder	By the end of 2002	TOR under review	18 months after contract signing	Under preparation
9. Study on the Testing Equipment and Technology of Aerosol Fire Extinguishing Agent	Selected bidder	By the end of 2002	TOR under review	18 months after contract signing	Under preparation
10.Training	DIA		three training workshops were carried out	2002.12.31	Ongoing
11.Performance Audit	CNAO		Performance audit was conducted from April-June, 2002	2002.10,31	Ongoing

ANNEX V

Special Initiatives

Special initiative	**Name of the manufacturer**	**Project starting date**	**Implementation Status**	**Planned completion date**	**Remarks**
HAL-99-SI-01 ABC Dry Powder Production Line	Foshan Electro-Chem General Plant	1999.05.12	Project completed and commissioned.	2001. 10.12	Completed
HAL-00-DI-02 National Halon Phaseout Conference	SEPA	2000.08.01	The conference was held on Nov. 22, 2000. Activity completed	2000.12.31.	Completed
HAL-00-SI-03 Halon Bank Guangdong Branch	Panyu Shengjie Fire Fighting Equipment Plant	2000.08.05	Equipment arrived and constuction of workshop started	2003.06.30	Ongoing
HAL-00-SI-04 Light Weight CO_2 Cylinders	Weifang Dongming Fire-fighting Equipment Co., Ltd.	2000.11.18	Procurement contract signed. Equipment to be delivered by second half of 2003.	2003.11.18	Ongoing
HAL-01-SI-05 Plant Protein Foam test laboratory Project	Honsen Fire-fighting Hi-tech Co., Ltd.	2001.04.04	Project Completed and to be commissioned by end December 2002	2002.12.31	Completed
HAL-02-SI-06 Development of a 3,600 MT Production Line of Honsen L119 Vegetable -protein Foam Extinguishing Agent	Dalian Honsen Hi-tech Fire-fighting Co., Ltd.		Feasibility study reviewed.	12 months after contract signing	Under preparation

China: Process Agents Sector Plan – Compliance Scenario

Introduction

1. At its 37th meeting in July 2002, the ExCom has decided that, pending any decision by the Meeting of the Parties, project proposals in which a country would be in non-compliance with the control measures of the Montreal Protocol should not be approved by the Executive Committee until the underlying issue of non-compliance had been dealt with by the Parties, through the Implementation Committee. The ExCom also invited the MLF Secretariat, the World Bank, and interested Executive Committee members, "to continue working on the sector plan to resolve technical issues and eligible incremental costs for consideration at a future meeting, when the underlying non-compliance issues were resolved." (Decision 37/20).

2. This decision was taken in the context of the China Process Agents Sector Plan, which was submitted for consideration at the 37th ExCom meeting. Following the ExCom meeting, China has informed the World Bank that it would like to develop an additional phaseout scenario that would reduce the CTC consumption for the 25 applications under Decision X/14 to 15 percent of the average consumption of 1998-2000 by 2005. An additional proposal with such a phaseout schedule for CTC is therefore provided in this note. In order to facilitate the review and enable a comparison, the original phaseout scenario proposed in the PA Sector Plan is included in this note. As further modifications might also result after discussions with the MLF Secretariat, The PA Sector Plan will be revised in accordance with the final agreement on PA phaseout scenario and funding.

National CTC Consumption and consumption in the PA Sector

3. The overall CTC production and consumption as reported to the Ozone secretariat is shown in Table I below. Data up to 2000 has been submitted. The data for 2001 is presently under collection and will be submitted in accordance with the reporting requirements; the data for 2001 below are best estimates. The data used below is further explained as follows:

i. 1997-2000 Production, imports and exports data is from reports by China to the Ozone Secretariat.
ii. 1997 Data of feedstock used for CFC production is calculated based on the production of CFC-11 and CFC-12, and the ratio of CFC-11/CTC and CFC-12/CTC from production sector verification.
iii. 1998-2000 Data of feedstock used for CFC production is from the national (CNAO) audit report of the CFC sector.
iv. 1997-2000 data of CTC used for process agent is from the process agent sector plan.

4. Consumption data is calculated using the MP definition (Consumption equals production plus imports minus exports minus feedstock use for CFC and quantity used for other process agents proposed by China (beyond the list of 25 applications).

Table I: National CTC Consumption and Production Data (data in MT)

Year	Production	Import	Export	Feedstock for CFC production	Process agents		Consumption
					Decision X/14 (List of 25)	Other applications proposed by China[1]	
1997	34780	32679	105	60761	2909	4511	2082
1998	31900	45975	31	64782	2707	5387	7675
1999	30036	53226	23	53534	2986	5224	24481
2000	48193	26092	61	48227	3593	5952	20045
2001[2]	58320	1	2	44108	3952	6547	7664

1: These applications will be treated as feedstock until a decision is taken by the Parties.
2: Assumes that consumption of CTC used for process agents (list of 25 as well as other applications proposed by China) in 2001 increased by 10% compared with that in 2000.

5. Unconstrained consumption of CTC in the process agents sector, as described in the Sector Plan, is projected to be as follows:

Table II: Unconstrained Demand for CTC in the Process Agents Sector

	Report	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
CR	Annex 1, Table 4 of Sector Plan	1,357	1,765	2,294	2,982	3,430	3,994	4,536	5,216
CP-70	Annex II, Table 5	2,236	2,482	2,755	3,058	3,395	3,768	4,183	4,643
CSM	growth of 6%/year (annex III, Paragraph 2)	987	1045	1108	1175	1245	1246	1399	1483
Ketotifen	growth of 10%/year (averaged from annex V, Table 3)	10.45	11.5	12.65	13.91	15.31	16.84	18.52	20.37
	Total	**4,590**	**5,304**	**6,170**	**7,229**	**8,086**	**9,024**	**10,137**	**11,363**

Original Phaseout Schedule

6. The proposal submitted to the ExCom earlier included the phaseout schedule as shown in the Table III below. This proposal for gradual phaseout over the entire 2003-2010 period originates from the previous categorization of process agents; until November 1998, there was no provision for process agents applications, and as these were not treated as controlled substance applications, they therefore did no appear in the Country Program for ODS phaseout.

Table III: Original proposed phaseout schedule scenario(in MT/a)

Product	**ODS used**	**Baseline (1999 consumption)**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
CP-70	CTC	932	932	782.52	640.32	498.12	498.12	355.92	317.72	317.72	0
CR	CTC	1142.3	1142.3	896.3	632	367	235	103.5	103.5	103.5	103.5
CSM	CTC	827	827	827	827	827	827	684	684	163.1	163.1
Ketotifen	CTC	10.35	10.35	10.3	8.3	5.3	2	2	2	2	2
PTFE	CFC-113	21.52	21.52	21.5	21.5	17.5	13.5	10.5	0	0	0
Subtotal		2,933	2,933	2,537*	2,129	1,715	1,576	1,156	1,107	586	269

Phaseout Scenarios for Compliance

7. Now that a decision has been taken to add a new scenario to meet the requirement by reducing its consumption of CTC in process agent applications from the average 1998-2000 consumption level of 3,094.6 MT CTC (3,404 ODP Tons) to 15 %, or 464.2 MT CTC (510.6 ODP Tons) by January 2005. Given the unwillingness of technology providers to easily transfer the technology and associated costs, it is not technically feasible to convert the current applications to non-ODS processes within the required time available (less than 2 ½ years for approval, procurement, contacting and implementation). The approach would therefore have to include a combination of policy measures on a national level and phaseout activities on enterprise level.

8. In order to meet its MP obligations, China will implement the CTC phaseout in the PA sector as follows:

i. China will reduce it supply of CTC for process agent consumption by 85% by January 2005 and forward.

ii. Assuming that Funds would be available from the MLF in 2003, all eligible enterprises in the CR, CP-70 and CSM sub-sectors would be invited to sign conversion or closure contracts latest by the end of December 2004.

iii. The annual consumption of CTC up to 2010 would also be limited through a quota system.

iv. China will concurrently establish a quota system for CTC production to ensure that the supply of CTC for feedstock and PA consumption conforms to MP requirements. (This assumes that the CTC production sector plan will be approved not later than 2004}

v. The Government will set up a monitoring system on CTC producers and PA enterprise level to ensure that the national consumption of CTC will be in compliance with the Montreal Protocol;

9. The CTC phaseout schedule will be as follows

Table IV: Revised phaseout Schedule

PA sub	1999	2002	2003	2004	2005	2006	2007	2008	2009	2010
CR	1,142	1,357	1,765	2,294	0	0	0	0	0	0
CP-70	1,007	2,236	2,482	2,755	0	0	0	0	0	0
CSM	827	987	1,045	1,108	352	373	396	419	444	
Ketotifen	10.45	11.5	12.65	13.91	15.31	16.84	18.52	20.37	10.45	
Unallocated					98	76	51	26	0	
	2,987	4,904	5,304	6,170	464	464	464	464	464	

10. The sector enterprises can decide on participating in the phaseout plan through either closure or conversion contracts.

i. Enterprises choosing closure would have to cease production and exit the industry by December 31, 2004 and have all their key equipment dismantled and destroyed within six months of this date. The full closure cost is provided in Table VI for comparison with other options.

ii. For enterprises choosing to convert their production processes, the contract will specify, in accordance with Government regulations, that they will not be allowed to buy any CTC from January 1, 2005 and it would be up to the enterprises to manage the period of transition until they have completed their conversion.

Choice of Phaseout Technologies

11. CR and CP-70 manufacturers will convert to water based technology, the only known non-CTC substitute technology used globally. It is expected that the conversion to water based technology for both CR and CP-70 producing enterprises would take 3 to 4 years, so enterprises would only be able to complete their conversion at the earliest by 2006. During the period of conversion and implementing emission control measures, the enterprises would have to shut down their production temporarily until the conversion has been completed. In order to evaluate or establish the costs associated with this scenario, the costs associated with a short shut down after January 2005 were compared and also listed in the last column of Table IV.

12. As no substitute technology is currently known for CSM and Ketotifen, their CTC phaseout would be based on emission control. For CSM, it is expected that implementation of the emission control measures would take at least 3 years.

13. Consistent with the current guidelines on the sector, emissions reductions will have to be brought down to "insignificant" levels which will be determined by the ExCom. In case this involves further reductions by 2010 and additional incremental costs to China, China would reserve the right to request additional funding for such reductions, to be based on the feasibility studies and international bids in accordance with normal World Bank rules and procedures.

Funding Schedule and Requirements

14. In Decision 27/78, it was agreed that proposals should be prepared consistent with all existing policies and guidelines of the ExCom, with the exception of the eligibility cut-off date of July 1995, which should not be applied as the decision to include CTC as a controlled substance was taken only at the tenth meeting of the Parties. The ExCom guidelines on process agent also requires, consistent with the Decision X/14 of the Parties, that the comparative costs of emission control technologies, process conversion, plant rationalization or closure should be evaluated, and that the cost-effectiveness and emission reductions which can be achieved should be presented. Finally, Decision 27/78 also states that cost-effectiveness of process agent projects will initially be considered on a case by case basis to provide a body of information which can be a basis for the establishment of appropriate cost-effectiveness thresholds in due course.

15. Phaseout costs for conversion of CR companies have been estimated based on the initial discussions with the MLF Secretariat and based on the experience from the only approved Chlorinated Rubber (CR) project.. A critical element in assessing the CR and CP-70 conversion cost, is the cost of technology transfer. At present, none of the technology holders has been willing to provide reasonable quotations at a level comparable with the conversion and

technology transfer costs of the sole approved CR project. The two main issues in descriptions received from technology providers has been the requirement to replace the entire existing equipment and to pay a high technology transfer costs.

16. The annual funding schedule for the compliance scenario is provided below.

Table V: Costs of Compliance Scenario (US$ million)

	1999	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
CTC Phase-Out Plan	2987	2987	2987	2987	447	447	447	447	447	165	
PA sub-sector											
CR			29.40	14.60	6.60	1.50					52.1
CP-70			38.60	12.00	2.00	1.00					53.6
CSM			10.30		0.25*	0.25*					10.8
Ketotifen			1.0								1.0
CFC-113					4.00	4.00	1.70				9.70
TA activities			0.5	0.25	0.25	0.25	0.25	0.25	0.25		2.00
Total MLF funding required			79.80	26.85	12.85	7.00	2.2	0.25	0.25		129.2

* Investment needed to improve emission control measures to "insignificant" levels (to be defined by the ExCom). The funding of $0.25 million is requested for feasibility studies on emission control to be carried out by experts familiar with CSM production and emission control technologies available.

17. China has also considered the costs of other scenarios , such as complete closure, as provided in the original sector plan document, but these options are found to be less cost-effective that the compliance scenario presented here. A comparison of the costs of alternative options is provided below:

Table VI: Comparison of Options

Application	Full closure Costs (as given in the Sector Plan)	Proposed funding in original Sector Plan	Costs of compliance scenario
CR	US$ 50.082	US$ 45.940	US$ 52.10
CP-70	US$ 49.552	US$ 49.720	US$ 53.60
CSM	US$ 19.358	US$ 6.393	US$ 10.8
Ketotifen	US$ 4.016	US$ 1.019	US$ 1.00
PTFE	US$ 222.481	US$ 9.700	US$ 9.70
TA	US$ 0	US$ 2.000	US$ 2.000
Total	US$ 345.489	US$ 114.772	US$ 129.2

Treatment of other applications (in addition to approved list of 25)

18. Consistent with previous decisions by the Parties to the Montreal Protocol regarding CTC used for process agent applications, it is China's understanding that the additional consumption

of 5,224 MT of CTC in other PA applications should be treated as feedstock, and is therefore exempt from controls under Protocol obligations, until the Parties take a new decision on these applications.

Other Issues raised in MLF Secretariat comments to ExCom

19. The MLF Secretariat has also commented (UNEP/OzL.Pro/ExCom/37/32 of June 20, 2002) on other issues relating to the Sector Plan document that need to be addressed. Apart from those already covered above, the following issues are addressed.

20. Specific mechanism for achieving necessary technology transfer: In order to identify potential technology providers, China is requesting a list of known technology providers from the PATF, China are seeking guidance from the MLF Secretariat on how to obtain such a list. Using World Bank procurement procedure, China will request these providers to provide offers of interest for specific conversions and contracts will be negotiated. Specific costs can only be presented after this exercise, which cannot be undertaken unless funding is made available.

21. Of particular importance is the issue of "eligible incremental costs" indicated in the ExCom's decision 37/20. This has limited relevance if closure is considered, but it is necessary to provide a description of existing baseline equipment so that a judgment can be made regarding what incremental costs are necessary for conversion. However, it is the technical opinion of China's experts that retrofit or salvage is not an option, and that the entire lines will need replacement. Attached is a Technical Annex that includes flow-charts of the revised configurations which can be reviewed to establish the validity of these assumptions, as also the components and detailed incremental costs of establishment of typical CP-70 and CR lines.

22. Date of eligibility of enterprises: China has already provided the reasons for considering January 1, 1999 as the appropriate date for establishing eligibility in process agents, and guidance is awaited on whether these reasons are acceptable. So far, no comments have been provided except a reiteration of the previous rules.

23. Closure compensation: Closure is one of the comparison options detailed in Decision X/14; in presenting closure costs, an effort has been made to capitalize the assets of the concerned companies. Guidance is requested on what other methods should be used.

24. Measurement of performance: As in other consumption sector plans, performance can be measured in two complementary ways: physical audits of the beneficiary enterprises to ensure localized phaseout, and caps on national consumption that confirm compliance of ODS supply. The latter issue can be addressed through the forthcoming CTC Sector Plan. As an example, the PU foam sector agreement stipulates national consumption limits on CFC-11 consumption that have to then be enforced by appropriate production quota caps in the CFC Production Sector Plan. The World Bank and China also reviewed the various reporting processes relating to data on consumption of CTC, and a summary is provided in Table I. China confirms that this is the final verified report in this regard (except the caveat for 2001).

25. Action Plans: as all enterprises must in any case participate in the sector plan, there will be limited requirement for setting up enterprise selection methods (bidding, etc.) or for annual targets; it is anticipated that 2003 would be spent in administrative and other arrangements, and phaseout activities would be initiated in 2004.

26. Penalties: Penalties can be set at twice the approved cost-effectiveness ratio for the sector plan.

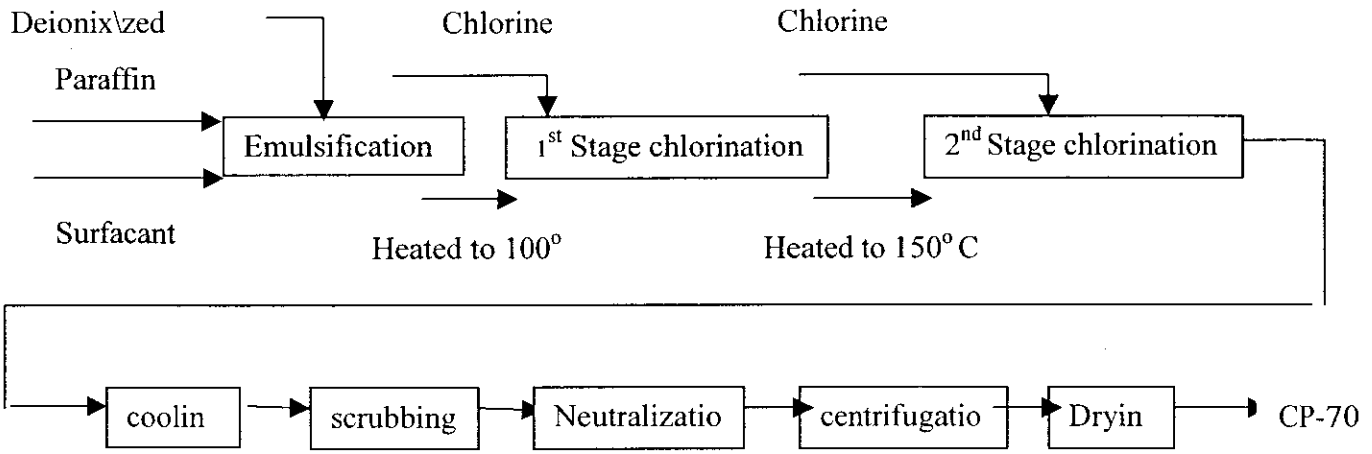
Technical Annex for China PA Compliance Scenario

Aqueous technology for CP-70

Description of the process for aqueous technology for CP-70

Paraffin or CP-42 are dispersed in aqueous or HCl solution with pertinent agents, and are sent to the chlorinating reactor. Chlorine gas is fed in for chlorinating reaction. When the chlorine content reaches 70±2%, the material in the reactor is discharged. After removing acids, neutralized by alkali solution scrubbing, the raw product is sent to the centrifuge and dried. The final product id packed for shipment. Meanwhile, dilute HCl solution is upgraded to concentrated hydrochloric acid as by-product.

Flow-sheet for CP-70 aqueous process



2. Main Equipment

Equipment	**Specification**
Chlorinating reactor	Special Material, 2000 L
Neutralization vessel	Special Material, 2000 L
Scrubbing vessel	
Stirrer	Material - Titanium
Centrifuge	SS - 8 0 0
Dryer	Horizontal fluidized bed
Electronic apparatus	
piping and valves	
Off gas treatment equipment	
Pressure Vessels for chlorine	
Vaporizing system for	

chlorine	
Miscellaneous	

3. Pollution treatment

In the process of producing CP-70, dilute HCl solution is produced. It should be neutralized till PH value of 6-8. Then, it can be discharged.

2000t/a CP-70 aqueous process pollutants and their treatments

Waste	Source	Component	Discharge rate, per year	Measures	Note
Waste gas	Tail gas after absorption by HCl solution	Gaseous chlorine	140394 m^3	Absorption by alkali solution	Meet the regulation of discharge
	Tail gas from chlorinating reaction	HCl,Cl_2	1.1× 10^6m^3	Liquid film absorber	
	Acid gas	HCl,Cl_2	10382m^3	Forced absorption by a stream pump, Neutralization of waster water containing acid	Meet the regulation of effluent
Waste water	Scrubbing water	CP-70,HCl	30000t	Precipitation of waste materials. Waste water neutralization and de-aeration.	Meet the regulation on effluent water
	Waste water containing acid	HCl	1650t	PH value 7-8 Pump to neutralization tower for neutralization treatment to pH value of 7-8	Meet the regulation on effluent

4. The main costs for setting up a for CP-70 plant are estimated as follows:

Source: Shenyang Chem Co Ltd				
Capacity: 2,000 TPA				
Technical sources: Imported aqueous technology				
Incremental Capital Costs				
	glass-lined reactor	6	1,800,000	
	photochemical system	4	600,000	
	Heat exchanger	6	280,000	
	process utility and pipig		700,000	
	storage tanks	2	280,000	
	effluent treatment system		100,000	

	Environmental treatment system		200,000	
	auxiliary equipments		564,000	
subtotal				4,524,000
Contingency				452,400
Incremental Operating Costs				
IOC for 2 years				
	power consumption and additional chemicals required			600,000
Technology transfer fee				1,500,000
preparation costs				
	Travel, trainning and project team salaries		40,000	
	Building modification		100,000	
	cost of trial production for 4 months		30,000	
	Designing fee		80,000	
subtotal				250,000
TOTAL				7,326,400

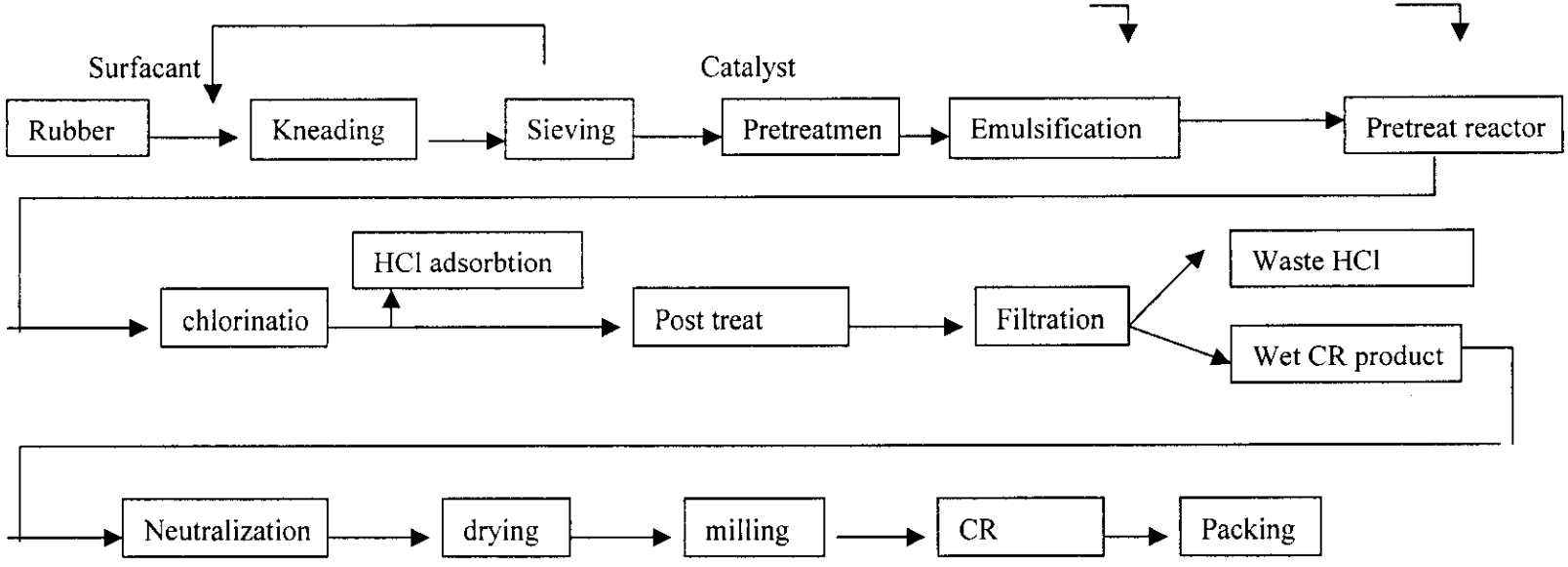
Aqueous technology for CR

1. Description of the process

The raw material is rubber that is cut into pieces and thereafter is rubbed into very fine particles and sieved and recycled the coarse fraction to the rubbing device. And then the fine particle is conveyed to a "pretreatment system". This system consists of an emulsion preparation system where also additives are fed (surfactant, stabilizer). From the suspension preparation system the feed is pumped to the pretreatment reactor, where water, hydrochloric acid and catalyst is added and the solution is homogenized to be ready for chlorination. When the next batch is started the contents of the pretreat vessel is pumped into the chlorination reactor (Both have equal volume). During chlorination, hydrochloric acid is vented to a HCl adsorption system; Residual inerts + HCl are neutralized in a tower fed with dilute caustic.

After chlorination, the suspension is pumped to the post treatment reactor to purge residual chlorine and some HCl and to adjust pH. This vessel also acts as feed bin for the filters (two in series) to separate the wet product. The wet product is fed to a dryer (rotary batch types or fluid bed). After drying the product is sieved and blended to specification. The flow-sheet of the CR Aqueous process, and an estimate of the main costs for setting up a CR plant, are provided below.

Flow sheet for CR production



Technical sources: Imported aqueous technology for 1000t/a CR production

Incremental Capital Costs

items	size	materials	unit price(US$)	quantity	price(US$)
solid rubber cutting facility	300kg/hr	304 stainless steel	135,000	1	135000
particle rubbing	300kg/hr	304 stainless steel	112,500	1	112500
Partcle feed system	300kg/hr	304 stainless steel	19,500	1	19500
Pretreat reactors	10m^3	304 stainless steel	29,000	2	58000
Pretreat transportation pump	0.3m^3/min	304 stainless steel	7,000	2	14000
Chlorinating reactors	10m^3	glass-lined or plastic lined	434,543	2	869086
Chlorination transportation pump	0.3m^3/min	glass-lined or plastic lined	7,000	2	14000
Post-treatment reactor	10m^3	plastic-lined steel	7,895	2	15790
1st stage solid separator	300kg/hr	plastic-lined steel	150,071	1	150071
2nd stage solid separator	300kg/hr	plastic-lined steel	150,071	1	150071
particle size control equipment	300kg/hr	304 stainless steel	225,300	1	225300
drying system	300kg/hr	304 stainless steel	195,000	2	390000
storage tanks for 12 hr products	3600kg solid/25m^3	304 stainless steel	52,800	1	52800
packing equipment	600kg/hr		22,500	1	22500
Feed system for additives	0.8m^3	304 stainless steelor FRP	800	2	1600
emulsion preparation system	0.8m^3	304 stainless steelor FRP	800	2	1600
catalyst preparation system	0.5m^3	304 stainless steelor FRP	250	2	500
chlorine vaporizer	600kg/hr	carbon steel	13,500	2	27000
Feed systemm for PH adapting	0.8m^3	304 stainless steelor FRP	800	2	1600
feed system for retardants	0.5m^3	305 stainless steelor FRP	1,500	2	3000
waste water storage system	25m^3	FRP	34,000	1	34000
waste water neutralization system			10,000	1	10000
condensers			15,000	2	30000
collectors of condensate	0.5m^3	plastic or glass-lined steel	500	2	1000
HCl adsorption system	600kg/hr HCl gas	glass-lined steel	96,000	1	96000
subtotal					**2434918**

Main items	cost of materials	Installation fee	total
principle equipment	2434918	66,169	2,501,087
Pipe lines	885,741	590,494	1,476,235
electronic items	338,301	276,794	615,095
Meters	516,682	221,435	738,117
Computer system	193,577	82,962	276,539

Building construction	147,888	344,454	492,342	
insulation	73,522	171,930	245,452	
Painting	61,540	184,592	246,132	
Incremental Investment Cost subtotal				6,590,999
Contingency				659,100
Basic engineering and technical service			80,000	
detailed design and implementation supervision			120,000	
Operating and safety training			100,000	
Pre-productive cost subtotal				300,000
Technology transfer fee				2,250,000
IOC for2-year due to power consumption and additional chemicals required				1,000,000
Total Cost				**10,800,099**

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THE CFC PRODUCTION SECTOR

CHINA

2003 ANNUAL PROGRAM

August 23, 2002

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Introduction

1. In accordance with the Executive Committee's approval of the "Agreement for the China Production Sector" (UNEP/Ozl.Pro/ExCom/27/48, Decision 27/82 and Annex IV), China is hereby requesting release of the fifth tranche of US$13 million for the implementation of the 2003 Annual Program. With this funding, China's CFC production will be reduced to a maximum of 30,000 ODP MT by the end of 2003. The production quotas issued will also ensure that the ceiling on overall national CFC-11 consumption of 15,500 MT for 2003 required in the "Agreement for CFC Phase-out in the Polyurethane Foam Sector in China" (UNEP/OzL.Pro/ExCom/35/19, Annex VIII) is met. Details of the 2003 annual program are provided in Section B.

2. Following the approval of the China CFC Production Sector Plan at the 27th Meeting of the ExCom in March 1999, China has been implementing the phaseout project according to the agreed phaseout plan. Through this period, China has also developed supporting policies and regulations. There were 37 CFC production plants in China in 1999; the number has been reduced to 7 producers in 2001. CFC production has correspondingly been reduced from 50,351 ODP Tons in 1997 to 36,196 ODP Tons in 2001, and will not exceed 32,900 ODP MT in 2002.

3. ***China's CFC phaseout obligations.*** Within the Sector Plan, China agreed to the following phaseout schedule for in Group I Annex A and Group I Annex B CFCs.

Table 1: CFC Production Phaseout Schedule[1/] and Annual Grant

Year	Annual Grant Funding	Agreed maximum production	Maximum planned production (based on quotas issued to producers)	Actual Production (confirmed by World Bank verification team)
	(ExCom Decision 27/82, Annex IV)			
	US$ (million)	(ODP Tons)		
1999	20	44,931	44,853	44,793
2000	13	40,000	39,998	39,991
2001	13	36,200	36,198	36,196
2002	13	32,900	32,898	
2003	13	30,000		
2004	13	25,300		
2005	13	18,750		
2006	13	13,500		
2007	13	9,600		
2008	13	7,400		
2009	13	3,200		
2010	0[2/]	0		

1/ The baseline year for CFC production phaseout is 1997. Baseline year production of CFCs (comprising CFC-11, CFC-12, CFC-113, CFC-114, CFC-115, CFC-13) was 50,351 ODP Tons .

2/ Savings from earlier years would be used for funding the 2010 phaseout.

4. As can be seen from Table 1, CFC production was below the annual targets in each of the years of the program

5. Thirty-two technical assistance activities have been planned, including activities to strengthen the implementation capacity and conversion capacity of closure enterprises, preparation of standards to ensure quality and reliability of CFC substitutes, and CFC production monitoring, etc.

6. Two special initiative projects have been taken up. Under the first initiative, Government is supporting the construction of a facility to produce HFC-134a. Under the second initiative, the screening of alternatives to Methyl Bromide in soil fumigation was taken up to screen out effective alternatives for tested crops, and to provide references for policy-makers.

7. The detailed implementation status of the 1999 - 2002 Annual Programs is provided in Part A.

PART A

IMPLEMENTATION STATUS OF PREVIOUS YEARS' ANNUAL PROGRAMS

As of July 2002

Phaseout Target

1. Starting with a baseline production of 50,351 ODP MT in 1997, China has issued production quotas each year that have enabled its producers to successfully meet the annual production targets specified in the agreement between China and the ExCom. The annual production in each year has been confirmed by both a national audit of the annual program (conducted by the China National Audit Office) and an international verification of production commissioned by the World Bank. The annual phaseout targets, production quotas issued to meet those targets, and the verified actual production for the first three years' annual programs are summarized in Table 1 above. In the year 2002, there are seven remaining CFC producers, and quotas for production of 32,898 ODP MT have been issued to them to meet the production reduction target of 32,900 ODP MT.

Enterprise Phaseout Activities

2. Details regarding the enterprise phaseout and production activities in the 1999-2002 Annual Programs are summarized in Annex 1. Starting with 37 identified enterprises in 1999 (36 covered under the technical audit commissioned by the ExCom and one additional enterprise identified later), 30 enterprises have been closed under the Sector Plan, accounting for closure of capacity for production of 73,430 MT of CFCs. All reduction in 1999 was through closure of enterprises, and starting in 2000, the required reduction in production has been achieved through a combination of closures and reduction in enterprise quotas. Seven enterprises remained in production in 2002.

3. The 1999 Annual Program comprised three sets of closures. *Firstly*, under the production sector agreement, China committed to close and dismantle production facilities at 14 enterprises (listed in the agreement between China and the ExCom) that had not been in production in 1997 (though one of these lines did produce some CFCs in the early part of 1999, prior to the agreement). SEPA signed closure contracts with these 14 enterprises, resulting in a reduction of production capacity of 22,630 MT (Annex 1, Table 1.1). *Secondly,* contracts were also signed with 3 other enterprises for closing down production lines that had no production in 1997, resulting in a further reduction of production capacity of 4,000 MT (Annex 1, Table 1.2). *Finally,* after the quota regulation and bidding for 1999 quotas, contracts were signed with 7 enterprises to phase out additional production capacity of 23,800 MT (Annex 1, Table 1.3).

4. Under the 2000 Annual Program, closure contracts were signed with 5 enterprises so as to enable a phase out of production capacity totaling 15,500 MT in 2000 (Annex 1, Table 1.4) and one enterprise accepted a reduction in quota.

5. Under the 2001 Annual Program, three producers were closed, and contracts for complete closure were signed in November 2000 with these three enterprises, enabling a total reduction in production capacity of 7,500 MT(Annex 1, Table 1.5).

6. Under the 2002 Annual Program, CFC production needs to be reduced from 36,200 ODP MT to 32,900 ODP MT. As no CFC producers bid to close their production lines, CFC production quotas were reduced by administrative measures, and quota reduction contracts were signed with 6 of the 7 CFC producers, with one enterprise's quota being retained at the previous level. . Quotas were issued for a total production of 32,898 ODP MT. These producers (Annex 1, Table 1.6) remain in production in 2002. Unverified data for CFC production through the end of June 2002 indicates that these enterprises had produced 18,738 ODP MT of CFCs (or 56% of the annual quota).

7. As indicated above, annual programs have been audited every year by the China National Audit Office.

8. All the closed production lines for all the years (1999 to 2001) have also been visited each year by a World Bank verification team that has confirmed that they are no longer capable of producing CFCs and their key production equipment has been fully dismantled and destroyed. The World Bank team has also verified and analyzed the production data recorded at each enterprise, and has confirmed that the production in 2001 was within the target established under the Agreement.

9. No total closures were planned for 2002. It is expected that the World Bank verification of CFC production under the 2002 Annual Program will be conducted starting on January 17, 2003 to enable a report to the first ExCom meeting by February 2003.

Implementation of Policy Instruments

10. *Key instruments.* The key policy instrument of the program is the regulation promulgated for the introduction and implementation of an annual tradable quota system, entitled "Circular on Implementing the Quota System for CFC Production", by the State Environmental Protection Administration (SEPA) and the State Administration of Petroleum and Chemical Industry (SAPCI) on May 31, 1999. A bidding system was also introduced together with the promulgation of the tradable production quota. Under this regulation, some CFC producers were awarded grants through bidding in 1999 and 2000 to close their production, while a national CFC production quota within the annual target was issued to the remaining CFC producers in order to ensure that the national production for the year did not exceed the agreed target. In 2001, administrative measures were adopted to meet the agreed target, and 3 CFC plants were closed. In 2002, CFC production quotas have been allocated through administrative measures, with the remaining 7 producers being given quotas totaling 32,898 ODP MT to meet the production target.

11. On December 17, 2001, SEPA issued a site supervision regulation to strengthen the monitoring of CFC production, entitled "Regulation on Implementing Site Supervision to CFCs Production Enterprises". From January 1, 2002, all the remaining CFCs producers have been placed under year-round site supervision by supervisors designated by SEPA These supervisors are technical professionals located on site at production plants, and are from other CFC producing plants; this effectively enables the CFCs industry to help to monitor itself.

12. *Other instruments related to trade in CFCs*. A study on options for export/import management for Halons and CFCs, which would help China to monitor trade in CFCs and prevent illegal CFC trade, was completed in July 1999. A "Circular on Control Mechanism of Import and Export of ODS" and a "Circular on Strengthening Management of ODS Import and Export" were promulgated on December 3, 1999 and in April, 2000. The mechanism is implemented by the Management Office of ODS Import-

Export Control jointly administered by SEPA, the General Administration of Customs (GAC), and the Ministry of Foreign Trade and Economic Cooperation (MOFTEC), and helps China to monitor trade in ODS and eliminate illegal ODS trade. Two batches of *Export/Import Control List of ODS in China* have been promulgated in January 2000 and January 2001 respectively. Imports of Carbon Tetrachloride, a key feedstock for CFC production and also a controlled substance under the Protocol, were banned on April 1, 2000, and imports of CFCs are regulated by a permit system administered by MOFTEC.

Technical Assistance Activities

13. Thirty-two technical assistance activities have so far been planned under the annual programs, of which twenty-two were taken up for implementation. Fifteen TAs have been completed, and seven are still under implementation. Four TAs for the recruitment of international consultants were not activated as such recruitments were not required. Six TAs were cancelled as they were found to duplicate other activities, or were not considered feasible on further consideration. Details are provided in Annex 3.

14. The status of the 2002 technical assistance activities is as follows:

(a) Training of Personnel Involved in Implementation of Phaseout Activities. To implement the phaseout plan effectively, it is necessary to train staff in CFC production enterprises and audit agencies. The TOR was prepared and agreed by the World Bank in May, 2002. The activities are expected to be completed by March 2003.

(b) 2001 Performance Audit. The activity has been completed .

(c) Study Tour on Methods of Controlling Smuggling of ODS. A study tour to some developed countries is being planned. With the aim of exchanging information and experience on efficient management of ODS import and export, and measures to control illegal trade in ODS. Implementation is being initiated.

(d) Integration of ODS MIS into the monitoring system at the Border. The system is designed to monitor all ODS imports and exports and enable PMO to obtain access to mainframe data, and to check the status of utilization of import and export licenses issued by MOFTEC. The TOR has been cleared by the World Bank, and implementation will begin within 2002.

(e) Recruitment of international technical consultants. No technical consultants are expected to be recruited in 2002. This TA will be activated when necessary.

(f) Three new TAs have been added to the 2002 Annual Program.

i. Site Supervision for CFCs Production Enterprises. This activity was added to the program for the purpose of strengthening the supervision of CFC production. From Jan. 1, 2002, all the remaining CFCs producers have been placed under year-round site supervision by supervisors designated by SEPA. These supervisors are technical professionals located on site at production plants, and are from other CFCs producing plants; this effectively enables the CFCs industry to help to monitor itself. This TA is under implementation.

ii. Investigation of CTC/TCA production status in China and analysis of substitute technologies: following the approval of the carrying out of technical audit for CTC production, China proposes to urgently review data on CTC production, to coordinate the supply of CTC as feed-stock for CFC production, and for other applications. This TA would also promote efficient provision of information to the technical audit itself and set up basic

information for the future CTC/TCA production sector plan. This TA proposes to review the number of producers, year of start of production, capacity and condition of production lines, data on production in recent years, and options for substitute technology, etc. Terms of reference are being developed, and the TA will commence within 2002.

iii. Study and tour of Performance audits. The China National Accounting Office (CNAO) are the performance auditors for the CFC production sector plan. As their previous experience with performance audits in China is limited, it is proposed that the audit team would visit neighboring countries to discuss procedures and monitoring systems and review best practices for performance audit processes applied in those countries.

Special Initiatives

15. As the phaseout of ODS production proceeds, the demand for substitutes in the consumption sector has increased rapidly. The impact of the first three years of implementation of the CFC sector plan equals a phaseout of more than 14,150 ODP tons of CFCs. The phaseout of CFC-11, which is the major foaming agent, has had an impact in the foam sector, and there is an urgent need to move into production of substitutes such as Cyclopentane and HCFC-141b. The use of CFC-12 as refrigerant in air-conditioners installed in all newly produced cars has been banned from January 1, 2002. It is estimated that the demand for HFC-134a, presently the only substitute of CFC-12 in the MAC sector in China, will exceed 7,500 tons in 2005 in this sector alone, and could reach 19,000 tons by 2010. China therefore envisages an urgent need to initiate special initiatives to produce such substitutes to ensure that there is no shortfall in their supply. Under the provisions of maximum flexibility in section (d) of the Agreement for the China Production Sector, China has undertaken the following initiatives.

16. ***Establishment of HFC-134a Production facility.*** Xi'an Jinzhu Jindai Chemical Industry Co., Ltd. was selected as the beneficiary for this project in December 2000. A plant with final annual capacity of 10,000 Tons (with the first stage capacity of 5,000 tons) is under construction.

17. ***Screening of alternatives to Methyl Bromide in soil fumigation in China.*** The Institute of Plant Protection, Chinese Academy of Agricultural Sciences, was selected as the beneficiary for this project in April 2002. The purpose of this project is to screen out one or two economical, effective and simple alternatives for each crop tested, to confirm their acceptance by Chinese farmers and to provide references for policy-makers. Five sites were defined for testing of tobacco, strawberry, tomato, cucumber and hot pepper. The project is expected to be completed by the end of 2002. China is now reviewing its options regarding ratifying of the Copenhagen Amendment to the Montreal Protocol.

Plants producing HCFC-22 in China

20. As required by the agreement on the production sector, China has provided an updated list of the plants producing HCFC-22 in China, attached in Annex 2.

PART B

2003 ANNUAL PROGRAM

1. *Phaseout Objectives* The phaseout objective of the 2003 Annual Program is to ensure that CFC production in the year does not exceed 30,000 ODP MT. China is requesting the release of the **fifth annual tranche** of **US$13 million** as agreed in the overall CFC Production Sector Phaseout Plan to achieve this objective. It is envisaged that the US$13 million will be allocated for closing CFC production lines or reducing production levels in some CFC enterprises which received production quota in 2003, for special initiatives , and for Technical Assistance activities.

Program Activities During the Year

2. *Policy actions.* In 2003, the following policies and measures will continue to be implemented by the Government. These policies are considered necessary for the success of total CFC production phaseout in China.

(a) Tradable production quota – The regulation has been under implementation since 1999, and will continue.

(b) Export and import control mechanism – The Management Regulation on Export/Import Control of ODS, promulgated in December 1999 by SEPA in collaboration with Ministry of Foreign Trade and Economic Cooperation (MFTEC) and General Administration of Customs (GAC), covers all ODS as well as related equipment and facilities that produce or consume ODS. ODS Export/Import quota and permit systems have been adopted, and all enterprises wishing to export or import ODS must hold both a quota issued by SEPA and MFTEC, as well as specific export/import permits. GAC supervises exports and imports of ODS. China has also promulgated the Export/Import Control List of ODS in China, the First Group in January, 2000, and the Second Group in January 2001. Under this regulation, China has banned imports of CTC, and introduced quota and permit requirements exports and imports of CFC-11, CFC-12, CFC-113 (not used as solvent), CFC-114 & CFC-115, CFC-13, Halon 1211 and Halon 1301.

3. *Enterprise activities.* Through a combination of bidding, allocation of production quota and administrative measures, plant would be granted funds for full or partial closure. All CFC reduction or closure contracts are expected to be signed by the end of November, but in any case will be signed no later than the end of 2002. Closure projects are expected to take effect from January 1, 2003 and are to be completed by the end of June 2003. Key equipment should be dismantled and destroyed by the end of January 2003.

4. *Technical assistance* (TA) activities. The following TA activities are proposed for 2003:

(a) *Training of personnel involved in implementation of phaseout activities.* To implement the phaseout plan effectively, it is necessary to train staff in CFC production enterprises and audit agencies. Training is also needed for enterprises to understand the closure regulations.

(b) *Daily Site Supervision to CFCs Production Enterprises.* This TA will continue in this year and the following years. This activity was added to the program in 2002 for the purpose of strengthening the supervision of CFC production. From January 1, 2002, all the remaining

CFCs producers have been placed under year-round site supervision by supervisors designated by SEPA. These supervisors are technical professionals located on site at production plants, and are from other CFCs producing plants; this effectively enables the CFCs industry to help to monitor itself.

(c) *Provisioning for Policy Training program administered by UNEP*. At its 34th Meeting held in July 2001, the Executive Committee of the MLF approved (Decision 34/37) a proposal for Policy training for local authorities in China to be implemented through UNEP. Some of the funding for this training is to be met from funding for the CFC production sector project; this requirement will be covered in the year.

5. Other TA activities that are necessary for effective phaseout may be developed during the year. The above policy initiatives, enterprise-level and technical assistance activities are summarized in Table B.1 below.

Table B.1: 2003 Annual Program

CFC production phaseout targets						
	Funding (US$ mill.)	2002 Production Limit[1] (MT)	Phaseout in 2003 (MT)	Allowed Production in 2003[2] (MT)	Performance Indicators	Key Dates
CFC (ODP Tons)	13	32,900	2,900	30,000	1. Closures of some current producers and reduction in production in remaining producers 2. Implementation of TA activities to help phaseout. 3. Production level not to exceed 30,000 MT	1. Dec. 2002-June 2003 2. Jan. 2003-Dec. 2003 3. Dec.31, 2003
Policy Initiatives						
Initiatives	Funding	Performance Indicators				Key Dates
1. Administrative measures	Incl .in TA n.a. n.a. n.a. incl. in TA	1. Training remaining enterprises for closing in 2003 2 Determine closing enterprises for 2003 3. Sign closure or partial closure contracts with CFC production enterprises 4. Implement closure or partial closure contracts 5 Train enterprises for closing preparation for 2004 reduction target				1. Sept. 2002 2. by Oct. 2002 3. Dec. 2002 4. Dec. 2002-June 2003 5. Sep. 2003
2. Tradable production quota for CFC producers	n.a.	1. Establish 2003 annual CFC production quota 2. Issue annual production quota to CFC producers for 2003				1. Dec. 2002 2. Feb. 2003
3. Import/export trade management	n.a.	1. implement the import/export trade management mechanism.				1. January 2003-December 2003
Enterprise activities						
	Funding (US$ million)	Existing enterprises		enterprises at end of 2003	Performance Indicators	Key Dates
Closure of CFC11/12/113 production lines	12.00	7		t.b.d.	1. Training of enterprises 2. Selection of closing plants, if any 3. Contracts signed 4. Facilities dismantled, and reports completed	1. Sept. 2002 2. Oct. 2002 3. Dec. 2002 4. no later than June 2003

[1] Per Agreement

[2] Maximum production quota that can be allocated for calendar 2003.

Table B.I: 2003 Annual Program (continued)

(Amount in US$ million)

Technical assistance activities			
Activities	Funding [1/] (US$ Million)	Performance Indicators	Key Dates
1. Training of personnel involved in implementation of phaseout activities.	t.b.d	1. TOR to be agreed with the Bank 2. Training on supervision and evaluation of CFC production, bidding system, management of CFC production quota system, and CFC Project Implementation Manual	1. June, 2003 2. Start in Jan. 2003. Specific schedules to be detailed in TORs
2. Implementing Site Supervision to CFCs Production Enterprise	t.b.d	1. TOR to be agreed with World Bank 2. Implementation.	1. January, 2003 2. January 1-December 31, 2003
3. Policy training managed by UNEP	0.457650	1. Performance Agreement to be signed between the World Bank and UNEP	By June 30, 2003.
4. others to be identified	t.b.d		
Subtotal	1.00		
TOTAL for phaseout activities	**13.00**		

[1/] These are estimated costs. After bidding for TA contractors, these costs will be adjusted to reflect contractual amounts for each TA. All TA activities are expected to be completed on schedule.

Annex 1
Status of CFC Producing Plants in the 1999-2002 Annual Programs

Table 1.1: CFC plants closed as part of ExCom approval conditions - April and May 1999

Sl.	SRI No.	Enterprise Name		CFC Production recorded					Status
			Capacity (MT/year)	CFC type	1999	2000	2001	2002	
1	A3	Shangdong Dongyue Chemical Co. Ltd.	5,000	CFC-12	1042	0	0	0	Closure verified August 1999
2	C2	Hunan Yiyang Chlor-Alkali Chemical Co. Ltd.	1,000	CFC-12	0	0	0	0	Closure verified August 1999
3	C5	Inner Mongolia Baotou Chemical Plant #1.	700	CFC-12	0	0	0	0	Closure verified August 1999
4	C1	Jiansu Jianhu Phosphate Fertilizer Plant	500	CFC-12	0	0	0	0	Closure verified August 1999
5	B4	Sichuan Zigong Fujiang Chemical Plant	1,500	CFC-11	0	0	0	0	Closure verified August 1999
			1,000	CFC-12	0	0	0	0	
6	B9	Zhejiang Linhai Jianxin Chemical Plant	800	CFC-12	0	0	0	0	Closure verified August 1999
7	A14	Guangdong Huiyang Chemical Plant	1,000	CFC-11	0	0	0	0	Closure verified August 1999
			3,000	CFC-12	0	0	0	0	
8	A1	Henan Hebi Chemical Plant #1	1,500	CFC-12	0	0	0	0	Closure verified August 1999
9	C3	Hebei Longwei Fluorochemical Plant #1	1,080	CFC-12	0	0	0	0	Closure verified August 1999
10	C4	Guizhou Wuling Chemical Plant	1,500	CFC-12	0	0	0	0	Closure verified August 1999
			50	CFC-13	19	0	0	0	
11	A15	Guangdong Zhaoqing Chemical Plant	500	CFC-12	0	0	0	0	Closure verified August 1999
12	C6	Shanxi Shangzhou Chemical Plant	2,000	CFC-12	0	0	0	0	Closure verified August 1999
13	B10	Zhejiang Linhai Shuiyang Chemical Plant	500	CFC-12	0	0	0	0	Closure verified August 1999
14	A12	Shanghai Shuguang Chem. Plant	1,000	CFC-113	0	0	0	0	Closure verified August 1999

Table 1.2: Additional CFC plant closures in 1999 -contracts of April and May 1999

SI	SRI	Name of enterprise	Capacity (MT/year)	CFC type	CFC Production				Status
					1999	2000	2001	2002	
15*	A2	Shangdong Jinan 3F Chemical Co. Ltd.	1,500	CFC-11	0	0	0	0	Closure verified August 1999
16	No SRI audit	Liaohe Chemical Group Chlor-Alkali Plant	1,000	CFC-12	0	0	0	0	Closure verified March 2000
17**	B15	Fujian Shaowu Floro-chem. Plant	1,500	CFC-11	0	0	0	0	Closure verified March 2000

Table 1.3: CFC plants closed as part of 1999 Annual Program - contracts of June 1999

SI	SRI	Name of enterprise	Capacity (MT/year)	CFC type	CFC Production				Status
					1999	2000	2001	2002	
18	B2	Chongqing Tianyuan Chemical Plant.	500	CFC11/ 12	14	0	0	0	Closure verified January 2000
19	B5	Hubei Wuhan Changjiang Chemical Plant	1,500	CFC-11	0	0	0	0	Closure verified January 2000
			4,500	CFC-12	0	0	0	0	
20	A5	Jiangsu Wuxian Juxing Chemical Plant	2,000	CFC-11	0	0	0	0	Closure verified January 2000
21	A6	Jiangsu Wuxian Union (City Link) Chemical Plant	1,800	CFC-11	0	0	0	0	Closure verified January 2000
22	B1	Jiangxi De'an Refrigeration Plant	3,000	CFC-12	0	0	0	0	Closure verified January 2000
15*	A2	Shangdong Jinan 3F Chemical Co. Ltd.	3,500	CFC-12	0	0	0	0	Closure verified January 2000
23	B6	Shanghai Chlor-Alkali Chemical Plant Co. Ltd.	7,000	CFC-12	687	0	0	0	Closure verified January 2000

Table 1.4: CFC plant closed as part of 2000 Annual Program - contracts of December 1999

SI	SRI	Name of enterprise	Capacity (MT/year)	CFC type	CFC Production				Status
					1999	2000	2001	2002	
24	A9	Jiangsu Wuxi Hushan Refrigeration Plant	4,000	CFC-11	560	0	0	0	Closure verified September 2000
25	B3	Sichuan Zigong Refrigerant Plant	1,500	CFC-11	198	0	0	0	Closure verified September 2000
			1,500	CFC-12		0	0	0	
26	B13	Zhejiang Lanxi Refrigeration Plant	2,500	CFC-11	785	0	0	0	Closure verified September 2000
27	B7	Zhejiang Rui'an Haitian Chem. Co. Ltd.	5,000	CFC-11	617	0	0	0	Closure verified September 2000
28	A4	Shandong Xuecheng Xinxing Chemical Plant	1,000	CFC-12	0	0	0	0	Closure verified September 2000

Table 1.5: CFC plants closed as part of 2001 Annual Program – contracts of November 2000

SI	SRI	Name of enterprise	Capacity (MT/year)	CFC type	CFC Production				Status
					1999	2000	2001	2002	
17**	B15	Fujian Shaowu Floro-chem. Plant	3,500	CFC-12	979	1,159	0	0	Closure verified June 2001
29	A7	Suzhou Xinye Chemical Co. Ltd.	3,000	CFC-11	7408	2,532	0	0	Closure verified June 2001
30	A11	Jiangsu Changsu Yudong Chem. Plant	1,000	CFC-113	545	545	0	0	Closure verified June 2001

Table 1.6: Remaining CFC producers by January 2002 (Quota reduction contracts signed in December 2001)

SI	SRI	Name of enterprise	Capacity (MT/year)	CFC type	CFC Production				Status
					1999	2000	2001	2002	
31	A8	Jiangsu Meilan Electric Chem. Plant	3,000	CFC-11	1766	1,050	1,050	480.76	Data not verified for 2002 (first half year reported)
			3,000	CFC-12	1866	1,793	1,793	570.94	
32	B14	Zhejiang Juhua Florochem. Com. Ltd.	4,000	CFC-11	3376	4,339	4,827	2,185.48	Data not verified for 2002 (first half year reported)
			8,000	CFC-12	6325	7,759	7,706	3,735.32	
33	A10	Jiangsu Changsu Refrig. Plant (Changsu 3F)	10,000	CFC-11	7960	8,192	8,222	5,476.30	Data not verified for 2002 (first half year reported)
			5,000	CFC-12	2780	5,019	5,075	1,932.43	
			4,000	CFC-113	2834	2,756	2,700	2,289.02	
			2,000	CFC-115	90	60	30	0	
34	B8	Zhejiang Linhai Limin Chem. Plant	3,000	CFC-12	1188	1,365	1,365	580.28	Data not verified for 2002 (first half year reported)
			50	CFC-13	27	27	27	9.59	
35	B12	Zhejiang Dongyang Chem. Plant	5,000	CFC-12	2053	2,219	2,219	1,047.38	Data not verified for 2002 (first half year reported)
36	A13	Guangdong Xiangsheng Chem. Co. Ltd.	3,000	CFC-12	1601	1,098	1,099	375.25	Data not verified for 2002 (first half year reported)
37	B11	Zhejiang Chemical Research Institute	100	CFC-114		7	7	12.42	Data not verified for 2002 (first half year reported)
			100	CFC-115	72	72	76	42.98	
		TOTAL ANNUAL PRODUCTION			**44,793**	**39,991**	**36,196**	**18,738.15**	

@: Separate lines closed at different times at this enterprise; it therefore appears twice in this table.

*: Separate lines closed at different times at this enterprise; it therefore appears twice in this table.

Annex 2

Updated List of HCFC-22 producing plants in China

Sl.	Name of Company
1.	Guangdong Huiyang Chemical Plant
2.	Hunan Zhuzhou Chemical Corporation (Group) (Hunan Zhuzhou Chemical Group Co., Ltd.)
3.	Zhonghao New Chemical Materials Co., Ltd.
4.	Jiangsu Changshu Elf Atochem 3F Co., Ltd. (ATOFINA-3F Fluoro-Chemical Changshu Co, Ltd.)
5.	Jiangsu Meilan Electric Chemical Plant (Jiangsu Meilan Chemical Co., Ltd.)
6.	Liaoning Fuxin Fluoro-chemical Plant (Fuxin Fluoro-Chemical Co., Ltd.)
7.	Shanghai Chlor-Alkali Chemical Co. Ltd. (Fluoro-Chemical Factory Of Shanghai 3F New Materials Co., Ltd.)
8.	Sichuan Chenguang Chemical Research Institute Plant No.2 (Zhonghao Chenguang Research Institute of Chemical Industry)
9.	Sichuan Zigong Refrigeration Plant
10.	Shandong Jinan 3F Chemical Co., Ltd. (Jinan 3F Fluoro-Chemical Co., Ltd.)
11.	Shandong Dongyue Chemical Co., Ltd.
12.	Shandong Fire Extinguishing Agent Plant Shouguang Division (The Fire Extinguishing Agent Factory Under Shandong Haihua Group Co., Ltd.)
13.	Sichuan Zigong Fujiang Chemical Plant
14.	Wuhan Changjiang Chemical Plant
15.	Zhejiang Juhua Fluoro-chemical Co., Ltd.
16.	Zhejiang Dongyang Chemical Plant (Zhejiang Fluorescence Chemical Co., Ltd.)
17.	Zhejiang Linhai Limin Chemical Plant (Zhejiang Linghai Limin Chemical Co., Ltd.)
18.	Zhejiang Yingpeng Chemical Co., Ltd. (Yingpeng Chemical Co., Ltd.)

Notes:

1. The enterprise name in the brackets are the current name of the enterprise (as established by CFC-01-TA-06, the 2001 TA on Verification of HCFC-22 Producers).
2. One HCFC-22 plant from the 2002 Annual Program list,(Sl. No.3) Jiangsu Changshu Refrigeration Plant has been closed and dismantled in January, 2002
3. One new plant has been added; Zhonghao New Chemical Materials Co., Ltd. The plant was constructed in beginning of 2002 (Sl. No. 3 in this list).

Annex 3

Technical Assistance Activities, 1999-2002

Table 3.1: Implementation of Technical Assistance Activities in the 1999 Annual Program

Ref. No.	Name of TA Project	Implementing Agency	Contract Date	Completion Date	Implementation status/Remarks
CFC-99-TA-01	Production of an ODS Phaseout Video	Promulgation and Education Center for Environmental Protection	July 12, 1999	December 1999.	**Completed.** An ODS Phaseout video was prepared and broadcast for public information during the 11th meeting of the Parties in Beijing in November 1999. The video, as well as six TV advertisements prepared under the activity, were broadcast on national TV to raise awareness of the general public and authorities in China concerning the necessity for ODS phaseout and the urgency of phaseout activities.
CFC-99-TA-02	Development of a Management Information System	Haitong Chuangye Company and Beifang Silu Information Tech. Company of Tsinghua University	September 13, 1999	December 1, 2000	**Completed.** An MIS was established to monitor and generate final production data and program progress reports
CFC-99-TA-03	Development of Substitute Strategy	Center of Environmental Science, Peking University and Zhejiang Chemical Research Institute	June 26, 2000	June 30, 2002	**Completed.** A report was finalized by the end of June, 2002. The strategy provides very useful guidelines for developing and investing in ODS substitutes Copies of the strategy document will be distributed to relevant administrations and associations for reference and guidance.
CFC-99-TA-04	Formulation of Standards for Cyclopentane, HCFC 141b, and HFC 134a	Shanghai Institute of Organic Fluorine Materials	April 28, 2000	March 23, 2001	**Completed.** After preliminary sampling of HCFC-141b and HFC-134a, the preliminary content and standards parameters were confirmed with the Government's administrative unit for standards. The draft standards report were completed in June, 2001 and submitted to the Standardization Committee of the State Bureau of Quality Supervision, quarantine and inspection for approval. The standards are expected to go into force by end of 2002.
CFC-99-TA-05	Training of Personnel involved in	SEPA		May 16, 2000	**Completed.** Training was organized for local officials, CFC producers

	Phaseout Implementation Activities				and auditors.
CFC-99-TA-06	Supervision and Management of Export/Import of ODS				**Cancelled**. Objective covered through a similar TA project in the Halon Sector
CFC-99-TA-07	Studies on Market Prospects for Closure Enterprises	SEPA		October 9, 2000	**Completed.** Eight enterprises were funded for exploring alternative economic options to CFC production.
CFC-99-TA-08	National Workshop	SEPA		June 5, 2000	**Completed.** This workshop included introductions by domestic research institutes of research topics relating to nine categories of CFC substitutes, fine fluorine chemicals, electrical fluorinated chemicals, electronic pure chemical reagents, special fluorine-containing drugs and agrochemicals (herbicide, insecticide etc.), production of these chemicals, and their potential market prospects. Many sector plan enterprises attended.
CFC-99-TA-09	Bidding Evaluation for HFC-134a Feasibility Study	CNCCC	January 28, 2000	January 14, 2001	**Completed.** Four proposals for undertaking a feasibility study for the construction of a HFC 134a production facility were evaluated, and a contract was signed with the winner.
CFC-99-TA-10	Survey on the ODS Application as Chemical Process Agents in China	Beijing University of Chemical Technology	December 10, 1999	January 12, 2000	**Completed.** This project provided a Report of Preliminary Survey on the ODS Application as Chemical Process Agents in China, and was used as the basis for further preparations on the proposed preparation of the Process Agent Sector Phaseout Plan in China.
CFC-99-TA-11	Recruitment of international technical consultants				**Cancelled**. No technical consultants were recruited internationally for TA activities in the year.

Table 3.2: Implementation of Technical Assistance Activities in the 2000 Annual Program

Ref. No.	Name of TA Project	Implementing Agency	Contract Date	Completion Date	Implementation status/Remarks
CFC-00-TA-01	Formulation of Standards for HFC-152a, and Isobutane	Zhejiang Chemical Research Institute	June 15, 2001	July 2002	**Ongoing.** Expected completion by end 2002
CFC-00-TA-02	Studies of Market Prospects for Closure Enterprises	SEPA	March 3, 2001	December 31, 2001	**Completed.** Six enterprises were supported to find production alternatives under this program.
CFC-00-TA-03	Training of Personnel Involved in Implementation of Phaseout Activities	SEPA		March 11, 2001	**Completed.** Training was organized for Audit staff, CFC producers and auditors.
CFC-00-TA-04	Performance Audit for 1999	China National Accounts Office	May 10, 2000	June 30, 2000	**Completed.**
CFC-00-TA-05	Verification of HCFC-22 Producers				**Deferred to 2001**. See CFC-01-TA-06.
CFC-00-TA-06	Recruitment of international technical consultants				**Cancelled.** No technical consultants were recruited internationally for TA activities in the year.

Table 3.3: Implementation of Technical Assistance Activities in the 2001 Annual Program

Ref. No.	Name of TA Project	Implementing Agency	Contract Date	Completion Date	Implementation status/Remarks
CFC-01-TA-01	Feasibility study of industrialized technology for CTC conversion to chloro-hydrocarbons other than CTC				**Canceled:** The CFC team concluded after field visits and a workshop that the technology was still under development.
CFC-01-TA-02	Training of Personnel involved in Phaseout Impl. Activities	SEPA		March 19, 2002	**Completed.** Training was organized for Customs staff, CFC producers and auditors.
CFC-01-TA-03	Assessment and Risk Analysis of Implementing Montreal in china	Institute of Environmental Economics Renmin University of China	August 15, 2001	October 15, 2002	**Under implementation:** Expected to be completed by end 2002.

CFC-01-TA-04	Studies of Market Prospects for Closure Enterprises				**canceled** as two of the three enterprises being closed in the year had already been covered under the 2000 Annual program, the third enterprise reduced its production quota only and did therefore not require any support. None of the remaining plants were to close in 2002.
CFC-01-TA-05	Performance Audit for 2000	China National Accounts Office	March 2001	June 30, 2001	**Completed.**
CFC-01-TA-06	Verification of HCFC-22 Producers	Chinese Industrial Association of Organo-Fluorine Silicone Materials	June 4, 2002	September 20, 2002	**Completed:** An updated list of HCFC-22 producers is provided in Annex 2. The list is the result of the study undertaken through the TA.
CFC-01-TA-07	Recruitment of international technical consultants				**Cancelled**. No technical consultants were recruited internationally for TA activities in the year.
CFC-01-TA-08	Significant New Alternative Processes (SNAP)				**Cancelled** as it was found that more preparatory work was necessary, including identification of key experts, before taking it up. It will be brought up in a later annual program.

Table 3.4: Implementation of Technical Assistance Activities in the 2002 Annual Program

Ref. No.	Name of TA Project	Implementing Agency	Contract Date	Completion Date	Implementation status/Remarks
CFC-02-TA-01	Training of Personnel involved in Phaseout Impl. Activities	SEPA		March 19, 2002	**Completed.** Training was organized for Customs staff, CFC producers and auditors.
CFC-02-TA-02	Performance Audit for 2001	China National Accounts Office	March 2002	June 30, 2002	**Completed.**
CFC-02-TA-03	Study Tour on Methods of Controlling Smuggling of ODS	SEPA			Under preparation
CFC-02-TA-04	Integration of ODS MIS	SEPA			Under preparation
CFC-02-TA-05	Recruitment of international technical consultants				**Cancelled**. No technical consultants were recruited internationally for TA activities in the year.

CFC-02-TA-06	Site supervision for ODS Producing Enterprises				Added in 2002. TOR Under preparation
CFC-02-TA-07	Investigation of CTC/TCA production status in China				Added in 2002. TOR Under preparation
CFC-02-TA-08	StudyTour of Performance Audit	The China National Accounting Office			Added in 2002. TOR under preparation.

Annex 4

Status of CFC producing plants under the CFC Sector Plan as of August 2002.

SI	SRI	Name of enterprise	Status
8	A1	Henan Hebei Chemical Plant #1. 1 CFC-12 production line.	Closed and dismantled
15	A2	Shangdong Jinan 3F Chemical Co. Ltd. 1 CFC-11 production line	Closed and dismantled
1	A3	Shangdong Dongyue Chemical Co. Ltd. 1 CFC-11 and 1 CFC-12 line	Closed and dismantled
28	A4	Shandong Xuecheng Xinxing Chemical Plant 1 CFC-12 production line	Closed and dismantled
20	A5	Jiangsu Wuxian Juxing Chemical Plant 1 CFC-11 production line	Closed and dismantled
21	A6	Jiangsu Wuxian Union (City Link) Chemical Plant. 1 CFC-11 production line	Closed and dismantled
29	A7	Suzhou Xinye Chemical Co. Ltd. 2 CFC-11 production line	Closed and dismantled
31	A8	Jiangsu Meilan Electric Chem. Plant 1 CFC-11 line and 1 CFC-12 line	**In production**
24	A9	Jiangsu Wuxi Hushan Refrigeration Plant 1 CFC-11 production line	Closed and dismantled
33	A10	Jiangsu Changshu Ref. Plant (Changshu 3F)	**In production**
30	A11	Jiangsu Changsu Yudong Chem. Plant 2 CFC-113 production line	Closed and dismantled
14	A12	Shanghai Shuguang Chem. Plant	Closed and dismantled
26	A13	Guangdong Xiangsheng Chem. Co. Ltd. 1 CFC-12 production line	**In production**
7	A14	Guangdong Huiyang Chemical Plant 1 CFC-11 production line and 1 CFC-12 production line.	Closed and dismantled
11	A15	Guangdong Zhaoqing Chemical Plant. 1 CFC-12 production line.	Closed and dismantled
22	B1	Jiangxi De'an Refrigeration Plant 1 CFC-12 production line	Closed and dismantled
18	B2	Chongqing Tianyuan Chemical Plant. 1 CFC-11 production line,1 CFC-12 production line	Closed and dismantled
25	B3	Sichuan Zigong Refrigerant Plant 1 CFC-11 production line, 1 CFC-12 production line	Closed and dismantled
5	B4	Sichuan Zigong Fujiang Chemical Plant 1 CFC-11 production line and 1 CFC-12 production line.	Closed and dismantled
19	B5	Hubei Wuhan Changjiang Chemical Plant 1 CFC-11 production line,1 CFC-12 production line	Closed and dismantled
23	B6	Shanghai Chlor-Alkali Chemical Plant Co. Ltd. 1 CFC-12 production line	Closed and dismantled
27	B7	Zhejiang Rui'an Haitian Chem. Co. Ltd. 1 CFC-11 production line	Closed and dismantled

34	B8	Zhejiang Linhai Limin Chem. Plant 2 CFC-12 production line and 1 CFC-13 production line	**In production**
6	B9	Zhejiang Linhai Jianxin Chemical Plant 1 CFC-12 production line.	Closed and dismantled
13	B10	Zhejiang Linhai Shuiyang Chemical Plant 1 CFC-12 production line.	Closed and dismantled
37	B11	Zhejiang Chemical Research Institute 1 production line to produce CFC-114 and CFC-115	Producing
35	B12	Zhejiang Dongyang Chem. Plant 1 CFC-12 production line	**In production**
26	B13	Zhejiang Lanxi Refrigeration Plant 1 CFC-11 production line	Closed and dismantled
32	B14	Zhejiang Juhua Florochem. Com. Ltd. Produce CFC-11 and CFC-12 in 1 production line	**In production**
17	B15	Fujian Shaowu Flouro-Chemical Plant	Closed and dismantled
4	C1	Jiansu Jianhu Phosphate Fertilizer Plant 1 CFC-12 production line.	Closed and dismantled
2	C2	Hunan Yiyang Chlor-Alkali Chemical Co. Ltd. 1 CFC 12 production line.	Closed and dismantled
9	C3	Hebei Longwei Fluorochemical Plant #1 2 CFC-12 production lines.	Closed and dismantled
10	C4	Guizhou Wuling Chemical Plant. 1 CFC-12 production line and 1 CFC-13 production line.	Closed and dismantled
3	C5	Inner Mongolia Baotou Chemical Plant #1. 1 CFC-12 production line.	Closed and dismantled
12	C6	Shanxi Shangzhou Chemical Plant1 CFC-12 production line	Closed and dismantled
16	Not SRI	Liaohe Chemical Group Chlor-Alkali Plant. 1 CFC-12 production line.	Closed and dismantled.

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2002 ANNUAL PROGRESS REPORT ON THE IMPLEMENTATION OF SOLVENT SECTOR PLAN FOR ODS PHASEOUT IN CHINA

AND

2003 ANNUAL IMPLEMENTATION PROGRAMME

submitted by
State Environmental Protection Administration (SEPA), China
and
United Nations Development Programme (UNDP)

A. BACKGROUND

At its 30th Meeting held in Montreal 29-31 March 2000, the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol (ExCom), by Decision 30/56, approved the "Agreement for ODS Phase out in China's Solvent Sector" (Agreement) on the phase out of ozone-depleting substances (ODS) in China's solvent sector at a total cost of $52 million to the Multilateral Fund (MLF).

The Agreement is for the phased reduction and complete phase out of the consumption of trichlorotrifluoroethane (CFC-113) and 1,1,1 trichloroethane (TCA), as well as the consumption of carbon tetrachloride (CTC) used as cleaning solvents in China.

The $52 million would be paid out in instalments over an eleven-year period in the exact amount of US dollars as specified in the Agreement, starting in the year 2000 and ending in 2010. By the approval of the Agreement, China committed that in exchange for the funding level specified, it will eliminate its total non-exempt CFC-113 and TCA consumption, as well as its total CTC consumption for solvent use in accordance with an agreed schedule. China further agreed that total non-exempt CFC-113 and TCA consumption in China, as well as the total consumption of CTC in the solvent sector in China will not exceed the levels agreed for specific chemicals in each year up to 2010.

China will phase out its CFC-113 consumption by 1 January 2006 and its CTC consumption by 1 January 2004, save for consumption of these two ODS for feedstock and process agent uses, and for CFC-113 consumption and CTC solvent consumption that may be agreed by the Parties to be essential for China after 2010. TCA will be totally phased out by 1 January 2010, save for any TCA solvent consumption that may be agreed by the Parties to be essential for China after 2015.

The United Nations Development Programme (UNDP) has agreed to be the implementing agency for this project for the first three years at a fee of 10% of funds allocated during that period. The fees for future years will be agreed between the Executive Committee and the implementing agency for the project.

B. ODS PHASEOUT ACTIVITIES

A series of preparatory activities took place immediately after the approval of the Agreement in March 2000. Project document was signed by SEPA and UNDP in June 2000 and work plan prepared. A Domestic Implementing Agency (DIA) was selected in August 2000 to assist SEPA in undertaking the day-to-day operational activities to facilitate enterprise level phase out.

1. 2000 ODS Reduction Contracts

Bidding for the 2000 ODS Reduction Contracts took place September 2000. 30 large and medium ODS solvent consuming enterprises in liquid crystal display (LCD) manufacture, compressor, electric vacuum and electronic component were identified as priority subsectors for early phase out. 20 out of the 30 enterprises submitted their bids by the closing date of 6 November 2000. A two-stage bid evaluation approach was utilized to evaluate the bids. 19 out of the 20 bids were qualified for the next stage of technical evaluation utilizing the following six criteria:

- priority of subsector;
- mature and advance alternative technology;
- reasonable and executable implementation plan;
- quality of documentation;
- management and financial condition of enterprise; and
- price.

The bid evaluation recommended 15 enterprises for the award of ODS Reduction Contracts that would phase out 473.169 tons of CFC-113, 15.6 tons of TCA and 7.6 tons of CTC. ODS Reduction Contracts for these 15 enterprises were signed on 27 November 2000. One more contract was signed on 21 February 2001 to phase out an additional 86 tons of TCA to meet all the phase out targets of each of the three solvents as stipulated in the 2000 – 2001 First Annual Implementation Programme.

The 16 ODS Reduction Contracts signed would therefore phase out 473.169 tons of CFC-113, 101.6 tons of TCA and 7.6 tons of CTC in 12 – 18 months, i.e. by June 2002. Total bid price for the 16 winning bids was RMB 58,799,444, counterpart funding by the enterprises amounted to RMB 24,641,414, total phase out cost for the ODS Reduction Contracts awarded is RMB 34,158,030, equivalent to US$ 4,132,353.

In April 2001, international competitive bidding for the equipment required for the 2000 ODS Reduction Contracts was advertised in newspapers in China and on international website. By the closing date of 13 June 2001, 15 domestic equipment manufacturers purchased the bidding document, 12 of them submitted bids. A Bid Evaluation Report and the recommendation of award were submitted to the Contracts Committee of the Foreign Economic Cooperation Office (FECO) of SEPA for review and approval. Contracts for the procurement of equipment were subsequently awarded to two lowest bidders in July 2001. Production of the equipment was closely monitored by the Special Working Group on the quality of materials and workmanship.

Throughout the production process, adjustments on technical specifications were being made to more accurately meet the specific cleaning requirements of the recipient enterprises. Unfortunately such adjustments led to delayed delivery from the original target date of December 2001.

Major equipment production has been completed by end of April 2002 with the exception of spacers for LCD enterprises. The equipment is now undergoing a final workshop adjustment and final inspection prior to delivery to enterprise sites. Some inspected equipment has already been delivered, tested and commissioned at three of the 16 enterprises during the period of May to August 2002, and their consumption phased out. The specifications for the spacers have been modified and finalized in early August according to information based on result of new findings from research and experiments. It is expected that the spacers will be delivered to the enterprises in early November 2002. All of the remaining 13 enterprises will have their equipment installed, test and commissioned latest by December 2002. Baseline equipment in all the 16 enterprises will be destroyed by the end of 2002.

The completion of some of the 2000 ODS Reduction Contracts in December 2002 will contribute to the phase-out target of 2003. It also means a six-month delay to the original completion target of 12-18 months.

2. 2001 ODS Reduction Contracts

According to the 2000 – 2001 First Annual Programme, the phase out of 655 tons of CFC-113 and 100 tons of TCA were to be achieved with the 2001 ODS Reduction Contracts and Voucher System.

Bidding documents for the 2001 ODS Reduction Contracts were issued on 2 April 2001 to 23 enterprises in the LCD, compressor, electronic vacuum, electronic components and mechanical processing subsectors. 21 of the 23 enterprises submitted bid by the closing date of 12 June 2001. The Bid Evaluation Committee recommended the award of contract to 19 successful bidding enterprises to phase out 676.978 tons of CFC-113, 27.973 tons of TCA. The Bid Evaluation Report was reviewed and approved by the Contracts Committee of FECO/SEPA. ODS Reduction Contracts with the 19 winning enterprises were signed on 5 July, 2001

The phase out amount of TCA again fell short of the required phase out target by 72.027 tons. DIA and national experts then carried out site visits and completed negotiations and finalized technical schemes with two more enterprises to phase out an additional 78 tons of TCA. Additional ODS Reduction Contracts were signed with these two enterprises in September 2001.

The 21 ODS Reduction Contracts signed in 2001 would therefore phase out 676.978 tons of CFC-113, 105.973 tons of TCA in 12 – 18 months after signature of the contracts. Total bid price for the 21 winning bids was RMB 56,050,140, counterpart funding by the enterprises amounted to RMB 20,003,300, total phase out cost for the 21 ODS Reduction Contracts awarded is RMB 36,046,840, equivalent to US$ 4,360,857.

Under the guidance of national experts, the 21 winning enterprises prepared technical specifications for the equipment required. Due to the wide range of sectors covered, the preparation of technical specifications required greater accuracy, it also required the national experts to spend more time and effort for an in-depth understanding of the actual situation and cleaning requirements of the enterprises, and more time to find the appropriate alternative cleaning solutions. Advertisement for the tendering of equipment was posted in August and September in Chinese and international websites. Bidding processing was initiated in September 2002. It is expected that contract award will be made the fourth quarter of 2002 for delivery early 2003, with completion of these 21 ODS Reduction Contracts targeted at June 2003, contributing to the phase-out reduction during 2003.

3. 2002 ODS Reduction Contracts

According to control targets stipulated in the Agreement, and the phase-out activities included in the 2002 Annual Implementation Programme approved by the Executive Committee at its 35th and 36th Meeting, China will phase-out 625 MT of CFC-113, 250 MT of TCA and 50 MT of CTC through ODS Reduction Contracts and Voucher System initiated in 2002. To accomplish these phase-out targets, DIA prepared bidding documents in March 2002. The Special Working Group on Solvent (SWG) and DIA held a Tendering and Training Meeting in Beijing from 17 to 19 April 2002. Close to 40 interested large and medium size enterprises participated. The enterprises were introduced on the China Solvent Sector Phase-out Plan and the requirements for national ODS solvent phase-out schedules. Bidding procedures, phase-out methodologies and qualification requirements for participation were introduced and carefully explained.

Of the 40 participated in the meeting, 17 purchased the bidding document at the meeting. From the number of bidding document purchased at the meeting, it can be foreseen that the phase-out activities may start to face a complicated situation. Some of the enterprises are not eligible to participate in the phase-out activity as they were established after July 25, 1995. Some enterprises consider the bidding procedure too complicated for the limited amount of grant they would receive and refused to participate in the bidding process, hence it may result in some of these enterprises prepare to phase-out at their own costs. Some enterprises are still hesitating to participate. In addition, some enterprises are not aware of the phase-out activities because of their remote locations. These ODS consuming enterprises are so scattered around that it is difficult for the SWG to find them. For this reason, other than intensifying its effort in the phase-out activities, China would promulgate regulation of issuing ODS Solvent Consuming Certificate to control ODS consumption from ODS production sources. Such regulation on issuance of ODS Solvent Consuming Certificate has been issued jointly by SEPA and the Ministry of Information Industry in June 2002.

Bids on 2002 ODS Reduction Contracts were opened on July 15, 2002, 36 enterprises submitted their bids. The bid evaluation took place 16 – 19 August 2002 by an Evaluation Committee of 11 technical experts from SEPA, DIA and various industrial sectors concerned. The evaluation result showed that 35 bidders were qualified, one bid was rejected because it failed to provide valid supporting documents to verify its actual ODS consumption.

The 35 successful bidding enterprises will phase out 695.36 tons of CFC-113, 482.39 tons of TCA and 16.31 tons of CTC with total contract price of RMB 33,832,883 equivalent to US$ 4,093,018. While the bidding results have been finalized and that the ODS Reduction Contracts can be awarded, UNDP has not authorized the signature of the 35 ODS Reduction Contracts, in compliance with ExCom Decisions 36/50 and 37/22 which decided that "no disbursement would occur until the required information on the use of carbon tetrachloride as a process agent (for the year 2000) has been provided" by China to the Executive Committee. Due to data verification, since February 2002 China was not in a position to provide UNDP with such information for reporting to the Executive Committee, neither at its 36th or 37th Meeting.

While signature of the 35 ODS Reduction Contracts has not taken place, UNDP and China can however report that, based on the results of the 2002 bidding, China will be able to sign 2002 ODS Reduction Contracts to phase-out sufficient quantity of solvents consumption to meet the reduction targets stipulated in the Agreement. The status of ODS consumption to be phased out as a result of the 2000, 2001 and 2002 ODS Reduction Contracts can be summarized as follows:

Table 1: Phase-out of 2000 – 2002 ODS Reduction Contracts

		CFC-113		**TCA**		**CTC**		**No. of Enterprises**	**Funding (US$ 1,000)**
		ODS tons	ODP tons	ODS tons	ODP tons	ODS tons	ODP tons		
2000 Bidding	Planned	466	372.8	100	10	0	0	10 – 20	$5,000
	Executed	473	378.4	101	10.1	7.6	8.36	16	$4,132
2001 Bidding	Planned	655	524	100	10	0	0	10 – 20	$5,505
	Executed	677	541.6	105.9	10.59	0	0	21	$4,361
2002 Bidding	Planned	625	500	250	25	50	55	20 - 40	$5,830
	Executed	695.36	556.29	482.39	48.24	16.31	17.94	35	$4,093
Three Year Cumulative Total	Planned	1,746	1,396.8	450	45	50	55	40 – 80	$16,335
	Executed	1,845.36	1,476.29	689.29	68.93	23.91	26.3	72	$12,586

With the exception of CTC, the quantities of phase-out under the 2002 ODS Reduction Contracts will exceed the targets set for CFC-113 and TCA. For CTC, the phase out quantity with the 2002 ODS Reduction Contracts will have a short fall of 33.69 MT, for the three year cumulative of 2000 – 2002, there is a short fall of 26.09 MT. It was found through actual investigation by SEPA that very few enterprises are using CTC as cleaning solvent. In fact so far, SEPA is only able to identify two enterprises using CTC as cleaning solvent, with consumption of 6.7 and 16.3 MT. It is believe that many of the CTC consuming enterprises have already phased out the use of CTC at its own cost, therefore the consumption of CTC will met the phase-out target.

4. Voucher System

A detailed operational procedure of the Voucher System has been prepared by the DIA and reviewed by the SWG. The procedure needs to be further simplified to suit the real situation of the SMEs to reduce the burdens imposed on the participating SMEs and the corresponding

operational workload, yet still be able to assure transparency, to achieve the most efficient and appropriate use of fund.

The procedure utilizes the industrial associations and local organizations as the intermediate execution agent (IEA) to locate those SMEs scattered around the country based on their experience and knowledge of these SMEs. The SMEs will be verified and registered by the IEA in accordance with the regulations specified by the SWG and then reported the registration to the DIA. Upon review and approval by SWG and FECO/SEPA, vouchers will be issued to the eligible SMEs through the IEA or the SWG. On completion of phase-out activities, IEA would be responsible for submitting a Project Completion Form to the DIA and SWG. Payment of the voucher amount will be made upon satisfactory verification and approval of FECO/SEPA.

DIA, together with SWG have already contacted the Beijing Municipal Environmental Bureau, the Tianjin Municipal Environmental Bureau and the Shanghai Academy of Environmental Science. All three departments expressed interest to undertake the role as IEA to implement the Voucher System. Based on discussions, the three departments already initiated actions to investigate and identify the small ODS consuming enterprises in their corresponding areas.

5. Relevant Policies

Throughout the period of the 2000 – 2002, China has initiated and effectively implemented policy actions to facilitate ODS phase-out. In order to control ODS production and selling situation, FECO/SEPA, jointly with the Ministry of Information Industry (MII), issued on June 20, 2002 the "Notice of Issuing Execution Methods on Issuing Usage Certificate on Selling ODS Products". The main contents of the Notice covers the following:

i) From May 25, 2002 all those who are producing ODS must strictly produce the ODS against the production quota of the year. The ODS producing factories must sell ODS products against the buyer showing their ODS Usage Certificate issued by FECO/SEPA.

ii) From May 25, 2002 all ODS consumers must apply to FECO/SEPA's designated unit to obtain the ODS Usage Certificate.

According to the operational procedures, the responsibility of issuing the ODS Usage Certificates has been assigned to China Cleaning Engineering Technique Cooperation Association (CCETCA). From August 9, 2002 up to now, CCETCA has issued such ODS Usage Certificates to 199 enterprises at all production levels.

C. TECHNICAL ASSISTANCE ACTIVITIES

1. Training Activities

Training activities were conducted in Amoy in January 2002, in Beijing in February and April 2002 for over 200 participants from the candidate enterprises for the 2002 bidding. Training programme includes:

- Introduction of Solvent Sector Plan and its execution modality;
- Preparation of bid proposal and how the bidding will be executed;
- Introduction by technical experts on alternative technologies;
- Exchange and discussion between technical experts and enterprises.

A Training Workshop by international experts was conducted in Xian in August 2002 for over 100 national experts and enterprise technicians to provide the participants with:

- Alternative cleaning process/technologies;
- Available alternative solvents;
- Retrofit of equipment to non-ODS cleaning applications

2. Public Awareness & Promotion

The event of issuing the Notice on ODS Solvent Usage Certificate was publicized by China Environment Protection Daily on June 27, 2002.

The event of International Seminar and Training on Solvent Technology was reported and publicized by China Daily on August 15, 2002.

Currently the overall promotion plan for the Solvent Sector Plan is under review by FECO/SEPA and will be implemented upon approval by FECO/SEPA. The promotion will include raising public awareness in trade journals, publications, newspaper, news media, Radio and TV.

3. Strengthening of Alternative Technology Support System (ATSS)

To strengthen the ATSS, SWG started in May 2002 to investigate countrywide the capability of local solvent cleaning institutes and experts by issuing an Application and Registration Form, with the aim to identify all capable institutes or experts in the country to participate in ATSS. To-date, a total of 33 application forms have been received and are under reviewed. Upon completion of a qualifying and approval process by SWG and FECO/SEPA, the ATSS will be further strengthened and appropriate training will be conducted for these newly identified institutes and experts.

To further build up the capacity of the national experts, an international seminar on alternative cleaning solvents and technologies were held in Xian, attended by 100 national experts and technicians from the various ODS consuming enterprises. Discussions and exchanges were made between the international and national experts, to learn from each other's experience and knowledge.

With cooperation of MII, the third Technology Center has been established at the Fifth Research Institute in Guangzhou, Guangdong Province and relevant work has been started. A technology assistance plan is being developed based on the current conditions and equipment available so as to strengthen the center to provide technical assistance to the enterprises in various sub-sectors in the overall capability of measuring, testing and technical services to ensure smooth execution of the Solvent Sector Plan.

4. Solvent Sector Management Information System (SSMIS)

The development of the SSMIS has been basically completed by end March 2002. The SSMIS is currently under test-run and readjustment. It is expected to be fully operational from October 2002, and will form an integral part of the overall Management Information System, covering all sector plans approved and being implemented and will offer a useful integrated database.

5. Development and Investment of Alternative Solvents Production

During preparation for the implementation of the Solvent Sector Plan, China realizes that the most important challenge for a successful and smooth phase out in the solvent sector is the sufficient availability of good quality, workplace safe alternatives at reasonable low price. At present, China imports most of the alternative solvents at a very high price which is a major obstacle to getting the interest of enterprises to participate in phase out activities. Some local enterprises have embarked on the development and production of alternative solvents and equipment. SEPA strongly believes that one important activity in the successful implementation of the Solvent Sector Plan is to assist these local enterprises in the development of these alternative solvents that are identified to be of good potential substitutes and to provide investment in building up their production capacity in order to provide sufficient local supply to current ODS solvent consumers.

To ensure that non-ODS cleaning technologies are appropriate for various cleaning applications and that cleanliness requirements and production capacity can be maintained, experiments on alternative technologies and production-scale tests have been carried out in LCD and electronic vacuum sectors. Studies on alternative equipment and appraisal on economic impacts of alternative technologies were also carried out.

A comprehensive strategy on alternative solvents is being developed. Investigations on current situation, the development trend and anticipated demand on solvent alternatives, alternative cleaning technologies and products are being conducted. A comprehensive economic and technical impact analysis will be carried out to assess benefits and costs to the affected industrial sectors and the country as a whole. Based on these findings, a national strategy on alternative development during the compliance period and post-2010 will be finalized.

To meet the requirement of the development and production of alternative solvents, savings of $2 million from the bidding process for the 2000 and 2001 ODS Reduction Contracts has been reallocated to the development and production of alternative solvents. While no actual activity or expenditure has been incurred up to now, plan for such alternative production has been included in the recently inaugurated Industrial Park for Implementation of Multilateral Environmental Agreements located in Langfang Economic Development Zone in Hebei Province outside Beijing.

D. CONTROL TARGETS OF ODS SOLVENT CONSUMPTION

As phase out activities at the enterprise level will take at least 12-18 months to complete implementation, phase-out of ODS consumption will only be achieved upon completion of the ODS Reduction Contracts and destruction of baseline equipment. For example, project activities initiated under the sixteen 2000 ODS Reduction Contracts signed in November 2000 and February 2001, under the 2000 – 2001 First Implementation Programme would not result in any consumption phase out at the end of 2000 or 2001, but will only contribute to the phase out targets in 2002.

1. 2000 CONTROL TARGETS

As reported to the 36th Executive Committee Meeting, China met the 2000 consumption limits for CFC-113, TCA and CTC as stipulated in table a of the Agreement, through phase-out achieved on the completion of on-going individual projects. SEPA and UNDP also submitted the name list and quantities purchased of CFC-113 and CTC for exempted feedstock use. However, due to data verification, China was not able to provide the name list of enterprises and quantities purchase of CTC for process agent use for the year 2000, either to the 36th or the 37th Executive Committee Meetings. China is now able to report such information in Table 2 below:

Table 2 Name List and Quantity of CTC for Process Agent Use in 2000

Name of Enterprise	Quantity of CTC for Process Agent Use (MT)
Shenyang Chemical Ltd.	45.68
Shanghai Dihua Industrial Enterprise	156.02
Shangyu Qiming Chemical Ltd.	148.9
Jiangyin Falsheng Fine Chemicals	144.47
Shouchang Chemical Ltd.	62
Sichuan Longchangshenghua Chemical Plant	102
Zhejiang Longyoulude Pesticide Ltd.	47.06
Wuxi Chemical Group Co.	320.44
Huanghua Jinhua Chemicals Co.	292
Zhongyuan Oil Field Fluorine Rubber Plant	140
Guangzhou Haotianxue Group	201.56
Zhejiang Xinan Chemicals Group	200.89
Luzhou Longmatan Hongyuan Chemicals	147.65
Dalian Lushun Jianxi Chemical General Co.	250.6
Harbin Yibin Chemicals Co.	24.06
Jilin Chemical Ltd.	933.07
Zhejiang Huahai Pharmaceuticals	15.75
Total	**3,232.15**
Limit as per Agreement	*5,000 (5,500 ODP MT)*

With the provision of the above required information, China has now fulfilled its obligation under the Agreement. UNDP will therefore proceed with authorization for the signature of the 2002 ODS Reduction Contracts, and the subsequent disbursement of funds for the implementation of the 2002 Annual Implementation Programme.

2. 2001 CONTROL TARGETS

Based on official data and statistics on China chemical production and import & export obtained by SEPA, the total domestic consumption of CFC-113 and TCA in 2001 has met the phase-out targets specified in Table a of the Agreement. While annual usage of CTC all over China is around 60,000 to 70,000 MT, the consumption of CTC as cleaning solvent cannot be increased or changed drastically from 2000, and CTC consumption for the year 2001 would not exceed 100 MT. China has therefore met the reduction targets on the three chemicals as well as the overall consumption limit for the year 2001.

Table 3: ODS Solvent Consumption for the Year 2001 unit: ton

	CFC-113		TCA		CTC	
	ODS	ODP	ODS	ODP	ODS	ODP
Consumption Control Target	3,375	2,700	6,130	613	100	110
Production	4,194.39		390			
Import	0		3,602			
Export	32		1			
Raw Material Usage	819.40		-			
Solvent Consumption	3,342.99	2,674.4	3,991	399.1	<100	<110

In accordance with paragraph c of the Agreement, a list of name of enterprises and the quantities purchased of CFC-113 and CTC for exempted feedstock use and process agent use for the year 2001 is presented in Table 4 and Table 5 below. With the exception of CFC-113 for exempted feedstock use that exceeds the 10 ODP ton limit, all other limits were met.

Table 4 Name List and Quantity of CFC-113 and CTC for Exempted Feedstock Use in 2001

Name of Enterprise	CFC-113 for Exempted Feedstock Use (MT)	CTC for Exempted Feedstock Use (MT)
Changshu 3 F Chemical Industry Co. Ltd.	86 or CFC-115)	
	526 (for CFC-113a)	
Zhejiang Chemical Industry Research Institute	207 (for CFC-114 & 115)	
Juhua Fluoro-Chemical Co. Ltd.		16,428.9
Dongyang Chemical Plant		3,010.5
Linhai Limin Chemical Plant		1,970.4
Guangdong Xiangsheng Chemical Co. Ltd.		1,507.8
Jiangsu Meilan Electro-Chemical Plant		3,773.7
Jiangsu Changsu 3 F Refrigerant Co. Ltd.		17,417
Total	819	44,108.3
Limit in Agreement	*12.5 (10 ODP MT)*	*60,000 (66,000 ODP MT)*

Table 5 Name List and Quantity of CTC for Process Agent Use in 2001

Name of Enterprise	Quantity of CTC for Process Agent Use (MT)
Shenyang Chemical Ltd.	74.62
Shanghai Dihua Industrial Enterprise	147.45
Shangyu Qiming Chemical Ltd.	151.7
Jiangyin Falsheng Fine Chemicals	150.44
Shouchang Chemical Ltd.	56
Sichuan Longchangshenghua Chemical Plant	126
Zhejiang Longyoulude Pesticide Ltd.	41.48
Wuxi Chemical Group Co.	122.97
Huanghua Jinhua Chemicals Co.	289.7
Zhongyuan Oil Field Fluorine Rubber Plant	140
Guangzhou Haotianxue Group	173.91
Zhejiang Xinan Chemicals Group	173.29
Luzhou Longmatan Hongyuan Chemicals	16.09
Dalian Lushun Jianxi Chemical General Co.	332.3
Harbin Yibin Chemicals Co.	37.55
Jilin Chemical Ltd.	1,063.17
Zhejiang Huahai Pharmaceuticals	25.92
Total	3,122.59
Limit as per Agreement	*5,000 (5,500 ODP MT)*

E. PERFORMANCE AUDIT ON 2001 PHASE-OUT TARGETS

1. SCOPE OF AUDIT

As mandated in the Agreement, UNDP has included the China Solvent Sector Plan in its regular annual management and financial audit in 2001 and 2002, undertaken by the National Audit Office of the People's Republic of China. The audit was conducted in conformity with the provisions of the project document, International Generally Accepted Auditing Standards, relevant Chinese auditing standards and the principles and procedures prescribed for the United Nations with respect to funds obtained from or through UNDP. The audit included examination of accounting records, tests of internal control systems and other procedures considered necessary for due performance of this audit. Opinion is expressed by the National Auditors on:

(a) Financial operations and controls
(b) Adequacy of the management structure
(c) Equipment use and control
(d) Monitoring, evaluation and reporting
(e) Project execution rate

In addition, the Foreign Funds Application Audit Department of the China National Audit Office (CNAO) was engaged by SEPA and UNDP to undertake a specific performance and financial

audit of the 16 recipient enterprises under the 2000 Annual Implementation Programme, as well as activities under the overall Solvent Sector Phase-out Plan.

From 4 to 7 February 2002, a training workshop was held in Shenzhen where the auditors from the Foreign Funds Application Audit Department (FFAAD), national technical experts, project officials of SEPA and UNDP train the auditors from the related audit offices from 10 provinces and municipalities who would participate in the audit exercise.

Auditors from local audit offices were authorized by CNAO to conduct audits on the 16 individual recipient enterprises, in accordance with the uniform audit programme. They submitted individual audit reports to FFAAD. FFAAD itself directly audited SEPA on the overall situation of the implementation and financial receipt and expenditure of the Solvent Sector Plan. FFAAD was assisted by two technical experts in auditing 3 of the 16 individual enterprises. The technical experts submitted the appraisal on each sub-project and prepared their technical reports that were submitted to FFAAD. FFAAD in turn reviewed and summarized the individual sub-project reports by the local audit offices and the technical experts and consolidated to finalize the Audit Report on ODS Solvent Sector Phase out Plan.

The scope and main content of the performance audit includes:

i) The Management and Implementation Status of the ODS Solvent Sector Phase-out Plan:
   - Policies formulated
   - Measures taken
   - Project management status
   - Progress of project
   - Implementation status of the annual workplan approved by UNDP
   - Disbursement of grants

ii) 16 ODS Reduction Contracts in the 2000 Annual Implementation Programme
   - Bidding and contract signing procedures
   - Quantity of ODS solvent used in tendering year
   - Quantity of ODS solvent used in 2000 and 2001
   - Information of ODS cleaning equipment of the sub-project
   - Receipt and application of the grant
   - Progress of sub-projects
   - Evaluation of the implementation of sub-projects

2. AUDIT CONCLUSIONS AND FINDINGS

The audit produces the following observations and recommendations:

i) Project Management and Control

The audit results on SEPA and the plants showed that the Project Management Office's management and control on the project was efficient; the whole phase-out programme

was in conformity with the situation of China; and the regulations issued and measures taken which conformed to the actual situation of the project were the concrete guarantee to smoothly realize the phase-out. Furthermore, the allocation of funds was timely and a guarantee of the smooth implementation of the test and reconstruction work in the enterprises. By the end of December 31, 2001, the related management departments have formulated the policies and regulations. In 2002 SEPA formulated the following policies and regulations:

"Notification of list of ODS materials restricted in export and import Second Part (HuanKongFa[2001]No.6)". The notification was promulgated by SEPA, Ministry of Foreign Trade and Cooperation, Custom Administration for the management on the import and export of ODS materials.

ii) 16 ODS Reduction Contracts

As described in the 2000 Annual Implementation Programme, the phase-out quantity of ODS solvent for 2000 was 466 tons of CFC-113 and 100 tons of TCA.

In line with the requirement of UNDP and the Solvent Special Working Group, CNAO audited overall project implementation status and the projects of the 16 ODS Reduction Contracts. The contract phase-out quantity verified by SEPA for the 2000 Annual Implementation Programme was 473.169 tons of CFC-113, 101.6 tons of TCA and 7.6 tons of CTC. The audit found some discrepancies in the actual phase-out quantity of CFC-113 and TCA in six enterprises. Subsequent contacts between SWG and the enterprises had resulted in explanations on the mistaken figures arrived at by the Auditors. The enterprises have contacted the local auditors to correct the wrong figures included in the audit report.

The audit shows that most concerned sub-projects have suitable business scope, qualified staff competency and sufficient technical and management ability to implement the project. The application, disbursement of the grant almost can meet the requirement of the project agreement.

iii) Audit Findings

The 2000 annual plan was the first yearly plan of the ODS Solvent Sector Phase-out Plan. CNAO audit shows that overall the project was implemented smoothly and concerned project units were capable of implementing the sub-project. However CNAO still found some problems that need to be improved. The problems and the recommendation of the Auditors are as follows:

a. All enterprise level's phase-out process was delayed according to the contract. According to the contracts signed between FECO/SEPA and the 16 enterprises, the phase-out process should be completed in 18 months (by June. 30, 2002). But actually, the period of design of the new equipments was effected by many facts such as different

situation in different enterprises, etc. This affected the whole process greatly. All contracts cannot meet the time limit of 18 months.

Recommendation: FECO/SEPA should report to UNDP on this issue. Adjustment on the time limit is needed considering the complexity of this project and in the equipment design stage. Thus the practicability and obligation of the contract can be fulfilled.

b. The data about the volume of ODS solvent used in some enterprises which were reported to SEPA when tendering was not corrected and not in accordance with the contract quantity.

Recommendation: SEPA should strengthen its examination of enterprises' data when tendering. Furthermore, a promise from enterprises is needed and related regulations for punishment need to be established.

[Note: Subsequent contacts between SWG and the enterprises had resulted in explanations on the mistaken figures arrived at by the Auditors. The enterprises have contacted the local auditors to correct the wrong figures included in the audit report. SEPA and UNDP is waiting for the correction of the audit report.]

c. Some enterprises used the aided fund to pay consultant fees.

Recommendation: SEPA should urge the above enterprises to use the aided fund as required by contract and reconstruction plan. The above fund paid should be expended from enterprises' counterpart fund. Furthermore, SEPA should strengthen the training and supervision on the use of the aided fund.

d. Some reduction contracts have been adjusted, yet necessary procedure is lack for the reflection of these changes. For the reason of sequence of the procedure of implementing the project (First tender of reduction contract, second tendering of equipment), some equipment's actual procurement amounts were not consistent with the amount signed in the reduction contract. Yet necessary amendment to reduction contract is lacking and thus the practicability and obligation of the reduction contract cannot be ensured.

Recommendation: SEPA should complete necessary adjustment to reduction contract to reflect the change of the use of the aided fund. And necessary items for explanation of these changes needed to be amended in the original reduction contract. Thus the practicability and obligation of the reduction contract can be ensured

e. The audit found that one enterprise was in the process of preparing for bankruptcy, and the audit on SEPA also shows that second allocation of test and reconstruction fees to this enterprise has been suspended.

Recommendation: In the future implementation of the sector plan, SEPA should require enterprises to submit their financial information supported by annual audit report

and ask enterprises to ensure the truthfulness of the financial information. Also enterprises need to promise to report its significant change timely when attend bidding. SEPA should strengthen the examination of these data and operation situation to avoid influence to project from problems in business operation.

[Note: The enterprise has since been acquired by another enterprise that agreed to accept all contractual obligations. SEPA has checked all official documents and financial records and judged the transfer of ownership acceptable. The new enterprise will undertake all contractual obligations and carry on implementation of the sub-project.]

f. Sichuan Danpu Compressor Company did not follow the regulations required in the contract and project management rules (taking pictures in the destruction of the old equipment) and this will affect this project's final acceptance test.

Recommendation: SEPA should strengthen the training of the related project management rules to ensure the smooth implementation of the project.

g. CNAO's audit on the consultant fees collected by China Cleaning Engineering Technique Cooperation Association (CCETCA) shows that the invoice they used is not in accordance with related regulations set by Ministry of Finance.

Recommendation: SEPA should ask CCETCA to correct its action as required.

Since the 16 enterprises did not complete their phase-out process before July 2002 as required by the ODS Reduction Contract, the audit has not rendered an opinion on quantities of ODS phase-out.

3. INDEPENDENT TECHNICAL AUDIT BY UNDP

In addition to the performance and financial audit undertaken by China National Audit Office, UNDP's international and national solvent sector experts also carried out a technical audit in August 2002 at the only three (out of the 16) recipient enterprises who have their equipment installed, commissioned and have eliminated the consumption of ODS solvent. The three enterprises clean compressor parts and electronic materials for meters. The technical audit reviewed the ODS cleaning applications, the quantity of ODS consumption, the alternative solvents, the new non-ODS cleaning equipment installed and commissioned, and the fate of the baseline equipment.

The technical audit concluded that:

- Review of the three sub-project sites showed a high quality of engineering effort, good competency in designing the projects, strong skills in the manufacturing and installation of the cleaning equipment and process.

- The enterprises pointed out the need for the new solvent supplier (locally produced HEP-2) to supply better information on the use and disposal of this nPB-containing product.

- The equipment suppliers are making a strong effort to meet the specifications, and that there is sufficient engineering support to assure a relatively smooth start-up.

- The factories that are recipients of these sub-projects are committed to making the phase-out successful in their particular site, and they all have worked well with the equipment suppliers to adjust the basic specifications and include some very good ideas to improve performance and safety in loading and operating the equipment.

- In general, the alternative solvent works very well and the equipment all work acceptably. Cleanliness requirements, based on visual examination, were equal or better than the system that was replaced.

- While the baseline equipment has not been destroyed, but in storage waiting for SEPA and UNDP officials to witness the destruction, they have now operating with non-ODS cleaning application, ODS consumption has been phased out.

With the completion of these three enterprises in June to August 2002, a total of 42.89 MT of CFC-113, 86 MT of TCA and 7.6 MT of CTC have been eliminated, contributing to the phase out reduction in 2002. With the completion of the remaining 13 recipient enterprises to take place latest by the end of 2002, the reduction in ODS consumption in these enterprises will contribute to the reduction targets in 2003.

F. CONTINUATION OF UNDP AS THE IMPLEMENTING AGENCY FOR THE CHINA SOLVENT SECTOR PLAN FROM 2003 TO 2010

Through close collaboration and cooperation, SEPA and UNDP have established an excellent mechanism and procedure to operationalize the China Solvent Sector Plan. While there are many obstacles and problems that were encountered during the first three years of implementation, both SEPA and UNDP worked diligently to identify the problems and seek innovative solutions, through a process of consultation and negotiation. Appropriate management and technical support were provided by the UNDP Montreal Protocol Unit in New York and the UNDP China Country Office in Beijing. Periodic missions of UNDP technical experts and programme management staff have established excellent working relationship with the SWG, DIA, FECO/SEPA and Ministry of Information Industry staff. Activities are dictated by proper and transparent procedures.

To maintain the momentum of this difficult sector phase-out plan in the consuming sector, both SEPA and UNDP agree that UNDP should be retained as the implementing agency for this sector phase-out plan, for the duration of its remaining period, 2003 – 2010.

G. 2003 ANNUAL IMPLEMENTING PROGRAMME

The 2003 Annual Programme (Annex 1) is submitted for the review and approval of the Executive Committee. The 2003 Annual Programme will phase out 600 ODP Tonnes of CFC-113, 78 ODP Tonnes of TCA and 55 ODP Tonnes of CTC. Phase-out activities at the enterprises level will be achieved through ODS Reduction Contracts and the Voucher System for SMEs. In order that phase-out activities will be completed by the end of 2004, bidding for the 2003 ODS Reduction Contracts will be initiated early 2003, with ODS Reduction Contracts signed by June 2003. Vouchers for the SMEs will be issued by October 2003. The completion of these activities by the end of 2004 will contribute to the phase-out targets in 2005.

Necessary technical assistance activities are also included in the 2003 Annual Implementation Programme. Together with enterprise level phase-out activities and the necessary policy framework, the combined actions will facilitate the smooth and orderly phase-out of solvent consumption to achieve the phase-out targets stipulated in the Agreement. It is note that the consumption of CTC as cleaning solvent will be completely phase-out by 2004.

The Executive Committee is requested to approve the 2003 Annual Implementation Programme of the China Solvent Sector Plan at its 38th Meeting, as the basis for consideration of the release of the 2003 funding level of $5,755,000 and the corresponding support fees at a future Executive Committee Meeting.

H. ACHIEVEMENT OF PERFORMANCE INDICATORS

As reflected in Annex 2 to this Report, in implementing the ODS Reductions Contracts and technical assistance activities, China has been able to achieve the performance indicators stipulated in Table 5 of the Amended 2000 – 2001 First Implementation Programme.

Annex 1

SOLVENT SECTOR PLAN
FOR ODS PHASEOUT IN CHINA

2003 ANNUAL IMPLEMENTATION PROGRAMME

(January 2003 – December 2003)

September 25, 2002

SOLVENT SECTOR PLAN FOR ODS PHASE-OUT IN CHINA 2003 ANNUAL IMPLEMENTATION PROGRAMME

A. PHASEOUT SCOPE AND APPROACH

1. The Solvent Sector Plan uses a phased, performance-based approached as described in detail in the final version of "Solvent Sector Plan for ODS Phase-out in China" (March 30, 2000, hereinafter referred to as the "Solvent Sector Plan") to phase out consumption of CFC-113, TCA and CTC as cleaning solvents. In accordance to the Solvent Sector Plan, China will continue to phase out ODS of CFC-113, TCA and CTC used as cleaning solvents through well structured annual implementation programmes. The scope of work for the 2003 Annual Implementation Programme will include the following:

(a) Undertake, sign and initiate implementation of ODS Reduction Contracts with 20 - 40 large enterprises and redeem vouchers with about 100 small enterprises to phase out 600 ODP tons of CFC-113, 78 ODP tons of TCA and 55 ODP tons of CTC so as to realize the phase out at the end of 2004;

(b) Further strengthening and optimization of the Alternative Technology Support System (ATSS);

(c) Implementation of the Voucher System;

(d) Continue to undertake technical assistance activities; and

(e) Continue to formulate related policies.

B. ACTIONS AND FUNDING

2. Solvent consumption phase-out requires implementation of investment projects at the enterprise level. At the enterprise level, the implementation period for contracts with large enterprises is about 18 months from signing and approval of the ODS Reduction Contracts to the commissioning of non-ODS technology system and destruction of baseline equipment. The implementation of phase-out through the Voucher System for small enterprises is about 12-18 months. Therefore China is applying to the Multilateral Fund to release the amount of $5,755,000, and the corresponding support fee in March 2003 to implement the 2003 Annual Implementation Programme, for activities covering the period of 1 January 2003 through 31 December 2003, with ODS phase out results being achieved by the end of 2004.

Table I. Phase out Activities and Proposed Funding

2003 Enterprise-level ODS Phase-out	Funding (USD 1,000)
ODS Reduction Contracts / Voucher System 20 - 40 large enterprises (ODS Reduction Contracts) 100 small enterprises (Voucher Payment) Estimated Phase-out to be realized at the end of 2004 600 ODP tons of CFC-113; 78 ODP tons of TCA; and 55 ODP tons of CTC	5,255
Technical Assistance activities and Policy Actions	500
Funding for 2003	5,755

C. ENTERPRISE-LEVEL ACTIVITIES

3. Enterprise level activities will continue to focus on the challenge of identifying, funding and implementing phase-out activities with large and medium size enterprises through ODS Reduction Contracts and small size projects with small solvent consuming enterprises through Voucher System to phase out sufficient quantity of consumption to achieve reduction at the end of 2004, contributing to the phase-out targets in 2005. Project identification will be carried out in several ways, with close cooperation of provincial and city level industrial associations, equipment manufacturers and solvent dealers. Principal focus will be the use of local resources including the Solvent Special Working Group (SWG), Domestic Implementing Agent (DIA), Ministry of Information Industry (MII) and ATSS agencies.

4. The following activities will be carried out in 2003:

(a) Complete implementation of 21 and 35 ODS Reduction Contracts signed in 2001 and 2002 to contribute to achieving the 2003 and 2004 consumption limits of CFC-113, TCA and CTC;

(b) Sign up about 20 - 40 ODS Reduction Contracts and issue vouchers to about 100 SMEs so as to achieve reduction at the end of 2004 and realize the phase-out targets for the year 2005.

5. Projects to be commenced in 2003 will require that ODS Reduction Contracts be signed latest by June 2003 and vouchers be issued by October 2003. Project Management Office (PMO) of the State Environmental Protection Administration (SEPA) will undertake planning action to identify, bid and negotiate these contracts and vouchers starting January 2003.

D. DEVELOPMENT AND STRENGTHENING OF ALTERNATIVE TECHNOLOGY SUPPORT SYSTEM (ATSS)

6. The ATSS and the associated Voucher System will be the principal vehicle for reaching the many small solvent users. During 2003, China will strengthen and optimize the functions of the three existing Technical Centers and other industrial associations as well as several alternative technology or equipment suppliers to make sure that they are capable of providing effective technical support on alternative solvent and technology to small enterprises, especially on the selection of the most appropriate and cost-effective options for moving to a non-ODS operation.

E. POLICY ACTIONS

7. The following activities will be undertaken to establish relevant policies and relevant solvent standards:

(a) Promulgate the Ban on Usage of CTC as cleaning solvent, starting 2004;

(b) Promulgate relevant sub-sector policies for stopping OD solvent usage.

(c) Continue to establish relevant solvent standards and technical norms.

F. TECHNICAL ASSISTANCE (TA) ACTIVITIES

8. Technical assistance activities shall continue to be undertaken to:

(a) strengthen the overall institutional framework;

(b) improve the management, monitoring and evaluation capabilities of participating institutions;

(c) train enterprise managers, technical personnel and decision makers at various levels;

(d) strengthen the Alternative Technology Support System

9. All terms of references and work schedule of TA activities will be agreed with UNDP prior to signing contracts and initiating work.

10. The main TA activities to be carried out in 2003 include:

(a) *Start integration of the Solvent Sector Management Information System (SSMIS)* for ODS phase out in the solvent sector with the ODS MIS System of FECO/SEPA to form a comprehensive and coordinated database of ODS phase out in all sectors;

(b) Continue the *Public Awareness Campaigns* to introduce and publicize country-wide the Solvent Sector Plan and ODS solvent phase-out schedule in newspaper and other media to make the public, especially the ODS solvent users, understand the phase-out plan and to attract participation in phase-out activities;

(c) With the wide geographical distribution of ODS solvent users in different regions and the many government and enterprise personnel involved in all aspects of the phase out activities, it is important to continue the *Training of personnel involved in the implementation of phase-out activities*. Training will be provided to: 1) environmental staff and decision makers to increase their recognition and management capacity; 2) industrial managers and technicians to enhance their understanding of alternative technology and to master how to apply the new technology; 3) ODS and substitute solvent dealers to deliver information on updated non-ODS solvent technology to their users; and 4) ODS solvent consumers on how to participate in activities of the ODS Reduction Contract bidding process and voucher system, and to obtain funding to undertake phase-out activities;

(d) *Strengthen the Alternative Technology Support System (ATSS)* – ATSS has been established with members from national experts group, relevant industrial associations, three technical support centers, alternative solvent and equipment dealers and manufacturers. Further strengthening of its technical capabilities will be required so that the ATSS can better resolve the alternative technology issues and to provide sufficient support on the selection of appropriate alternative technology options and its subsequent implementation;

(e) *Development of a non-ODS solvent management plan:* Rapid phase-out of ODS solvent production in China will cause demand after 2010 to be covered increasingly by substitutes. Preparation work for the development of ODS substitutes started in 2001 will continue during 2003. Preparation of the plan will draw on experiences from developed countries. Essential and necessary usage in the solvent sector will be determined, survey, study, testing and tryout of alternatives will be carried out.

(f) *Establish standards and technical norms*: Terms of Reference will be finalized by the end of 2002. As this work involves many areas, in 2003, it will continue to carry on the work and scope initiated in the First Annual Implementation Programme and to expand to other areas;

(g) Recruit necessary national and international consultants to provide technical services for training and technical conversion guidance to ODS solvent users, SWG, DIA and procurement agency.

G. DEVELOPMENT AND INVESTMENT OF ALTERNATIVE SOLVENTS PRODUCTION

11. To support the development of alternative solvents, US$ 2 million savings from the 2000 and 2001 ODS Reduction Contracts through the bidding process has been realized and reallocated to the development and investment of alternative solvents production in China. To ensure effective fund utilization, China has completed investigation and feasibility study on local alternative solvents. The development and investment in the local production of alternative solvents will follow the same set of Guidelines for Management of Investment on ODS Substitute Production which has been drafted by SEPA and World Bank for other sector plans, with selection of enterprises through bidding process to participate in the investment for local production.

12. A locally developed alternative HEP-2, containing n-propyl bromide as its components, has been chosen as alternative solvent by 28 of the 37 enterprises selected for the 2000 and 2001 phase-out projects. Development and investment on local production of HEP-2 will become the first priority for consideration. An enterprise in Huizhou, Guangdong Province has been selected through a bidding process.

13. In view of the uncertain toxicity of nPB, China will supervise and guide the users on the use of HEP-2 in the safest condition possible. Regarding nPB's toxicity, ODP value and usage, China will abide by the decisions made by the Parties and the Executive Committee.

Table II. Implementation Programme - Phase-out Targets and Enterprise Activities (January 1, 2003 – December 31, 2003)

SOLVENT CONSUMPTION PHASE-OUT TARGETS & ACTIVITIES							
	MLF $ million Requested	**Start of programme (MT)**	**Reduction Target (MT)**	**Reduction Contract (MT)**	**End of programme (MT)**	**Key Actions Required**	**Key Dates**
Phase out of CFC-113 from 2002 ODS Reduction Contracts			625	695			July 1, 2002– Dec. 31, 2003
CFC-113 (2003 ODS Reduction Contracts)	3.600	2,125	750		1,375	1. Conversion of ODS solvent enterprises to non-ODS cleaning technology 2. Ban on import and export of CFC-113 as cleaning solvent	January 1, 2003 – Dec. 31, 2004
CFC-113 Consumption Phase-out Target		2,750	1,375		1,375		By December 2004
Phase out of TCA from 2002 ODS Reduction Contracts			250	482			July 1, 2002 – Dec. 31, 2003
TCA (2003 ODS Reduction Contracts)	1.455	5,800	780		5,020	1. Conversion of ODS solvent enterprises to non-ODS cleaning technology 2. Ban on export and management on import of TCA as cleaning solvent	January 1, 2003 – Dec. 31, 2004
TCA Consumption Phase-out Target		6,050	1,030		5,020		By December 2004
Phase out of CTC from 2002 ODS Reduction Contracts			50	16+6			July 1, 2002– Dec. 31, 2003
CTC (2003 ODS Reduction Contracts)	0.200	50	50		0	1. Conversion of ODS solvent enterprises to non-ODS cleaning technology 2. Ban on import and export of CTC as cleaning solvent	January 1, 2003 – Dec. 31, 2004
CTC Consumption Phase-out Target		50	50		0		By December 2004

ENTERPRISE-LEVEL ACTIVITIES				
	Estimated MLF US$ million requested	**No. of enterprises targeted**	**Key Actions Required**	**Key Dates**
Conversion of ODS Consuming Enterprises	CFC-113 3.600 TCA 1.455 CTC 0.200	1. L/M-size: 30-50 2. Small size: 100	1. Sign 20 – 40 ODS Reduction Contracts 2. Issuing vouchers to about 100 small users	1. Bid winners and contracts signed by the end of June 2003; 2. Vouchers issued by end of October 2003.

Table III. Implementation Programme - Policies and TA Activities (January 1, 2003 – December 31, 2003)

POLICY INITIATIVES		
Activities	**Actions Required**	**Key Dates**
1. Final Notice on banning use of CTC as cleaning solvent	- Formulate and seek approval of the Ban; - Promulgate such Ban at least one year prior to taking effect.	By the end of 2003.
2. Prepare and draft Notice on self-phase out of OD solvent for enterprises not cover by MLF grant	- Consult and discuss with relevant industrial associations; - Study and determine the feasibility of promulgation and implementation of such policies; - Prepare and draft a policy.	- By beginning of 2003; - Second half of 2003.

TECHNICAL ASSISTANCE ACTIVITIES			
Activities	**MLF funding requested (US$1,000)**	**Actions Required**	**Key Dates**
a. Public Awareness	20	Promote public awareness of enterprises on ODS solvent sector phase-out activities	From beginning of 2003
b. Training	50	Training on technology of non-ODS solvent and conversion operating manual.	Start no later than April 2003
c. Strengthening ATSS	50	Conduct training and exchanges	June 2003
d. Strengthening of third technology center	50	Optimize establishment and capacity of the third technical center.	March 2003
e. Preparation for the development of a non-ODS solvent management plan and support to some necessary tests on alternative technology	100	1. Start to implement the project for strategy study on alternative technology development; 2. Support to tests and study on alternative technology on the basis of sub-sectors.	From the beginning of 2003 Start no later than June 2003
f. Establishment of standards and technical norms	200	By qualified institution	Start in January 2003
g. National and International Consultants	30		January – December 2003
Total 2003 TA Activities	**500**		

Table IV. Implementation Programme
(January 1, 2003 – December 31, 2003)
Performance Indicators

Solvent Phase-out Targets				
Solvent sub-sector	**Start of programme (MT)**	**Reduction Target (MT)**	**End of programme (MT)**	**Indicators to be reported on in semi-annual progress reports.** **Verified in annual performance audits**
CFC-113 Imports/exports	0	0	0	Ban on exports and imports in 2003
Domestic consumption and phase-out target		750		Consumption levels will be dictated by domestic production.
TCA		780		Realized by ODS Reduction Contracts
CTC		50		Realized by ODS Reduction Contract
Number of ODS Reduction Contracts Voucher Redeem		L/M 20-40 SMEs 100		Number of contract signed. Number of voucher issued.
Development and Investment on alternative solvents production				Enterprises selected for investment through bidding process.

Policy and TA Initiatives	
Initiatives	**Indicators to be reported on in semi-annual progress reports**
1. Bidding system	- Enterprises trained for bid preparation for 2003 bidding - Bidding procedures completed. - Winning enterprises for 2003 ODS Reduction Contracts selected. - Vouchers issued to SMEs.
2. Public Awareness	- Introduce Solvent Sector Plan and phase-out schedule in newspapers. - Invite ODS solvent users to take part in the bidding and promote the enterprises to participate in the phase-out actions.
3. Training	Provide personal training courses to ODS users, EPBs and local line ministries
4. Final Notice on banning use of CTC as cleaning solvent	- Promotional campaigns on the ban; - ATSS, Local Electronic Bureaus and EPBs engaged in promotion and support to CTC solvent users
5. Strengthen ATSS	Contracts issued, technical capacity improved, progress reports prepared
6. Establishment of standards and technical norms	Contracts issued, progress reports prepared, draft standards finalized

Annex 2
Implementation Programme (2000 - 2001)
Performance Indicators

Solvent Phase out Targets					
Solvent Sub-sector	Start of programme (MT)	Reduction Target (MT)	End of programme (MT)	Indicators to be reported on in Semi-Annual Progress Reports. Verified in Annual Performance Audits	Achievement
CFC-113 Imports / Exports	149	0	0	Ban on exports and imports effective January 1, 2001	Promulgated 18 January 2001, effective 1 February 2001
Domestic Consumption and Phase out Target	4,441	466 (plus 600 from on-going MLF projects)	3,375 (in 2001) 2750 (in 2002)	Consumption levels (production plus imports minus exports)	Overall 2000 and 2001 Consumption and Phase out Targets on CFC-113, TCA and CTC were met
TCA Supplement	-	>100	-	Included in ODS reduction contracts	ODS Reduction Contracts signed to meet 2001 and 2002 Phase Out Targets
Number of ODS Reduction Contracts (inclusive of TCA supplement) Voucher Redeem		L/M 20-40 S 100 (2001)		Number of contract signed (sum of ODS reduction in the contracts) Progress under contracts Number of voucher redeemed	- 16 ODS Reduction Contracts signed in 2000 to phase out 473 MT of CFC-113, 101 MT of TCA and 7.6 MT of CTC; - 21 ODS Reduction Contracts signed in 2001 to phase out 677 MT of CFC-113, 105.9 Mt of TCA

Policy and TA Initiatives		
Initiatives	Indicators to be reported on in semi-annual progress reports	Achievements
1. Bidding System	Bidding system's operating procedures finalized. Winning enterprises for 2000 –2001 selected. Enterprises trained for bid preparation for 2000 and 2001bidding.	- Project Implementation Manual finalized June 2000 and bidding took place in September 2000 and April 2001. - 30 and 23 enterprises selected to participate in 2000 and 2001 phase out activities respectively. - Training took place prior to each year's bidding. - Performance and financial audits carried out in Aug. 2002
2. Public Awareness	Introduce Solvent Sector Plan and phase out schedule on two newspapers Invite ODS solvent users to take part in the reduction bidding and promote the enterprises to participate the phase out actions	- Mass media promotions carried out in August 2000. Periodic articles published in electronic sector's regular publications and countrywide newspapers and magazines. - 30 and 23 enterprises were invited to participate in the 2000 and 2001 bidding.
3. Training	Provide personal training courses to ODS users, EPBs and local line ministries	Trainings and seminars on ODS phase out conducted during 2000 and 2001.
4. Notice on banning newly-built enterprise which produces or uses ODS solvent	Promotional campaigns on the ban; Local Electronic Bureaus and EPBs engaged in overseeing ban enforcement.	Second Export Banning List of ODS promulgated on 18 January 2001 and became formally effective 1 February 2001.
5. Developing ATSS	Contracts issued, progress reports	ATSS composed of national expert group, relevant industrial associations, three technical support centers, alternative solvent or equipment dealers or manufacturers