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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Fifty-first Meeting
Montreal, 19-23 March 2007

PROJECT PROPOSALS: PEOPLE'S REPUBLIC OF CHINA

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

Foam

• Sector plan for phase-out of CFC-11 in the China foam sector: 2007 annual programme	World Bank

Process agent

• Phase-out the production and consumption of CTC for process agent and other non-identified uses (Phase I): 2007 annual programme	World Bank

Production

• CFC production phase-out programme: 2006 verification report	World Bank

Refrigeration

• Refrigeration servicing sector CFC phase-out plan (third tranche)	Japan, UNEP and UNIDO

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS
PEOPLE'S REPUBLIC OF CHINA

PROJECT TITLE	BILATERAL/IMPLEMENTING AGENCY
Sector plan for phase-out of CFC-11 in the China foam sector: 2007 annual programme	World Bank

NATIONAL CO-ORDINATING AGENCY:	SEPA/FECO

LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT

A: ARTICLE-7 DATA (ODP TONNES, 2005, AS OF JANUARY 2007)

CFC	13,321.7		

B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2005, AS OF JANUARY 2007)

ODS	Aerosol	Foam	Ref. Mfg.	Ref. Servicing	Solvents	Process agent	Fumigant
CFC-11	166.96	6,085.29	366.38	240.00			
CFC-12	595.27	108.00	691.84	4,065.64			

CFC consumption remaining eligible for funding (ODP tonnes)	N/A

CURRENT YEAR BUSINESS PLAN: Total funding US $4,843,000: total phase-out 1,167 ODP tonnes.

PROJECT DATA		2002	2003	2004	2005	2006	**2007**	2008	2009	2010	Total
CFC-11 (ODP tonnes)	Montreal Protocol limit	57,819	57,819	57,819	28,909	28,909	**8,673**	8,673	8,673	0	
	Annual consumption limit	17,200	15,500	13,100	10,400	7,700	**4,130**	3,800	300	0	
	Annual phase-out from ongoing projects	14,143	13,830	10,520	9,000	7,000	**400**	0	0	0	
	Annual phase-out targets in PU foam sector	0	313	3,330	1,500	2,000	**6,600**	400			14,143
Final project costs (US $):											
Funding for Lead IA: World Bank											
Total project funding		9,940,000	12,570,000	10,903,000	10,903,000	3,320,000	**2,676,000**	1,767,000	1,767,000	0	53,846,000
Final support costs (US $):		886,600	1,115,300	961,270	961,270	282,800	**240,840**	159,030	159,030	0	4,766,140
Support cost for Lead IA: World Bank											
Total support costs											
TOTAL COST TO MULTILATERAL FUND (US $)		10,826,600	13,685,300	11,864,270	11,864,270	3,602,800	**2,916,840**	1,926,030	1,926,030	0	58,612,140
Final project cost effectiveness (US $/kg)											N/A

FUNDING REQUEST: Approval of funding for the sixth tranche (2007) as indicated above.

SECRETARIAT'S RECOMMENDATION	For individual consideration

PROJECT DESCRIPTION

1. On behalf of the Government of the People's Republic of China (China), the World Bank has submitted to the 51st Meeting of the Executive Committee, a request for approval of the 2007 annual implementation programme (AIP) for the CFC-11 phase-out in the polyurethane (PU) foam sector in the China. The Bank also requests the release of a sixth funding tranche, that is, US $2,676,000 plus agency support costs of US $240,840, to finance the 2007 AIP, when requisite conditions have been met.

Background

2. The CFC-11 phase-out in the polyurethane foam sector in China was approved at the 35th Meeting of the Executive Committee, with the World Bank as the implementing agency and the State Environmental Protection Agency (SEPA) as the national implementing operating agency. The implementation of the CFC-11 phase-out in the polyurethane foam sector supports the Government of China in meeting its Montreal Protocol obligations, including the complete phase-out of the controlled use of CFCs by 2010. In order to achieve these targets, a series of investment, non-investment, technical assistance and capacity building activities will be, and are being, implemented by China with the assistance of the World Bank. The total funds approved in principle for the plan amounted to US $53,846,000 plus agency support costs of US $4,766,140.

3. In 2005, China's national CFC-11 consumption was 6,986.6 ODP tonnes, of which 6,085.3 ODP tonnes were CFC-11 consumption in the polyurethane foam sector. Both consumption levels were within the control limits set out in the agreements for the CFC-11 phase-out in the polyurethane foam sector and the accelerated phase-out plan. The control targets and the related funding schedule are provided in Table 1 below.

4. The release of the funds is subject to the following:

(a) Confirmation that:

(i) All agreed phase-out targets and consumption limits for the previous year have been achieved;

(ii) It has been verified that the activities planned for the previous year were undertaken in accordance with the annual implementation programme;

(iii) CFC phase-out contracts have been signed, amounting to at least 50 per cent of the current year contract targets and 100 per cent of the previous year contract targets.

(b) Confirmation of performance through verification by site inspection of a minimum of 15 per cent of the conversion activities, accounting for a minimum of 15 per cent of the CFC consumption of the annual implementation programme;

(c) Consumption figures provided under the Agreement are consistent with China's reports to the Ozone Secretariat under Article 7 of the Montreal Protocol.

Table 1

Control targets for CFC-11 consumption in the polyurethane foam sector in China (ODP tonnes) and related funding schedule (US $ '000)

	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
Annual national CFC-11 consumption limit (ODP tonnes)	17,200	15,500	13,100	10,400	7,700	4,130	3,800	300	0	
Annual CFC-11 consumption limit in PU foam sector* (ODP tonnes)	14,143	13,830	10,520	9,000	7,000	400	0	0	0	
Annual CFC-11 phase-out targets in PU foam sector (ODP tonnes)	0	313	3,330	1,500	2,000	6,600	400			14,143
Total annual funding (US $ X 1,000)	9,940	12,570	10,903	10,903	3,320	2,676	1,767	1,767		53,846
Programme support cost (US $ X 1,000)	886.6	1,115.3	961.27	961.27	282.8	240.84	159.03	159.03		4,766.14
Total cost to the Multilateral Fund (US $ X 1,000)	**10,826.6**	**13,685.3**	**11,864.27**	**11,864.27**	**3,602.8**	**2,916.84**	**1,926.03**	**1,926.03**		**58,612.14**

* Figures for annual CFC-11 consumption limits in PU foam sector for 2004-2010 are based on limits agreed under the APP.

5. The condition in paragraph 4 (a) above specifies that all agreed phase-out targets and consumption limits for the previous year are to be achieved. The agreed phase-out targets and consumption limits are:

(a) Annual national CFC-11 consumption limit (ODP tonnes);

(b) Annual CFC-11 consumption limit in PU foam sector (ODP tonnes);

(c) Annual CFC-11 phase-out targets in PU foam sector (ODP tonnes).

The limits are set out in Table 1 above.

6. From the documentation it became evident that an important part of the preconditions set by the Agreement for submission of the 2007 tranche have not been fulfilled. The documentation specifies that China will need another 1,038 ODP tonnes of phase-out contracts to fulfil the 2005 phase-out commitment of 2,500 ODP tonnes, i.e. so far only 58 per cent of the ODP phase-out contracts for 2005 have been signed. The World Bank believes that the remaining contracts for 2005 will be signed by mid-2007.

7. Also, no contracts so far have been signed in the 2006 Annual Programme, as all efforts were spent in fulfilling the 2004 and 2005 contract amounts. However, in order to release the 2007 tranche, 50 per cent of the contracts for 2006 have to be signed, representing a further 300 ODP tonnes.

8. The World Bank informed the Secretariat that the fulfilment of the target in terms of contracts signed for 2006 and subsequent years will be very challenging, if the modality of implementation is not broadened. The remaining contracts to be signed amount to 1,151 ODP tonnes or 11 per cent of all contracts to be signed under this Agreement. The challenge stems from the fact that the foam sector agreement, one of the earlier agreements under the Multilateral Fund, had the characteristics of an enlarged umbrella project with the necessity of contracts with each individual enterprise for a large part of the total phase-out addressed in the Agreement. Small enterprises do tend not to have their financial and other records available for past years, which would be required for issuing of phase-out contracts.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

9. The last tranche was approved at the 47th Meeting. The World Bank had submitted a request for funding to the 50th Meeting; this request was subsequently withdrawn, since the preconditions in terms of contracts signed with foam companies had not been met.

10. In conjunction with the submission of the 2007 AIP to the 50th Meeting, the World Bank had approached the Secretariat concerning the possibilities for support under the foam sector plan for enterprises established after July 1995. The Agreement, as approved by the 35th Meeting of the Executive Committee, specifies that the Chinese polyurethane foam sector plan and other related documentation may include estimates of specific funds that were thought to be needed for specific items. Notwithstanding this, the Executive Committee expressed in the Agreement that it wishes to provide China with flexibility in using the agreed funds to meet the consumption limits agreed, and that it has the understanding that during implementation, as long as it is consistent with this Agreement, the funds provided to China pursuant to this Agreement may be used in the manner that China believes will achieve the smoothest possible CFC polyurethane foam sector phase-out, consistent with operational procedures as agreed between China and the World Bank in the polyurethane foam sector plan as revised and as indicated in the annual implementation programmes.

11. The Secretariat informed the World Bank in October 2006 of its understanding of the Agreement that China is entitled to use the flexibility mentioned in a way that enterprises could benefit from the plan, which would be deemed non-eligible if submitted as part of an investment project. This is particularly valid for enterprises with capacity established after July 1995. The related activity still has to fulfil a number of conditions, one being that it leads to CFC phase-out in the foam sector, that it is in line with operational guidelines agreed between the World Bank and China, and that it is indicated in an annual work plan, which in turn needs to be approved by Executive Committee prior to implementation.

12. The Agreement for CFC phase-out in the polyurethane foam sector in China requests as a precondition for release of tranches, that CFC phase-out contracts had been signed amounting to at least 50 per cent of the current year contract targets and 100 per cent of the previous year contract targets. It further specifies that verification would be contingent upon site inspection of not less than 15 per cent of the conversion activities accounting for a minimum of 15 per cent of the CFC consumption in the annual implementation programme to confirm performance. The

mutual understanding of the Multilateral Fund, China and the World Bank as implementing agency was that these contracts refer to individual companies.

13. In discussions between the Secretariat and the World Bank, an alternative approach was developed. Under this approach, the understanding of the term "contract" under the Agreement would be enlarged to include contracts with environmental authorities in provinces and large municipalities to phase out CFC-11 consumption in their areas. These contracts will have to fulfil a number of detailed requirements and will hold local authorities responsible to work directly with enterprises. The details of this approach are outlined in the below decision.

RECOMMENDATION

14. The Secretariat notes with appreciation China's effort to reduce its CFC-11 consumption and that the 2006 national CFC-11 consumption including that for the PU foam sector is within the limits given by the PU Foam sector Agreement. However, as the total phase-out in the CFC-11 phase-out contracts with enterprises is less than that required by paragraph 4 of the Agreement between the Government of China and the Executive Committee, the Secretariat cannot recommend the 2007 AIP and relevant tranche for approval at this point in time.

15. The Executive Committee might consider:

(a) Requesting the World Bank and China to intensify their efforts to complete the targets specified in the Agreement between the Government of China and the Executive Committee as precondition for approval of the 2006 annual tranche and 2007 annual work programme;

(b) Specifying that for the purpose of the annual work programme for 2007 and following years under this Agreement, the term "CFC phase-out contracts" shall include contracts signed with Environmental Pollution Bureau of either provinces or very large municipalities. These contracts would specify:

(i) The objective of full phase-out of CFC-11 use in the province or municipality in line with the commitments of China under the Montreal Protocol and in relevant CFC phase-out agreements;

(ii) The related grant amount, the amount of phase-out to be achieved in each year, as well as the project duration;

(iii) The related activities and their respective budget, which need to include:

a) Introduction and enforcement of policies banning the use of CFC-11 for foam production from January 1, 2008;

b) Training and technical assistance for the relevant local authorities;

c) Identification of CFC-11 using enterprises in the respective area, commitments from provincial government, and activities, such as training, public awareness, surveys, monitoring, and enforcement;

d) Visiting all registered foam enterprises in the respective area and registration of the blowing agent used;

e) Surveys regarding CFC-11 using foam companies, polyol suppliers and CFC-11 dealers;

f) Training and technical assistance provided by local and national foam experts to CFC-11 using enterprises in order to assist them in changing over to non-CFC-11 technologies; and

g) Supply of CFC substitutes for formulation and trial production, where appropriate.

(iv) The funding under these contracts will be at least 90 per cent used for activities as per sub-item 15(b)(iii)c) to 15(b)(iii)g) above.

(c) Specifying that the phase-out under these contracts for a given year is defined as the difference between CFC-11 use in the province or municipality during the previous year minus any phase-out from any implementation activities under the Multilateral Fund funded outside the specific contract, and minus the CFC-11 use in the given year;

(d) Specifying that the CFC-11 use in the province or municipality in any year is determined for the period January 1st to December 31st, by using the minimum of the amounts obtained through the following two methods:

(i) Sales data provided by the CFC-11 producers still producing in 2007. This sales data will include produced quantities as well as sales of CFC-11 stocks from the CFC producers;

(ii) Sales data from the larger CFC dealers in the province or municipality. For the first relevant year for which data is needed (baseline), the sales data for 2004-2006 will be reviewed and used to check the consistency of the data of the relevant year.

(e) Requesting the World Bank to submit a report about the implementation of the 2007 tranche to the last meeting in 2008.

PHASE-OUT THE PRODUCTION AND CONSUMPTION OF CTC FOR PROCESS AGENT AND OTHER NON-IDENTIFIED USES (PHASE I): 2007 ANNUAL PROGRAMME AND VERIFICATION OF THE 2006 ANNUAL WORK PROGRAMME

Introduction

16. The World Bank submitted the 2007 annual programme for the implementation of the Agreement with the People's Republic of China to phase out the production of CTC for controlled uses and the consumption of CTC and CFC-113 as process agents (Phase I), to the 50th Meeting, with the understanding that the funding for 2007 would be released only when the verification of the results of the implementation of the 2006 annual programme was available. The Executive Committee approved the 2007 annual programme for Phase I of the CTC sector plan at the 50th Meeting but withheld the funds with the expectation that the World Bank would submit the verification of the 2006 implementation results to the 51st Meeting (decision 50/35).

17. Accordingly the World Bank is submitting to this Meeting the completed verification of the production of CTC, and the consumption of CTC and CFC-113 as process agent under Phase I for the year 2006, and has requested the release of US $5 million plus the associated support cost of US $0.375 million for the implementation of the 2007 work programme.

18. The verification of the production and the consumption of CTC and CFC-113 as process agent in 2006 consists of two parts: the CTC production verification, and the verification of consumption of CTC and CFC-113 as process agents under Phase I. For reasons of economy, the Secretariat is only attaching the summary part of the CTC production verification which includes important insight into the complex CTC production sector in China as well the methodology and the overall findings of the verification team. However the Secretariat, as always, is ready to make the entire submission of the World Bank available to members of the Executive Committee upon request.

Verification of the CTC production in 2006

19. The production verification was carried out in February 2007 by the same team of three consultants who had carried out the verification in 2004 and 2005 on behalf of the World Bank. It consisted of two technical experts and one financial analyst. The report included a technical audit part and a financial audit part.

20. The summary of the technical audit part contained the results of the visits and investigation of nine active CTC producers and one CTC residue distiller out of the 16 CTC producers in China. The other six producers had closed down and were not visited. Table 1 of the production verification report provides a list of the 16 plants with data on the name of the plant, the 2006 production quota allocated by SEPA, the actual 2006 production verified, and comments on the status of the plant (closed or in production) and other relevant information. The summary also includes a list of CTC process agent applications listed in Table A-bis of the Meeting of the Parties' decision XVII/8, a list of CTC applications as feedstock, and a list of new process applications which came out of the survey conducted by SEPA.

21. The verification exercise collected from each of the plants the following information: plant identification; plant history, such as date of construction, number of CTC production lines, capacity, and baseline production for 2001 and production between 2002-2005; plant production

process; production quota for 2006 allocated by SEPA; daily production logs and product transfer records; daily and monthly CTC inventory; and data on CTC packed for sales from daily transfer records out of the product warehouse. The verification team also checked, as secondary level of information, the consumption of raw materials, chlorine, and organic raw materials like methane, methanol and ethylene from daily shift transfer records and the opening and closing stocks from the monthly production inventory. In addition, the team also calculated the CTC output to raw material consumption ratio and compared it with the theoretical values in order to determine whether or not the values varied within a reasonable range.

22. Since the production of chloromethane products generated a series of other products in addition to CTC, the team also collected information on the production of the co-products methyl chloride, methylene chloride, chloroform and perchloroethylene for a check on material balance. At the same time, the financial analyst of the team reviewed the reliability of the accounting system, invoices of purchases and sales records. The results of the technical audit and the financial audits were then compared for consistency, and on that basis the team drew its conclusion whether the plant was in compliance with the quota allocated by SEPA.

23. The verification report provided a summary of the verification carried out at each plant. It included the verification of: the CTC production, stocks and sales; supply and consumption of chlorine; supply and consumption of methane, methanol, and ethylene depending on the technology applied in the plant; a presentation of the results in tabular form of the production of CTC, co-produced chloromethane products, the raw material consumption and the ratios. The verification of each plant concluded with a comparison of results from the technical and financial audits and discussed the reasons if any discrepancies were found. The report finally presented the findings on the CTC production level, raw material consumption and ratio, and number of operating days.

24. The verification team reported that 7 of the 10 CTC producers visited produced more than the quotas allocated by SEPA and as a result the total CTC production was 41,679.95 metric tonnes in 2006. However 10,475.62 metric tonnes was reported by SEPA as being used as a feedstock in the production of non-ODS chemicals, which included 5,834.92 metric tonnes being converted by CTC producers to methyl chloride (CM1). Table 2-2 in the summary of the 2006 CTC production verification report presents a list of 13 feedstock uses of CTC in the production of non-ODS chemicals in 2006, which was provided by SEPA with details on the applications, and the purchase of CTC in 2006. Another 105.6 metric tonnes was reported as destroyed.

25. In addition, a total of 4,442.03 metric tonnes of CTC was reported by SEPA as being used in process agent applications listed in Table A-bis in the Meeting of the Parties' decision XVII/8 and Table 2-1 in the report provides information on the number of application from the A-bis list, the name of the application, and CTC purchase in 2006. The survey carried out by China has found another 21 new process agent applications which have not yet been covered by any Meeting of the Parties decision. A total of 774.68 metric tonnes of CTC was reported by SEPA as being consumed by these applications in 2006. Table 2-3 contains a list of these applications, with data on name of the application and CTC purchase in 2006.

26. Finally, the verification concluded that China produced 25,882.02 metric tonnes of CTC in 2006 after netting out the 10,475.62 metric tonnes used as feedstock for non-ODS chemical production, 105.6 metric tonnes being destroyed, 4,442.03 metric tonnes for applications in A-bis list under decision XVII/8 and 774.68 metric tonnes as newly discovered process

applications. The last two deductions were based on the provisions of the Agreement of Phase II where a ceiling limit of 14,300 ODP tonnes for the applications in the A-bis list and those unknown applications are exempted from being considered as part of the consumption for compliance for China prior to 2009, so long as China committed to reporting such consumption to the Ozone Secretariat and phasing them out by 2009. The level of 25,882.02 metric tonnes, or 28,470.22 ODP tonnes was below the target of 28,662 ODP tonnes as established in the Agreement with the Executive Committee.

Verification of the consumption of CTC and CFC-113 as a process agent under Phase I in 2006

27. The verification of the consumption of CTC and CFC-113 was carried out in February 2006 by a team of two, a technical expert and a financial analyst. There was no consumption of CFC-113 in 2006 since all the CFC-113 users had moved to non-ODS technology and the CFC-113 production facility at Jiangsu Changshu 3F was confirmed by the CFC production verification team as closed and dismantled in 2005. From Phase I of the sector plan, there were only three plants which were still producing and using CTC as a process agent, while the other plants had either closed or converted to a non-ODS process. These 3 plants are

Company name	**Process agent application**
Jilin Chemical Industrial Co., Ltd.	Chlorosulphonated polyofin (CSM)
Fasten	Chlorinated Rubber (CR)
Shanghai Chlor Alkali	Chlorinated Rubber
Total	

28. The team verified the consumption of CTC at each of the three plants. The verification began by reviewing the plant history, including date of construction, number of production lines for each CTC application, and their capacities. There was also a discussion of the changes in the plant in 2006, in particular those related to the project activities. It then examined as primary data the following:

(a) CTC consumption quotas received from SEPA for 2006;

(b) CTC purchase orders and daily movement records (from outside to plant warehouse, and from plant warehouse to workshop storage);

(c) CTC inventory, including the amount of CTC that remained in plant warehouse and in production system; and

(d) Monthly CTC consumption which was calculated as: CTC opening stock + CTC purchase – CTC closing stock.

29. The team also collected as supporting data secondary information on packaging and movement records of CR, and CSM from the production line to product warehouse; dispatching and movement records of CR and CSM out of the product warehouse for sales; inventory records of CR and CSM stocks; the number of operating days; and CTC/CR and CTC/CSM consumption ratios.

30. The report provides a summary on each of the enterprises visited, including a description of the enterprises, the verification carried out and the results. The results contain a presentation of the opening and closing stocks, and procurement of CTC for the year. There is also an assessment of the actual production of the final product of the plant obtained by examining the production and movement of the inventory. The CTC purchased by the plant was treated as part of the national consumption in 2006 and was compared to the quota issued by SEPA.

31. It has been confirmed by the verification that the 2006 CTC purchases in the PA Sector (Phase I) were as follows:

Company name	**Process agent application**	**Consumption in 2006**	
Jilin Chemical Industrial Co., Ltd.	CSM	229.62 MT	252.582 ODP tons
Fasten	Chlorinated Rubber	100.00 MT	110.000 ODP tons
Shanghai Chlor Alkali	Chlorinated Rubber	89.86 MT	98.846 ODP tons
Total		419.48 MT	461.428 ODP tons

32. Therefore the verified CTC consumption in 2006 was 461.428 ODP tonnes, which was below the 2006 maximum allowable CTC consumption (493.00 ODP tonnes) in the Agreement of Phase I of the CTC sector plan.

33. The verification provided an update on the struggling CSM emission control project stating: "The new CSM line's process and equipment modification for reducing CTC consumption by emission control was still unsuccessful. No progress was made in 2006. Due to the technical and financial reasons and, more importantly, the compliance with China environmental protection requirements, the company does not exclude the option to shut down and dismantle all its CSM production lines before 2010."

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Verification of the 2006 CTC production and the consumption of CTC and CFC-113 as process agent under Phase I of the sector plan

34. The verification was carried out in accordance with the verification framework which the World Bank developed for carrying out verifications of CTC phase-out sector plans for China and India, and which was noted by the Executive Committee. The teams that implemented the exercises have the relevant expertise and have undertaken the same verifications in the previous years.

35. According to the arrangement agreed upon in the Agreements for Phase I and Phase II of the CTC sector plan, this verification covers the CTC production for both phases but only the consumption in Phase I of the sector plan. The verification of the CTC consumption in Phase II will be submitted by the World Bank to the 52nd Meeting of the Executive Committee because that verification will need to visit a significant number of companies that cannot be done in time for the first meeting of the Committee. The Agreement of Phase I of the sector plan sets four

criteria for assessing the success or otherwise of the annual work programme and these are presented in the following table, with the results of the years completed, including 2006.

CTC PRODUCTION AND CONSUMPTION IN ODP TONNES

Year	**CTC production* (Row 1 of the agreement)**		**Use of CTC for CFC feedstock consumption (Row 2 of the agreement**		**Use of CTC for the 25 PA applications (Row 4 of the agreement)**		**Use of CFC-113 for 25 PA applications (Row 5 of the agreement)**	
	Allowed	Verified	Allowed	Verified	Allowed	Verified	Allowed	Verified
Base	86,280	N/A	N/A	N/A	3,825	N/A	17.2	N/A
2001	64,152	N/A	55,139	NA	4,347	N/A	17.2	N/A
2002	64,152	N/A	45,400	NA	5,049	N/A	17.2	N/A
2003	61,514	59,860	45,333	39,839	5,049	3,080	17.2	17.1
2004	54,857	50,195	39,306	34,168	5,049	3,886	14	10.8
2005	38,686	33,080	28,446	25,811.3	493	485.02	14	3.2
2006	**28,662**	**28,470**	**21,276**	**18,590.9**	**493**	**461. 4**	**10.8**	**0**

36. The results from the verification seem to indicate that China has achieved all the targets in the Agreement for Phase I of the sector plan for the year 2006.

37. However since the verified CTC production of 28,470 ODP tonnes includes the maximum allowable consumption for Phases I and II and the allowance for CFC production, and CTC used as feedstock for CFC production in 2006 has been verified at 18,590.9 ODP tonnes, the balance should be for controlled process applications for both phases. The balance calculated as the difference between 28,470 ODP tonnes and 18,590.9 ODP tonnes is 9,879.1 ODP tonnes. It is higher than the combined maximum CTC consumption for both phases at 7,438 ODP tonnes (493 + 6,945) and also higher than the maximum allowable consumption level under the Montreal Protocol at 8,383 ODP tonnes.(Agreement of Phase II refers). Therefore there is a minimum of 1,496.1 ODP tonnes (9,879.1 ODP tonnes – 8,383 ODP tonnes) which is not accounted for from the results of the verification of CTC production and consumption for Phase I of the sector plan. This could result from the lower than planned consumption of CTC as feedstock for CFC production (21,276 ODP tonnes planned vs. 18,590.9 ODP tonnes used). However this needs to be clarified and accounted for in the verification of the consumption of CTC in Phase II of the sector plan to be submitted by the World Bank to the 52nd Meeting.

38. For the maximum allowable amount of CTC used in process agent applications listed in the interim Table A-bis of decision XVII/8, and in potential future process agent applications as identified and reported by China in its annual verification reports, the World Bank is expected to submit to the 50th Meeting the results of the survey which SEPA was conducting in China of all the unknown CTC applications as per the Agreement in Phase II. The ceiling of 14,300 ODP tonnes which the Agreement provided to cover these applications would be subject to reconfirmation by the Executive Committee on the basis of the results of the survey. The World Bank could not complete the survey in time for submission to the 50th Meeting and is submitting the results together with the verification report to this meeting.

39. A total of 4,442.03 metric tonnes of CTC was reported by SEPA as being used in process agent applications listed in Table A-bis in the Meeting of the Parties' decision XVII/8. Table 2-1 in the report provides information on the number of application from the A-bis list, the name of the application, and the CTC purchased in 2006. The survey carried out by China has also found

another 21 new process agent applications which have not yet been covered by any Meeting of the Parties decision. A total of 774.68 metric tonnes of CTC was reported by SEPA as being consumed by these applications in 2006. Table 2-3 contains a list of these applications, with data on name of application and the CTC purchased in 2006. The total of the two categories comes to 5,216.71 metric tonnes or 5,738.7 ODP tonnes, which is below the ceiling of 14,300 ODP tonnes.

RECOMMENDATION

40. The Secretariat recommends that the Executive Committee:

(a) Takes note of the verification report of the CTC production and consumption for process agent of Phase I of the China CTC sector plan for 2006;

(b) Releases the 2007 annual tranche of US $5 million and US $375,000 in support cost for the implementation of the 2007 work programme of Phase I of the sector plan, since the verification indicates that China met the criteria of the Agreement of Phase I of the sector plan in 2006;

(c) Takes note of the results of the survey by the World Bank of the CTC consumption in process agent applications listed in Table A-bis of decision XVII/8 and process agent applications which have been newly identified;

(d) Considers the need to reconfirm the ceiling of 14,300 ODP tonnes set in the Agreement for these applications; and

(e) Requests the World Bank to clarify the over 1,496.1 ODP tonnes of CTC production which is not accounted for in the results of the verification of CTC production and consumption for process agent uses in 2006 in Phase I as part of the verification of CTC consumption in Phase II of the sector plan due for the 52nd Meeting.

CFC PRODUCTION PHASE-OUT PROGRAMME: 2006 VERIFICATION REPORT

PROJECT DESCRIPTION

Introduction

41. According to the Agreement for the China CFC production sector plan that required the annual programme to be submitted for review at the last meeting of the year preceding the year of the programme, the World Bank submitted the 2007 annual programme for the CFC production sector phase-out plan in China to the 50th Meeting in November 2006. The Executive Committee decided "to approve the 2007 work programme for the China CFC production closure programme, noting that the request for funding and support costs would be submitted by the World Bank to the 51st Meeting together with a verification report on the implementation of the 2006 annual programme" (decision 50/38).

42. Accordingly, the World Bank is submitting to the 51st Meeting the verification report on the implementation of the 2006 China CFC production phase-out programme and the request for the release of US $24 million and US $1.8 million for the implementation of the 2007 annual programme. The submission of the World Bank also includes a report on China CFC exports in 2006, which is provided in compliance with decision 50/38, which requests "the World Bank to provide further details on the proposed scheme for controlling CFC exports for 2006 and 2007 through five CFC producers in the revised 2007 work programme to be submitted together with the verification of the 2006 annual work programme at the 51st Meeting".

43. For reasons of economy, only the summary of the verification is attached. The full verification report and the report on China CFC exports in 2006 could be made available to members of the Executive Committee upon request.

Verification of the 2006 CFC production in China

44. The verification was conducted between late January and early February 2007 by a team of three members with relevant technical and financial expertise and headed by Mr. Vogelsberg, a consultant who had been carrying out verifications of the CFC plants in China on behalf of the World Bank for the past seven years. The team visited the 6 remaining CFC plants (from the original 36) that were producing under the quota system in the 2006 annual programme (identified by the SRIC audit report numbers as A8, A10, B11, B8, B12, and B14). The report contains a summary of conclusions and 4 annexes. The summary of the conclusions provides the overall assessment of the verification team on the performance of 2006 work programme in achieving the targets set in the Agreement and the aggregate data on the total CFC production, the breakdown into the different substances of CFC-11, CFC-12, CFC-113, CFC-114, CFC-115, CFC-13, the number of plants for each substance, the product inventory change in 2006, the ratio and the overall consumption of feedstock. The overall assessment of the verification concludes that China complied with the annual CFC production target set out in the Agreement for the year 2006, with the total actual production of CFCs being 13,079.6 ODP tonnes against the target of 13,500 ODP tonnes set in the Agreement. Of that total, 19.5 ODP tonnes is confirmed to be the total production of CFC-13, which is below the quota of 20 ODP tonnes allocated to the plant by SEPA, and also below the maximum allowable production of 21.36 ODP tonnes under the Montreal Protocol control schedule.

45. Annex I of the report contains a description on a plant-by-plant basis of the verification process and a discussion of the findings. It starts with an observation of the changes that may or may not have been introduced to the plant since the last visit of the team and continues with an assessment on the quality of record-keeping in the plant. It describes the types of records that were used to conduct the verification and the relevance of these records to the verification exercise. The team followed the production process and checked the paper trail on the movement of the raw materials CTC and HF to the CFC production units, the transfer of finished products from the day tank to the packaging area and then the transfer of the packaged product in containers to the sales warehouse. This process involved the collection and tabulation of the daily, monthly and yearly data. There was a cross check of using the data from the financial audit which proceeded simultaneously. The conclusion of the verification of each plant consists of an assessment of the compliance of the company with the production quota assigned by SEPA. Since many of the plants would terminate CFC production in 2007 and dismantle their equipment, the verification team took a photo record of the equipment destined for removal and disposal.

46. The verification team noticed significant deterioration in the operating conditions in quite a few of the plants due to lack of maintenance resulting from the prospect of closure in the near future. A leakage in the receiver tank in the CFC-13 plant was recorded, which had some undetected for a significant period of time and led to the emission of CFC-13. This could have been avoided if management had instructed its engineers to conduct more frequent checks with the halide leak detector. Another producer had a truck load of 2.5 metric tonnes of CTC diverted by its driver, offloaded to an unknown destination and refilled the truck with EDC, another chemical. This was not detected by the plant until the yield of CFC-11 came down and CTC consumption increased significantly. The verification team was not able to confirm the whereabouts of the missing 2.5 metric tonnes of CTC.

47. The production facility for CFC-113 at Changsu 3F was dismantled between 20-24 December 2005 under the supervision of local environment bureau (EPB) and received a certificate for dismantling on the 26 April 2006. The verification team viewed the VCD that described the whole process of dismantling and checked all the relevant documents, such as the certification letter by the local EPB, the receipt for disposal of scrap from dismantling and destruction of the critical equipment, as well as the reassignment of the personnel from the original CFC-113 plant. Annex II presents the findings in the format approved by the Executive Committee for complete plant closures.

48. Annex III sets out the results for each producing plant in the format approved by the Executive Committee and covers data by month on production capacity, product mix, production quota and actual CFC production, feedstock consumption ratio and inventory changes in feedstock, and the number of days of production. Comparative data on these parameters since the beginning of the phase-out programme has been provided to facilitate a check on consistency.

49. Annex IV contains the financial audit results presented by the financial specialist in the verification team. The focus of the audit is the verification of CFC production obtained from the examination of financial records on the procurement, consumption of raw materials and sales. The report provides the audited results of CTC, HF, and CFC-113a consumption and CFC production plant by plant.

China CFC export in 2006

50. The verification team collected CFC export data from each of the producers. They examined the data by comparing the copies of custom declarations obtained from the plants with the financial records of the plants, and found consistency between the two. They tried to check the custom declarations against the export approvals issued by SEPA, which contained information about the seller, destination and quantity of CFC exports and found that the destinations of CFC exports in the custom declarations were the same as the ones in the SEPA licences and that the quantities of CFC exports equalled or were less than the quantities in the SEPA licences.

51. One of the CFC plants, Juhua exported to Russia 324 metric tonnes of CFC-12 for MDI use, claiming to have the letter from Russia requesting it. Changshu 3F, another producer exported 74.03 metric tonnes of CFC-11 to Dupont USA, representing the balance from a licence approved in 2005 based on a letter from US EPA certifying that it had been approved by the Parties in accordance with decision X/14, and that the use of CFC-11 in this case would not be taken into account in the calculation of production and consumption of the exporting country.

52. However, the World Bank acknowledges this is not a complete import/export verification for 2006 because the import/export data should be checked with the official statistics data of the China General Administration of Custom (GAC), which will not be available until late April to May 2007. In case there is any discrepancy between them, the latter shall prevail. Therefore they entitled the current Report as "China CFC Export in 2006".

53. The CFC exports from CFC producers are reported to be as follows:

Table 1

EXPORT TO ARTICLE-5 COUNTRIES

Country	ODS (MT)	ODP tonnes	Chemicals	Producer
Chile	5.58	1.85	R502	Changsu 3F, ZCRI
Colombia	4.08	1.35	R-502	ZCRI
Ecuador	0.34	0.11	R-502	Changsu 3F
Egypt	6.12	2.03	R-502	ZCRI
Korea	35.08	11.63	R-502	ZCRI
Lebanon	1.632	0.54	R-502	Changsu 3F
Malaysia	2.176	0.72	R-502	Changsu 3F
Saudi Arabia	13.94	4.62	R-502	ZCRI, Changsu 3F
Singapore	16.76	5.56	R-502	ZCRI
Syria	1.36	0.45	R-502	Changsu 3F
Trinidad and Tobago	2.7064	0.90	R-502	Changsu 3F
Bangladesh	15.64	15.64	CFC-12	Dongyang
Colombia	15.64	15.64	CFC-12	Dongyang
Costa Rica	10.88	10.88	CFC-12	Changsu 3F
Ghana	6.8	6.8	CFC-12	Changsu 3F
Iran	10.88	10.88	CFC-12	Changsu 3F

Country	ODS (MT)	ODP tonnes	Chemicals	Producer
Malaysia	76.99	76.99	CFC-12	Changsu 3F, Juhua
Philippines	15.64	15.64	CFC-12	Changsu 3F
Uruguay	8.71	8.71	CFC-12	Dongyang
Korea	2	1.6	CFC-113	Changsu 3F
Argentina	4	4	CFC-114	ZCRI
Total	**256.96**	**196.54**		

Table 2

EXPORT TO NON-ARTICLE 5 COUNTRIES

Country	ODS MT	ODP tonnes	Chemicals	Producers
Russia	1.36	0.45	R-502	Changsu 3F
The Netherlands	20.81	6.92	R-502	ZCRI
Total	**22.17**	**7.37**		

Note: Export to non-Article 5 countries for essential use (MDIs) and for insignificant emission from process agent applications as per Meeting of the Parties decision.

Table 3

EXPORT FOR ESSENTIAL USES AND PROCESS APPLICATIONS TO NON-ARTICLE 5 COUNTRIES

Country	ODS MT	ODP tonnes	Chemicals	Producers
USA (PA)	74.03	74.03	CFC-11	Changsu 3F
Russia (MDI)	324.00	324.00	CFC-12	Juhua
UK	40.00	32.00	CFC-113	Changsu 3F
Total	**438.03**	**430.03**		

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Overall assessment of the 2006 verification in light of the guidelines for verification of ODS production phase-out

54. The verification of the implementation of the 2006 work programme was carried out by the same team which had been conducting this exercise for the past several years. It was carried out in accordance with the guidelines and methodology approved by the Executive Committee. The results of the verification are presented in line with the approved formats, and are supported by adequate documentation that enables tracking and validation of CFC production, and the use of feedstock. The results of the verification of the 2006 CFC production confirm that China complied with the annual CFC production target set out in the Agreement for the year 2006, with the total actual production of CFCs at 13,079.6 ODP tonnes against the target 13,500 ODP tonnes set in the Agreement.

55. The Secretariat shares the concern expressed by the verification team over the fast deterioration in the operating conditions of some of the CFC plants and the resulting increase in the level of emissions. Before the final closure, there should be adequate maintenance to ensure safety and control of emissions. The plant closures planned in the second half of 2007 needs to be done in an environmentally responsible manner and the remaining inventory of CFCs and feedstock should be accounted for and monitored.

Compliance with the Montreal Protocol control schedule for CFC-13

56. It has been confirmed by the verification team that China's production of CFC-13 in 2006 was 19.5 ODP tonnes, which is below the 21.36 ODP tonnes of maximum allowable production under the Montreal Protocol control schedule for CFC-13 production.

China CFC exports in 2006

57. The Secretariat appreciates the effort by the World Bank in complying with the decision of the Executive Committee by collecting the export data from the CFC producers. However this does not constitute verification of China's CFC imports/exports (as is acknowledged by the World Bank) since the data has not been validated by the official data from the General Administration of Custom. In the clarifications provided by the World Bank, the Secretariat did not receive a definitive answer as to whether there were still distributors of CFCs in 2006 as in 2005, other than the CFC producers, because this report does not cover any distributors.

RECOMMENDATIONS

58. The Secretariat recommends that the Executive Committee:

(a) Releases to the World Bank US $24 million for the implementation of the 2007 work programme of the China CFC production sector agreement, as well as US $1.8 million in support costs for the World Bank, in light of the verification results that China has achieved the CFC production reduction target as established in the CFC production sector agreement for the year 2006;

(b) Requests the Government of China to ensure that CFC plants are being adequately maintained for safety and emission control prior to full closure, and that the dismantling of these plants will be carried out in an environmentally responsible manner in 2007; and

(c) Takes note of the report on the China 2006 CFC export, with the understanding that it does not constitute the verification of China's CFC exports for 2006, as it has not been validated against the official data from the General Administration of Customs for 2006.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS
THE PEOPLE'S REPUBLIC OF CHINA

PROJECT TITLE	BILATERAL/IMPLEMENTING AGENCY
Refrigeration servicing sector CFC phase-out plan (third tranche)	Japan, UNEP and UNIDO

NATIONAL CO-ORDINATING AGENCY:	SEPA/FECO

LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT

A: ARTICLE-7 DATA (ODP TONNES, 2005, AS OF FEBRUARY 2007)

CFC	13,321.7		

B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2005, AS OF FEBRUARY 2007)

ODS	Aerosol	Foam	Ref. Mfg.	Ref. Servicing	Solvents	Process agent	Fumigant
CFC-11	166.96	6,085.29	366.38	240.00			
CFC-12	595.27	108.00	691.84	4,065.64			
CFC-115				129.15			

CFC consumption remaining eligible for funding (ODP tonnes)	

CURRENT YEAR BUSINESS PLAN: Total funding US $1,505,000: total phase-out 1,382.0 ODP tonnes.

PROJECT DATA		2004	2005	**2006**	2007	2008	2009	2010	Total
CFC-12 (ODP tonnes)	Montreal Protocol limit	6,934[2]	5,713	**5,637**	5,805	406	406	0[4]	
	Annual consumption limit	5,083[2]	4,572	**3,790**	2,997	2,317	1,786	1,181[3]	
	Annual phase-out from ongoing projects	0.0	0.0	**0**	0	0	0	0	0
	Annual phase-out newly addressed	0.0	511	**782**	793	680	531	605	3,902
	Annual unfunded phase-out	0.0	0.0	**0.0**	0.0	0.0	0.0	0.0	0.0
TOTAL ODS CONSUMPTION TO BE PHASED OUT		0.0	511	**782**	793	680	531	605	3,902
Total ODS consumption to be phased-in (HCFCs)									
Final project costs (US $):									
Funding for Lead IA: UNIDO		550,000	0	**700,000**	700,000	700,000	785,000	0	3,435,000
Funding for Cooperating IA: Japan		1,000,000	3,000,000	**0**	0	0	0	0	4,000,000
Funding for Cooperating IA: UNEP		0	450,000	**0**	0	0	0	0	450,000
Total project funding		1,550,000	3,450,000	**700,000**	700,000	700,000	785,000	0	7,885,000
Final support costs (US $):									
Support cost for Lead IA: UNIDO		41,250	0	**52,500**	52,500	52,500	58,880	0	257,630
Support cost for Cooperating IA: Japan		130,000	390,000	**0**	0	0	0	0	520,000
Support cost for Cooperating IA: UNEP		0	58,500	**0**	0	0	0	0	58,500
Total support costs		171,250	448,500	**52,500**	52,500	52,500	58,880	0	836,130
TOTAL COST TO MULTILATERAL FUND (US $)		1,721,250	3,898,500	**752,500**	752,500	752,500	843,880	0	8,721,130
Final project cost effectiveness (US $/kg)									5.48

(1) According to the "Accelerated CFC and Halons Phase-out Plan in China", including CFCs Annex, Groups I and II.
(2) Estimate.
(3) Service tail requirement to be covered from stockpile.
(4) Except for essential uses as agreed by Parties.

FUNDING REQUEST: Approval of funding for the third tranche (2006) as indicated above.

SECRETARIAT'S RECOMMENDATION	Blanket approval

PROJECT DESCRIPTION

59. On behalf of the Government of the People's Republic of China (China), UNIDO as the lead implementing agency, has submitted to the 51st Meeting of the Executive Committee a funding request for the third tranche of the refrigeration servicing sector CFC phase-out plan for China, at a total cost of US $700,000 plus agency support costs of US $52,500. The request was accompanied by a report on project implementation during 2006, and an annual implementation plan for 2007. The submission also contained a verification report for the CFC-12 consumption for China in 2005. The tranche had been submitted originally to the 50th Meeting, but was subsequently withdrawn because of the then incomplete verification.

Background

60. The refrigeration servicing sector CFC phase-out plan for China was approved at the 44th Meeting of the Executive Committee, with UNIDO as lead agency and Japan as cooperating bilateral agency. Subsequently, the agreement was amended to also include UNEP as a cooperating implementing agency. The implementation of this refrigeration servicing sector CFC phase-out plan supports China in meeting its Montreal Protocol obligations, including the complete phase-out of the controlled use of CFCs prior to 2010. In order to achieve these targets, a series of investment, non-investment, technical assistance and capacity building activities will be, and are being, implemented by the People's Republic of China with the assistance of UNIDO, UNEP and Japan. The total funds approved in principle for the plan amounted to US $7,885,000 plus agency support costs of US $836,125.

61. UNIDO submitted a verification of the 2005 consumption in the refrigeration-servicing sector, which was determined by using China's total CFC-12 consumption and deducting from that total the consumption in other sectors. China has submitted with this tranche for the first time a verification of CFC-12 export figures for 2005. That year, total consumption of CFCs in the refrigeration servicing sector was 4,305.65 ODP tonnes, 266.35 tonnes (6 per cent) less than the consumption limit of 4,572 ODP tonnes set for that year.

62. The activities planned, namely, training of technicians, and update and dissemination of training manuals has been carried out. In addition to the planned two train-the-trainers programmes, three more have been held. However, while instead of the originally envisaged 2,000-2,300 technicians to be trained during 2006, only 1,500 received training. The previous tranche focussed largely on recovery of CFC-12 from MAC systems at the end of life. The bidding process for the related recovery and recycling equipment is virtually completed, with delivery expected in the first half of this year.

63. During the implementation of the previous tranches, several meetings were held between China and the implementing agencies, to review and evaluate the progress and achievements of the project. It was decided that, in addition to the mobile air-conditioning servicing sector (MAC), the servicing of chillers, commercial and domestic refrigeration equipment and appliances was also very important, because of the significant potential for recovery of CFCs in these sectors.

64. The implementation plan for 2007 covers a large number of activities. As compared to the 2006 programme, which was very focussed on the MAC subsector and end-of-life recovery,

the 2007 programme is significantly broader. Its activities cover also the commercial, domestic and industrial refrigeration subsectors. These include, in addition to general activities such as monitoring, reporting and public awareness, the development of a code of good service practices, equipment for regional training centres for the commercial and domestic refrigeration and chillers subsectors, further training of trainers and subsequent training of technicians for these subsectors as well as refrigerant recovery and recycling.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

65. UNIDO provided, on behalf of China, a verification of the consumption of CFC-12 in the refrigeration servicing sector in 2005. According to the verification the CFC-12 consumption targets for the sector for the year 2005 have been met.

66. The report on activities in 2006 shows a close adherence to the plan and good progress in the implementation, which is fully in line with that expected from a successful project. Delays of less than half a year in reaching the ambitions objectives for the 2006 technician training and equipment supply are not likely to be critical.

67. The strong focus of the programme on MAC end-of-life recovery and recycling has been significantly softened. The Secretariat welcomes the fact that China has decided to broaden the approach of CFC phase-out in the servicing sector in a manner that in the opinion of the Secretariat, is likely to increase the benefits of this project in phasing out CFC-12 in China.

RECOMMENDATION

68. The Fund Secretariat recommends blanket approval of the third tranche of the project, with associated support costs, at the funding levels shown in the table below:

	Project Title	Project Funding (US $)	Support Cost (US $)	Implementing Agency
	Refrigeration servicing sector CFC phase-out plan (third tranche)	700,000	52,500	UNIDO

CHINA PROCESS AGENT SECTOR PLAN

PHASE I

2006 CTC Production Verification Report

The World Bank

February 2007

I. Summary

The CTC Verification Team verified, using the World Bank's Terms of Reference (TOR) as guidance, the production of each of the nine CTC producers and one CTC residue distillation plant presently producing in China. It was confirmed by the verification and included in the summary report that the 2006 CTC production in China was **28,470.22 ODP tonnes CTC**, which was below the Executive Committee/China agreed amount of **28,662.00 ODP tonnes CTC** and below the SEPA issued quota of **30,666.90 ODP tonnes CTC**.

In conclusion, the Verification Team confirmed that each producer with seven exceptions had produced within the production quotas assigned to them by SEPA. Of the seven exceptions, three companies (CTC 02, CTC 14 and CTC 16), claimed that their over-produced CTC was sold to non-ODS feedstock consumers or destroyed by incineration. One company (CTC 09) claimed that its over quota produced CTC had been used as a feedstock to produce methyl chloride (CM1) based on its own technology. One company (CTC 15) claimed that some CTC was converted to CM1 and the rest was sold to non-ODS feedstock consumer. One company (CTC 13) claimed that its over-produced CTC was the waste CTC purchased from a chlorinated rubber company that was closed in 2005. The waste CTC was distilled and sold. Finally, another company (CTC 04) claimed that all its produced CTC was converted to cinnamic acid. This company's CMs facility was new in 2006 and SEPA only allowed the company to use its produced CTC as a feedstock to make non-ODS chemical.

Also, the Verification Team confirmed that in 2006 one dedicated CTC production line located in CTC 11 was completely dismantled. However, in the same period, two new CMs production lines were installed and commissioned within two existing CMs producers (CTC 09 and CTC16), adding a new CMs capacity totaling 160,000 MT/a. Accordingly, the co-produced CTC accounts for about 3 to 5% of the new CMs total. Another producer (CTC 02) expanded its existing CMs capacity from 118,500 MT to 184,000 MT by adding two new reactors. The company claimed that the result of expanding its capacity could reduce its CTC production from 25,000 MT to 12,800 MT by modifying the process control and reaction conditions.

The summary of each plant's verified CTC production and assigned quota is presented in Table 1 below. The detailed production, raw material consumption, financial figures for each verified producer and the pictures of one dismantled CTC production line are included in the ANNEXES to the summary report.

Table1 1: Summary of quotas issued by SEPA and verified CTC production in 2006

Sector Plan #	Name of CTC producer	2006 CTC Production Quota, MT	Verified CTC Production in 2006, MT	Comments
CTC 01	Luzhou North Chem. Industries Co., Ltd.	1,246.00	1,202.54	
CTC 02	Zhejiang Juhua Fluorochemical Co., Ltd.	13,606.00	14,096.66	Plant claimed that 519.63 MT was sold to non-ODS feedstock consumers. 6,724.14 MT sent to CFC plant as feedstock for producing CFC-11 /12 products.
CTC 03	Liaoning Panjing No. 3 Chemical Plant	0	0	Plant closed in 2001.
CTC 04	Chongqing Tianxuan Chemical Co., Ltd.	0	95.05	One new CMs production line was installed and commissioned in 2006. 95.05 MT CTC was sent to in-plant workshop for producing cinnamic acid as non-ODS feestock.
CTC 06	Chongqing Tianyuan Chem General Plant	0	0	Plant closed April 16, 2004.
CTC 07	Taiyuan Chemical Industrial Co., Ltd.	0	0	Plant closed in 1998.
CTC 08	Luzhou Xinfu Chemical Industry Co., Ltd.	0	0	Plant closed in 2005.
CTC 09	Jiangsu Meilan Chemical Co., Ltd.	1,253.00	5,538.77	4,331.11 MT sent to CTC conversion facility for converting to CM1. 1,207.66 MT sent to CFC plant as feedstock for CFC production.
CTC 10	Guangzhou Hoton Chem (Group) Co., Ltd.	0	0	Plant closed in 1997.
CTC 11	Sichuan Honghe Fine Chemical Co., Ltd.	3,451.00	3,449.75	One dedicated CTC production line was dismantled in 2006.
CTC 12	Shanghai Chlor-Alkali Chemical Co., Ltd.	4,859.00	4,859.00	
CTC 14	Wuxi Greenapple Chemical Co., Ltd.	1,000.00	1190.52	Plant claimed that 189.07MT was sold to non-ODS feedstock consumers and 1.5 MT was sent for pilot test of diphenyl ketone production.
CTC 15	Shandong Jinling Chemical Group Company	850.00	5,476.11	345.38 MT was sent to CTC conversion facility for converting to CM1. Besides, the plant claimed that 4,305.64 MT CTC was sold to non-ODS feedstock consumers.
CTC 16	Shandong Dongyue Fluoro-Silicon Material Co., Ltd.	1,018.00	5,165.55	105.60 MT sent to incinerator for destruction and 1,048.49 MT sent for CTC conversion facility for converting to CM1. Besides, the plant claimed that 2931.20 MT CTC was sold to non-ODS feedstock users.
CTC MT Subtotal Production		**27,283.00**	**41,073.95**	
CTC 05	Chongqing Tiansheng Chemical Co., Ltd.	0	0	CTC residue distillation plant closed in 2005.
CTC 13	Quzhou Jiuzhou Chemical Co., Ltd.	596	606	Plant claimed that the over-produced 10.75 MT CTC was the waste CTC purchased from a chlorinated rubber company that was closed in 2005. The waste CTC had been included in 2005 verification and, therefore, it was out of the 2006 CTC production quota control.
CTC MT Subtotal by Distillation Plant		**596**	**606**	
Verified 2006 CTC Total Production in China		**27,879.00**	**41,679.95**	Verified by WB
2006 CTC Uses for Table A-bis Applications[1]		**4,442.03 MT**		Reported by SEPA, see Table 2-1
2006 CTC Uses for Non-ODS Feedstock Applications[2]		**10,475.62 MT**		Reported by SEPA, see Table 2-2
2006 CTC Uses for New PA Applications[3]		**774.68 MT**		Reported by SEPA, see Table 2-3
2006 CTC Destruction by Incineration		**105.60 MT**		Reported by SEPA, see Table 2-4
2006 CTC Production in China[4]		**25,882.02 MT**		**28,470.22 ODP tonnes**
Agreement Limit on 2006 CTC Production in China		**26,056.36 MT**		**28,662.00 ODP tonnes**

[1] As defined by Table A-bis of Decision XVII/8.
[2] Include CTC conversion to methyl chloride (CM1).
[3] To be reviewed and add to the list of process agent applications by the MOP at a future meeting.
[4] 2006 CTC Production in China = Verified 2006 CTC Total Production – SEPA reported 2006 CTC uses for (Table A-bis applications + non-ODS chemical applications + new PA applications + destructed by incineration)

II. Use of CTC as feedstock for non-ODS production

SEPA reported that China had non-ODS feedstock users consuming **15,692.33 MT** CTC during the verification year of 2006. This amount of CTC non-ODS feedstock consumption includes newly identified CTC feedstock applications; some PA applications listed in the interim Table A-bis of Decision XVII/8; and new PA applications identified in China but not yet reviewed by the Parties. SEPA also reported that in 2006 China destroyed **105.60 MT** CTC by incineration.

The Verification Team noted that the PA applications as listed in the interim table A-bis of Decision XVII/8 were still accounted by SEPA as feedstock uses in 2006. SEPA explained that this was agreed by a special note with the Executive Committee.

The SEPA-reported 2006 CTC non-ODS feedstock consumption (including Table A-bis and new PA applications) and destruction have been deducted from the overall CTC production verification total (see Table 1). The Bank's Verification Team did not visit any company that used CTC as a feedstock for non-ODS chemical production during its 2006 verification. Detailed information reported and verified by SEPA is presented in Tables 2-1 to 2-5 as below.

Table 2-1: Use of CTC for PA applications under Decision XVII/8 in 2006, MT

No.	Application No. in decesion XVII/8	Process agent applications[5]	CTC purchase in 2006, MT	Reported by
1	44	Prallethrin/ ES-Prallethrin	165.70	SEPA
2	45	2-Methoxybenzoylchloride	19.80	SEPA
3	46	O-Nitrobenzaldehyde / M-Nitrobenzaldehyde	420.48	SEPA
4	49	Benzophenone	675.26	SEPA
5	51	3-Methyl-2-Thiophenecarboxaldehyde	12.00	SEPA
6	54	2-Thiophene ethanol	103.30	SEPA
7	56	Levofloxacin	66.00	SEPA
8	57	Cinnamic acid	247.58	SEPA
9	59	3,5-DNBC/triiodoisophthalic	17.50	SEPA
10	60	Fipronil	28.00	SEPA
11	61	Processing of Aluminium, Uranium	67.20	SEPA
12	63	3,3,3-trifluoropropene	638.64	SEPA
13	64	Triphenylmethyl chloride	596.70	SEPA
14	65	Tetrachloride dimethylmethane	300.72	SEPA
15	66	4,4-difluorodiphenyl ketone	240.14	SEPA
16	67	4-trifluoromethoxybenzenamine	357.11	SEPA
17	68	1,2-benzisothiazol-3-ketone	280.60	SEPA
18	68	1,2-Benzisothiazol-3-Ketone	205.30	SEPA
	Total Table A-bis uses in MT		**4,442.03**	

[5] As defined by Table A-bis of Decision XVII/8.

Table 2-2: Use of CTC for non-ODS feedstock applications in 2006, MT

No.	Application No. in Decesion XVII/8	Non-ODS feedstock applications[6]	CTC purchase in 2006, MT	Reported by
19	NA	DV methyl ester	2620.00	SEPA
20	NA	2-methyl-3-(trifluoromethyl)aniline	60.00	SEPA
21	NA	HFC-236fa	616.53	SEPA
22	NA	HFC-245fa	693.00	SEPA
23	NA	HFC-365mfc	0.00	SEPA
24	NA	DFTFB	0.00	SEPA
25	NA	Flunarizine Hydrochloride	4.00	SEPA
26	NA	Astaxanthin	31.50	SEPA
27	NA	Trifluoromethoxybenzen	383.10	SEPA
28	NA	DPGA	49.57	SEPA
29	NA	Fluorescent bleaching agent intermediate	177.90	SEPA
30	NA	Frochloride lubricant	5.10	SEPA
52	NA	Converted to CM1	5,834.92	SEPA
	Subtotal non-ODS feedstock applications in MT		**10,475.62**	

Table 2-3: Use of CTC for new PA applications identified in 2006, MT

No.	Application No. in Decesion XVII/8	New process agent applications[7]	CTC purchase in 2006, MT	Reported by
31	NA	Chloromethane-sulfoniceaster	3.90	SEPA
32	NA	2-(p-Bromomethylphenyl) propionic acid	90.00	SEPA
33	NA	2-methoxy-3-methylpyrazine	7.10	SEPA
34	NA	4-(trifluorometoxy)aniline (TFAM)	82.93	SEPA
35	NA	4-Bromoanisole	8.00	SEPA
36	NA	4-Bromo-benzenesulfonyl	68.45	SEPA
37	NA	4-Chloro-2-Trichloromethyl pyridine	30.00	SEPA
38	NA	Chloropyrazine	14.20	SEPA
39	NA	diamino pyrazole sulfate	20.00	SEPA
40	NA	Dichloro-p-cresol	29.40	SEPA
41	NA	Dope	190.00	SEPA
42	NA	Doxofylline	17.30	SEPA
43	NA	Ethly γ-chloroacetoacetate	75.57	SEPA
44	NA	Ethyl-4Chloroacetoacetate	20.00	SEPA
45	NA	Ozagrel	15.90	SEPA
46	NA	PVDF	36.38	SEPA
47	NA	Single-ester	3.00	SEPA
48	NA	Ticlopidine	19.80	SEPA
49	NA	Using as G.I.	9.90	SEPA
50	NA	β-Bromopropionicacid	3.00	SEPA
51	NA	Acrylamide（N-(1,1-dimethyl-3-oxobutyl)（DAAM）	29.85	SEPA
	Subtotal new process agent applications in MT		**774.68**	

[6] As identified by China State Environmental Protection Administration (SEPA).
[7] To be reviewed and add to the list of process agent applications by the MOP at a future meeting.

Table 2-4: CTC destructed by incineration in 2006, MT

No.	Disposal of CTC	CTC destroyed by incineration[8], MT	Reported by
1	Destroyed by incineration	105.60	SEPA
	Subtotal CTC destroy in MT	**105.60**	

Table 2-5: Summary of SEPA-reported CTC uses for non-ODS feedstock applications, Table A-bis and new PA applications, and destructed by incineration in 2006, MT

No.	Uses of CTC for	CTC consumed or incinerated, MT	Reported by
1	PA applications as defined by Table A-bis of Decision XVII/8	4,442.03	SEPA
2	New PA applications to be reviewed by the MOP	774.68	SEPA
	Total CTC used for Table A-bis and new PA applications in 2006, MT	**5,216.71**	
3	Destruction by incineration	105.60	SEPA
	Total CTC destructed by incineration in 2006, MT	**105.6**	
4	Non-ODS feedstock applications	4,640.70	SEPA
5	Conversion to CM1 within the CM plants	5,834.92	SEPA
	Total CTC used for non-ODS feedstock applications in 2006, MT	**10,475.62**	

[8] Reported and verified by China State Environmental Protection Administration (SEPA).

CHINA CTC PRODUCTION PHASE-OUT PROGRAM
2006 VERIFICATION REPORT
February 3, 2007

CTC Verification Team

- Zhiqun Zhang (Simon), Team Leader and Technical Consultant (Canada)
- John Wilkinson, Technical Consultant (USA), attended 01/14/07 – 01/29/07
- Huang Baiji, Financial Analyst (China)
- Wu Ning, Financial Analyst (China), attended 01/09/07 – 01/19/07

Assisted and Accompanying by

- Gong Xingming, Project Officer of State Environmental Protection Administration (SEPA), attended 01/09/07 – 01/19/07
- Pan Chunyan, Project Officer of SEPA, attended 01/19/07 - 01/29/07

Verification Mission Time Frame

The mission began on January 9, 2007 in Beijing and ended in Hangzhou on January 29, 2007. In total 10 CTC production enterprises were visited as tabulated below:

Number	Name of Enterprise	Process	CM capacity as of Dec. 2006[9]	Date of visit
CTC 01	Luzhou North Chemical Industrial Co., Ltd.	Methanol-based	15,000 MT/a	Jan. 21-22, 2007
CTC 02	Zhejiang Juhua Fluorochemical Co., Ltd.	Methanol-based	184,000 MT/a	Jan. 26-27, 2007
CTC 03	Liaoning Panjin No. 3 Chemical Plant	Closed in 2001	N/A	Not visited
CTC 04	Chongqing Tianxuan Chemical Co., Ltd.	Methanol-based	12,000 MT/a	Jan. 20, 2007
CTC 05	Chongqing Tiansheng Chemical Co., Ltd.	Closed in 2005	N/A	Not visited
CTC 06	Chongqing Tianyuan Chemical General Plant	Closed in 2004	N/A	Not visited
CTC 07	Taiyuan Chemical Industrial Co., Ltd	Closed in 1998	N/A	Not visited
CTC 08	Luzhou Xinfu Chemical Industry Co., Ltd.	Closed in 2005	N/A	Not visited
CTC 09	Jiangsu Meilan Chemical Co., Ltd.	Methanol-based	240,000 MT/a	Jan. 17-18, 2007
CTC 10	Guangzhou Hoton Chemical Co., Ltd.	Closed in 1997	N/A	Not visited
CTC 11	Sichuan Honghe Fine Chemical Co., Ltd.	Methane-based Methanol-based	130,000 MT/a	Jan. 23-24, 2007
CTC 12	Shanghai Chlor-Alkali Chemical Co,	Ethylene-based	N/A	Jan. 14, 2007
CTC 13	Quzhou Jiuzhou Chemical Co., Ltd.	Residue Distillation	N/A	Jan. 28, 2007
CTC 14	Wuxi Greenapple Chemical Co., Ltd.	Methanol-Based	40,000 MT/a	Jan. 15-16, 2007
CTC 15	Shandong Jinling Chemical Group Company	Methanol-Based	120,000 MT/a	Jan. 10-11, 2007
CTC 16	Shandong Dongyue Fluoro-Silicon Material Co., Ltd.	Methanol-Based	80,000 MT/a	Jan. 12, 2006

[9] *Please note that the information regarding capacity is commercial sensitive and for the Secretariats internal use only.*

VERIFICATION METHODOLOGY USED FOR EACH PLANT VISITED

The Verification Team attempted to gather the following information from each plant in order to verify their 2006 CTC production:

- plant identification (name, technical audit number, address, contact person and function title, telephone and fax numbers, and email address);
- plant history (date of construction, number of CTC production lines, capacity in baseline year 2001, and production for 2002, 2003, 2004, 2005 and 2006);
- plant process clarification and where within the plant process would it be best to collect CTC production data for our verification;
- CTC production quotas received from SEPA for 2006;
- daily CTC production logs and CTC product transfer records in 2006;
- daily and monthly CTC storage inventory in 2006; and
- CTC packaged for sales verified from daily movement records of CTC out of the product warehouse in 2006.

Secondary information was also gathered in order to support the CTC production data:

- chlorine (Cl_2) consumption from daily shift transfer records and opening and closing stocks from monthly production inventory;
- organic raw material methane (CH_4), methanol (CH_3OH) and ethylene (C_2H_4) supply from daily transfer records;
- organics consumption from daily shift transfer records and monthly opening and closing stocks inventory;
- CTC's co-product's [methyl chloride (CM1), methylene chloride (CM2), chloroform (CM3), and perchloroethylene (PCE)] production in metric tones;
- CTC output ratios and raw material consumption ratios were calculated for CTC/ CMs, CTC/ (PCE+CTC), Cl_2/CTC, CH_4/CTC, CH_3OH/CTC, and C_2H_4/CTC. The enterprise's annual average ratio was compared with the theoretical value in order to determine whether or not the values varied within a reasonable range and generally slightly above the theoretical value.

Concurrently, a financial verification was conducted by reviewing and checking:

- the accounting system's reliability;
- the financial records related to raw material purchase, storage and transfer;
- the accounting records of CTC production, transfer and sales;
- the track number from the accounting records traced back to the original documents; and

- all inconsistencies between financial records were asked to be clarified.

Once all of the above was completed, the Verification Team would conduct a cross check on the verification results from both the production side and the financial side to ensure the data consistency and determine whether or not the Enterprise's 2006 CTC production data were verified[10]. If there were any irresolvable data differences between the financial analysis and the production verifications, the Team reported the production data. The Team also explained, if possible, the differences in the financial analysis ANNEX II.

[10] According to the guideline released by SEPA in 2006, CTC should be treated as a waste product and allocated no costs in accounting practice (Zero Cost Method). Since it is financially impossible to record the quantity changes of CTC production without allocating any cost, there were no financial records related to the CTC production for companies adopting the Zero Cost Method. Therefore, the financial verification of CTC production was not carried out on these companies that applied the Zero Cost Method in 2006, which are Chongqing Tianxuan (CTC 04) and Shangdong Dongyue (CTC16).

CHINA CFC PRODUCTION PHASE-OUT PROGRAM
2006 VERIFICATION REPORT
FEBRUARY 2, 2007

Inspection Team

F.A. Vogelsberg: Mission Leader and primary text preparation - Annex I
Hua Zhangxi: Data Summary - Annex II (Gradual Closure) and Annex III (Complete Closure)
Wu Ning: Financial Verification of CFC Production for China in 2006- Annex IV

Assisted and Accompanied By

Lin Nanfeng: (SEPA/FECO)
Wang Yong: (SEPA/FECO)

Inspection Mission Time Frame

January 21 – February 3, 2007

Enterprises in Visitation Order

Zhejiang Juhua Fluoro-Chemcial Co. Ltd- Zhejiang Province, Quzhou City
Zhejiang Dongyang Chemical Plant - Zhejiang Province, Dongyang City
Zhejiang Linhai Limin Chemical Plant – Zhejiang Province, Linhai City
Zhejiang Chemical Research Institute (ZCRI) - Zhejiang Province, Hangzhou City
Jiangsu Changsu 3F Refrigerant Co. Ltd - Jiangsu Province, Changshu City
Jiangsu Meilan Electro-chemical Co. Ltd - Jiangsu Province, Taizhou City

Report Format and Contents

- Verification conclusions for CFC Production in China for 2006.

- Annex I - Text covering details of technical effort by Vogelsberg and Hua for the six CFC Enterprises visited and inspected.

- Annex II - CFC production verification tables for gradual closure for the six Enterprises.

- Annex III – CFC Production Phase-out Verification (complete closure)

- Annex IV - Financial verification of CFC Production for China in 2006

Verification Conclusions with respect to China's CFC Production in 2006

There was one complete closure project in China CFC Production Sector 2006 (A 10, the CFC-113 production unit of Jiangsu Changshu 3 F). The only remaining CFC-113 producer was closed in 2006, therefore no CFC-113 was produced in the year. The verified overall national production of CFCs in 2006 is 13,079.567 ODP tonnes. The following table is the breakdown in accordance with various product types: The summary of product stocks for the six CFC producers in 2006 is also expressed in this table..

Type of CFC Product	Number of Producers	Total Production		Total Producer's Stock in 2006 (MT)		
		ODS (MT)	ODP(tonnes)	Opening	Closing	Change
Products belong to Annex A to the Montreal Protocol, Group I						
CFC-11	3	6,959.421	6,959.421	1,136.93	1,287.37	+153.44
CFC-12	4	5,958.352	5,958.352	2,045.67	2,544.16	+498.49
CFC-113	0	0	0	589.52	348.74	-240.78
CFC-114	1	39.990	39.990	8.10	41.05	+32.95
CFC-115	2	170.495	102.297	63.30	109.20	+45.9
Sub -total		13,128.258	13,060.06			
Product belongs to Annex B to the Montreal Protocol, Group I						
CFC-13	1	19.507	19.507	8.731	5.721	-3.01
Total National Production			13,079.567			

The targeted limit of total CFC production in 2006 was 13,500 ODP tonnes as specified in the Agreement. The total CFC production quota in 2006 issued by the Chinese Government was 13,090 ODP tonnes. Therefore the verified total actual CFC production in 2006 is 10.433 ODP tonnes lower than the quota as well as 420.433 ODP tonnes lower than the targeted limit.

The CTC Consumption for overall national CFC Production in 2003 is summarized in the following table:

CTC used for	Amount CTC (MT)
Direct consumption for CFC-11 production	8,625.27
Direct consumption for CFC-12 production	8,201.49
Direct consumption, subtotal for CFC-11 & 12	16,826.76
Indirect consumption for CFC-13 production	74.07
Overall national CTC consumption for CFC Production in 2005 (including CFC 11,12 & 13)	16,900.83

The total consumption of CTC for the production of 6,959.421 MT of CFC-11 product is 8,625.27 MT; and the overall average CTC/ CFC-11 ratio is 1.239 (theoretical 1.12). Among the three CFC-11 producers, the producer that had the lowest CTC/ CFC-11 ratio (1.219) is Zhejiang Juhua Fluoro-chemical Co. Ltd. (SRI # B14) and the highest ratio (1.316) is Jiangsu Meilan Chemical Co. Ltd (SRI# A 8).

The total consumption of HF for the production of 6,959.421 MT of CFC-11 product is 1,121.51 MT; and the overall average HF/ CFC-11 ratio is 0.161(theoretical 0.145). Among the three CFC-11 producers, the producer that had the lowest HF/ CFC-11 ratio (0.159) is Jiangsu Changshu 3F

Refrigerant Co. Ltd. (SRI# A 10); and the highest ratio (0.182) is Jiangsu Meilan Chemical Co. Ltd.(SRI# A 8).

The total consumption of CTC for the production of 5,958.352 MT of CFC-12 product is 8,201.49 MT; and the overall average CTC/ CFC-12 ratio is 1.376 (theoretical 1.272). Among the four CFC-12 producers, the producer that had the lowest CTC/ CFC-12 ratio (1.338) is Jiangsu Changshu 3F Refrigerant Co. Ltd. (SRI# A 10); and the highest (1.434) is Jiangsu Meilan Chemical Co. Ltd.(SRI# A 8).

The total consumption of HF for the production of 5,958.352 MT of CFC-12 product is 2,321.18 MT; and the overall average HF/ CFC-12 ratio is 0.390 (theoretical 0.331). Among the four CFC-12 producers, the producer that has the lowest HF/ CFC-12 ratio (0.364) is Zhejiang Juhua Fluoro-chemical Co. Ltd. (SRI # B 14) and the highest (0.450) is Zhejiang Dongyang Chemical Plant (SRI# B12).

A detailed summary of China CFC production in 2006 is attached in the next page.

The verification process as well as the assessment and findings are described in Annex I to the Report. All the verified monthly production data and raw material consumption data are recorded in the Annex II to the Report. The detailed profile of the closure of CFC-113 production unit of Jiangsu Changshu 3F Refrigerant Co. Ltd (A 10) is recorded in Annex III to the Report. The financial verification results are described in Annex IV to the Report.

SUMMARY OF CHINA CFC PRODUCTION IN 2006

Products belong to Annex A to the Montreal Protocal, Group I

CFC-11

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CTC Consumption	HF Cons'ption	Ratio CTC/ CFC-11	Ratio HF/ CFC-11
A 8	Jiangsu Meilan Chemical Co. Ltd	454.750	454.750	598.56	82.83	1.316	0.182
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	4,666.641	4,666.641	5,785.86	743.80	1.240	0.159
B 14	Zhejiang Juhua Fluoro-chemical Co. Ltd.	1,838.030	1,838.030	2,240.85	294.88	1.219	0.160
	Overall	6,959.421	6,959.421	8,625.27	1,121.51	1.239	0.161

CFC-12

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CTC Consumption	HF Cons'ption	Ratio CTC/ CFC-12	Ratio HF/ CFC-12
A 8	Jiangsu Meilan Chemical Co. Ltd.	424.870	424.870	609.10	184.77	1.434	0.435
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	1,706.480	1,706.480	2,283.14	688.68	1.338	0.404
B 12	Zhejiang Dongyang Chemical Plant	627.700	627.700	888.33	282.69	1.415	0.450
B 14	Zhejiang Juhua Fluoro-chemical Co. Ltd.	3,199.302	3,199.302	4,420.92	1,165.04	1.382	0.364
	Overall	5,958.352	5,958.352	8,201.49	2,321.18	1.376	0.390

CFC-114

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CFC-113a** Consumption	HF Cons'ption	Ratio CFC-113/ CFC-114	Ratio HF/ CFC-114
B-11	Zhejiang Chemical Research Institute	39.990	39.990	48.20	6.63	1.205	0.166

CFC-115

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CFC-113a** Consumption	HF Cons'ption	Ratio** CFC-113/ CFC-115	Ratio HF/ CFC-115
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	99.550	59.730	162.17	64.43	1.629	0.647
B-11	Zhejiang Chemical Research Institute	70.945	42.567	94.80	26.72	1.336	0.377
	Overall	170.495	102.297	256.97	91.15	1.507	0.535

Product belongs to Annex B to the Montreal Protocal, Group I

CFC-13

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CFC-12 Conumption	Ratio CFC-12/CFC-13	Indirect CTC Cons'ption*	Indirect CTC/CFC-13 ratio*
B 8	Zhejiang Linhai Limin Chemical Plant	19.507	19.507	53.60	2.748	74.07	3.796

* The indirect CTC consumptioon is the consumption for producing 53.6 MT CFC-12 in Zhejiang Juhua(B14) that used for Linhai Limin (B 8)for producing CFC-13.

** Since 2004 Zhejiang Chemical Research Institute uses CFC 113a as the raw material instead of CFC 113.