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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Fifty-fourth Meeting
Montreal, 7-11 April 2008

PROJECT PROPOSALS: CHINA

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

Process agent

- Phase-out the production and consumption of CTC for process agent and other non-identified uses (Phase I): 2008 annual programme World Bank

Production

- CFC production phase-out programme: 2008 annual programme World Bank

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**PHASE-OUT THE PRODUCTION AND CONSUMPTION OF CTC FOR PROCESS
AGENT AND OTHER NON-IDENTIFIED USES (PHASE I): 2008 ANNUAL
PROGRAMME AND VERIFICATION OF THE 2007 ANNUAL WORK PROGRAMME**

Introduction

1. The World Bank submitted the 2008 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 53rd Meeting, with the understanding that the funding for 2008 would be released only when the verification of the results of the implementation of the 2007 annual programme was available. The Executive Committee approved the 2008 annual programme for Phase I of the CTC sector plan at the 53rd Meeting at US \$3.0 million plus US \$225,000 as support cost for the World Bank but withheld the funds with the expectation that the World Bank would submit the verification of the 2007 implementation results to the 54th Meeting (decision 53/31). 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 agents under Phase I for the year 2007, and requests the release of the funds approved at the 53rd Meeting for the implementation of the 2008 work programme.

2. The verification of the production and the consumption of CTC and CFC-113 as process agents in 2007 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 2007

3. The production verification was carried out between January and February 2008 by a team of three consultants two of whom were from the team who had carried out the verification in 2004 through 2006 for the World Bank. The new member of the team was Mr. Vogelsberg who had been carrying out verifications of the CFC production phase out and has joined the CTC verification team. The team had two technical experts and one financial analyst. The report included a technical audit part and a financial audit part.

4. The summary of the technical audit part contained the results of the visits and investigation of 12 active CTC producers and one CTC residue distiller out of the 18 CTC producers in China. The other 5 producers had closed down and were not visited. Table 1 of the production verification report provides a list of the 18 plants with data on the name of the plant, the 2007 production quota allocated by SEPA, the actual 2007 production verified, and comments on the status of the plant (closed or in production) and the aggregate data on the total gross production, CTC used as feedstock in the production of non-ODS chemicals, CTC used in new PA applications, and amounts destroyed. The summary also includes a list of CTC used as feedstock, and a list of new process applications including those which were covered in Decision XIX/15 of the 19th Meeting of the Parties and those newly identified by SEPA.

5. 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 2002-2007; and plant activities in 2007 such as any process modification, capacity expansion and new facility construction. It also collected data on the production quota for 2007 allocated by SEPA, daily production logs for CTC, CM1, CM2 and CM3 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 checked, as a 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.

6. 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.

7. 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.

8. The verification team reported that the total CTC production was 43,183.31 metric tonnes in 2007. However 29,075.94 metric tonnes were reported by SEPA as being used as a feedstock in the production of non-ODS chemicals, of which the two largest amounts of CTC went into the production of methyl chloride (16,635 metric tonnes) and perchloroethylene (5,559.96 metric tonnes). Table 3 in the summary of the 2007 CTC production verification report presents a list of 23 feedstock uses of CTC in the production of non-ODS chemicals, which was provided by SEPA with details on the applications, and the purchase of CTC in 2007. Another 602.39 metric tonnes of CTC were reported as destroyed.

9. In addition, a total of 1,288.52 metric tonnes of CTC were reported by SEPA as being used in new process agent applications listed in Decision XIX/15 of the 19th Meeting of the Parties and those newly identified by SEPA. Table 4 in the report provides information on the numbering of the applications from the Decision XIX/15, the name of the application, and CTC purchase in 2007.

Verification of the consumption of CTC and CFC-113 as a process agent under Phase I in 2007

10. The verification of the consumption of CTC and CFC-113 was carried out in February 2008 by a team of two, a technical expert and a financial analyst. There was no consumption of CFC-113 in 2007 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 are only three plants which are still producing and using CTC as a process agent, while the other plants had either closed or converted to a non-ODS process. These three plants are

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

11. 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 2007, in particular those related to the project activities. It then examined as primary data the following:

- (a) CTC consumption quotas received from SEPA for 2007;
- (b) CTC purchase orders and daily movement records (from outside to plant warehouse, and from plant warehouse to bulk storage on site);
- (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.

12. 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.

13. 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 2007 and was compared to the quota issued by SEPA.

14. It has been confirmed by the verification that the 2007 CTC purchases in the PA Sector (Phase I) were as follows:

Company name	Process agent application	Consumption in 2007	
Jilin Chemical Industrial Co., Ltd.	CSM	259.02 mt	284.92 ODP tonnes
Fasten	Chlorinated Rubber	99.80 mt	109.78 ODP tonnes
Shanghai Chlor Alkali	Chlorinated Rubber	79.63 mt	87.59 ODP tonnes
Total		438.45 mt	482.29 ODP tonnes

15. Therefore the verified CTC consumption in 2007 was 482.29 ODP tonnes, which was below the 2007 maximum allowable CTC consumption (493.00 ODP tonnes) in the Agreement of Phase I of the CTC sector plan.

16. The verification provided an update on the struggling CTC emission control project for CSM, which continued experiencing technical problems with the imported equipment. As a result the CTC emission level still remained at 0.32-0.35 mt of CTC per mt of CSM produced, which was much higher than the desired level of 0.06 Mt. The verification team was advised that the plant was considering of abandoning the imported equipment and constructing an entirely new line in order to bring down the CTC consumption.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Verification of the 2007 CTC production and the consumption of CTC and CFC-113 as process agent under Phase I of the sector plan

17. 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.

18. According to the arrangement set out 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 55th Meeting of the Executive Committee because for that verification the team will need to visit a significant number of CTC-consuming 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 2007.

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
2007	18,782	13,438	11,396	8,987	493	482	8.4	0

19. The results from the verification, as shown against the targets in the Agreement in the last row of the table above, indicate that China achieved all the targets in the Agreement for Phase I of the sector plan for the year 2007. However since the verified CTC production of 13,438 ODP tonnes includes the maximum allowable consumption for Phases I and II of the sector plan and the allowance for CFC production, there is still a balance of approximately 4,000 ODP tonnes of CTC from the 2007 production not accounted for, after deducting the 8,987 ODP tonnes for CFC production verified by the CFC verification team and the 482 ODP tonnes consumed by the three applications from Phase I as shown in this verification. This could represent the CTC consumed by applications in Phase II of the sector plan, which will be examined by the World Bank in the verification of the Phase II to be submitted to the 55th Meeting.

20. A total of 1,288.52 metric tonnes, or 1,417.4 ODP tonnes of CTC was reported by SEPA in 2007 as being used in process agent applications listed Decision XIX/15 of the 19th Meeting of the Parties and those newly identified by SEPA. It is significantly below the ceiling of 14,300 ODP tonnes which was set in the Agreement of Phase II to cover these applications.

RECOMMENDATION

21. 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 2007;
- (b) Releases the 2008 annual tranche of US \$3.0 million and the associated support cost of US \$225,000 for the implementation of the 2008 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 2007.

**CFC PRODUCTION PHASE-OUT PROGRAMME:
2008 ANNUAL PROGRAMME AND VERIFICATION OF THE 2007 ANNUAL WORK
PROGRAMME**

PROJECT DESCRIPTION

Introduction

22. 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 2008 annual programme for the CFC production sector phase-out plan in China to the 53rd Meeting in November 2007. The Executive Committee decided “to approve the 2008 work programme of the China CFC production closure programme at the level of US \$7.5 million and associated support costs of US \$562,500, noting that the request for funding and support costs would be submitted by the World Bank to the 54th Meeting of the Executive Committee together with a verification report on the implementation of the 2007 annual programme” (decision 53/34).

23. Accordingly, the World Bank is submitting to the 54th Meeting the verification report on the implementation of the 2007 China CFC production phase-out programme and the request for the release of US \$7.5 million and US \$562,500 for the implementation of the 2008 annual programme. For reasons of economy, only the summary of the verification is attached while the full verification report could be made available to members of the Executive Committee upon request.

Verification of the 2007 CFC production in China

24. The verification was conducted during October 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 a number of years. The team visited the six remaining CFC plants (of the original 37) that were producing under the quota system in the 2007 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 three annexes. The summary of the conclusions provides the overall assessment of the verification team on the performance of the 2007 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 2007, 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 2007, with the total actual production of CFCs being 6,285.085 ODP tonnes against the target of 7,400 ODP tonnes set in the Agreement. Of that total, 3,958 ODP tonnes are confirmed to be the total production of CFC-13, which is below the quota of 3.99 ODP tonnes allocated to the plant by SEPA, and also below the maximum allowable production of 4.00 ODP tonnes under the Montreal Protocol control schedule.

25. The verification reports that after the completion of the 2007 production campaign all the six plants were closed and the production lines dismantled with key equipment destroyed, except one CFC-11/CFC-12 production line at Zhejiang Juhua Fluoro-chemical Co Ltd (SRI#B14) that has been converted to a swing plant for producing primarily HCFC-22 while producing with a

license of no more than 550 ODP tonnes of CFC-12 for MDI production each year in 2008-2009. The verification confirms that there is no chance that these dismantled facilities would be able to resume CFC production in the future.

26. 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 the data used from the financial audit which proceeded simultaneously.

27. While this has been the usual procedure followed in each of the previous verifications, the team also included this time the checking of the plant closure process in each of the six plants. The team reviewed the photos and videos that were taken when the dismantling took place and checked them against the photos that had been taken the previous year before the equipment was removed. The records of disposal of the scrap metal, certification by the local environmental bureau of the results of the dismantling and the disposition of the personnel employed in the CFC production were also examined.

28. Annex II sets out the results for each 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. It also includes the data on the date of termination of production, date of dismantling and evidence of dismantling examined.

29. Annex III 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.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Overall assessment of the 2007 verification in light of the guidelines for verification of ODS production phase-out

30. The verification of the implementation of the 2007 work programme was carried out by the same team that 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 2007 CFC production confirm that China has closed the six remaining CFC plants and dismantled the production facilities as of July 2007 except one line, which will be producing 550 ODP tonnes of CFC per year for MDI manufacturing in 2008 and 2009.

31. Consequently, China complied with the annual CFC production target set out in the Agreement for the year 2007, with the total actual production of CFCs at 6,285.085 ODP tonnes against the target 7,400 ODP tonnes set in the Agreement. With the closing of the remaining six CFC plants, China has completed the CFC production phase out two and half years ahead of the completion date as specified in the Agreement and the requirement of the Montreal Protocol control schedule.

32. The Secretariat wishes to congratulate the Government of China and the World Bank for accomplishing this achievement, and to encourage them to continue monitoring the supply and demand of CFCs in China to ensure the sustainability of the complete phase out.

Compliance with the Montreal Protocol control schedule for CFC-13

33. It has been confirmed by the verification team that China's production of CFC-13 in 2007 was 3.96 ODP tonnes, which is below the 4.00 ODP tonnes of maximum allowable production under the Montreal Protocol control schedule for CFC-13 production.

RECOMMENDATIONS

34. The Secretariat recommends that the Executive Committee:

- (a) Commends the Government of China and the World Bank for achieving the accelerated completion of the CFC production phase out two and half years ahead of schedule in the largest CFC producing country after the completion of phase out in non-Article 5 countries;
- (b) Releases to the World Bank US \$7.5 million and the associated support cost of US \$562,500 for the implementation of the 2008 work programme of the China CFC production sector agreement, 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 2007;
- (c) Requests the Government of China and the World Bank to continue monitoring the supply and demand of CFCs in the country, including carrying out verification to ensure the sustained CFC production phase out.

CHINA PROCESS AGENT SECTOR PLAN

PHASE I

2007 CTC Production Verification Report

The World Bank

February 2008

Table 1 Summary of 2007 verified CTC production in China

Sector Plan #	Name of CTC producer	2007 CTC Production Quota, MT	Verified CTC Production in 2007, MT	Comments
CTC 01	Luzhou North Chem. Industries Co., Ltd.	0.00	280.20	333.00 MT sold to licensed CTC users and dealers, which included inventory from 2006 year end.
CTC 02	Zhejiang Juhua Fluorochemical Co., Ltd.	0.00	11,716.34	9,535.05 MT sold to licensed CTC users and dealers. 3,073.72 MT sent to CFC plant for CFC-11/12 production. 131.5MT purchased from Quzhou Jiuzhou (CTC 13), of which 39.97 MT sent directly to Ningbo Juhua (CTC 17) for PCE production while 91.53 MT remained in year end stock.
CTC 03	Liaoning Panjing No. 3 Chemical Plant	N/A	N/A	Plant closed in 2001.
CTC 04	Chongqing Tianxuan Chemical Co., Ltd.	No	95.92	95.92 MT sent to CTC conversion unit on site for cinnamic acid production.
CTC 06	Chongqing Tianyuan Chem General Plant	N/A	N/A	Plant closed April 16, 2004.
CTC 07	Taiyuan Chemical Industrial Co., Ltd.	N/A	N/A	Plant closed in 1998.
CTC 08	Luzhou Xinfu Chemical Industry Co., Ltd.	No	38.78	New CMs producer started in March 2007 with a capacity of 20,000 MT/a. 22.35 MT CTC sent to Honghe for PCE production, while 16.43 MT remained in year end stock; no CTC sales allowed for this plant.
CTC 09	Jiangsu Meilan Chemical Co., Ltd.	0.00	7,516.79	512.92 MT sent to CFC plant as feedstock for CFC production. 7,003.87 MT sent to CTC conversion unit for CM1 production.
CTC 10	Guangzhou Hoton Chem (Group) Co., Ltd.	N/A	N/A	Plant closed in 1997.
CTC 11	Sichuan Honghe Fine Chemical Co., Ltd.	0.00	3,221.44	2,163.64 MT sold to licensed CTC users and dealers. 923.96 MT sent to CTC conversion unit for PCE production. 133.84 MT remained in year end inventory.
CTC 12	Shanghai Chlor-Alkali Chemical Co., Ltd.	0.00	42.39	42.39 MT sent to incinerator for destruction. 300.38 MT sold to licensed CTC users and dealers, from year end 2006 stock.
CTC 14	Wuxi Greenapple Chemical Co., Ltd.	0.00	953.36	954.64 MT from 2006 year end stock sold to licensed CTC users and dealers.
CTC 15	Shandong Jinling Chemical Group Company	0.00	7,484.02	3,756.38 MT sold to licensed CTC users and dealers. 3,727.67 MT sent to CTC conversion unit for methyl chloride production.
CTC 16	Shandong Dongyue Fluoro-Silicon Material Co., Ltd.	0.00	7,752.17	2502.43 MT sold to licensed CTC users and dealers. 4811.20 MT sent to CTC conversion unit for CM1 production. 560.00 MT sent to incinerator for destruction.
CTC 17	Ningo Juhua Chemical & Science Co., Ltd.	No	3,448.37	New CM producer started in February 2007 with a total capacity of 60,000 MT. At the same time, a PCE unit was installed and commissioned June 2007 with a capacity of 12,000 MT/a. All 2007 CTC produced sent to the conversion unit for PCE production. No CTC sales allowed for this plant.

Table 1- continued

CTC 18	Shandong Haihua Chemical Co., Ltd.	No	138.04	New CM producer started in February 2007 with a total capacity of 40,000 MT. The plant also constructed a CTC conversion unit for converting CTC to CM1 on site (not operated in 2007). All produced CTC stored in bulk storage carried over to 2008. No CTC sales allowed for this plant.
CTC Subtotal Production, MT		0.00	42,687.81	
CTC 05	Chongqing Tiansheng Chemical Co., Ltd.	N/A	N/A	Plant closed in 2005.
CTC 13	Quzhou Jiuzhou Chemical Co., Ltd.	0.00	495.5	520.50 MT sold to licensed users including 131.50 MT sold to Zhejiang Juhua (CTC 02) and sent to Ningbo Juhua (CTC 17) for conversion to PCE.
CTC Subtotal by Distillation Plant, MT		0.00	495.50	
Verified 2007 CTC Total Production, MT		43,183.31		Verified by WB
2007 CTC Uses for non-ODS feedstock, MT		29,075.94		Reported by SEPA, see Table 3
2007 CTC Uses for new PA applications, MT		1,288.52		Reported by SEPA, see Table 4
2007 CTC destroyed by incineration, MT		602.39		Reported by SEPA, see Table 5
2007 CTC Production in China*, MT		12,216.46		13,438.11 ODP tonnes
Agreement Limit on 2007 China CTC Production, MT		17,074.55		18,782.00 ODP tonnes

* 2007 CTC Production in China = Verified 2007 CTC Total Production – non-ODS feedstock uses - new PA applications – amount destroyed by incineration.

Table 2 Verified CTC sales profile in 2007, MT

Total CTC sales in 2007*	To CFC users	To PA users	To Non-ODS feedstock users	To laboratory users	To licensed CTC dealers	Others**
20,070.88	3,721.33	2,633.46	7,135.95	141.40	6,307.24	131.50
100%	18.5%	13.1%	35.6%	0.7%	31.4%	0.7%

* Verified from financial records. Difference between financial sales (20070.88 MT) and production verification figures (20,066.02 MT) was due to the late payment of 4.86 MT CTC sales sold at year end 2006 but paid to Financial Department in 2007.

** Sold to Zhejiang Juhua (CTC 02) from Quzhou Jiuzhou (CTC 13); this transaction was agreed by SEPA without a paper record.

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

SEPA reported that China consumed **29,075.94 MT** of CTC as feedstock for non-ODS chemical production during the verification year of 2007, as summarized in Table 3. This amount of CTC consumption includes the same CTC feedstock applications listed in last year's report (No. 1-13); the CTC feedstock applications already removed from the interim table A-bis of Decision XVII/8; and the CTC feedstock applications recently identified in China (No. 22-24). SEPA also reported that in 2007 **1,288.52 MT** of CTC were used in new process agent applications and **602.39 MT** CTC was destroyed by incineration.

This SEPA-reported CTC non-ODS feedstock uses, new PA uses and the amount of CTC destroyed by incineration in 2007 have been deducted from the overall CTC production verification total (see Table 1). Detailed information reported and verified by SEPA is presented in Tables 3 to 5 below. The Bank's Verification Team did not examine any of the SEPA's reported data verification during this January 2008 mission.

Table 3 Use of CTC for non-ODS feedstock applications in 2007*, MT

No.	Non-ODS feedstock applications	CTC purchase in 2007	Reported by
1	DV methyl ester	1479.10	SEPA
2	2-methyl-3-(trifluoromethyl)aniline	0.00	SEPA
3	HFC-236fa	540.64	SEPA
4	HFC-245fa	45.96	SEPA
5	HFC-365mfc	0.00	SEPA
6	DFTFB	0.00	SEPA
7	Flunarizine Hydrochloride	0.00	SEPA
8	Astaxanthin	31.50	SEPA
9	Trifluoromethoxybenzen	0.00	SEPA
10	DPGA	0.00	SEPA
11	Fluorescent bleaching agent intermediate	165.90	SEPA
12	Frochloride lubricant	3.50	SEPA
13	Converted to CM1	16635.13	SEPA
14	Benzophenone	1787.84	SEPA
15	Cinnamic acid	706.06	SEPA
16	Triphenylmethyl chloride	533.25	SEPA
17	Tetrachloride dimethylmethane	429.06	SEPA
18	Processing of Aluminium, Uranium	63.00	SEPA
19	4,4-difluorodiphenyl ketone	477.94	SEPA
20	4-trifluoromethoxybenzenamine	79.80	SEPA
21	1,2-Benzisothiazol-3-Ketone	394.80	SEPA
22	2-methyl-4,5- Difluoro-1-(2,2,2)-trifluorobenzen	60.00	SEPA
23	Converted to CM3	82.50	SEPA
24	perchloroethylene (PCE)	5559.96	SEPA
Subtotal non-ODS feedstock applications in 2007, MT		29,075.94	

* Identified and reported by China State Environmental Protection Administration (SEPA) in January 2008.

Table 4 CTC for new PA applications identified in 2007*, MT

No.	Application No. in Decesion XIX/15	New process agent applications	CTC purchase in 2007, MT	Reported by
1	32	Prallethrin/ ES-Prallethrin	64.51	SEPA
2	33, 39, 41	O-Nitrobenzaldehyde / M-Nitrobenzaldehyde/nitro benzyl alcohol	327.49	SEPA
3	34	3-Methyl-2-Thiophenecarboxaldehyde	19.35	SEPA
4	36	2-Thiophene ethanol	0	SEPA
5	37	3,5-DNBC/triiodoisophthalic	10	SEPA
6	38	1,2-Benzisothiazol-3-Ketone	131.26	SEPA
7	40	Ticlopidine	10	SEPA
8	NA	Chloromethane-sulfoniceaster	0	SEPA
9	NA	2-(p-Bromomethylphenyl) propionic acid	50	SEPA
10	NA	2-methoxy-3-methylpyrazine	5	SEPA
11	NA	4-(trifluorometoxy)aniline (TFAM)	127.3	SEPA
12	NA	4-Bromoanisole	5	SEPA
13	NA	4-Bromo-benzenesulfonyl	0	SEPA
14	NA	4-Chloro-2-Trichloromethyl pyridine	30	SEPA
15	NA	Chloropyrazine	10.1	SEPA
16	NA	diamino pyrazole sulfate	0	SEPA
17	NA	Dichloro-p-cresol	21.1	SEPA
18	NA	Dope	250	SEPA
19	NA	Doxofylline	15	SEPA
20	NA	Ethyl-4Chloroacetoacetate	119.41	SEPA
21	NA	Ozagrel	0	SEPA
22	NA	PVDF	29	SEPA
23	NA	Single-ester	0	SEPA
24	NA	Using as G.I.	0	SEPA
25	NA	β -Bromopropionicacid	0	SEPA
26	NA	Acrylamide (N-(1,1-dimethyl-3-oxobutyl) (DAAM)	10	SEPA
27	NA	2-Methoxybenzoylchloride	20	SEPA
28	NA	Levofloxacin	10	SEPA
29	NA	Fipronil	0	SEPA
30	NA	2-chloro-5-(trifluoromethyloxy)pyridine	24	SEPA
Subtotal new process agent applications in 2007, MT			1,288.52	

* Identified and reported by China State Environmental Protection Administration (SEPA) in January 2008.

Table 5 CTC destroyed by incineration in 2007*, MT

No.	Disposal of CTC	CTC destroyed by incineration	Reported by
1	Destroyed by incineration	602.39	SEPA
Subtotal CTC destroy in 2007, MT		602.39	

* Verified and reported by China State Environmental Protection Administration (SEPA) in January 2008.

CHINA CFC PRODUCTION PHASE-OUT PROGRAM
2007 VERIFICATION REPORT

October 22 2007

Inspection Team

F.A. Vogelsberg: Mission Leader and primary text preparation - Annex I

Hua Zhangxi: Data Summary - Annex II (Gradual Closure and Complete Closure)

Wu Ning: Financial Verification of CFC Production for China in 2007- Annex III

Assisted and Accompanied By

Lin Nanfeng: (SEPA/FECO)

Inspection Mission Time Frame

October 11 – October 23, 2007

Enterprises in Visitation Order

Zhejiang Juhua Fluoro-Chemical 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 Changshu *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 2007.**
- ◆ **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– Financial verification of CFC Production for China in 2007.**

Verification Conclusions with respect to China's CFC Production in 2007 (January 01 2007-June 30 2007)

In accordance with the "CFCs/CTC/Halon accelerated Phase Out Plan in China", all production of CFCs in China ceased before the end of June 2007. Therefore, the CFC production, sales, and stock change in 2007 China refer to that of CFC-11, CFC-12, CFC-114, CFC-115 and CFC-13 within the period from January 01, 2007 to June 30, 2007. The verified overall national production of CFCs in 2007 is 6,289.043 tonnes (ODP). The following table is the breakdown by product types: The summary of product stocks for the six CFC producers in 2007 are shown in this table.

Type of CFC Product	Number of Producers	Total Production		Total Producer's Stock in 2007 (MT)		
		ODS (MT)	ODP(tonnes)	Opening	Closing	Change
Products belong to Annex A to the Montreal Protocol, Group I						
CFC-11	3	959.848	959.848	1,287.367	914.697	-372.67
CFC-12	4	5,182.423	5,182.423	2,544.158	5,489.85	+2,945.692
CFC-113	0	0	0	350.743	241.963	-108.78
CFC-114	1	22.999	22.999	41.045	58.731	+17.686
CFC-115	2	199.619	119.815	109.2	277.429	+168.229
Sub -total		6,675.661	6,285.085	4332.513	6,882.67	+2,550.157
Product belongs to Annex B to the Montreal Protocol, Group I						
CFC-13	1	3.958	3.958	5.721	5.113	-0.608
Total National Production		6,679.619	6,289.043			

The targeted limit for total CFC production in 2007 is 7,400 ODP tonnes as specified in the APP Agreement. The total quota for CFC production in 2007 issued by the Chinese Government is 6,305.490 ODP tonnes. Therefore, the verified total actual CFC production in 2007 is 1,110.957 ODP tonnes lower than the targeted limit, as well as 16.447 ODP tonnes lower than the total quota issued.

The CTC Consumption for overall national CFC Production in 2007 is summarized in the following table:

CTC used for	Amount CTC (MT)
Direct consumption for CFC-11 production	1,172.71
Direct consumption for CFC-12 production	6,982.68
Direct consumption, subtotal for CFC-11 & 12	8,155.39
Indirect consumption for CFC-13 production	14.32
Overall national CTC consumption for CFC Production in 2007 (including CFC 11,12 & 13)	8,169.71

The total consumption of CTC for the production of 959.848 MT of CFC-11 product is 1,172.71 MT; and the overall average CTC/ CFC-11 ratio is 1.222 (theoretical 1.12). Among the three CFC-11 producers, the producer that had the lowest CTC/ CFC-11 ratio (1.181) is Zhejiang Juhua. (SRI# B14); and the highest ratio (1.318) is Jiangsu Meilan Chemical Co. Ltd (SRI# A 8).

The total consumption of HF for the production of 959.848 MT of CFC-11 product is 151.43 MT; and the overall average HF/ CFC-11 ratio is 0.158 (theoretical 0.145). Among the three CFC-11 producers, the producer that had the lowest HF/ CFC-11 ratio (0.155) 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 5,182.423 MT of CFC-12 product is 6,982.68 MT; and the overall average CTC/ CFC-12 ratio is 1.341 (theoretical 1.272). Among the four CFC-12 producers, the producer that had the lowest CTC/ CFC-12 ratio (1.341) is Jiangsu Changshu 3F Refrigerant Co. Ltd. (SRI# A 10); and the highest (1.363) is Jiangsu Meilan Chemical Co. Ltd.(SRI# A 8).

The total consumption of HF for the production of 5,182.423 MT of CFC-12 product is 6,982.68 MT; and the overall average HF/ CFC-12 ratio is 0.378 (theoretical 0.331). Among the four CFC-12 producers, the producer that has the lowest HF/ CFC-12 ratio (0.358) is Zhejiang Juhua Fluoro-chemical Co. Ltd. (SRI # B 14) and the highest (0.418) is Jiangsu Meilan Chemical Co. Ltd (SRI# A 8).

A detailed summary of China CFC production in 2007 (Jan 1-June 30) is on the next page.

The verification process as well as the assessment and findings are described in Annex I to the Verification Report.

Except Zhejiang Juhua Fluoro-chemical Co Ltd (SRI# B14) with one CFC-11/12 production line that has ceased the CFC production and the production line converted to a swing plant for producing primarily HCFC-22 and partly CFC 11/12 in the future under approved exemption for MDI uses. Other CFC producers, including Jiangsu Meilan Chemical Co.Ltd (SRI# A8) with one CFC-11 production line and one CFC-12 production line; Jiangsu Changshu 3F Fluoro-chemical Co-Ltd (SRI# A10) with one CFC-11 production line, one CFC-12 production line and one CFC-115 production line; Zhejiang Chemical Industry Research Institute (SRI# B11) with one CFC-114/115 production line; Zhejiang Dongyang Chemical Plant (SRI# B12) with one CFC-12 production line as well as Zhejiang Linhai Limin Chemical Co. Ltd (SRI# B8) with one CFC-13 production line have ceased CFC production and their production lines have been dismantled with key equipment destroyed. All the pertinent data for complete closure of these CFC producers are reported in the corresponding section D1 of the Annex II to the Verification Report; while the detailed assessments for the complete closure are described in Annex I to the Verification Report. The Verification Team confirms that there is no chance for the above-mentioned complete closed CFC producers resuming CFC production.

All the verified monthly production data and raw material consumption data are recorded in the corresponding Section D2 of Annex II to the Verification Report.

The financial verification results are described in Annex III to the Verification Report.

SUMMARY OF CHINA CFC PRODUCTION IN 2007

Products belong to Annex A to the Montreal Protocol, 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.	79.250	79.250	104.42	14.43	1.318	0.182
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	547.378	547.378	674.88	84.84	1.233	0.155
B 14	Zhejiang Juhua Fluoro-chemical Co. Ltd.	333.220	333.220	393.41	52.16	1.181	0.157
	Overall	959.848	959.848	1,172.71	151.43	1.222	0.158

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.	299.740	299.740	408.50	125.38	1.363	0.418
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	2,549.344	2,549.344	3,418.21	981.55	1.341	0.385
B 12	Zhejiang Dongyang Chemical Plant	276.138	276.138	392.78	114.16	1.422	0.413
B 14	Zhejiang Juhua Fluoro-chemical Co. Ltd.	2,057.201	2,057.201	2,763.19	735.69	1.343	0.358
	Overall	5,182.423	5,182.423	6,982.68	1,956.78	1.347	0.378

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	22.999	22.999	28.11	3.19	3.185	0.138

CFC-115

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CFC-113** Consumption	HF Cons'ption	Ratio** CFC-113/ CFC-115	Ratio HF/ CFC-115
A 10	Jiangsu Changsu 3F Refrigerant Co. Ltd.	99.700	59.820	161.91	63.75	1.624	0.639
B-11	Zhejiang Chemical Research Institute	99.991	59.995	134.89	31.80	1.349	0.318
	Overall	199.691	119.815	296.80	95.55	1.486	0.478

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

CFC-13

SRI #	Name of Enterprise	Production (ODS)	Production (ODP)	CFC-12 Consumption	Ratio CFC-12/CFC-13	Indirect CTC Cons'ption*	Indirect CTC/CFC-13 ratio*
B 8	Zhejiang Linhai Limin Chemical Plant	3.958	3.958	10.70	2.703	14.32	3.618

* The indirect CTC consumption is the consumption for producing 10.7 MT CFC-12 in Zhejiang Juhua (B14) that used by Linhai Limin (8) for producing CFC-13.

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