



**United Nations
Environment
Programme**

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/57/Inf.2
27 March 2009

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Fifty-seventh Meeting
Montreal, 30 March - 3 April 2009

**REPORT OF THE EXECUTIVE COMMITTEE TO THE OPEN-ENDED WORKING GROUP
ON THE PROGRESS MADE IN REDUCING EMISSIONS OF CONTROLLED
SUBSTANCES FROM PROCESS-AGENT USES (FOLLOW-UP TO
DECISION XVII/6 OF THE SEVENTEENTH MEETING OF THE PARTIES)
AN UPDATE FOR THE PERIOD 2007 - 2008**

I: INTRODUCTION

1. This report is prepared further to decision XVII/6 of the 17th Meeting of the Parties which, inter-alia requested the Technology and Economic Assessment Panel and the Executive Committee to report to the Open-ended Working Group (OEWG) at its 27th Meeting in 2007, and every other year thereafter, unless the Parties decide otherwise, on the progress made in reducing emissions of controlled substances from process-agent uses; the associated make-up quantity of controlled substances; on the implementation and development of emissions-reduction techniques and alternative processes and products not using ozone-depleting substances.

2. The document consists of an update to the report of the Executive Committee submitted to the OEWG at its 27th Meeting in response to the above mandate. It presents the progress made to the end of 2008 by the Multilateral Fund in assisting Article 5 countries in reducing the emissions of controlled substances from process agent use to “levels agreed by the Executive Committee to be reasonably achievable in a cost-effective manner without undue abandonment of infrastructure” (decision X/14). It lists the projects and activities that were funded in 2007 and 2008, with information on the level of funding approved, the impact and the date of completion of such projects. It also presents information on progress with on-going projects as reported by implementing agencies.

3. The Executive Committee received a draft of this report at its 57th Meeting and [in decision 57/** requested the Fund Secretariat to complete the report, taking into account comments provided by Committee members and, following approval of the final text by the Chair of the Executive Committee, to submit it to the 29th Meeting of the OEWG].

II: OVERVIEW OF PROCESS AGENT USES OF ODS IN ARTICLE 5 COUNTRIES IN 2005

4. In its first report submitted to the 25th Meeting of the OEWG, the Executive Committee estimated that the total consumption of ODS as a process agent in Article 5 countries in 2003 was some 13,623 ODP tonnes, 97 per cent of which was reported as being used in three countries, China (10,538 ODP tonnes), India (2,268 ODP tonnes) and the Democratic People’s Republic of Korea (432 ODP tonnes) (document UNEP/OzL.Pro/WG.1/25/INF/4).

5. On the basis of current Article 7 data, the total reported CTC consumption for process agent and all other uses in Article 5 countries in 2007 (excluding the Republic of Korea) was 1,129.7 ODP tonnes. Ninety seven point five per cent of this consumption is reported in a total of four countries, namely India (707.3 ODP tonnes), China (265.1 ODP tonnes), Mexico (79.1 ODP tonnes) and Brazil (50.3 ODP tonnes).

6. While Article 7 consumption data provides a useful insight into general trends, it may not fully reflect the use of CTC for process agent applications. It includes any remaining non-process agent consumption, for example in use as a solvent. It may not include use in applications that might be viewed by many technical experts as a process agent use rather than a feedstock, which is not a controlled use. Such information would only need to be reported as Article 7 data subsequent to a decision of the Meeting of the Parties defining specific uses as process agent use, i.e. as controlled use.

7. Consistent with practice followed in preparing the report to the 27th Meeting of the OEWG, the Multilateral Fund Secretariat sought confirmation from the Chemicals Technical Options Committee (CTOC) as to whether any information on CTC use had been provided that was additional to the data provided under Article 7. CTOC has advised that three additional potential process agent applications using CTC were reported to it by China in 2008. However to date, the issue of whether these applications constitute process agent use has not been considered by the Parties.

8. The CTOC also commented on the lack of information from many Parties on emissions of CTC, reporting of which is mandated under decision X/14 of the Parties. One reason for this may be the practical difficulties encountered in measuring and reporting accurately on emissions associated with industrial processes. As advised in the 2005 report, for most industrial processes in Article 5 countries that are not feedstock uses, the total quantity of CTC added to the process each year (the make-up quantity) is emitted to the environment. Thus the reporting of make-up quantities, if requested by the Parties, would provide similar information to that on emissions requested in decision X/14. Data on make-up quantities is typically available from plant records.

III: NEW PROJECTS APPROVED BY THE EXECUTIVE COMMITTEE IN 2007 AND 2008

9. In 2007 and 2008, the Executive Committee approved two new projects to phase-out CTC in process agent applications as indicated below:

Country	Project	Implementing agency	Date of approval	Level of funding (US\$)	Impact (ODP tonnes)	Date of completion
Brazil	Phase-out of carbon tetrachloride as process agent in two applications at Braskem	UNDP	11 April 2008	1,178,544	297	2002 (Retroactive project).
Mexico	Umbrella project for terminal phase-out of CTC	UNIDO	27 July 2007	1,518,094	87.29	Planned: end-2008 Current: end-2009

Project in Brazil

10. The two applications in which CTC was used as a process agent in the Brazil project were the production of vinyl chloride monomer and the removal of nitrogen trichloride during the production of chlorine. Both applications are included as process agent uses in decision XIX/15 of the Parties. The project is retroactive. In each case the activities necessary to eliminate CTC consumption were implemented in 2002.

11. In regard to production of vinyl chloride monomer, a process change was undertaken resulting in cessation of use of CTC in the process. In regard to production of chlorine, emission reductions were undertaken to improve the efficiency of destruction of the CTC used in the process. The destruction technology has been reported by the country and the implementing agency as being consistent with the destruction requirements specified by the Parties. The current, improved destruction efficiency has been reported as reducing CTC use by the company by 98.4 per cent.

12. In this context the Government of Brazil has undertaken to limit the consumption for all process agent applications approved to date by the Meeting of the Parties to zero tonnes of CTC, with the exception of annual use for the production of chlorine of up to 2 ODP tonnes per year until and including 2013, by which time the emissions control process will be changed to eliminate the use of CTC at no additional cost to the Multilateral Fund. The Government of Brazil has also committed to report the resulting data regarding the amounts of CTC destroyed as well as the import of CTC for this application annually to the Ozone Secretariat as part of the reporting of Article 7 data.

13. The approval of the Brazil project by the Executive Committee, and the associated performance and reporting undertakings, is considered to be consistent with the requirement in decision X/14 of the Meeting of the Parties in which it is indicated that the Executive Committee may consider a range of options to reduce the emissions of controlled substances from process agent use by Article 5 Parties to levels agreed by the Executive Committee to be reasonably achievable in a cost-effective manner without undue abandonment of infrastructure. Therefore, the use by Brazil of up to 2 ODP tonnes of CTC per year, as well as the necessary related imports, between 2010 and the end of 2013 for the production of chlorine is consistent with decision X/14 of the Parties and will therefore not constitute consumption as defined by the Protocol.

Project in Mexico

14. The project in Mexico involves the use of some 87 ODP tonnes of CTC as a process agent in the manufacture of chlorine. The project involves a process change, and when implemented, CTC will no longer be used. The original implementation schedule envisaged completion of the process change during 2008. However the implementing agency has advised that delays have been encountered and conversion is now planned to be completed in 2009. Without prejudice to the reporting in due course by the Government of Mexico of data on CTC consumption in 2007, advance information provided by Mexico indicates that the delay in project implementation may have implications for Mexico's achievement of the 2008 CTC consumption limit specified in the Plan of Action approved in decision XVIII/30 of the Parties.

IV: STATUS OF IMPLEMENTATION OF ON-GOING PROJECTS AND PROGRAMMES APPROVED PRIOR TO 2007

China sector plan for phasing out ODS process agent applications (phases I and II)

Phase I of the China sector plan

15. Phase I of the China process agent sector plan was approved in December 2002 to address 25 CTC and CFC-113 process agent applications included in List A of decision X/14. Total CTC consumption, reported as 3,382 ODP tonnes in 2003, has been reduced to 482.99 ODP tonnes in 2008. The consumption of CFC-113 ceased in 2006.

16. Complete phase-out has been achieved in 29 of the 32 plants that used CTC or CFC-113 as a process agent in 2001, through either plant closure or conversion to non-ODS processes. Three remaining plants continue to produce and use quantities of CTC as process agent in the production of chlorinated rubber (CR) and chlorosulphonated polyethylene (CSM) within the targets established in the approved sector plan, as indicated below.

Company name	Process agent application	consumption in 2008 (ODP tonnes)
Jilin Chemical Industrial Co., Ltd.	Chlorosulphonated polyethylene	284.99
Jiangsu Fasten Fine Chemical Co. Ltd.	Chlorinated rubber	110.00
Shanghai Chlor Alkali	Chlorinated rubber	88.00
Total		482.99

17. Interim improvements in emission control technology in the two plants producing CR have reduced emissions to the level of 0.20 to 0.21 metric tonnes of CTC per metric tonne of CR produced. However the two CR producers have now signed contracts with the Ministry of Environment Protection in China for closure of production in 2009.

18. The plant producing CSM continues to experience difficulties in trying to reduce the level of CTC emissions. The verification report provided by the implementing agency indicates that as a result of efforts in 2008 the CTC emission level was reduced to 0.3 metric tonnes of CTC per metric tonne of CSM produced, compared to the previous value of 0.32-0.35. However this remains significantly higher than the desired level of 0.06 metric tonnes per metric tonne of CSM. The verification team was advised in January 2009 that a decision had been taken in 2008 to convert the process to aqueous technology, which would eliminate the use of CTC.

Phase II of the sector plan

19. As previously advised, Phase II, approved by the Executive Committee in December 2005, targets the CTC consumed by the process agent applications set out in decision XV/6 of the 15th Meeting of the Parties, and will reduce the total consumption of CTC in these uses from an allowed maximum of around 7,000 ODP tonnes in 2006 to 994 ODP tonnes in 2010 and beyond. The table below presents the list of applications, CTC consumption in 2007 for each application, and the number of enterprises remaining in production as of August 2008.

Application	Annual consumption (MT)		No. of Production Lines		Actions
	2003	2007	2003	2008	
Cyclodime	152.85	15.30	9	9	All 9 plants have stopped CTC production and closure will happen in 2008 and 2009.
CPP/CEVA	2,730.40	2,303.22	18 (including 3 new ones)	8	10 closed and dismantled 3 stopped production 5 in production
MIC	574.54	1,036.98	6	5	1 closed and dismantled
MPB	679.95	283.73	3	1	2 stopped production and dismantled 1 will stop in 2008 once CTC stock runs out
Imidacloprid	264.81	198.20	4	1	1 converted 2 closed and dismantled
Buprofenzin	316.87	367.73	3	1	2 closed and dismantled
Oxadiazon	57.00	0	3	0	1 stopped due to bankruptcy 2 closed and dismantled
CNMA	136.12	388.75	1	1	
Mefenacet	6.93	0.00	2	0	1 converted and the other dismantled
DCBT	0.00	0.00	0	0	
Total	4,919.47	4,593.91	49	26	

20. The strategy to achieve the necessary reductions in consumption during 2009 continues to be predominantly conversion to non-ODS technology or plant closure. The implementing agency reports that non-ODS technology is not sufficiently mature for implementation in three remaining applications, namely chlorinated polypropene (CPP), chlorinated EVA (CEVA) and MIC derivatives (carbamic ester series pesticides) However, China has undertaken to meet the CTC consumption limit in the sector plan for these three applications as necessary through production delays or plant closures.

21. Subsequent to the results of the survey of consumption in 2006 for those process agent applications listed under Table A-bis of decision XVII/8 and any other applications which were not identified at the time of the approval of Phase II, the Executive Committee agreed in decision 52/32 to reduce the national annual CTC consumption control target for all process agent applications other than the applications listed in Phase I and Phase II, from 14,300 ODP tonnes to 6,600 ODP tonnes. China also commits to phasing out the CTC consumption in these applications by the end of 2009. The table in Annex I provides a list of all CTC uses identified by China and notified to the Executive Committee in

sector plan progress reports as being potential process agent applications additional to those listed in decisions X/14, XV/6, XVII/8 and XIX/15.

Democratic People's Republic of Korea

22. The sector plan for phase-out of CTC production and consumption in DPR Korea was originally approved in December 2003 and a supplementary plan was approved in only 2006 at a total cost to the Multilateral Fund of US \$6,995,504. Total phase-out under the plan was 2,027 ODP tonnes of CTC of which approximately 228 ODP tonnes was for approved process agent uses. CTC production ceased in 2005. Stockpiles were established before production ceased, but these were fully used prior to the end of 2008. Thus all use of CTC, including as a process agent, has now ceased.

23. However, although the use of CTC has ceased, conversion of two process agent applications at the 2.8 Vinalon Factory Complex and the Sinuiju Chemical Fibre Complex has not been able to proceed because certain equipment items already purchased for the conversion were deemed to fall under the dual-use restrictions of the International Chemical Weapons Convention, to which the DPR Korea has not yet adhered.

24. Steps are being taken by the implementing agency to dispose of the equipment that cannot be supplied to DPR Korea. Additionally, the Executive Committee has left open the possibility that, in the event that the DPR Korea was not able to complete the conversion at the two factories, the country could resubmit a funding request for the conversion of these two enterprises no later than the 59th Meeting, if an alternative approach was found to be technically feasible and economical viable, and provided that the country will in any event achieve compliance with the CTC phase-out schedule under the Montreal Protocol. The Executive Committee has not so far received such a request, and there are no CTC projects foreseen in the business plan of UNIDO for 2009 for DPR Korea.

India

25. Phase-out of CTC as a process agent in India is being accomplished through a sector plan for phase-out of both production and consumption of CTC. The sector plan was approved in principle in July 2003 at a total cost of US \$52 million. Under the programme, India committed to reducing the consumption of CTC used as process agent and as a solvent from a baseline of 11,505 ODP tonnes to zero by 2010. By the end of 2007, consumption for both solvent and process agent uses had been reduced to 707 ODP tonnes, consistent with the maximum level specified in the agreement between the Government of India and the Executive Committee.

26. A total of 17 individual process agent applications have been identified as eligible for funding. In each case, phase-out of the use of CTC has been, or will be, accomplished by changing the process to use a non-ODS solvent. No emissions reduction technologies are envisaged. Three conversion projects for the production of CR were completed through the World Bank as implementing agency in 2006 and 2007. Fourteen endorsed process agent applications for production of a variety of chemical and pharmaceutical products, involving a total CTC consumption of 60 ODP tonnes in 2006 were either completed or nearing completion at the end of 2007. In 2008 the maximum consumption of CTC permissible under the sector plan agreement is 268 ODP tonnes. India's performance in completing the implementation programme for 2008, including the reduced level of consumption, will be reported to the 58th Meeting of the Executive Committee in July 2009.

Romania

27. The terminal phase-out management plan for the phase out of production of CTC and its consumption for process agent uses in Romania was approved in November 2005 at a total cost of US \$3.44 million. In accordance with the project's implementation schedule, the implementing agency

has confirmed that production of CTC and its consumption as a process agent in the manufacture of the chemical intermediate di(ethylhexyl)-peroxydicarbonate (DEHPC) ceased by the end of 2007. The phase-out was accomplished by changing the process agent from CTC to the hydrocarbon isododecane.

Annex I

Use of CTC in China in 2008 for potential PA applications not included in decisions X/14, XV/6, XVII/8 and XIX/15 (metric tonnes)

Chloromethane-sulfonic ester	0
4-Bromo-benzenesulfonyl	0
4-Chloro-2-Trichloromethyl pyridine	0
diamino pyrazole sulphate	0
Ozagrel	0
Single-ester	0
Using as G.I.	0
β-Bromopropionic acid	0
Acrylamide (N-(1,1-dimethyl-3-oxobutyl)) - DAAM	0
Fipronil	0
2-Thiophene ethanol	0
1,2-Benzisothiazol-3-ketone	0
2-methoxy-3-methyl pyrazine	4.8
4-Bromoanisole	5
Chloropyrazine	9.9
3,5-DNBC/triiodoisophthalic	10
3-Methyl-2-thiophenecarboxaldehyde	14.5
Doxofylline	15
Ticlopidine	15
2-Methoxybenzoyl chloride	22
PVDF	23.3
Levofloxacin	27
Dichloro-p-cresol	29.9
2-Chloro-5-trifluoromethoxy pyridine	33
2-(p-Bromomethylphenyl) propionic acid	50
Ethyl-γ-chloroacetoacetate	75.6*
4-(trifluoromethoxy)aniline (TFAM)	90
Ethyl-4-chloroacetoacetate	161.4
Dope	200
TOTAL CTC USE FOR ADDITIONAL APPLICATIONS	786.4

Note: * = 2006 figure: data for 2008 not available.