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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Forty-third Meeting  
Geneva, 5-9 July 2004

**Follow-up to Decision 42/12 (c):  
Intermediate Evaluation of CFC Production Sector Phase-out Agreements**

**I. Background**

1. The Executive Committee considered at its 42<sup>nd</sup> meeting the report on the intermediate evaluation of CFC production sector phase-out agreements (UNEP/OzL.Pro/ExCom/42/12), which presented the findings and recommendations resulting from the evaluation missions to China, the Democratic People's Republic of Korea, and India in January 2004.
2. The Senior Monitoring and Evaluation Officer explained that in India, although CFC production had stayed under the maximum allowable level when measured in terms of net saleable production, it had been slightly above the maximum in terms of gross production.
3. After discussing this and other issues, the Executive Committee decided inter alia:  
  
"To request the Government of India, in cooperation with the World Bank, to plan and verify allowable CFC production in India as so-called gross production, to review the calculations made to establish the baseline for the agreement, and to report to the 43<sup>rd</sup> Meeting of the Executive Committee on their findings". (Decision 42/12 (c)).
4. The Secretariat received on June 3, 2004, a Report prepared by the Ozone Cell, Ministry of Environment and Forests Government of India and The World Bank for submission to the 43<sup>rd</sup> Meeting of the Executive Committee. The Report is attached.

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## II. Comments

5. The Report by the Ozone Cell and the World Bank states in the first paragraph under Findings:

*“Based on the questionnaires for the preparation of the 1998 CFC production audit report developed by SRI International, the projection of CFC production of each enterprise, for the period 1999-2002, is the same with the projection of the net saleable quantity. In addition, historical production data included in the report of SRI International is also based on net production. This methodology employed by SRI International was used as a basis for the development of the CFC Production Phase-out Sector Plan for India. Therefore, the baseline for the agreement for the CFC Production Phase-out Plan for India was developed on the basis of net saleable production.”*

6. However, SRI in reality did not collect net saleable production data but proceeded in the following way in India, as in the other Article 5 countries, to obtain CFC production data: it requested data from each company for the most recent year on actual use of raw material (CTC, HF, etc.) and actual CFC production according to production log book records which are based on measurements of day tanks. These data were then compared with standard input-output ratios for this type of production. In case of deviations from international averages, explanations were sought. All further calculations and projections of the economic model used these data which are gross production data. For the historical records dating back to 1991, data were provided to SRI by the companies which, according to recent explanations, are net production figures although they were called production only. These data are, according to the Government of India, also the data reported under Art. 7. For the year analyzed by SRI (1997), the figures for gross and net production are the same which is difficult to explain, as are the differences for the other years which are reportedly all net production figures; therefore the figures submitted under Art. 7 should match the data in the SRI report and the project document presented by the World Bank which for most years is not the case (see table in Annex I).

7. The concept of net saleable production was also not used in the project document or the Agreement and the first two verification reports. This concept came up in January 2001 when it was first mentioned in the introduction of the verification report for the year 2000. As per the information from the team leader of the auditing team, production for 1999 and 2000 reported in the verification report was net saleable production although it was called only production. Only for 2001, 2002 and 2003 was net saleable production explicitly stated in the verification reports, and only in these same years gross production started to exceed the maximum allowable production set out in the Agreement.

8. The third paragraph of the attached Report reads:

*“Based on the comments of our OORG experts, any CFC production facilities would not be able to completely avoid production loss. However, this loss has always been minimized by all CFC producers in order to maximize their production and financial efficiency. It was also pointed out that physical*

*measurement of gross production or loss was not done by most CFC production facilities as in most cases it was not practical and not possible to obtain accurate measurement”.*

9. According to current industry standards, it is indeed impossible to avoid all handling and filling losses, due to the gaseous character of CFCs making it difficult to control emissions during filling of small cylinders with hoses. Filling of larger tanks through pipes, however, can largely avoid such emissions, and medium-size tanks (1 ton) which are filled with hoses can be equipped with back-suction systems to recuperate evaporated CFCs to a large extent. Best practices can bring filling losses down to about 0.3 %, as for example in Mexico, while the average in India is between 0.5% and 1 %, and at times even higher, except for one company which reports significantly lower losses.

10. While measurements of CFC volumes in large day tanks, which are not always mounted on weigh scales are indeed not precise to the last 100 kg, the CFCs are in most companies transferred into smaller tanks which are usually mounted on some form of weighing mechanism, such as strain gauge load cells. This enables a more accurate figure to be obtained for the gross production, before the filling into small cylinders takes place where most losses occur. Every company maintains such records for daily plant monitoring and to trace filling and handling losses with the aim of minimizing them. This is the case even for the one company which reports that it has no final storage tanks separate from the cylinders for dispatch and thus is not able to provide gross production figures. Even in such a case, with good calibration, the measurement of day tanks can be accurate to less than 1 % error margin. These gross production data are then compared to those obtained when applying the average input-out ratios for the raw materials used, in order to detect any anomalies. Moreover, if indeed the gross production and the handling and filling losses cannot and are not measured, as stated in the paragraph from the Report quoted above, then how can the verification reports from 2001 to 2003 provide such figures for three of the four Indian CFC producers, and calculate it for the fourth one assuming an average loss rate of 1.5 %? During the visits of the evaluation mission to CFC producers in India, the logbook gross production records were shown by each company and the filling losses discussed with the management.

### **III. Conclusion**

11. After further information was received from the Government of India and the team leader for the verification reports for 1999, 2000 and 2001, the Secretariat recommends that the Executive Committee might consider:

- (a) taking note of the Report prepared by the Ozone Cell, Ministry of Environment and Forests Government of India and The World Bank;
- (b) providing a clarification on whether the Government of India, in cooperation with the World Bank, should plan and verify allowable CFC production in India as net or gross production.

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**INDIA**  
**CFC PRODUCTION**

Year	A7 Data (ODP Tonnes)	CP Data (ODP Tonnes)	Technical Audit/World Bank Project Document (ODP Tonnes) <sup>(1)</sup>	Difference (ODP Tonnes)	Maximum Allowable Production as per Agreement (Metric Tonnes)	Verified Actual Gross Prod. (Metric Tonnes)	Production in Excess of Agreement (Metric Tonnes)	Verified Net Saleable Prod. (Metric Tonnes) <sup>(3)</sup>	Difference Gross-Net (Metric tonnes)
(1)	(2)	(3)	(4)	(5) = (4)-(2)	(6)	(7)	(8)	(9)	(10) = (9)-(7)
1991	N/A	N/A	4,730	N/A					
1992	6,096.8	N/A	6,044	-52.8					
1993	11,438.8	N/A	11,412	-26.8					
1994	16,646.0	N/A	16,666	20.0					
1995	21,779.6	N/A	21,678	-101.6					
1996	22,459.6	N/A	22,458	-1.6					
1997	23,658.0	N/A	23,659	1.0					
1998	20,012.8	20,012.0							
1999	22,498.6	22,498.6			22,588.0			22,411.0	
2000	20,403.8	N/A			20,706.0			20,407.0	
2001	18,689.2	N/A			18,824.0	18,939.0	115.0	18,691.0	-248.0
2002	<sup>(2)</sup> 16883.72	16,883.7			16,941.0	17,078.0	137.0	16,890.0	-188.0
2003	N/A	N/A			15,058.0	15,104.0	46.0	15,015.0	-89.0
2004					13,176.0				
2005					11,294.0				
2006					7,342.0				
2007					3,389.0				
2008					2,259.0				
2009					1,130.0				
2010					0.0				

N/A = Not available

<sup>(1)</sup> Data in SRI's Technical Audit and the Project Document presented by the World Bank (Table 2.3 on p.8) match fully, except that SRI reported the data for the Indian business and administrative year (April to March) for the following calendar year. Figures have been transformed into ODP tonnes in order to make the data comparable to A7 data in column 1.

<sup>(2)</sup> One company produced 35.3 MT of CFC-113, which means 28.2 ODP tonnes; some of it is used as feedstock for CFC-113a.

<sup>(3)</sup> For 1999 and 2000 only one figure for production was reported in the verification reports which, according to the team leader, was net production.



REPORT AS PER THE EXECUTIVE COMMITTEE  
DECISION 42/12 PARA. (C)

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AND

THE WORLD BANK

Submitted to the 43<sup>rd</sup> Meeting of the Executive Committee

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## Introduction

At the 42<sup>nd</sup> Meeting of the Executive Committee, the Senior Monitoring and Evaluation Officer submitted the report on the intermediate evaluation of CFC production sector phase-out agreements for the consideration of the Executive Committee. This report was prepared on the basis of findings and recommendations resulting from the evaluation mission to China, the Democratic People's Republic of Korea, and India. The general findings of this report indicate that the process of phase-out is sustainable and on track to achieve the full elimination of CFC production planned for the end of 2000.

With regard to the CFC production sector phase-out project in India, the report pointed out that although CFC production in India had stayed under the maximum allowable level when measured in terms of net saleable production, it had been slightly above the maximum in terms of gross production. The World Bank clarified that as the concept of net production may have been used to calculate the baseline for India, it was important to verify the effects before changing to the concept of gross production. Moreover, the current level of production loss was only about one per cent.

Based on the findings of the report and discussions made during the meeting, the Executive Committee decided to request the Government of India, in cooperation with the World Bank, to plan and verify allowable CFC production in India as so-called gross production, to review the calculations made to establish the baseline for the agreement, and to report to the 43<sup>rd</sup> Meeting of the Executive Committee on their findings (Dec. 42/12 (c)).

In response to the above decision of the Executive Committee, the Government of India and the World Bank, therefore, undertook the review of the 1998 CFC production audit report prepared by SRI International, an independent verification agency contracted by the Multilateral Fund, other related documents, and the principle used by the Government of India for reporting its annual production of Annex A, Group I chemicals to the Ozone Secretariat as per Article 7 of the Montreal Protocol. The World Bank also sought an expert opinion on this issue. Findings of the review undertaken by the Government of India and the World Bank are described in this report.

## Findings

Based on the questionnaires for the preparation of the 1998 CFC production audit report developed by SRI International, the projection of CFC production of each enterprise for the period 1999 – 2002 is the same with the projection of the net saleable quantity. In addition, historical production data included in the report of SRI International is also based on net production. This methodology employed by SRI International was used as a basis for the development of the CFC Production Phase-out Sector Plan for India. Therefore, the baseline for the agreement for the CFC Production Phase-out Plan for India was developed on the basis of net saleable production.

As required by Article 7 of the Montreal Protocol, the Government of India has always reported its annual production of Annex A, Group I chemicals based on net production to the Ozone Secretariat. It was also confirmed by all CFC producers in India that the production data submitted to the Government is the net saleable production quantity as stated in the excise records and their accounting statements.

Based on the comments of our OORG experts, any CFC production facilities would not be able to completely avoid production loss. However, this loss has always been minimized by all CFC producers in order to maximize their production and financial efficiency. It was also pointed out that physical measurement of gross production or loss was not done by most CFC production facilities as in most cases it was not practical and not possible to obtain accurate measurement.

It is important to point out that because of the difficulties in obtaining accurate measurement of gross production or loss as mentioned by the expert, CFC producers in India were able only to provide their best estimates and some were unable to provide any data.

The net saleable production quantity has been used as a basis for verifying the production of each CFC producing enterprise in India since the first year of the implementation of the CFC Production Phase-out Sector Plan. The issue of gross production that was recently raised by the auditing firm should not be misconstrued as a change in the reporting practice of the industry and/or the Government of India.

### **Conclusion**

Given the annual production targets stipulated in the agreement are based on the net saleable production level and the practical constraints in measuring and reporting accurate data on gross production, the Government of India and the World Bank find that the current practice of using net production for reporting to the Ozone Secretariat as per Article 7 of the Montreal Protocol for distribution of production quota and for reporting to the Executive Committee, should be maintained.

For all future reports, only the production quantity defined as net production will be presented as this is the basis for evaluating India's compliance with the agreement between the Executive Committee and India for the CFC Production Phase-out Sector Plan.