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THE MULTILATERAL FUND FOR THE
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**OPTIONS FOR A TRACKING SYSTEM FOR HCFC-141b-BASED PRE-BLENDED POLYOLS
EXPORTED BY SYSTEMS HOUSES AND USED BY FOAM ENTERPRISES IN IMPORTING
ARTICLES 5 COUNTRIES**

Background

1. This document is presented in response to decision 65/12(b) by which the Secretariat was requested to prepare a document on options for a tracking system to correlate, by country, the amounts of HCFC-141b-based pre-blended polyols exported by systems houses, with the amounts used by foam enterprises in importing Article 5 countries that had been approved for phase-out, which could be updated on a periodic basis.

Decisions relevant to the issue of HCFC-141b in pre-blended polyols that are exported

2. In response to decision 59/12(a)¹, the Executive Committee considered, at its 61st meeting, the document “Consumption arising from HCFC-141b contained in pre-blended foam chemicals (polyols) (decision 59/12 and 60/50)²”, and decided *inter alia*, to request Article 5 countries that wished to seek assistance for the phase-out of HCFC-141b contained in imported pre-blended polyols to include in their HPMPs a list of all foam enterprises established prior to 21 September 2007 that used imported pre-blended polyols, including the amount of HCFC-141b contained therein; to include in the starting point for aggregate reduction in HCFC consumption the annual amount of HCFC-141b in imported polyols during the 2007-2009 period; to include a sector plan for the complete phase-out of the use of HCFC-141b in imported pre-blended polyols, taking into account that the share of HCFC-141b contained in such polyols might need support under a schedule beyond 2015; and a commitment to put in place policies banning the import and or the use of HCFC-141b pre-blended polyols (decision 61/47(c)).

3. The Committee had also decided “that Article 5 Parties with eligible enterprises manufacturing HCFC-141b pre-blended polyol systems would be provided with assistance calculated on the basis of consumption of HCFC-141b sold domestically, on the understanding that the full consumption of HCFC-141b by those enterprises manufacturing pre-blended polyol systems would be deducted from the starting point” (decision 61/47(d)).

Sources of information

4. The amounts of HCFC-141b contained in imported/exported pre-blended polyols used in this document have been collected during the preparation of stand-alone HCFC phase-out projects³ as well as HCFC phase-out management plans (HPMPs)⁴, as part of the data collection surveys covering foam enterprises, importers of HCFCs, chemical distributors and systems houses, where available. Data on imported pre-blended polyols was also obtained from the 2009 and 2010 annual progress reports on implementation of country programmes⁵. Previous documents related to the subject considered by the Executive Committee were also consulted⁶.

¹ The Executive Committee requested the Fund Secretariat, in consultation with the Ozone Secretariat, to prepare for the 61st meeting a discussion paper outlining the implications for Article 5 Parties and the Fund associated with the import and export of HCFC-based pre-blended polyols, and outlining the policy issues and their related technical and economic implications.

² UNEP/OzL.Pro/ExCom/61/53.

³ Stand-alone projects or sector plans for the phase-out of HCFC used in the foam sector have been approved for 14 Article 5 countries.

⁴ As of the 65th meeting, the Executive Committee had approved HPMPs for 106 Article 5 countries. Nineteen additional HPMPs have been received by the Secretariat, 16 of which have been submitted to the 66th meeting.

⁵ The format of the annual progress reports on implementation of country programmes was modified at the 60th meeting to include information relevant to the HCFC phase-out, including *inter alia*, HCFC-141b in imported pre-blended polyols (decision 60/4(b)(iv)).

⁶ “Revised analysis of relevant cost considerations surrounding the financing of HCFC phase-out (decisions 53/37(I) and 54/40)” (UNEP/OzL.Pro/ExCom/55/47); and “Consumption arising from HCFC-141b contained in pre-blended foam chemicals (polyols) (decisions 59/12 and 60/50)” (UNEP/OzL.Pro/ExCom/61/53).

5. Lead agencies for each of the HPMPs and/or foam sector phase-out plans were specifically requested to provide information on the names of systems houses and/or chemical distributors; the estimated amounts of HCFC-141b contained in pre-blended polyols that were exported by countries annually from 2007 to 2010; and the list of countries to which pre-blended polyols were exported. However, the new information collected by the agencies within the time available remained incomplete.

Scope of the document

6. This document consists of the following sections:
- (a) Background on pre-blended polyols;
 - (b) Overview on import and export of HCFC-141b-based pre-blended polyols;
 - (c) Discussion; and
 - (d) Recommendations.

Background on pre-blended polyols

7. Currently HCFC-141b is used principally as a blowing agent for manufacturing polyurethane rigid foam and, to a lesser extent, integral skin foam and flexible moulded. The typical process for producing these types of polyurethane foams is by mixing two components, namely the isocyanate resin component and the pre-blended polyol component, which may also include an auxiliary blowing agent and other essential chemicals according to a specific formulation depending on the end product. The auxiliary blowing agent (such as HCFC-141b) is often required to form the foam, and the amount required varies according to the formulation and the type of blowing agent (i.e., below 10 per cent to 25 per cent or more of the polyol).

8. Pre-blending may be done in-house by the foam enterprise where equipment (pre-mixer and ancillary equipment) is available. This is the case for large foam enterprises manufacturing domestic appliances or with continuous production lines for panels or blocks, where the blowing agent is purchased as a separate chemical. However, when prices of pre-blended polyols containing HCFC-141b are lower than those of the polyols and the HCFC-141b purchased separately, some of these enterprises may purchase pre-blended polyols containing the blowing agent (e.g., Bosnia-Herzegovina). Smaller foam producers normally purchase pre-blended polyols from systems houses or chemical distributors in order to avoid the additional cost of installing and operating pre-blending equipment and facilities.

9. Several non-Article 5 owned systems houses and chemical distributors are operating in Article 5 countries where there is a relatively large foam industry (e.g., Brazil, Egypt, India, Mexico and Thailand). In some cases, locally-owned systems houses and chemical distributors are also present, although their market share is usually lower than that of foreign-owned (e.g., Malaysia, and Thailand). For countries with a small foam sector, the operation of a systems house for a few local enterprises would not be economically viable and, thus, these enterprises import fully formulated foam systems (e.g., Bolivia, Costa Rica, Cuba, Dominican Republic, El Salvador, Jamaica and Paraguay).

10. The selection of a supplier of pre-blended polyol systems by foam enterprises is driven by several factors, such as:

- (a) The availability of specific formulations required for the various applications (e.g., insulation foam for domestic appliances or for commercial refrigeration equipment; spray foam, pipe insulation, or integral skin);

- (b) The supply of these formulations at the time they are required;
- (c) The prices of chemicals and formulations at the time of the purchase; and
- (d) The level of technical assistance and services provided by the systems houses or the chemical distributors.

11. For the reasons mentioned above, foam enterprises frequently purchase systems from different suppliers (preferably locally or within the same geographical region) to reduce transport costs. However, in some cases they may purchase from suppliers located in other regions when the prices of the systems are lower. In cases where local- and/or foreign-owned systems houses are in place, HCFC-141b-based pre-blended polyols may be imported to make up for shortfalls in market supply. This makes it difficult to differentiate between the locally pre-blended and imported pre-blended systems (e.g., Egypt and Viet Nam).

12. Pre-blended polyol systems used in some Article 5 countries (e.g., Egypt and Lebanon) are also imported from countries that do not access finance from the Multilateral Fund (i.e. Republic of Korea, Singapore and United Arab Emirates).

Overview on import and export of HCFC-141b-based pre-blended polyols

13. The sum of the 2009-2010 average consumption of HCFC-141b by Article 5 countries has been calculated at 11,945.17 ODP tonnes⁷ based on data reported under Article 7 of the Montreal Protocol. This amount is based on data from the 73 Article 5 countries consuming HCFC-141b including three that have not sought assistance from the Multilateral Fund, namely Republic of Korea, Singapore and United Arab Emirates⁸. Approximately 95 per cent of the total consumption of HCFC-141b is used as a foam blowing agent while the remaining consumption is used as a propellant in aerosol applications and as solvents, including flushing of refrigeration circuits⁹. Some Article 5 countries regard the HCFC-141b contained in imported pre-blended polyol systems as consumption and report it under Article 7 of the Montreal Protocol.

14. From the information available to date¹⁰, an average 534.56 ODP tonnes of HCFC-141b contained in pre-blended polyols was imported by 28 Article 5 countries over the 2007-2009 period, as shown in Annex I to this document. Approximately 46 per cent of this amount was imported by two countries in Asia; namely India and Viet Nam, while 18 per cent was imported by Egypt. It should be noted that the total amount could increase due to potential imports by countries that have not yet submitted their HPMPs (e.g., Democratic People's Republic of Korea, Peru, South Africa and Tunisia). Only seven Article 5 countries have been identified as exporting HCFC-141b-based pre-blended polyols as shown in Table 1. Where available, the table also shows the amounts of HCFC-141b in pre-blended polyols exported by these countries, as well as the basis for the starting point (i.e. baseline or most recent consumption).

⁷ One country accounted for 55.3 per cent of the total HCFC-141b consumption reported by the 69 Article 5 countries eligible for funding, while the 16 countries with the highest consumption (each with consumption of over 110.00 ODP tonnes) accounted for 94.1 per cent of the total reported consumption. Thirty-eight countries have consumption below 6.00 ODP tonnes of HCFC-141b.

⁸ A total of 1,208.39 ODP tonnes of HCFC-141b was consumed by these three countries, representing approximately 10 per cent of the total consumption of 11,945.17 ODP tonnes.

⁹ Analysis was made on the basis of the sector distribution of HCFCs reported in HPMPs received by the Secretariat.

¹⁰ HCFC stand-alone projects and HPMPs that have been submitted to the Secretariat.

Table 1. Preliminary data on amounts of HCFC-141b contained in exported pre-blended polyols (*)

Country	HCFC-141b (ODP tonnes)			Starting point
	2008	2009	2010	
Argentina	0.00	0.00	5.02	Baseline ¹¹
Brazil		0.00	9.46	Baseline
Chile	12.32	n/a	n/a	Baseline
China		n/a	n/a	Baseline
Colombia	33.33	n/a	n/a	Baseline
Kuwait		25.59	39.39	Baseline
Mexico	82.17			2008
Total	127.82	25.59	53.87	

(*) Excluding Republic of Korea, Singapore and United Arab Emirates.

n/a: Not available

15. In reviewing the available limited data on the amounts of HCFC-141b contained in pre-blended polyols that are exported, it was noted that:

- (a) The amounts of HCFC-141b in pre-blended polyols for all exporting countries, with the exception of China, have been reported for only one or two years over the 2008-2010 period. In the case of China, the exported amounts could not be tracked since polyols are sold to a large number of distributors that could export to other countries (systems houses do not export by themselves);
- (b) Although local- and/or foreign-owned systems houses operate in Egypt, India, Indonesia, Islamic Republic of Iran, Malaysia, Saudi Arabia, Thailand and Viet Nam, these countries reported no export of HCFC-141b-based pre-blended polyols; and
- (c) The status of South Africa regarding potential levels of export of HCFC-141b in pre-blended polyols will only be known and addressed when it submits its HPMP for consideration by the Executive Committee;
- (d) Amounts that might be exported by Republic of Korea, Singapore and United Arab Emirates could not be collected. As these three countries do not access funding from the Multilateral Fund to phase out their consumption of HCFCs, the issue of double funding involving these countries arises only if they import HCFC-141b pre-blended polyols from any other Article 5 country and subsequently re-export to other Article 5 countries.

Discussion

16. Based on the information above, it could be noted that the customer base of systems houses or chemical distributors is rather fluid. In some cases, foam enterprises switch between national and international suppliers. They might also switch from purchasing HCFC-141b in bulk to HCFC-141b contained in pre-blended polyols, or they might purchase foam systems without knowing if they were locally pre-blended or imported pre-blended. There are no regulatory mechanisms to obtain information from importers on the origins of HCFC-141b-based pre-blended polyols or from exporters on their destinations, since they are not controlled substances. Furthermore, pre-blended polyols could be formulated without HCFC-141b or with different amounts of HCFC-141b depending on the end product. In some cases, countries with systems houses also import HCFC-141b pre-blended polyols to make up for shortfalls in market supply. Furthermore, the aggregated amount of HCFC-141b contained in imported

¹¹ The Government of Argentina has submitted its HPMP to the 66th meeting (UNEP/OzL.Pro/ExCom/66/28). The Government is requesting to change its established starting point for aggregate reduction in HCFC consumption from the reported HCFC consumption in 2008 to the HCFC baseline.

pre-blended polyols is based on the average of amounts imported over the 2007-2009 period, while the levels of HCFC-141b-based polyols exported relate to one or two years in the 2008-2010 period, which results in data discrepancies between imported and exported amounts since the reference periods differ.

17. Under these circumstances, it might not be feasible to establish a tracking system that could accurately correlate the imported and exported amounts of HCFC-141b contained in pre-blended polyols. However, there are only 10 Article 5 countries identified so far¹² that supply HCFC-141b pre-blended polyols to Article 5 countries, three of which do not access assistance from the Multilateral Fund for ODS phase-out. Therefore, the potential risk of double funding would be limited to the remaining seven countries, six of which had already reported actual amounts of HCFC-141b in pre-blended polyols exported in a given year.

18. The purpose of decision 61/47(d) is to avoid double counting in the phase-out of HCFC-141b in imported pre-blended polyols (i.e., funding the phase-out of HCFC-141b twice, in the country of export as well as in the country of import). The possibility of double funding would arise when HCFC-141b is imported in bulk and counted as consumption for purposes of funding, then pre-blended in polyols and exported to other countries for use by foam enterprises that may subsequently be funded for conversion to a non-HCFC blowing agent. As HCFC-141b reductions occur at the enterprise level in the importing country, the HCFC-141b consumption of the exporting country should be reduced by the amounts of HCFC-141b contained in the pre-blended polyols that are exported for use in other countries.

19. The issue under consideration could be linked with the starting point for aggregate reductions in HCFC consumption¹³, given that the starting point includes the amounts of all HCFCs imported by an Article 5 country in a given year (e.g. 2008 or 2009 if the most recent reported consumption was chosen), or in the years 2009-2010 (if the baseline was chosen), irrespective of eligibility for funding under the rules of the Multilateral Fund, e.g., consumption associated with foreign-owned enterprises (ineligible as per the decision adopted at the 7th meeting) or consumption by enterprises established after the cut-off date of 21 September 2007 (decision 60/44(a)). In these cases, HCFC consumption by ineligible enterprises is deducted from the starting point when the enterprises are included in a given implementation stage of the HPMP. For the few countries where imported HCFC-141b was used to manufacture pre-blended polyols for export markets, the quantity of the HCFC-141b involved would be considered ineligible for funding as per decision 61/47(d).

20. Considering the present circumstances, and given the complexity of the trade in HCFC-141b contained in pre-blended polyols, the Executive Committee may wish to consider discounting from a country's starting point the amount or average amount of HCFC-141b contained in pre-blended polyols exported for the year or years on which the starting point has been based. By removing these amounts from the starting point at any given time, the issue of double counting will not arise, regardless of the amount of HCFC-141b in pre-blended polyols that may be exported in future, since it is only a one-off deduction. The Executive Committee may wish to note that in the HPMPs of Argentina¹⁴ and Kuwait¹⁵ submitted to the 66th meeting, both Governments have proposed to deduct from their starting points the average amounts of HCFC-141b in pre-blended polyols that were exported over the 2009-2010 period (as indicated in Table 1 above). Accordingly, the issue of double funding involving these two countries does not arise.

¹² A few additional Article 5 countries that have not yet submitted their HPMP (e.g., South Africa) may also export HCFC-141b-pre-blended polyols.

¹³ Prior to the establishment of HCFC baselines based on reported consumption under Article 7 of the Montreal Protocol, Article 5 countries could choose between the most recent reported consumption at the time of the submission of the HPMP and/or an investment project, and the average of forecast consumption for 2009 and 2010, to be adjusted later based on actual data reported under Article 7 (decision 60/44 (d) and (e)).

¹⁴ UNEP/OzL.Pro/ExCom/66/28.

¹⁵ UNEP/OzL.Pro/ExCom/66/40.

21. Noting the potential constraints in obtaining data for HCFC-141b in pre-blended polyols exported by China (as mentioned in paragraph 15(a) above), during the preparation of this document the Secretariat suggested to the lead implementing agencies of relevant HPMPs and/or foam sector plans that such information could be collected from the few countries importing the largest amounts of HCFC-141b-based polyols, namely India (83.1 ODP tonnes), Indonesia (where 8.8 ODP tonnes of HCFC-141b are in pre-blended polyols), Nigeria (where 48.6 ODP tonnes of HCFC-141b are in pre-blended polyols), Syrian Arab Republic (9.8 ODP tonnes), Thailand (15.7 ODP tonnes), Turkey (30.8 ODP tonnes) and Viet Nam (164.6 ODP tonnes). The feasibility of collecting information on the amounts of HCFC-141b-based polyols imported from/exported by Singapore and Republic of Korea was also raised, although these countries have not received assistance from the Multilateral Fund to phase-out ODS. In responding to this suggestion, one agency expressed concern regarding potential difficulties in obtaining accurate data given the length of time that has lapsed (3 to 5 years).

22. The Executive Committee may wish to consider the information provided in Table 1 above as the basis for addressing the issues associated with potential double counting relating to the export and import of HCFC-141b contained in pre-blended polyols. In that regard, exporting countries that have not provided data for the relevant years to enable the appropriate deductions to be made (i.e., Chile (2009, 2010), Colombia (2009, 2010) and China (2009, 2010)) could be requested to provide the missing information. In line with decision 61/47(d), the amounts of HCFC-141b that will result from submission of complete data as set out in Table 1 above will not be eligible for funding and will be deducted from the starting points of the countries concerned at the appropriate time.

23. Under the circumstances as discussed above, it may be concluded that a standing tracking system with periodic updates as required in paragraph 1 of this document would not be required, and is likely to be very difficult (and possibly costly) to introduce.

Recommendations

24. The Executive Committee may wish to:

- (a) Note document UNEP/OzL.Pro/ExCom/66/50 containing information on options for a tracking system to correlate, by country, the amounts of HCFC-141b-based pre-blended polyols exported by systems houses, with the amounts used by foam enterprises in importing Article 5 countries that had been approved for phase-out, which could be updated on a periodic basis;
- (b) Consider discounting from a country's starting point for aggregate reductions in HCFC consumption the amount or average amount of HCFC-141b contained in pre-blended polyols exported for the year or years on which the starting point has been based;
- (c) Request bilateral and implementing agencies, in collaboration with the Governments of Chile, China and Colombia to provide the Secretariat with the amounts of HCFC-141b in pre-blended polyols that were exported in 2009 and 2010;
- (d) Request the Secretariat to update the information on the amounts of exports and imports of HCFC-141b contained in pre-blended polyols specified in Table 1 and Annex I, respectively, of document UNEP/OzL.Pro/ExCom/66/50; based on information requested under sub-paragraph (c) above and on additional or updated information reported in the context of HCFC phase-out management plans to be submitted to the 67th meeting, and to report back to the Executive Committee at its 67th Meeting; and
- (e) Consider when to deduct the amounts of HCFC-141b exported in pre-blended polyols from the starting points for aggregate reductions in HCFC consumption of the countries concerned.

Annex I. Amount of HCFC-141b used in Article 5 countries

No.	Country	HCFC-141b (ODP tonnes)		
		In bulk (*)	Imported polyol (**)	Total
1	Algeria	5.66	5.36	11.02
2	Argentina	113.42		113.42
3	Bahrain	0.44	2.06	2.50
4	Bangladesh	21.23		21.23
5	Belize	0.12		0.12
6	Bolivia	0.97	0.60	1.57
7	Bosnia and Herzegovina	1.49	2.69	4.18
8	Botswana	0.01		0.01
9	Brazil	521.54		521.54
10	Cameroon	22.05		22.05
11	Chile	39.29		39.29
12	China	5,941.30		5,941.30
13	Colombia	151.74		151.74
14	Costa Rica	3.58	18.11	21.69
15	Cote d'Ivoire	0.03		0.03
16	Croatia	(0.11)		(0.11)
17	Cuba	2.60	13.35	15.95
18	Democratic People's Republic of Korea	16.01		16.01
19	Democratic Republic of the Congo	24.48		24.48
20	Dominican Republic	0.60	19.51	20.11
21	Ecuador	0.62	20.67	21.29
22	Egypt	129.61	98.34	227.95
23	El Salvador	3.34	4.94	8.28
24	Guatemala	1.08	1.40	2.48
25	Honduras	1.90	0.80	2.70
26	India	865.52	83.05	948.57
27	Indonesia	132.65		132.65
28	Iran (Islamic Republic of)	216.83		216.83
29	Jamaica	3.63		3.63
30	Jordan	28.78	11.31	40.09
31	Kuwait	75.19	10.64	85.83
32	Kyrgyzstan	0.73		0.73
33	Lao People's Democratic Republic		3.24	3.24
34	Lebanon	37.53		37.53
35	Libya	13.76		13.76
36	Malaysia	162.54		162.54
37	Maldives	0.68		0.68
38	Mauritius	0.14		0.14
39	Mexico	673.62		673.62
40	Morocco	20.88		20.88
41	Myanmar	0.04		0.04
42	Namibia	0.26		0.26
43	Nicaragua	0.59	0.31	0.90
44	Nigeria	149.64		149.64
45	Oman	1.12	1.11	2.23
46	Pakistan	138.50		138.50
47	Panama	2.30		2.30
48	Paraguay	0.06	1.36	1.42
49	Peru	1.79		1.79
50	Philippines	63.31		63.31
51	Qatar	0.58		0.58
52	Rwanda	0.16		0.16

No.	Country	HCFC-141b (ODP tonnes)		
		In bulk (*)	Imported polyol (**)	Total
53	Saudi Arabia	341.00		341.00
54	Seychelles	0.02		0.02
55	Somalia	23.17		23.17
56	South Africa	160.05		160.05
57	Sri Lanka	1.85		1.85
58	Sudan	40.65		40.65
59	Suriname	-		-
60	Swaziland	5.54		5.54
61	Syrian Arab Republic	67.71	9.82	77.53
62	Thailand	205.25	15.68	220.93
63	The Former Yugoslav Republic of Macedonia	0.86	1.50	2.36
64	Trinidad and Tobago	2.26		2.26
65	Tunisia	1.60		1.60
66	Turkey	197.13	30.80	227.93
67	Turkmenistan	-		-
68	Uruguay	1.49	5.33	6.82
69	Venezuela (Bolivarian Republic of)	39.56	1.91	41.47
70	Viet Nam	53.90	164.56	218.46
71	Zimbabwe	0.94	6.11	7.05
	Total	10,736.81	534.56	11,271.37

(*) Baseline for compliance (2009 and 2010 average consumption). The total amount excludes 1,208.39 ODP tonnes of HCFC-141b consumed by Republic of Korea, Singapore and United Arab Emirates (i.e., countries that were requested not to seek assistance from the Multilateral Fund). Some Article 5 countries regard the HCFC-141b contained in imported pre-blended polyol systems as consumption and report it under Article 7 of the Protocol.

(**) 2007-2009 average consumption as per decision 61/47(c)(ii). These figures have been extracted from approved stand-alone projects or sector plans for the phase-out of HCFC in 14 Article 5 countries, approved HPMPs for 106 Article 5 countries, and HPMPs from 21 countries that have been submitted and not yet approved.
