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Att: CDM Executive Board

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Your ref.:	Our ref.:	Date:
CDM Ref 0499	KCHA/MLEH	12 October 2006

Response to request for review "Destruction of HFC-23 at Refrigerant (HCFC-22) Manufacturing Facility of Chemplast Ltd." (0499)

Dear Members of the CDM Executive Board,

We refer to the requests for review raised by three Board members concerning DNV's request for registration of the "Destruction of HFC-23 at Refrigerant (HCFC-22) Manufacturing Facility of Chemplast Ltd." (0499) and would like to provide an initial response to these requests for review.

DNV herewith provides DNV's initial response to the issues raised by the requests for review.

1) *A comment received by CarbonWatch raises serious questions regarding the additionality of the project activity:"(…) What this suggests/ point to is the possibility of the baseline scenario being the discontinuation of production of HCFC22 (and thus the emissions of HFC23), the proposed HFC23 incineration results in a scenario which is no different from the BAU. On the contrary as the incineration does not reduce 100% of the HFC23 emission, it in fact increases GHG emissions." Considering that in the response to the above comment the DOE states that "(…) As per the Montreal Protocol, India and refrigerant manufacturer's like CSL are committed to phase out of CFC productions.(…)", and the DOE states in section 3.2 of the Validation Report that "Though in business from 1989, since June2004, CSL has outsourced the production of refrigerant gases as part of CSL's revamping strategy. Production of HCFC is now expected to be revived along with the implementation of the project activity in 2007", this should be further clarified.*

2) *A public comment raises serious questions both the eligibility and the additionality of the project activity: the plant stopped its CFC production a couple of years ago and now intends to start HCFC 22 production. Therefore it is not obvious that this plant should be considered as an existing facility in accordance of AM0001. Moreover there is a possibility of the baseline scenario being the discontinuation of production of HCFC22 (and thus the emissions of HFC 23).*

DNV Response:

First of all, we would like to assert that this is an issue that we have taken seriously in our validation. DNV identified this issue early in the validation process already prior to the stakeholder comment.

DNV would also like to note that CSL has provided a detailed response to the stakeholder comment and our concerns. But due to an error in the process of transforming the report into PDF format, the content of the file including CSL's response is not visible but rather only the icon appears in the report. CLS's response has, however, been enclosed once again as attachment 1.

As indicated in our validation report, we reiterate that CSL had actually not exited from the production of refrigerants, but had only outsourced the production of refrigerant gases. This outsourcing is a temporary activity, primarily to revamp the existing plant to meet the growing demand for HCFC 22 in India.

Moreover, under the Montreal Protocol, the accelerated phase-out programme is restricted to only CFC 11/12 and does not apply to HCFC 22. Prior to the revamping phase, both the outsourcing plant and CSL were producing refrigerant gases (CFC's and HCFC's) independently. During the revamping phase, when CSL has outsourced its production of gases, the outsourcing unit produces both its own quota of refrigerant gas production as well as CSL's agreed quota that is being marketed under the brand name of METTRON by CSL. Post revamp, however, CSL will continue to produce HCFC 22.

DNV's validation report also clearly states that the concept note on the revamping strategy by CSL dated April 2004 (attachment 2) has been verified by DNV and this concept note demonstrates that outsourcing of HCFC 22 production is only for a short period. Among others the concept note indicates the following:

- Recognition of a growing market for HCFC 22;
- Need for revamping at CSL:
  - Re-orienting the plant to produce only HCFC-22,
  - Improving raw material consumption norms and material and energy efficiencies to be in line with industry standards,
  - Improve HCFC-22 quality to international standards for obtaining better export volumes;
- Need for additional investment and costs for GHG mitigation (Elimination of HFC-23 stream)
- The capacity post revamp is expected to be 5 tons per day of HCFC 22 or 1 700 tons per year of HCFC 22, assuming 340 days of operation.

To demonstrate that the outsourcing is restricted to only production of CFC's and CSL continues to be in the business of refrigerant gases, the following has been verified by DNV:

- CSL continues to market and sell the outsourced production under its brand name METTRON (Kindly refer to attachment included in the project participant's response to the requests for review, wherein two invoices raised by CSL has been forwarded – one in the month of May 2005 and the other in the month of September 2006).
- CSL has continued to perform peripheral activities such as sourcing raw of material and packaging material, which are only provided to the outsourcing unit to complete the process of conversion. This clearly demonstrates that the outsourcing activity was not only temporary and that CSL is maintaining good continued relationship with the suppliers in order to take advantage of the same once production resumes at CSL.
- The production of refrigerant gases, though outsourced, is accounted for in CSL's balance sheet for the financial year ending 31 March 2006. Kindly refer to the attachment included in the project participant's response to the requests for review. This also clearly demonstrates that CSL continues to be in the business of refrigerant gases.

From the above it is evident that discontinuation of HCFC 22 production is not a baseline scenario for CSL.

3) *Differently from what is defined in AM0001/ver.03, the amount of natural gas (Q_NGy) used by destruction process is not monitored. It is not explained in PDD whether the destruction process doesn't use natural gas. Methodology says "if a different fuel, such as liquid petroleum gas (LPG), is used for the incineration process, the variables Q_NGyand E_NGy are replaced with variables for the quantity of fuel used and emission coefficient for that fuel. Please clarify.*

DNV Response:

Though not explicitly stated in the PDD or in the validation report that hydrogen is being used in place of natural gas, DNV confirms that the project activity proposes to use hydrogen as fuel and not natural gas. Hydrogen does not result in direct GHG emissions, but indirect emissions associated with the use of hydrogen have been accounted for as leakage in both the monitoring plan and the estimation of leakage in the PDD. This has been further clarified in section E.2 of the revised PDD dated 4 October 2006. However, already the monitoring plan of the PDD dated 10 January 2006 submitted for registration provided for the monitoring of the necessary parameters to determine leakage associated with (sections D.2.3, ID number 15-17):

- electricity consumption for production of hydrogen,
- transportation of hydrogen.

4) *Only final figures are presented for baseline, project and leakage. Initial activity data (such as electricity consumed kWh, data for calculation of leakage, etc) for emission calculations are not provided.*

DNV Response:

DNV acknowledges that the PDD dated 10 January 2006 submitted for registration does not provide details on the emission calculations. The revised PDD (dated 4 October 2006) submitted by the project participant as part of their response to the requests for review now includes initial activity data such as power consumptions.

5) *The PDD states in Section C that the starting date of the project activity is "15/10/2005 (PDD development started). Incineration plant is expected to start operation by March 2007". However, the starting date of the crediting period is stated as 01/10/2006. The crediting period cannot start before plant operation. Please correct it.*

DNV Response:

The starting date of crediting period indicated as 1/10/2006 in the PDD was the proposed starting date of HFC storage and not with respect to the start date of operation of the incineration plant. Considering the current status, the start of storage HFC 23 is expected only from 15/11/2006. Hence this date has now been mentioned as the starting date of the crediting period in the revised PDD dated 4 October 2006.

We sincerely hope that the Board accepts our aforementioned explanations.

Yours faithfully
for DNV

Michael Lehmann
Technical Director
International Climate Change Services

Chandrashekara Kumaraswamy
Manager (South Asia)

Attachments:

Attachment 1: Response to public stakeholder comments by CSL

Attachment 2: Concept note on the revamping strategy by CSL dated April 2004

Attachment 1:
Response to public stakeholder comments by CSL

SANMAR

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January 16, 2006

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Kind Attn: Mr.Kumaraswamy

Sub: Chemplast's Reply to Public Comments

We give below our point-by-point reply to the queries raised on the project, during the web-hosting period.

1. *The Refrigerant Gas Business is not a core business for Chemplast as it generates only 5 % of the company's total revenues.*

   Chemplast Sanmar Ltd is an integrated chlorine based chemical manufacturer producing PVC, Caustic soda & Chlorine, Chloromethanes, Chloroethanes, and Silicon wafers.

   The Refrigerant Gas business (Mettron business) always has been a strategic business for Chemplast, right from its inception in 1988, despite its small size, due to the following factors:

   - It captively consumes a significant portion of its Chloromethanes production (~10%)

   - Its profitability is most often superior to other businesses of Chemplast, which are much larger in revenue terms. Contrary to the impression conveyed in the comments, the business has always been profitable and its profitability is expected to improve significantly in future as HCFC-22 demand in India explodes, following the pattern observed in China, Thailand and other ASEAN countries.

   Chemplast doesn't chose its businesses based on market leadership, but support to overall profitability of the integrated chain.

- The company has been a low market share operator in many if its businesses for a long time, leveraging the strengths from integration. For eg: even in the PVC business, which is the largest revenue generator, Chemplast has a market share of only around 8% for many years now, while in Caustic Soda, the second highest revenue generator, the market share is even less at around 4%.

2. *The Refrigerant Gas business consists of both HCFC 22 & CFC and the Plant is a swing Plant*

Chemplast's plant (especially the post reactor equipments like distillation train and condensers) is designed to operate for a higher proportion of CFC over HCFC.

With CFC being phased out in the country under the Montreal Protocol, the production of CFC would be stepped down to zero by 2010. In the year 2005, Chemplast's quota for CFC production was 963.37 Tonnes. This represents 38% of the total production capacity. Post 2005, the quota would entail CFC production of lower than 30% of capacity.

Thus the plant needs a revamp to be refocused to produce higher proportion of HCFC (for which demand is increasing) up to 100%, with improved quality and efficiencies.

3. *The Director's report seems to suggest that Chemplast had discontinued the manufacture of refrigerant gases (as the entire production is outsourced).*

4. *Discontinuation of the manufacturing was the Economically prudent route to adopt.*

5. *Manufacture of Refrigerant gases had been discontinued and this seemed to be a permanent decision (at that point of time), thus there was no question of emission of HFC 23.*

Answers to points 3,4 & 5 are given below:

The outsourcing was part of strategy[1] of Chemplast to refocus the plant on HCFC-22 - the product of the future for India.

[1] A concept note on this revamping strategy that was prepared in April 2004 is being submitted to show increasing market potential of HCFC-22 and the significant profitability of the business. This is a confidential note and not to be shared with public.

- CFC production, as its demand is declining, was to be continued as outsourced.
- The HCFC-22 production is being outsourced for a short period, till the plant is revamped and refocused on HCFC-22

Again, contrary to the impression conveyed by the comments, the market, (though declining in absolute terms because of declining CFC sales), is increasing for HCFC-22.

HCFC-22 market is increasing all across Asia and will increase in India too.

The higher growth of HCFC-22 in the Asian market particularly driven by large consumption in the Air-Conditioners segment, presented an excellent opportunity for the company to refocus its Refrigerant gas business around HCFC-22.

- We are attaching a report by CRISIL in year 2004 on the Air-conditioners market in Asia. Driven by this growth, the HCFC-22 growth in India, even on a very conservative basis, was estimated at 20% in the next few years.

- HCFC-22 demand in China and ASEAN countries is large and increasing and is 30-40 times larger than in India. Such an explosion is expected to happen in India too.

- Production of HCFC-22 in Western countries is likely to decline in the near future. This presents an opportunity for Chemplast to export HCFC-22 produced, especially to growing ASEAN market.

Discontinuation of manufacturing is not the most economical route

Contrary to the conclusion arrived at in the comment:

- The manufacturing of HCFC-22, including the revamp costs for refocusing the plant on HCFC-22, gives significant NPV at benchmark hurdle rates for the company[2], even assuming moderate growth rates of demand in India.

- The business can become a star business if Indian HCFC demand explodes as observed in China, Thailand etc.

[2] refer Strategy note of April 2004.

Discontinuation of manufacturing was a temporary decision:

As evidenced in the strategy note of April 2004, the decision to discontinue manufacturing was temporary, to refocus the plant on HCFC-22 production.

After the discontinuation, the company has invested time and resources in making plant modifications, and arriving at the most efficient way to operate the plant. As part of this strategy, the company even evaluated relocation of the plant closer to its Chloromethanes facility and attempted clearance from the Pollution Control Board for the same.

All these steps prove that, contrary to the inference of the comment, the company was clearly committed to continuing the manufacturing.

Issues of methodology:

Apart from the fact that conclusions arrived at in the comment are incorrect, the methodology of AM0001 doesn't give any applicability criteria which the Project doesn't meet.

Market share, Profitability, ability to continue manufacturing of HCFC-22 and whether HCFC-22 is core business for the Project Proponent, are not the defined applicability criteria for the methodology.

It is incorrect to propose additional applicability criteria now, based on a somewhat inadequate understanding of the business and project proponent.

N.Krishnamoorthy
Executive Vice President – Chlorochemicals

Encl: Concept Note on refrigerant gas business (Confidential)
CRISIL Report on Airconditioners

Attachment 2:
Concept note on the revamping strategy by CSL dated April 2004

CHEMPLAST SANMAR LIMITED

April 6, 2004

PSJ

Please find attached, note on the proposed revamp in Plant I for improving the efficiency of operation and changing over to 100% production of HCFC-22 in view of the impending phase out of CFC-11 and CFC-12.

The financial evaluation has been done for a period of only 7 years as against our normal practice of doing for 10 years, essentially to evaluate the project on a conservative basis.

The salient features of the proposal are:

Investment – Rs. [redacted]akhs
NPV @ [redacted] - Rs. [redacted]lakhs

For approval please

N Krishnamoorthy

Background

Plant I (METTRON Plant) is capable of producing CFC-11 & CFC-12 as well as HCFC – 22. We propose to take a shutdown of the Plant by June/July 2004 and undertake a total revamp. We also propose to manufacture required refrigerant gases during the shutdown period at NF's facility at Bhestan on conversion basis. Post restart of the Plant, we can continue to get CFC-11 and CFC-12 converted at NF's facility at Bhestan, while utilizing our facility entirely for producing HCFC-22. By this method, we will be able to maintain our market share.

The rationale for this step is:

- CFC-11/CFC-12 production quota (as per Montreal Protocol) has already come down (960 T/a) which is around 1/3rd of our production capacity (2500 T/a).
- The production quota for CFCs will come down to zero by 2010.
- HCFC-22 market is growing (Montreal Protocol restrictions will come to apply only by 2040).
    - The demand for HCFC-22 in the Asian market is growing at a fast clip on the back of surging demand for Air Conditioners for home and office. For instance, Chinese demand for HCFC-22 is estimated to be about 120,000 TPA. The anticipated fall in prices for small sized Air Conditioners (0.5 T to 1.0 T) is further expected to propel demand. T).
    - In India also, demand has been growing at over 20% in the past 3 years. With rising disposable income, increasing severity of summer and falling AC prices, demand growth can be in excess of 30% in the near future.
- CTC (carbon tetra chloride) production has been going down with reduction of production for CFC11/12. With the Montral Protocol phase out for CTC used in non-feedstock application also coming in to force from 1st January 2005, CTC production will have to be curtailed. This will make it imperative for us to produce more Chloroform which could then be used to produce more HCFC-22.

1 Revamp plan

1.1 Technical issues involved in revamping

The focus from the technical side will be on the following:

- Re-orienting the plant to produce only HCFC-22.
- Improving raw material consumption norms and material and energy efficiencies, so that we are more in line with Industry standards.
- Improve HCFC-22 quality to International standards for obtaining better export volumes.

There is no major technology change involved. We will need to engage a Consultant to study present operations and suggest a way forward for achieving our objective. However to carry out the necessary study and improvements, we will need some time.

Also, we may take this opportunity to once again make an effort to shift the production facility to Plant III. This would give us enormous advantage on utilities cost as well as eliminating movement cost of raw material from Plant III to Plant I. We will also be able to save on manpower cost and other overheads by combining operations. However, this would require that we move once again with TNPCB for consent to shift, which again would be a time consuming process.

It is therefore expected that plant could be re-started by quarter Oct-Dec 2005.

1.2 Capacity post revamp

The capacity will be dedicated to HCFC 22 as CFC11 and CFC12, which were produced prior to shutdown for revamp will have declining market and looking at our comparatively small capacity, it is better to focus the plant on HCFC 22. In any case, we can get our required volumes of CFCs converted at NF's facility at Bhestan.

The capacity post revamp is expected to be 5 TPD of HCFC 22 or 1,700 TPA of HCFC 22, taking 340 days of operation.

1.3 Market for HCFC 22 in India

The table below shows the trend in demand for HCFC 22 in India.

(TPA)

	2003-04	2004-05 (est)	2005-06 (F)
Total Market Size T/a)	[redacted]	[redacted]	[redacted]
Chemplast Sale (pot)T/a	[redacted]	[redacted]	[redacted]

Growth ~ 20% per annum

1.3.1 Domestic sale

We expect to easily sell [redacted]mt of HCFC 22 in the domestic market in the next year and grow thereafter atleast at a [redacted]% rate, on account the following:

- Market for HCFC 22 in India is expected to be [redacted]TPA in 2005-06
- This is expected to grow @ around [redacted] per annum. The drivers for the growth will be:
    - Increasing take off of home/SOHO ACs (0.5 T to 1.0 T) which have become extremely affordable now (current price of 0.5 T AC is less than Rs. 12,000/-).
    - Expected fall in AC prices on account of economies of scale.
    - The rising disposable income.
    - Increasing pollution and severity of summer temperatures.
- Based on our past track record and our distribution network, we can target for a market share of around [redacted]%, translating to a volume of around [redacted]mt in [redacted].

1.3.2 Export market

- The ASEAN, Middle East and African markets present a great opportunity for sale of excess HCFC 22 as these markets consume over [redacted] TPA of HCFC 22 and are growing. The growth is driven by these countries becoming manufacturing base for ACs and other consumer durables, in addition to inherent domestic demand growth..
- There are well-established distribution channels that can be accessed by us.
- Volume to be sold exported is [redacted]TPA and declining. Enquiries and firm interest for this volume already exists.

2 Profitability

Since we are backward integrated into manufacture of Chloroform and even Chlorine, it is profitable for us to consume these intermediates in-house and produce HCFC-22. Every tonne of HCFC-22 produced, gives a positive contribution.

The overall investment needed in revamp is expected to be close to Rs [redacted] lakhs, which can be recovered within a year of re-start of the plant. The financial evaluation of the revamp and restart proposal is attached to this proposal.

3 Need for additional investment and costs for GHG mitigation (elimination of HFC-23 stream)

When HCFC-22 is produced, it also generates HFC-23, which is normally vented out. New regulations are being brought enforced in developed world, which force producers to incinerate the HFC-23 produced. So far, developing countries like India do not have such regulations. However it is likely that this may happen in India as well.

The investment needed in such incineration and associated facility is likely to be around Rs. [redacted] crores. However this investment can be financed using Carbon Credits generated from such an activity. Hence, it is recommended to install such an incinerator and finance it using revenue generated from sale of carbon credits. This area needs to be studied in more detail and a separate proposal will be submitted in due course.

N Krishnamoorthy

Chemplast Sanmar Ltd

Rs lacs

Particulars		Inflation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Borrowings - Rs lacs										
Repayment of borrowings										
Balance loan										
Interest @[redacted] p.a.	A									
HCFC - 22 Quantity sold Domestic	MT									
Selling price	Rs/MT									
Sale value of HCFC - 22 Domestic	Rs. Lakhs									
HCFC - 22 Quantity Exported										
Selling price USD/Cylinder	USD/Cyl									
Exchange Rate	44									
Premium	2%									
Exchange rate										
Selling price	Rs/MT									
Selling price inclusive of DEPB benefit	Rs/MT									
Sale value of HCFC - 22 Export	Rs. Lakhs									
Total Sale value HCFC - 22	**Rs. Lakhs**									
Variable cost Rs/ MT - Domestic										
Variable cost Rs/ MT - Export										
Variable cost	Rs. Lakhs									

COMPANY DATA

Chemplast Sanmar Ltd

P&L acccount

Rs. Lacs

Particulars		Inflation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Net Sales - HCFC 22									
Less : Variable cost - HCFC 22									
Contribution - HCFC 22	(A)								
Less: Fixed expenses									
Salaries and wages									
Repairs and Maintenance									
Other expenses									
Operating expenses									
Total fixed expenses									
EBITDA									
Depreciation									
EBIT									
Interest on borrowings									
EBT									
Tax	33.66%								
PAT									

FINANCIAL DATA

Chemplast Sanmar Limited

Financial evaluation - R 22 revamp

Project IRR	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Investments in assets									
EBIT									
Depreciation									
Terminal value									-
NPV @ [redacted] - Rs lacs									

FINANCIAL DATA

Chemplast Sanmar Ltd

Rs lacs

Income tax depreciation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Investment in Plant and Machinery									
Depreciation at 15% (first year 35%)									
WDV - P&M									
Calculation of Income tax									
PBT									
Add : Book depreciation									
Less : Tax depreciation									
Tax									

FINANCIAL DATA

Chemplast Sanmar Ltd

Cashflows from HCFC business

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Quantity produced / sold	MT							
Contribution	Rs lacs							
Fixed cost	Rs lacs							
Salaries and wages								
Repairs and Maintenance								
Other expenses								
Operating expenses								
Total fixed expenses								
Net profit / (Loss)								

FINANCIAL DATA

Chemplast Sanmar Ltd

M 22 Variable cost (Export) - Post revamp

Rs./MT

	Rate	Efficiency		
AHF	[redacted]	[redacted]	[redacted]	Based on current price
Chloroform	[redacted]	[redacted]	[redacted]	Based on current estimates, rounded off
Steam	[redacted]	[redacted]	[redacted]	
Power	[redacted]	[redacted]	[redacted]	
Cylinder cost			[redacted]	
Total variable cost - (A)			[redacted]	

Chemplast Sanmar Ltd

M 22 Variable cost (Domestic) - Post revamp

Rs./MT

	Rate	Efficiency		
AHF	[redacted]	[redacted]	[redacted]	Based on current price
Chloroform	[redacted]	[redacted]	[redacted]	Based on current estimates, rounded off
Steam	[redacted]	[redacted]	[redacted]	
Power	[redacted]	[redacted]	[redacted]	
Total variable cost - (A)			[redacted]	