Yingpeng Chemical Co., Ltd.
#69, Yonghua Road
Yongkang, Zhejiang, P.R.China, 321300
+86 579 87265560
http://www.yingpengchemical.com/

Ref: Response to request for review "Yingpeng HFC23 Decomposition Project" with the reference number 1947

29 November 2008
UNFCCC Secretariat
Martin-Luther-King-Strasse 8
D-53153 Bonn
Gemany

Attention: CDM Executive Board

Dear Sir or Madam,
We were informed that our project "Yingpeng HFC23 Decomposition Project" (the reference number 1947) was requested for review by CDM Executive Board. As required by the Executive Board and on behalf of the project participants, we would like to answer the questions and clarify the issues raised in the requests for review as follows:

1. The DOE shall provide justification on how it has validated that CDM was considered prior to the project start date (7 November 2006) as per EB 41, Annex 46, paragraph 5 and 6.

Yingpeng Chemical Co., Ltd (hereinafter called as Yingpeng) seriously considered CDM issues prior to the project start date (7 November 2006), the main evidence are listed below:
(1). Yingpeng attended the International Workshop on HFC-23 CDM Projects Cooperation in China hold by the State Administration for Environmental Protection of P.R.C in February 4th -6th 2004 in Sanya City of Hainan Province of P.R.C.[1] The international attendee included Mr. Mustapha Kleiche from the Ministry of Environment of France, Mr. Stephan Sicars from the GIZ of Germany, Mr. Marcello Balasini from the ministry of Environment, Land and Resource of Italy, Mr. Bernhard Grimn from TUV, Dr. Naoki Matsuo from INEOS Fluor of Japan, Mr. Masaya Inaauro from the World Bank, and etc; the domestic attendee included Mr. Guangsheng Gao from the DNA of China, Xuedu Lv from the Ministry of Science and Technology of PRC, Feng Gao from the Ministry of Foreign Affairs of PRC, the executives from all the main HCFC22 manufacturers of China, and etc.
(2). Yingpeng attended the Sino-Italy International Workshop on HFC-23 CDM Projects hold by the State Administration for Environmental Protection of P.R.C and the Ministry of the Environment, Land and Resource of Italy on January 24th 2005 in Beijing[2].

[1] The relevant documents had been provided to DNV during the validation process and DNV had verified the documents.
[2] http://www.sinoitaenvironment.org/ReadNewsc1.asp?NewsID=1824 and the relevant documents had been provided to DNV during the validation process and DNV had verified the documents.

(3). The board of directors of Yingpeng made a decision to startup the project activity on October 18th 2005[3].

(4). Yingpeng signed a CDM consultation agreement with Climate Experts Ltd (a Japan-based company located in Isshiki, 1433-3, Hayama, Kanagawa, 240-0111,Japan) on January 1st 2006, engaged Dr. Naoki Matsuo to study the baseline and the PDD of the project activity.[4]

(5). Yingpeng signed a validation service agreement with DNV on May 19th 2006[5].

(6). Yingpeng signed the LOIs (Letter of Intent) with Enel (an UK-based buyer) and Infinity (an Ireland-based buyer) on October 4th 2006 and October 13th 2006 respectively.[6]

(7). The PDD of the project activity supplied to DNV for publicity on October 30th 2006, and was publicity on the EB website in November 14th –December 13th 2006.[7]

(8). The FSR of the project activity was approved by the Development and Reform Committee of Yongkang City on November 7th 2006, and this date is selected as the start date of the project activity. Because the permission date for construction and the purchase order date for the main equipments of the project activity are all late than this date, this selection is conservative.[8]

2. The PP/DOE shall further explain how the measurement procedures, calculations and assumptions used to determine 'w' was carried out as per AM0001, version 5.2, page 6.

There are data of direct measurement of HFC23 release in Yingpeng during 2001to now, but the DNV considered these data lack of the evidence of the third party, we finally chose the mass balance method based on actual data in the three (3) most recent years of operation up to 2004 (i.e. 2002, 2003 and 2004) to determine 'w' in the PDD. As per AM0001/version 5.2, 'w' estimated by the mass balance method may be based on the carbon efficiency and the fluorine efficiency of the process and the average of the two values shall be used. So 'w' can be determined through the following formula:

$w = \min (w_{2002}, w_{2003}, w_{2004}, 3\%)$ (1)

Where,

w_{2002}	The historical waste generation rate w in 2002 (%). Its value calculated as per the following formula (2).
w_{2003}	The historical waste generation rate w in 2003 (%). Its value calculated as per the following formula (2).
w_{2004}	The historical waste generation rate w in 2004 (%). Its value calculated as per the following formula (2).

[3] The relevant documents had been provided to DNV during the validation process and DNV had verified the documents.

[4] The relevant documents had been provided to DNV during the validation process and DNV had verified the documents.

[5] Please refer to: Validation service agreement for Yingpeng HFC23 Decomposition Project signed between Yingpeng and DNV on May 19th 2006

[6] The relevant LOIs had been provided to DNV during the validation process and DNV had verified the documents.

[7] http://cdm.unfccc.int/Projects/Validation/DB/6XS19WYSI5ULUG8M4LLCE29R1CQQHI/view.html

[8] The relevant documents had been provided to DNV during the validation process and DNV had verified the documents.

3%	Cap of the historical waste generation rate regulated by AM0001.

$w_{200x} = (w_{C\ balance} + w_{F\ balance}) / 2$ (2)

Where,

w_{200x}	The historical waste generation rate w in 2002, 2003 or 2004 (%).
$w_{C\_balance}$	The historical waste generation rate w estimated based on the carbon efficiency of the process (%). Its value calculated as per the following formula (3).
$w_{F\_balance}$	The historical waste generation rate w estimated based on the fluorine efficiency of the process (%). Its value calculated as per the following formula (4).

$w_{C\_balance} = q_{HFC23\_C} / q_{HCFC22} * 100\%$ (3)

$w_{F\_balance} = q_{HFC23\_F} / q_{HCFC22} * 100\%$ (4)

Where,

q_{HFC23_C}	The quantity of HFC23 in the exhaust gas vented from the HCFC22 production facility annually based on the carbon efficiency (tonne). Its value calculated as per the following formula (5).
q_{HFC23_F}	The quantity of HFC23 in the exhaust gas vented from the HCFC22 production facility annually based on the fluorine efficiency (tonne). Its value calculated as per the following formula (6).
q_{HCFC22}	The quantity of HCFC22 production annually (tonne). Its value is summed by the historical monthly production records.

$q_{HFC23\_C} = q_{C\_emission} * p_{C\_emission} * M_{HFC23} / M_C$ (5)

$q_{HFC23\_F} = q_{F\_emission} * p_{F\_emission} * M_{HFC23} / M_F$ (6)

Where,

$q_{C\text{-}emission}$	Carbon in the HFC23 exhaust gas vented from the HCFC22 production facility annually (tonne). Its value calculated as per the following formula (7).
$p_{C\text{-}emission}$	The proportion of carbon in the HFC23 vented from the HCFC22 production facility annually (%). Its value calculated as per the following formula (24).
$q_{F\_emission}$	Fluorine in the HFC23 exhaust gas vented from the HCFC22 production facility annually (tonne). Its value calculated as per the following formula (8).
$p_{F\_emission}$	The proportion of fluorine in the HFC23 vented from the HCFC22 production facility annually (%). Its value calculated as per the following formula (25).
M_{HFC23}	The molecular weight of HFC23, its value is 70
M_C	The molecular weight of carbon, its value is 12
M_F	The molecular weight of fluorine, its value is 19

$q_{C\_emission} = q_{C\_chloroform} - q_{C\_HCFC22} - q_{C\_HCFC21} - q_{C\_HCLacid} - q_{C\_spentCaustic} - q_{C\_leakage}$ (7)

$q_{F\_emission} = q_{F\_HF} - q_{F\_HCFC22} - q_{F\_HCFC21} - q_{F\_HCLacid} - q_{F\_spentCaustic} - q_{F\_leakage} - q_{F\_HCLacid\_InorganicF} - q_{F\_spentCaustic\_Inorganic}$ (8)

Where,

$q_{C\_chloroform}$	Carbon in the annual consumption of chloroform used by the HCFC22 production facility (tonne). Its value calculated as per the following formula (9).

q_{F_HF}	Fluorine in the annual consumption of HF used by the HCFC22 production facility (tonne). Its value calculated as per the following formula (10).
q_{C_HCFC22}	Carbon in annual quantity of HCFC22 production (tonne). Its value calculated as per the following formula (11).
q_{F_HCFC22}	Fluorine in annual quantity of HCFC22 production (tonne). Its value calculated as per the following formula (12).
q_{C_HCFC21}	Carbon in the byproduct HCFC21 annually (tonne). Its value calculated as per the following formula (13).
q_{F_HCFC21}	Fluorine in the byproduct HCFC21 annually (tonne). Its value calculated as per the following formula (14).
$q_{C\_HCLacid}$	Carbon in the byproduct HCL acid annually (tonne). Its value calculated as per the following formula (15).
$q_{F\_HCLacid}$	Fluorine in the byproduct HCL acid annually (tonne). Its value calculated as per the following formula (16).
$q_{F\_HCLacid\_In}$	Inorganic fluorine in the byproduct HCL acid annually (tonne). Its value calculated as per the following formula (17).
$q_{C\_spentCaustic}$	Carbon in the byproduct spent caustic annually (tonne). Its value calculated as per the following formula (18).
$q_{F\_spentCaustic}$	Fluorine in the byproduct spent caustic annually (tonne). Its value calculated as per the following formula (19).
$q_{F\_spentCaustic\_inorganic}$	Inorganic fluorine in the byproduct spent caustic annually (tonne). Its value calculated as per the following formula (20).
$q_{C\_leakage}$	Carbon in the HCFC22 leakage annually (tonne). Its value calculated as per the following formula (22).
$q_{F\_leakage}$	Fluorine in the HCFC22 leakage annually (tonne). Its value calculated as per the following formula (23).

$$q_{C\_chloroform} = q_{chloroform} * p_{chloroform} * M_C / M_{chloroform} \quad (9)$$

$$q_{F\_HF} = q_{HF} * p_{HF} * M_F / M_{HF} \quad (10)$$

Where,

$q_{chloroform}$	The annual consumption of chloroform used by the HCFC22 production facility (tonne). Its value is summed by the historical monthly production records.
$p_{chloroform}$	The purity of chloroform used by the HCFC22 production facility annually (%). Its value is the annual average of the historical analysis records.
q_{HF}	The annual consumption of HF used by the HCFC22 production facility (tonne). Its value is summed by the historical monthly production records.
p_{HF}	The purity of HF used by the HCFC22 production facility annually (%). Its value is the annual average of the historical analysis records.
$M_{chloroform}$	The molecular weight of chloroform, its value is 119.35
M_{HF}	The molecular weight of HF, its value is 20
M_C	The molecular weight of carbon, its value is 12
M_F	The molecular weight of fluorine, its value is 19

$$q_{C\_HCFC22} = q_{HCFC22} * p_{HCFC22} * M_C / M_{HCFC22} \quad (11)$$

$$q_{F\_HCFC22} = q_{HCFC22} * p_{HCFC22} *2* M_F / M_{HCFC22} \quad (12)$$

Where,

q_{HCFC22}	The quantity of HCFC22 production annually (tonne). Its value is summed by the historical monthly production records.
p_{HCFC22}	The purity of HCFC22 annually (%). Its value is the annual average of the historical analysis records.
M_{HCFC22}	The molecular weight of HCFC22, its value is 86.45
M_C	The molecular weight of carbon, its value is 12
M_F	The molecular weight of fluorine, its value is 19

$$q_{C\_HCFC21} = q_{HCFC22} * r_{HCFC21} * M_C / M_{HCFC21} \quad (13)$$

$$q_{F\_HCFC21} = q_{HCFC22} * r_{HCFC21} * M_F / M_{HCFC21} \quad (14)$$

Where,

q_{HCFC22}	The quantity of HCFC22 production annually (tonne). Its value is summed by the historical monthly production records.
r_{HCFC21}	The byproduct rate of HCFC21 annually (%). According to the historical records, the average byproduct rate of HCFC21 within 2002-2004 is 0.19%. To be conservative, we chose 0.2% as the value of r_{HCFC21}.
M_{HCFC21}	The molecular weight of HCFC21, its value is 102.9
M_C	The molecular weight of carbon, its value is 12
M_F	The molecular weight of fluorine, its value is 19

$$q_{C\_HCLacid} = q_{HCLacid} * s_{HCFC22\_in\_acid} * M_C / M_{HCFC22} \quad (15)$$

$$q_{F\_HCLacid} = q_{HCLacid} * s_{HCFC22\_in\_acid} *2* M_F / M_{HCFC22} \quad (16)$$

$$q_{F\_HCLacid\_Inorganic} = q_{HCLacid} * c_{F\_in\_HCLacid} / d_{HCLacid} \quad (17)$$

Where,

$q_{HCLacid}$	The quantity of HCL acid byproducted from the HCFC22 production facility annually (tonne). Its value is sourced from the historical production records.
$s_{HCFC22\_in\_acid}$	The saturation solubility of HCFC22 in HCL acid (%), this value is 0.32% sourced from page 40 of the Manual for Fluoration Chemical Production published by Chinese Chemical Press on 1996.
$c_{F\_in\_HCLacid}$	The annual average concentration of inorganic F in HCL acid (g/L). Its value is sourced from the historical production records.
$d_{HCLacid}$	The density of HCL acid (g/cm^3). This value is 1.14 g/cm^3 under the average temperature is 25℃ and the concentration of HCL is 32%.
M_{HCFC22}	The molecular weight of HCFC22, its value is 86.45
M_C	The molecular weight of carbon, its value is 12
M_F	The molecular weight of fluorine, its value is 19

$$q_{C\_spentcaustic} = q_{spentcaustic} * s_{HCFC22\_in\_spentcaustic} * M_C / M_{HCFC22} \quad (18)$$

$$q_{F\_spentcaustic} = q_{spentcaustic} * s_{HCFC22\_in\_spentcaustic} *2* M_F / M_{HCFC22} \quad (19)$$

$q_{F\_spentcaustic\_Inorganic} = q_{spentcaustic} * c_{F\_in\_spentcaustic} / d_{spentcaustic}$ (20)

Where,

$q_{spentcaustic}$	The quantity of spent caustic byproducted from the HCFC22 production facility annually (tonne). Its value calculated as per the following formula (21).
$s_{HCFC22\_in\_spentcaustic}$	The saturation solubility of HCFC22 in the spent caustic (%), this value is 0.32% sourced from page 40 of the Manual for Fluoration Chemical Production published by Chinese Chemical Press on 1996.
$c_{F\_in\_spentcaustic}$	The annual average concentration of inorganic F in spent caustic (g/L). Its value is sourced from the historical analysis records.
$d_{spentcaustic}$	The density of spent caustic (g/cm^3). This value is 1.05 g/cm^3 under the average temperature is 25℃.
M_{HCFC22}	The molecular weight of HCFC22, its value is 86.45
M_C	The molecular weight of carbon, its value is 12
M_F	The molecular weight of fluorine, its value is 19

$q_{spentcaustic} = q_{caustic} * c_{caustic} / c_{spentcaustic}$ (21)

Where,

$q_{caustic}$	The quantity of caustic used by the HCFC22 production facility annually (tonne). Its value is sourced from the historical production records.
$c_{caustic}$	The concentration of caustic (%). This value is 30% according to technical requirement of HCFC22 production facility in Yingpeng Chemical Co., Ltd.
$c_{spentcaustic}$	The concentration of spent caustic (%). This value is 5% according to technical requirement of HCFC22 production facility in Yingpeng Chemical Co., Ltd.

$q_{C\_leakage} = q_{HCFC22} * r_{Leakage\_HCFC22} * M_C / M_{HCFC22}$ (22)

$q_{F\_leakage} = q_{HCFC22} * r_{Leakage\_HCFC22} * 2\ M_F / M_{HCFC22}$ (23)

Where,

q_{HCFC22}	The quantity of HCFC22 production annually (tonne). Its value is summed by the historical monthly production records.
$r_{Leakage\_HCFC22}$	The leakage rate of HCFC22 annually (%). Its value estimated below: The leakage of HFC22 is about 47 tonnes, it includes: (1). The annual leakage for the reactors of HCFC22 discharging the used catalyst is less than 24 tons; (2). The annual leakage for maintenance of reactors is less than 6 tones; (3). The annual leakage for replacing the molecular sieve is less than 14 tones; (4). The annual leakage for loading and sampling of HCFC22 is less than 3 tons. So the leakage rate of HCFC22 in 2002, 2003 and 2004 is calculated as follows: $r_{Leakage\_HCFC22\_2002} = 47/15115.37 * 100\% = 0.31\%$ $r_{Leakage\_HCFC22\_2003} = 47/22723.90 * 100\% = 0.21\%$ $r_{Leakage\_HCFC22\_2004} = 47/23269.14 * 100\% = 0.20\%$ To be conservative, we chose 1% as the value of $r_{Leakage\_HCFC22}$.
M_{HCFC22}	The molecular weight of HCFC22, its value is 86.45
M_C	The molecular weight of carbon, its value is 12

M_F	The molecular weight of fluorine, its value is 19

$$p_{C\text{-}emission} = p_{HFC23} / M_{HFC23} / (p_{HFC23} / M_{HFC23} + p_{HFC22} / M_{HFC22}) *100\% \quad (24)$$

$$p_{F\text{-}emission} = 3*p_{HFC23} / M_{HFC23} / (3*p_{HFC23} / M_{HFC23} + 2*p_{HFC22} / M_{HFC22}) *100\% \quad (25)$$

Where,

p_{HFC23}	The proportion of HFC23 in the exhausted gas vented from the HCFC22 production facility (%). Its value is sourced from the historical production records.
p_{HFC22}	The proportion of HFC22 in the exhausted gas vented from the HCFC22 production facility (%). Its value is sourced from the historical production records.
M_{HCFC22}	The molecular weight of HCFC22, its value is 86.45
M_{HFC23}	The molecular weight of HFC23, its value is 70

The detailed calculation spreadsheet of determination of *w* has supplied to DNV for verifying during validation.

3. The PP/DOE shall clarify why sold HFC23 will be monitored using sales records and not metered as required by AM0001 version 5.2 (page 12).

We acknowledge that sold HFC23 will be monitored using sales records is a typo. That sold HFC23 will be monitored using flow meters and cross checked using the production and sales records is correct. PDD updated.

With the above explanation and clarification, we expect that the concerns raised by CDM Executive Board have been fully and adequately addressed, and we sincerely hope that the CDM Executive Board would approve this project for registration.

Yours sincerely,

Ruikang Yan
Yingpeng Chemical Co., Ltd.
#69, Yonghua Road
Yongkang, Zhejiang, P.R.China, 321300
Tel: +86 579 87265560
Fax: +86 579 87265338
E-Mail: ruikang.yan@yingpengchemical.com

Note:

In case you have any further question or request during review process, please don't hesitate to contact us by phone call or Email to persons list as below:

Mr. Ding Zhaoming

Tel: =86-10-6657 5558
Mobile: =86-135 0117 8568
E-Mail: dingzm1@gmail.com