

## **Minutes**

### **Technical Expert Review: Quantification Protocol for Nitrous Oxide Abatement Projects**

**Date:** November 6, 2008  
**Location:** EPCOR Place, Calgary and Conference Call  
**Time:** 9:00 am to 12:00 pm MST

#### **In Attendance**

<b>Organization</b>	<b>Name</b>	<b>Initials</b>
Orica	David Hind	DH
EPCOR	Renee Levesque	RL
Global Analyzer	Brian Rosentreter	BR
Agrium	Brian Gilbertson	BG
Climate Change Central	Amanda Stuparyk	AS
ClimateCHECK	Patrick Hardy	PH
ClimateCHECK	Rob Janzen	RJ
Terra Industries (Terra Nitrogen)	Kim DeMarsh	KD
Terra Industries	Eric Kelly	EK
Terra Industries	Regan Pfaff	RP
AN Resources	Frank Wolf	FW
Saskatchewan Research Council	Jason Wilkinson	JW
Dyno Nobel	Gary Prince	GP
Dyno Nobel	Barbara Cabot	BC
Austin Powder	Shawn Rana	SR
Invista	Rob Routliffe	RR
Geneva Nitrogen	Steve Olsen	SO

#### **Invited but not in Attendance:**

<b>Organization</b>	<b>Name</b>
Terra Industries	Dan Kilpatrick
Pembina	Matt McCulloch
Saskatchewan Research Council	Keith W Wallace
Dyno Nobel	Vic Mudie
Dyno Nobel	Sam Correnti
Agrium	Doug Beever
Canadian Fertilizer Institute	Clyde Graham

**Meeting Opened:** 9:05 am MST

<p><b>1. Welcome</b>  Renee Levesque welcomed all to the meeting</p>
<p><b>2. Round Table Introductions</b></p>
<p><b>3. Review of the Alberta Offset System Protocol Process</b>  Amanda Stuparyk provided an overview of the protocol process.</p> <ul style="list-style-type: none"> <li>▪ Part of a PPP contracted to facilitate the protocol development process</li> <li>▪ Alberta Environment has final approval</li> <li>▪ July 1, 2007 the Alberta Government introduced a regulatory framework for gas emitters to have a 12% intensity reduction with three options to meet this:</li> </ul>

- Internal improvement through emission performance credits both bankable and transferable
- Credits with a price cap of \$15/ tonne
- Offset credits where facilities purchase verified credits
- Eligibility criteria for projects includes:
  - Projects must have a start date on or after January 1, 2002
  - Projects must have real protocols i.e. be demonstrable and quantifiable
  - Projects must be incremental not regulated by law
  - Projects must have a clear and identifiable ownership or split ownership
  - Projects must be generated and based within Alberta
  - Offset credits can only be serialized once
  - Projects must have verification by a recognized third party i.e. accountant or engineer
- Currently at step Seven of 11 – first round technical review to ensure
  - Transparency
  - Identification of issues early on in the process
  - There is a sustaining consensus to proceed
- Dates to note
  - Submission deadline is November 15
  - Second round technical review will be in the second week of December either the 11<sup>th</sup> or 12<sup>th</sup>
- The protocol must meet ISO 14064 standards
- Alberta Government states to keep in mind four principles during development
  - Environmental integrity
  - Usability and practicability
  - Justification of any adaption of precedence
  - Life cycle analysis

#### 4. Review of the Quantification Protocol

Patrick Hardy performed high-level review of the protocol document

##### *Comments*

BG: Should 298 GWP multiplier for N<sub>2</sub>O used versus the projects 310 GWP multiplier

PH: 2007 report has been published with 298, but 310 is still the standard being used today; it will be an Alberta Environment decision to adopt

**Protocol Action: No action required**

##### **Section 1**

#### **1.0 Project and Methodology Scope and Description**

No comments

#### **1.1 Protocol Scope and Description**

No comments

#### **Protocol Approach**

No comments

#### **Figures 1.1 and 1.2**

FW: in 1.2 mention should be made of the cobalt oxide catalyst used in a limited number of plants to avoid the protocol being technology specific

**Protocol Action: Add Cobalt and other catalytic materials to the definition of Catalyst Gauze**

AS: should B2 - leakage emissions be included in the baseline diagram

PH: B2 should not be included in the baseline as the baseline does not have the secondary

catalyst installed; leakage also excluded from CDM baseline

***Protocol Action: remove leakage “B2” from baseline***

RR: is there a reliance on one campaign and is it possible for the proponent to manipulate the baseline

PH: yes there is only one campaign for the baseline. Possibility is there for manipulation but can only ask for more historical data

DH: one campaign is suitable for this baseline. There is a five year history used to demonstrate statistically the suitability of the baseline

RR: consideration to move to a more conservative baseline due to catalysts in the market to reduce N<sub>2</sub>O by 30-40%

DH: referring to FTC catalyst program, Orica baseline was completed with FTC Catalyst. The improvement in efficiency associated with FTC was not measurable.

SO: tried FTC and it did not work, created operational problems

SR: have tried FTC and also had operational problems with no improvement in efficiency

***Protocol Action: No action required***

**Protocol Applicability and Protocol Flexibility**

No comments

**1.2 Glossary of New Terms**

SO: FTC gauze seems to be heavily loaded with palladium and rhodium what about other precious metals

DH: there is a generic catalyst for ammonia and oxygen mentioned but could include generic words for catalyzing agent

FW: define what an oxidizing catalyst needs to do and define what the current metals are

AS: need to include a reference to global warming potential. Alberta Environment has said that there will be a review every five years of the quantifiable protocols if there have been no major changes/ issues before then

***Protocol Action: Add Cobalt and other catalytic materials to the definition of Catalyst Gauze***

**Section 2**

**2.0 Quantification Development and Justification**

No comments

**2.1 Identification of Sources and Sinks (SS's) for the Project**

No comments

**Figure 2.1 and Table 2.1**

No comments

**2.2 Identification of Baseline**

No comments

**2.3 Identification of SS's for the Baseline**

RR: what about additional catalyst technologies that exist today, should they be considered

SO: is there an established baseline reference to best available technology eg FTC gauze.

Should there be a requirement for gauze to be as efficient as possible or left up to the producer.

DH: not sure there is a reference to best available technology and would debate if FTC is the best  
 SO: should there be a mandate to state you should be using best available technology  
 DH: goal for the producer to identify the catalyst  
 SR: should not limit the producer to a specific catalyst  
 GP: would fully support not including one catalyst type as it would limit other catalysts from being included

**Protocol Action: No action required**

*Note: In summary, primary catalyst selection should be done per plant based on operational experience and desired ammonia conversion efficiency. There is not one best primary catalyst for ammonia conversion.*

**Figure 2.2 and Table 2.2**

No comments

**2.4 Selection of Relevant Project and Baseline SS's**

No comments

**Table 2.3**

No comments

**2.5 Quantification of Reductions, Removals and Reversals of Relevant SS's**

No comments

**2.5.1 Quantification Approaches**

No comments

**Table 2.4**

FW: the velocity flow rate is that actual or standard

DH: velocity measured as actual and converted to standard

BR: is the flow rate the same as NO<sub>x</sub> and corrected to standard conditions

DH: measured at end of stack and corrected to standard conditions

**Protocol Action: No action required**

**2.5.2 Contingent Data Approaches and N<sub>2</sub>O CEMS 2.4.4 Backfilling and Substitution for Missing Data**

SR: are we able to extrapolate if something goes wrong

DH: the previous 120 hours are averaged for a maximum of 120 hours or five days to fill in the missing data

SR: what about a start up and shut down event

DH: it would be a fully monitored using the CEMS

FW: is start up and shut down part of a defined campaign

DH: yes

**Protocol Action: No action required**

**2.6 Management of Data Quality, 2.6.1 Record Keeping and 2.6.2 Quality Assurance/**

**Quality Control**

SR: the US production side have other regulations for data keeping times  
 RL: would meet the protocol requirements and the regulation requirements  
 DH: or whichever is longer

**Protocol Action: No action required**

**Appendices**

**Appendix A**

RR: are we anticipating challenge based abated non-selective catalyst reduction  
 DH: has been considered but the baseline needs to be based on the facility and its performance not on a standard  
 GP: each plant in his business is unique and a performance standard is not appropriate  
 DH: each plants N<sub>2</sub>O emissions are specific to that plant based upon technology selection, facility operation, modifications and NO<sub>x</sub> abatement systems

**Protocol Action: No action required**

**Appendix B**

No comments

**Appendix C**

FW: bleach air has not been considered in here  
 DH: not sure where it would fit in as for us it is recycled back into the process  
 FW: is it part of process gas that goes through abatement out stack  
 DH: only one stack. Measure at the end of stack and metering apparatus' on the tail gas stack

**Protocol Action: No action required**

*Note: Bleach air would be measured as part of end of stack gas*

SR: what about interference with NO and N<sub>2</sub>O readings from ammonia giving false high readings  
 DH: have an extended absorption method and use a total independent test method to verify the analyzer  
 JW: reference method has some interference from gases but can calibrate systems to counteract; also documented procedure from the EPA  
 SR: note in the protocol that there is possibly some interference from gases that may produce false high readings  
 DH: comes down to instrument selection  
 BR: in Appendix D the guidelines state a less than 4% of scale for interference gases  
 SR: if covered in selection of meters I'm okay with that

**Protocol Action: No action required**

*Note: Gas interferences is covered by the attached appendix N<sub>2</sub>O Meter (CEMS) Code*

**Appendix D**

BR: reviewed N<sub>2</sub>O meter code and compared it with the 1998 Alberta CEMS code. They closely match and in two cases the N<sub>2</sub>O code has tighter specifications than the Alberta code

**Protocol Action: No action required**

**5. Additional Questions/ Comments**

BR: in relation to backfilling 120 hours how steady are emissions or is there a possibility of looking at process parameters either up or down

DH: if plant trips during 120 hours used for backfill, won't be representative

FW: some will be of steady data so backfilling will cover some but not all

DH: for example meter failure. The 120 hours should be suggestive of stable operation

GP: recent continuous operation of 120 hours

**Protocol Action: Modify 2.4.4 Backfilling and Substitution for Missing Data in the protocol to require the "averaging 120 hours of representative continuous data during stable operations" to backfill the missing data**

BC: in table 6 what is the frequency of QA/QC. We have a two cylinder gas and RATA in the US EPA

DH: AB requires two cylinder gas audits and 2 RATA's per year, protocol requires one cylinder gas audit and one RATA per campaign to ensure a cylinder gas audit and RATA in each campaign

**Protocol Action: No action required**

**6. Summary of Suggested Changes to the Protocol**

RL: summarized changes

- Change the language for backfilling data to recent continuous operation of 120 hours
- Catalyst in definitions
- Reference for N<sub>2</sub>O multiplier

RL: based on discussion today have not heard any sustained objections; have until Nov 12, 12:00 noon to provide comments

*Note: No sustained objections from this meeting; technical review participants have until November 12, 2008 12:00 pm MST to provide comments.*

**7. Next Steps**

November 12 – send in any additional comments by 12 noon

November 13 – revised protocol sent to Technical Expert Review Participants

November 14 – final comments by 12 noon

November 15 – submission deadline

**Meeting Closed:** 10:25 a.m. MST