

National Framework for Petroleum Refinery Emission Reductions (NFPRER)

Progress Report on Accomplishments January - August, 2003

Background

The CCME National Framework for Petroleum Refinery Emission Reductions will provide a set of principles and methods to assist jurisdictions to establish annual facility emissions caps for common air pollutants and air toxics from petroleum refineries.

The CCME National Framework for Petroleum Refinery Emission Reductions (NFPRER) Steering Committee was established in Spring of 2002. The Steering Committee is co-chaired by Randy Angle of Alberta Environment and Marie Schingh of Environment Canada. It includes representatives from provincial and federal environment, energy and health departments, Canadian Petroleum Products Institute (CPPI), non-governmental health and environment organizations (NGOs). Environmental NGO members were nominated by the Canadian Environmental Network and the health NGO member was nominated by the NAICC-A Stakeholder Advisory Committee. A membership list is attached for your reference.

In addition, the Steering Committee has established 4 Sub-groups which will facilitate the development of the Framework, including:

- Benchmarking
- Health Prioritization
- Communications and Consultations
- Framework Development (including the Monitoring and Reporting Team)

Steering Committee

In February 2003, the Steering Committee (SC) held a face-to-face meeting at Environment Canada in Gatineau, Quebec. The purpose of the meeting was to provide an update to the SC on the January 23rd and 24th, 2003 NAICC-A/SAC meeting, discuss the revised SC Terms of Reference including the addition of the word Petroleum to the title of the initiative. Progress reports were presented by each of the Sub-group co-chairs and there was a discussion of structure, co-chairs and membership for the initiation of the Framework Development Sub-group. The Communications and Consultations Sub-group provided a Strategy document, a Terms of Reference including a workplan and budget for approval. A teleconference was held in May 2003 to approve the Terms of Reference for the Framework Development Sub-group and the Request for Proposal (RFP) for developing the Framework Methodology, Discussion Document and final Framework Document. A teleconference was held in June to approve the RFP for the Monitoring and Reporting Strategy of this initiative. The SC Terms of Reference have been finalized and were sent to NAICC-A in July for final approval.

The Steering Committee members were actively involved in a two-day information sharing meeting held in Gatineau, Quebec on July 7th and 8th hosted by the Framework Development Sub-group. Over forty members from the Steering Committee and Sub-groups participated in the meeting to review the reports and recommendations from the Benchmarking and Health Prioritization Sub-groups, and begin the development of the Framework.

Benchmarking Sub-group

The Benchmarking Sub-group is co-chaired by Environment Canada and Ontario Energy, and includes members from provincial and federal governments, industry and environmental groups. Meetings have been held at least monthly throughout the review period. A Sub-group face-to-face meeting was held on March 20th in Ottawa and members also participated in a two-day information sharing meeting hosted by the Framework Development Sub-group on July 7 and 8, 2003.

Work continued throughout the review period on a contract for *Benchmarking of Refinery Emission Performance* being carried out by Levelton Engineers (sub-contractors: Purvin & Gertz and Don O'Connor). The purpose of this study is to prepare a report compiling petroleum refineries air emissions performance data for Canada and the United States, and investigating and recommending parameters with which to normalize and compare refinery emissions data. The report was finalized in April with minor revisions in June. The Sub-group continued extensive additional analysis on the data to explore other options for comparing refinery emissions data. In the end, the Sub-group agreed with the normalizing parameters recommended by the consultant.

Based on this work, the Sub-group has been successful in developing a database of refinery emissions and process information for Canada and the U.S. that can be used by the Framework Development Sub-group. Canadian data were verified by the facility representatives from industry for most of the refineries. For three refineries, in New Brunswick, Saskatchewan and Newfoundland & Labrador, facility representatives did not review the emissions or facility information presented. Government representatives in New Brunswick and Newfoundland and Labrador provided a review to the best of their ability and were active on the Sub-group. A Saskatchewan government representative provided more recent emissions data for SO₂ and NO_x after the consultants' report was finalized.

The Sub-group has agreed on recommended correlations for U.S. refinery emissions to develop benchmarks against which emissions from Canadian refineries can be compared for sulphur oxides (SO_x), nitrogen oxides (NO_x), volatile organic compounds (VOC), carbon monoxide (CO), particulate matter (direct PM₁₀ and direct PM_{2.5}) and benzene. For most pollutants, the throughput of crude oil was determined to be the best normalizing parameter.

In addition, the Sub-group managed a contract with Marbek Resource Consultants (sub-contractor: AMEC) for *Benchmarking of Regulatory Regimes*. The purpose of this study is

to prepare an overview and assessment of petroleum refinery emission regulations in Canada, the United States, the European Union, key European Union countries, and Japan at the local, provincial/state and federal levels. The report was finalized in May.

The report documents information on regulatory regimes in Canada, the United States, Europe and Japan. The consultant was able to conclude that setting facility-wide performance-based limits for air pollutants is an innovative approach to regulating facility emissions for a range of pollutants. Its application as a singular approach for petroleum refineries remains to be fully proven, although it has been tried in a number of cases, for a narrow set of pollutants. It appears to have potential to allow the greatest flexibility to facilities in achieving emissions reductions, and is expected to be more cost-effective than prescriptive approaches.

The Benchmarking Sub-group has completed its work and has provided a report to the Steering Committee. The executive summaries of the two consultants reports and the Sub-group report will be posted on the CCME website prior to the consultation workshop.

Health Prioritization Sub-group

The Health Prioritization Sub-group is co-chaired by Environment Canada and the Canadian Lung Association, and includes members from provincial and federal governments, industry, health and environmental groups. Meetings have been held regularly throughout the review period. A Sub-group face-to-face meeting was held on May 21st in Gatineau, Québec and members also participated in a two-day information sharing meeting hosted by the Framework Development Sub-group on July 7 and 8, 2003.

Work continued on the contract for the *Literature Review - Health Implications of Petroleum Refinery Emissions* carried out by WBK and Associates. The report was finalized in July.

Although the available literature was limited, WBK reported that the public health risk assessments identified possible concerns for short-term respiratory effects from exposure to sulphur dioxide and other substances, as well as cancer risks from benzene and other substances, near some of the Canadian refineries. The WBK report noted these risk assessments were designed to be conservative (ie. precautionary) in nature. The Sub-group also noted that the work by WBK complements, and provides some additional support for the well-documented cardiac and respiratory effects of air pollution including particulate matter (PM) and ground-level ozone.

A second project, entitled *Assessment of Comparative Human Health Risk-based Prioritization Schemes for Petroleum Refinery Emission Reductions* was awarded to the Network for Environmental Risk Assessment and Management (NERAM) from the University of Waterloo. The final report was received in July.

The NERAM team assessed a variety of available schemes for prioritizing air toxics based on their relative health impacts. To do this assessment, a computer spreadsheet package called HEIDI (Health Effects Indicator Decision Index) was developed and trialed for a

limited number of air toxics for a few refineries. A subsequent phase of work anticipated to commence in August will extend the HEIDI model to include a broader range of air toxics and common air pollutants for the full set of refineries in Canada. This work is anticipated to provide some detailed, quantitative information to the Framework Development Sub-group for prioritizing substances based on the relative health risks of Canadian petroleum refinery emissions.

The Sub-group has provided an interim report to the Steering Committee and is currently finalizing this next phase of work. This additional work will need to be completed by November 2003, for inclusion into the Discussion Document.

Communications and Consultations Sub-group

The Communications and Consultations Sub-group is co-chaired by Environment Canada and the Friends of the Earth, and includes members from provincial and federal governments, industry, and environmental groups. For the first part of the year, meetings were held regularly and will continue on a periodic basis throughout the rest of the year. The Terms of Reference for the Sub-group including a workplan, as well as a Communications and Consultation Strategy were approved by the SC on February 21, 2003.

A key piece of the Communications and Consultations Strategy was the development of the website hosted by the CCME. The website became operational in April and includes background information on the NFPRER structure and organization, a set of frequently asked questions and will include the executive summaries of the consultant's reports. Since becoming operational the website has been accessed over 1000 times. For additional information, please refer to http://www.ccme.ca/initiatives/climate.html?category_id=69.

Over the next few months, the Sub-group will be planning for the public consultation workshop which will be held in late January or early February.

Framework Development Sub-group

The Framework Development Sub-group is co-chaired by Environment Canada and Alberta Environment, and includes members from provincial and federal governments, industry, health and environmental groups. The work of the Monitoring and Reporting Team who reports to this Sub-group is reported on separately. The members of the Sub-group met for the first time in March and submitted to the SC in early May, the Terms of Reference for the Sub-group and the Request for Proposal (RFP) for developing the Framework methodology, draft Discussion Document and the final Framework document.

The team of Levelton/Stratos was chosen through a competitive bidding process at the end of June to help the Sub-group develop the Framework. Levelton/Stratos helped organize

and deliver a successful two-day information sharing meeting on July 7th and 8th with nearly forty members from the Steering Committee and Sub-groups. The meeting provided all members with an opportunity to integrate lessons learned from all of the groups and to identify some potential directions for the framework.

Over the next three months, the Sub-group will be working on the development of the methodology, the 10 year action plan and the draft Discussion Document that will form the main body of work for the public consultation workshop. The monitoring and reporting strategy is being developed by the Monitoring and Reporting Team.

Monitoring and Reporting Team

The Monitoring and Reporting Team reports to the Framework Development Sub-group and is lead by the Ville de Montréal. Membership includes representatives from provincial and federal departments, industry, health and environmental groups. The Team met for the first time in May and submitted to the SC in June, the Request for Proposal (RFP) for the development of the Monitoring and Reporting Strategy which will be included in the Framework.

In August, Levelton was selected through a competitive bidding process to work with the Team in the development of the Monitoring and Reporting Strategy.

The Team will develop the Monitoring and Reporting Strategy over the next 3 months in preparation for the Discussion Document. Work will continue on the development of the details of the strategy for inclusion into the final Framework document.

Next Steps

The following tasks are planned for the remainder of 2003/2004:

- complete a second phase of work with the Health Prioritization Sub-group – Nov. 2003
- develop the Methodology, Monitoring and Reporting Strategy and 10-year Action Plan for inclusion into the draft Discussion Document – Nov. 2003
- distribute the draft discussion document and host a broader stakeholder workshop in Winter 2003/2004; and
- incorporate stakeholder input and present a final Framework document to NAICC-A by March 2004.

Submitted by: Steering Committee Co-chairs: Marie Schingh and Randy Angle
Approved by Steering Committee

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NATIONAL FRAMEWORK FOR PETROLEUM REFINERY EMISSION REDUCTIONS
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