A Response to *Canada Gazette* Part I, Vol. 144, No. 33 — August 14, 2010: NGO comments on Draft Assessment for Stream 1 of the Petroleum Sector Stream (20 chemicals) of the Chemicals Management Plan

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Introduction

The Canadian Environmental Law Association (CELA) and Chemical Sensitivities Manitoba (CSM) are submitting the following comments in response to the *Canada Gazette* Part 1, Vol. 144, No. 33, August 14, 2010 release of draft assessments documents for 20 substances identified under the Chemicals Management Plan (CMP), Petroleum Sector Stream Approach – Stream 1 (low boiling point naphthas - LBPNs).

CELA (www.cela.ca) is a non-profit, public interest organization established in 1970 to use existing laws to protect the environment and to advocate for environmental law reform. It is also a legal aid clinic that provides legal services to citizens or citizens' groups who are otherwise unable to afford legal assistance. In addition, CELA also undertakes substantive environmental policy and legislation reform activities in the areas of access to justice, pollution and health, water sustainability and land use issues. Under its pollution and health program, CELA has been actively involved in matters that promote the prevention and elimination of toxic chemicals addressed in the *Canadian Environmental Protection Act*, including the categorization process and implementation of the CMP.

Chemical Sensitivities Manitoba (CSM), a volunteer organization, was founded in 1997 by four individuals who saw the need to address the effects of toxic chemicals on human health and the possible link between the onset of chemical sensitivities and chemical exposure and, in particular, chronic low-level exposure. CSM raises awareness of the presence of toxic chemicals in the home and the environment and strongly advocates for the safe substitution of these toxins.

Our respective organizations have submitted substantial comments on assessment results and proposed management options for substances identified under the Challenge Program of the Chemicals Management Plan. To date, our organizations have commented on substances under Batches 1 to 9 and provided substantial comments on the government's risk management approach on these substances. While our organizations are pleased that progress is being made under the CMP to assess chemicals that have been in the Canadian market for many decades, we have used the public comment periods provided under CEPA 1999 to elaborate on the gaps and limitations on specific aspects of the risk assessments conducted and the proposed management instruments for specific chemicals. Consequently, we have proposed recommendations that aim to fully protect the environment and human health and improve the current assessment approach by raising the accountability to industry which should be providing relevant data in a timely manner to demonstrate the safety of their chemicals.

We have also submitted comments on the draft screening assessments for gas oils and heavy fuel oils in Stream 1 of the Petroleum Sector Stream Approach that address 10 chemicals. Our initial comments on the Petroleum Sector Stream focused on the areas

in the assessment approach where there is a need for more transparency in the rationale for government proposals and we have indicated that there is an urgent need for greater industry accountability as it applies to the 20 targeted chemicals.

In reviewing and comparing the draft screening assessment for gas oils and the heavy fuel oils to that for the 20 low boiling point naphthas (LBPN) – both being site-restricted, there were no obvious attempts to fill in the data gaps that were brought to the government's attention in our previous submission.[1] Again, in this report, we will reiterate these gaps and add to the list through our comments and recommendations for the 20 LBPNs that are classified as site-restricted.

The comments below are intended to provide your departments with a broad understanding of the public interest expectations for the government's approach on these chemicals one that would result in the protection of Canadians and their environment from toxic chemicals.

Background

In this submission, we have provided commentary to the draft risk assessments for the following substances:

Low boiling point naphthas (LBPNs) – CAS RNs:

64741-54-4, 64741-55-5, 64741-64-6, 64741-74-8, 64742-22-9, 64742-23-0, 64742-73-0, 68410-05-9, 68410-71-9, 68410-96-8, 68476-46-0, 68477-89-4, 68478-12-6, 68513-02-0, 68514-79-4, 68606-11-1, 68783-12-0, 68919-37-9, 68955-35-1 and 101795-01-1

The LBPNs are complex petroleum mixtures and are considered to be of unknown or variable composition, complex reaction products or biological materials, otherwise known as UVCBs. The substances can be used as blending ingredients in gasoline, or can be intermediate products of distillation or extraction processes, which subsequently undergo further refining.

To determine the fate and effects of these LBPNs in the environment, a suite of representative structures were selected for the major groups of petroleum hydrocarbons within the boiling point ranges of these substances.[2] These representative structures were used in environmental models to estimate fate and effects, the results of which were compared with available empirical data.

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[1] Access the report at: htpp://www.cela.ca/sites/cela.ca/files/735%20-%20CELA%20and%20CSM%20on%20CMP%20petroleum%20stream%201%28July%202010%29.pdf Dated July 28, 2010

[2] Environment Canada and Health Canada: Draft Screening Assessment Petroleum Sector Approach Stream 1 – Low Boiling Point Naphthas (20 substances) - site-restricted: Access http://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=82F527F8-1; page iii. Dated August 14, 2010

From available data, most of the LBPNs are likely to have high concentrations of C_4–C_6 hydrocarbons and as a result, should be considered to be persistent in air, based on criteria defined in the *Persistence and Bioaccumulation Regulations* of CEPA 1999. However, four of these substances also met all of the ecological categorization criteria for persistence, bioaccumulation potential and inherent toxicity to non-human organisms.[3] Experimental and modelled ecotoxicological data indicate that many of these LBPNs are moderately toxic to aquatic organisms possibly because of the presence of mono- and di-aromatic and alkylated aromatic hydrocarbons portions. A lack of data as to the proportions of these constituents makes it impossible to confirm this hypothesis.

Specific Comments on the Risk Assessment Approach

As mentioned above, there appears to be no significant departure in previous methodology applied by the government in the Petroleum Stream Approach Stream 1, to fill in the data gaps that have been identified by public interest organizations and that are considered crucial to the outcome of the draft risk assessment. It is the government's intent for the petroleum stream substances to have assessments done separately and in a different format from the substances under the Industry Challenge, with the hope that this approach will identify the efficiencies of the screening assessments upon which risk management strategies could then be proposed.[4]

With the similarities in approach between the first draft assessment and the current one, it can be assumed that the government considers this approach and the level of toxicity data included in the assessment reports to be acceptable for the decision making process under CEPA. However, we are concerned about the quality of the draft assessment conducted on these chemicals. The conclusions on toxicity were made with a significant lack of data on the chemicals. We have concerns that this approach will perpetuate the data gaps that already exist on these chemicals and that the basis for seeking management measures will not be possible unless these data gaps are addressed.

Therefore, our comments are intended to ensure that these assessments add to the information base on these chemicals, including more toxicity data sets to reduce the level of uncertainty in the decision making for the toxicity of these substances. In effect, it will demonstrate how the government applies the precautionary principle in the absence of this information. While there was mention of a lack of data in the draft assessment report, it remains unclear if any attempts were made to get industry to fill in these data gaps in addition to what was made available as a result of the section 71 survey. The draft assessment on these chemicals suggests that the precautionary principle should be applied with more rigour and the "lack of scientific certainty shall not

[3] Ibid, page ii

[4] Government of Canada. Chemical Substances. Access http://www.chemicalsubstanceschimiques.gc.ca/plan/approach-approche/petrole-eng.php, dated July 27, 2010

be used as a reason for postponing cost-effective measures to prevent environmental degradation."[5]

The following lists a number of gaps and concerns related to the assessment conducted on the above substances. These include:

- The proposed conclusion that the LBPNs do not meet the criteria set out in section 64 of CEPA 1999 is based on the level of uncertainty with specific data.
- The absence of general data for each of the substances including quantity use, number of facilities that use or blend LBPNs, and general location of these facilities. This information would be relevant to determine if additional focus should be given to specific locations in Canada that may have a concentration of facilities located in one region.
- The lack of details and rationale on how these substances are effectively addressed and managed within the current policy and regulatory frameworks (e.g. *Fisheries Act*). Specifically, it should be articulated if these chemicals or chemical families are targeted specifically in the applicable regulations. If so, how are they managed?
- The absence of statistical data regarding controlled or uncontrolled releases to the environment and the possibility of health effects to vulnerable populations, including workers, children, and fence line communities.
- The UVCB chemicals covered in this assessment include chemicals with varying carbon chains from C4 to C12 including both aliphatic and aromatic structures and generally containing approximately 1% benzene. While the document recognized the carcinogenicity of benzene, it does not fully consider it in the assessment. Further details on what impacts the presence of benzene may pose to the environment and health in site restricted facilities are warranted and valuable to the results of the assessment.

Based on these and other gaps and concerns noted in this document, we encourage your departments to reconsider the findings of the draft screening assessments and change your decision on these substances.

Comments & Recommendations

1) Release information of site-restricted LPBNs

The draft screening assessment for the LPBNs does not give any indications of the amount of these substances produced, blended or released in the refineries and the upgraders, for any year. Also, any controlled or unintentional releases of these substances from these facilities have not been quantified and were not included in the assessments. In fact, the absence of this information presents a significant data gap that severely affects the quality of the assessment. The assessment approach

[5] *Canadian Environmental Protection Act*, 1999 (1999, c. 33)

dismisses without appropriate qualifications on the type and quantity of controlled or unintentional releases that may occur at these facilities. While some of these events may be reported under other regulatory requirements as suggested in the assessment report,[6] the absence of this data represents a misperception of the operations of these facilities.

Based on the recent environmental catastrophic events that included oil spills in southern United States[7] and in the Great Lakes region,[8] which were site restricted, and the aluminum refining waste deluge in Hungary,[9] the need to better understand the worse case scenarios for uncontrolled or unintentional releases of chemicals to the environment should be presented in the assessment. These events are difficult to contain and pose significant dangers to the workers and the surrounding community. These possible events should be considered fully in the scope of the assessment to identify potential areas of inefficiencies when these chemicals are either blended, releases or produced in the refineries and upgraders. Based on the information presented in the assessment report, we are unsure if this type of information was omitted due to confidential business information, the lack of evidence provided by stakeholders or a combination of both. The assessment conclusions should clearly indicate the status of such information and what data were used to conclude that any releases of these chemicals would be minimal. This information is critical for potential management measures since most LBPNs are persistent in air, moderately toxic to aquatic organisms and are also human carcinogens.

Recommendation: Based on the lack of data mentioned above, the government should use its authority under CEPA to fill in these data gaps using section 71(1)(c) and apply the precautionary principle in the absence of data.

Recommendation: The assessment report should be revised to include full explanations on existing information gaps approaches to be taken by government to fill such gaps. This should include an explanation to indicate if information is available or not.

2) Significant New Activity (SNAc) provision

Under the CMP, there has been a trend toward issuing SNAcs to high hazard – low volume "existing" substances without designating them as CEPA toxic. The 20 substances have been proposed for the SNAc provision under section 83(1) of the

[6] Environment Canada and Health Canada: Draft Screening Assessment Petroleum Sector Approach Stream 1 – Low Boiling Point Naphthas (20 substances) - site-restricted: Access http://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=82F527F8-1; page iii. Dated August 14, 2010. page 8

[7] *Deepwater Horizon* oil spill in the Gulf of Mexico April 20, 2010 to July 15, 2010

[8] Suncore Energy oil spill in St. Lawrence River September 29, 2010

[9] October 5, 2010

Canadian Environmental Protection Act. We continue to express concerns we have with the proposal to apply a SNAc provision for these types of substances. These concerns include the following:

a) Application of SNAcs will not lead to the reduction in the use or release of these substances over time but rather, it provides a signal to other potential users that notification will be required. This is of significant concern as the assessment has presented substantial evidence of persistence in air, toxicity in the aquatic environment and potential impacts to human health. The current practice will be permitted without additional requirements for facilities to reduce the use or unintentional releases of LPBNs based on the assessment conclusion and application of SNAcs. Continued use of these substances will not minimize or eliminate potential health or environmental impacts.

b) SNAcs will require the further assessment of chemicals under the New Substances Program. The results of these assessments may not necessarily result in applying elimination or reduction strategies on these substances, regardless of the initial data gathered through the categorization process.

b) Failure to designate these substances CEPA toxic means that no government action is required to develop management measures on these chemicals unless the SNAc provisions are completed and a finding of toxicity is made under CEPA. This also means that there is no incentive to discover and test safe alternatives for these chemicals at this particular time to prevent its use in Canada in the future.

c) The New Substances Program, under which the SNAc notices will be implemented, lacks a public engagement component for reviewing results of the assessment. There is a clear disconnect between the public transparency and engagement that are being promoted by the government under the CMP and the process outlined under the New Substances Program, since it lacks obligations to seek public comments.

d) The SNAc provision was originally designed to address substances “new” to Canada and assessed under the New Substances Program. This provision was not originally designed to address existing substances on chemicals listed under the Domestic Substances List but has been significantly applied for this use during the implementation of the CMP.

e) For chemicals targeted for SNAcs, the government will rely on data sets outlined in various Schedules (principally from Schedules 4 to 6 – Chemicals and Polymers) of the New Substances Notification Regulations. It is our view, the approach to select specific data requirements from these different schedules may not necessarily result in a complete data set for a chemical to demonstrate its safety to health and the environment. As noted in previous submissions by NGOs responding to the use of SNAcs, these schedules do not require the submission of all toxicity end points identified as relevant for assessing substances on the DSL. For example, industry will not be required to submit data on vulnerable populations such as infants and children,

workers and aboriginal communities, or on chronic toxicity, endocrine disruption potential, and neurotoxicity, or on cumulative and synergistic impacts.

f) We note that under the CMP, SNAcs have been proposed for about 180 substances.[10] It is our view that rather than using SNAcs, it is more protective and precautionary for the government to list all of these chemicals as CEPA toxic and to develop regulations to prohibit their import, use and manufacture in the future.

g) There has been very limited public policy debate or review on the use of SNAc notices to existing substances under the CMP, despite efforts by ENGOs to raise this important policy issue in submissions on the various batches in the CMP. In the fall of 2009, the government had committed to releasing a guidance document on the SNAc program but the report has yet to be released for public comments. NGOs would welcome the opportunity to discuss the government's approach on the application of SNAcs and its overall contribution to reduce and eliminate the impact of toxic chemicals.

Recommendation: The government should initiate a comprehensive policy dialogue to assess the applicability of SNAcs to existing substances under the CMP, beginning with the release of a guidance document.

Recommendation: The government should make revisions to the New Substances Program to ensure public engagement on substances that are notified under the SNAc provision.

Recommendation: The government is urged to develop action plans for these chemicals with an aim for reduction or elimination of these chemicals rather than apply SNAc. (See issue #6 below on "Conclusion of toxicity under CEPA 1999")

3) Precautionary principle should be applied with uncertain and insufficient data

To determine the fate and effects of these LBPNs in the environment, a suite of representative structures were selected for the major groups of petroleum hydrocarbons within the boiling point ranges of these substances.[11] These representative structures were used in environmental models to estimate fate and effects, the results of which were compared with available empirical data. While there are many gaps in the data about these substances, the conclusion made by the government is to assume that the impacts to human health and the environment are low, because these substances are site-restricted.

[10] Canada's Chemicals Management Plan. Web portal – The Challenge at http://www.chemicalsubstanceschimiques.gc.ca/challenge-defi/index-eng.php. Dated October 6, 2010. This figure includes substances proposed for SNAc from 500 high priority chemicals and those chemicals covered under Batches 1-9 of the Industry Challenge including proposal for notification of future use on CEPA "toxic" chemicals

[11] Ibid, page iii

It is our view that this presents an inaccurate reflection of the fate of these chemicals since the government has failed to quantify the releases – controlled or unintentional releases of these chemicals demonstrating the potential of these chemicals to enter the environment. The lack of data to demonstrate how these types of releases may affect neighbouring communities should not be dismissed with a general conclusion that it would create a low impact on the environment or human health. In these situations, we expect the government to apply the precautionary principle due to the absence of good data or known uncertainties regarding these chemicals.

The rational and supporting data for the bioaccumulation for these LBPNs appear to be less defined than that used for determining persistence. Because of a lack of toxicological data on these substances, empirical and modelled data for log K_{ow} of substances with structures closely related to the LBPNs, were employed in the assessment. With log K_{ow} values ranging from 2.1–6.1, some of the values suggest that there is a potential for some of these substances to bioaccumulate in biota. The modeled bioconcentration factor (BCF) data for the same substances indicated a low bioconcentrion potential for many of the substances which the document claimed 'is seen in the environment.'[12] It is not clear if this deduction was made as a result of data that was cited from the Tolls and van Dijk study (2002).

This study indicated some co-relation for the BCF value of a C12 isoalkane at between 880 and 3500 L/kg, which is consistent with the modelled BCF value for 2,3-dimethyl decane (1910L/kg) but not the BAF value which was estimated at 8232L/kg. Also, the draft assessment cited evidence that low BAF values for some *n*-alkanes around C12 and some C10–C12 aromatics and alkylated aromatics are bioaccumulative in mussels and various trophic levels of fish via diet. However, the research data on the accumulation of *n*-alkanes and PAHs in this size range do not indicate the high BAFs predicted by the BAF model. As a result, the conclusion was made that the LBPNs under consideration are not considered to be bioaccumulative because they do not contain representative structures that bioaccumulate.

While data exist to show that some of these site restricted chemicals do not have the potential to bioaccumulate, there are situations where the data using modelled log Kow values (2.1-6.1) have demonstrated moderate to high BAF values for these substances. Recognizing that the LPBNs have a high C4-C6 content, some examples of include: C9 nonane – Log Kow 5.7 with a BAF value of 13,300L/kg, C12 n-hexyl cyclohexane – Log Kow 6.1 with a BAF vale of 9,600 L/kg. There were no obvious additional efforts or information given in the report to indicate approximately, how much of these structures that have the potential to bioaccumulate or be persistent, could be present in the substances under assessment or the volume of these substances that is applicable to the petroleum sector.

The absence of this information makes it difficult to support the conclusions in the assessment report on bioaccumulation. Based on the data presented on BAF or BCF, the bioaccumulation criteria remain uncertain for these substances. In fact, the

[12] Ibid, page 14

assessment report fails to conclude whether these chemicals are bioaccumulative based on the criteria defined in the Persistence and Bioaccumulation Regulations of CEPA 1999. With this level of uncertainty for the bioaccumulation criteria of these substances, it would be difficult to support the current draft assessment decision. Hence, this draft assessment conclusion has profound implications for decisions made by government to better manage these substances in the future.

It is our view that the uncertainty in this data set for bioaccumulation should have been better addressed by the government by using its authority to collect additional data from affected facilities using section 71(1)(c) of CEPA. In the absence of additional data to validate the bioaccumulation criteria, it would be appropriate for the government to apply the precautionary principle in its decision. Therefore, for the government to conclude on the side of safety on these LBPNs and propose measures that aim to reduce their uses, would be in keeping with a precautionary approach.

Recommendation: See previous recommendation under #1. We urge the government to seek additional data for chemicals for which data remain uncertain, for example, for criteria such as the bioaccumulation factor. The government should use its authority under section 71(1)(c) of CEPA to fill this data gap or to reduce uncertainty.

Recommendation: In the absence of valid bioaccumulation data, the government should apply the precautionary principle and take necessary measures to manage the chemical based on the existing level of uncertainty.

4) Disposal of site-restricted substances

With the assumption that the releases of these site-restricted substances to the environment will be minimal, there was no elaboration of the disposal methods for these substances. In fact, the assessment does not explore the complete life cycle of these chemicals from their use to the eventual disposal process, further treatment processes or recycling processes, even if they were to occur strictly on-site. While we recognize that there would be provincial regulations regarding waste disposal of these substances, we consider the disposal methods to be also relevant in these assessments as there are concerns about the persistence and bioaccumulation of some of these substance and in some cases, any possible breakdown by-products. Even eventual storage of waste on-site may pose potential danger to the environment or health and should be considered in the scope of the assessment.

Recommendation: The risk assessment approach for the petroleum sector stream should consider the full life cycle of the substance with particular emphasis on the disposal methods for each substance and the consideration of all byproducts created throughout the process.

5) Consideration of vulnerable populations

The assessment process conducted on these chemicals was focused on the site-restricted parameters of the substances. However, there is no solid evidence or data presented in the draft assessment report that support the notion that these substances remain on the facility site. In fact, we would hope that the government's efforts under these assessments had included a focus on vulnerable populations - people living in communities outside of the fence-line.

We are extremely disappointed that the assessment report did not provide any further explanations of the potential impacts these substances may have on plant workers. We understand that assessments conducted under CEPA do not address occupational settings. Due to the presence of benzene – a human carcinogen, in most of the LBPNs, and the possibility of other human health effects from exposure to these "site-restricted" substances, further pertinent information from these facilities should be requested. This approach should help inform and improve existing safety practices in the workplace required under the authority of the provincial jurisdiction for the petroleum sector. The assessment of these 'site-restricted" substances" should have been used to identify future plans for protecting workers. As a result, the draft assessment report did not attempt to provide or suggest any recommendations to the provinces as to areas of work that could be undertaken on these substances in order to determine the impacts to workers who work with these substances.

As noted, the other vulnerable populations that have not been considered in the assessment report are those communities which are located outside the fence line of the facilities. These communities, in close proximity to the facilities or located downwind from the facilities, could be negatively affected by substances released from these plants. The issue could be chronic exposure to these substances and, in particular, for vulnerable populations such as children, infants and pregnant women. The assessment report does not offer information to confirm that the processes used on-site do not release any of the substances or other by-products that may be toxic to health or environment.

Recommendation: While these substances are considered site-restricted, the government should improve the risk assessment approach by considering the impacts to the health of vulnerable populations, particularly for people living in close proximity (fenceline communities) or downwind from the facility and worker exposure to these substances.

6) Conclusion of toxicity under CEPA 1999

Based on the uncertainty of the data, particularly on persistence and bioaccumulation, and the absence of critical data on emissions or production in the assessment report, we question the conclusion that these substances do not meet the criteria of section 64 of CEPA. The draft assessment report presents sufficient evidence outlining the significant health impacts from these substances and also provides some insight on

impacts to the aquatic environment (although no data are presented). We would expect, based on the health evidence that these substances would sufficiently meet the criteria set under section 64 of CEPA. However, the absence of exposure data makes it difficult to meet the requirements under section 64 of CEPA.

Recommendation: We do not support the current decision that these chemicals do not meet the criteria for toxicity under CEPA due to the existing data gaps.

Recommendation: The government should take additional steps to provide data on releases of substances or by-products from processes using these substances. These data would provide the evidence to demonstrate that these substances remain strictly on-site.

Recommendation: On the basis of the data available on these chemicals, including persistence to air, toxicity to the aquatic environment and human health, we urge the government to designate the site-restricted LBPNs (as listed above) as CEPA toxic and seek appropriate management strategies as required under CEPA.

Recommendation: These LBPNs should be added to the List of Toxic Substances (Schedule 1) of CEPA.

Recommendation: We urge the government to consider adding these toxic chemicals on the Prohibition of Certain Toxic Chemicals Regulations under CEPA to ensure that future manufacture, import, or use of these chemicals are prevented.

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