Canadian Electricity Association | Association canadienne de l'électricité

December 23, 2010

The Honourable John Baird, P.C., M.P.
Minister of the Environment
c/o The Executive Director
Program Development and Engagement Division
Department of the Environment
Gatineau, Quebec K1A 0H3
Via email to: Existing.Substances.Existantes@ec.gc.ca

RE: Notice of Objection and Request for the Establishment of a Board of Review regarding the Proposed Order to add Vanadium Pentoxide (V_2O_5) to Schedule 1 of the *Canadian Environmental Protection Act 1999 (CEPA 1999)* as published in the Canada Gazette Part 1 (Vol. 144, No.44) Released October 30, 2010.

Dear Minister:

The Canadian Electricity Association (CEA), on behalf of its members, are filing a Notice of Objection under subsection 332 (2) and request that a Board of Review be established under section 333 of the *Canadian Environmental Protection Act 1999 (CEPA 1999)* regarding the proposed addition of vanadium pentoxide (V_2O_5) to the Toxic Substance List in Schedule 1 of *CEPA 1999*. CEA recommends that V_2O_5 be added to the Priority Substance List for further assessment.

CEA has provided comments on the Proposed Risk Management Approach (RMA) for Vanadium Oxide (Vanadium Pentoxide) as well as on the Draft Screening Assessment Report (SAR) on Vanadium Pentoxide. CEA is concerned with the manner in which the decision to propose the addition of V_2O_5 to the Toxic Substance List was derived.

Assessment Conclusions

The Assessment Conclusion states:

> *"On the basis of the carcinogenicity for which there is a probability of harm at any level of exposure, as well as the potential for other harmful effects, it was concluded that vanadium pentoxide, potassium bromate, TGOPE and methyl eugenol may be entering the environment in a quantity or concentration or under conditions that constitute or may constitute a danger in Canada to human life or health as set out in paragraph 64(*c*) of CEPA 1999."*

There is concern regarding two aspects of this statement:

- The basis of carcinogenicity for where there is probability of harm at any level of exposure
- Vanadium pentoxide is entering the environment in a quantity that may constitute a danger in Canada to human life or health.

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Probability of Harm at any Level of Exposure

One factor in the decision to propose the addition of V_2O_5 to the Toxic Substances List in Schedule 1 of *CEPA 1999* was that V_2O_5 is classified as a carcinogen by national and international agencies such as European Union, 1996; U.S. National Toxicology Program, 2002 (US NTP 2002); and the International Agency for Research on Cancer, 2006 (IARC 2006). It is understood that a weight of evidence approach was taken to conclude that V_2O_5 is carcinogenic; however, it is not clear through the above references how that was achieved. The *Summary Record Commission Working Group on the Classification and Labelling of Dangerous Substances*, European Union 1996 does not provide analysis or a conclusion on the carcinogenicity of V_2O_5. Furthermore, the IARC Monographs Volume 86 on V_2O_5 (IARC 2006), which references the US NTP 2002 study where exposure to V_2O_5 particles caused lung neoplasms in rodents, nevertheless concludes that:

"There is inadequate evidence in humans for the carcinogenicity of vanadium pentoxide"

And the overall evaluation concludes that V_2O_5 is not classified as a Group 1 or 2A (carcinogenic or probable carcinogenic), rather:

"Vanadium pentoxide is possibly carcinogenic to humans (Group 2B)"

Given that the most recent publication, IARC 2006, concludes that there is inadequate evidence of carcinogenicity in humans, CEA does not support the conclusions of the SAR that there is the probability of harm at any level of exposure. It is not clear why such an extrapolation of reference material was used in the assessment. CEA believes the weight of evidence warrants additional study, and thus, requests that V_2O_5 be added to the Priority Substances List for further assessment.

Vanadium Pentoxide Releases to the Environment

CEA along with individual members also provided new information indicating that vanadium pentoxide is not being released by fossil fuel-fired electricity generators as described in the draft SAR. The final SAR did not reflect this information in its conclusion and continued to implicate the electricity sector as a major emitter of V_2O_5. Our submissions of May 17, 2010 and November 17, 2010 provided the following information:

- Analysis of the fly ash[1] from a coal-fired electricity generator indicated that V_2O_5 does not exist.
- Analysis of fly ash from oil-fired electricity generation indicated that some V_2O_5 existed; however, vanadium was also present in other compounds such as nickel vanadium oxide (NiV_3O_8) and potassium vanadium oxide ($K_{0.33}V_2O_{4.67}$). This supports the argument that the vanadium content in the fuel is not converted 100% to V_2O_5.
- The vanadium content in Venezuelan oil used by one of CEA's members is 334 ppm; a significantly smaller quantity than the reference provided in the SAR (referenced as 1180 ppm V).

The main concern with the final SAR is that it is the primary basis of this proposed order and does not reflect accurate data or information. The main assumption for these emissions is that vanadium found in the fuel source (coal or oil) is converted 100% to V_2O_5; an erroneous assumption. CEA is concerned that the assumption that the fossil-fuel fired electricity generators are a significant contributor of V_2O_5 emissions is used to conclude that V_2O_5 may be entering into the environment in quantities that constitute a danger to human life or health. Health Canada and Environment Canada do not provide any evidence or reference material to

[1] Fly ash is collection of particulate matter from the flue gas using control equipment such as a baghouse, electrostatic precipitator, etc.

substantiate this assumption and have stated that it serves to provide as a conservative estimate.

CEA is concerned that the assessment for V_2O_5 will draw an unfair regulatory burden on industry and government that is not warranted. CEA also supports the comments submitted by the Vanadium Producers and Reclaimers Association in regards to the Proposed Order to add V_2O_5 to Schedule 1 of *CEPA 1999*. This is an important issue to both our associations.

CEA believes the information provided in both our previous submissions warrant further review of V_2O_5 releases into the environment. CEA would be pleased to work with Environment Canada and Health Canada to help develop an updated, realistic profile of V_2O_5 emissions from the electricity sector to determine the actual releases to the environment.

In summary, CEA is filing a Notice of Objection under subsection 332(2) and request that a Board of Review be established regarding the proposed order of adding V_2O_5 to the Toxic Substances List in Schedule 1 of *CEPA 1999*. It is our view that there is insubstantial evidence and grossly conservative assumptions present in the SAR that undermine the conclusion of the substance addition. It is imperative that correct and up-to-date information be used when assessing a substance for regulatory management to ensure the burden to industry and government is justified. This issue is important to CEA and its members and we look forward to working with both Environment Canada and Health Canada to develop an updated and realistic emissions profile of V_2O_5 as the basis for informing any regulatory process.

Should you have any questions or concerns, please do not hesitate to contact me at my coordinates below or contact Giulia Brutesco, P. Eng., Manager, Environment and Technology by phone: 613-688-2651 or by email: Brutesco@electricity.ca. Thank you.

Yours sincerely,

Pierre A. Guimond
President and Chief Executive Officer

Copy: The Honourable Leona Aglukkaq, P.C., M.P., Minister of Health
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