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To Whom It May Concern:

Re: Special Review of 2,4-D: Proposed Decision for Consultation (REV2016-08)

This letter is in response to the invitation for public comment on Re-evaluation Note REV2016-08, posted on March 31, 2016. The David Suzuki Foundation and Équiterre are pleased that on December 30, 2013, the Pest Management Regulatory Agency (PMRA) announced it would initiate a special review of pest control products containing the active ingredient 2,4-D, as required by s. 17(2) of the Pest Control Products Act (the Act).

Norway banned the herbicide 2,4-D in 2000 because of human health and the environment concerns. The information published in the Rotterdam Convention PIC Circular XIII Norway identified including “a risk of cancer in soft tissue and lymph”.

However, we are disappointed by the lack of rigour and limited scope with which the PMRA appears to have conducted this special review. In our view, a special review conducted pursuant to s. 17(2) should consider new information and emerging issues related to health and environmental risks of the subject pest control product, in particular data and studies that may not have been available to, or previously considered by PMRA.

Our assessment of PMRA’s special review of 2,4-D products is that many important environmental and human health issues have not been addressed. The herbicide 2,4-D is one of the highest use active ingredients in Canada with sales of over 1,000,000 kg per year. As a systemic herbicide it is currently registered in Canada for use on turf, forests and woodlots, terrestrial feed and food crops, and industrial and domestic non-food sites. Quebec has banned the use of 2,4-D for cosmetic purposes on lawns under the Pesticides Management Code adopted in 2003.

Special Review fails to assess 2,4-D pest control products

The proposed special review of 2,4-D fails to assess the individual 2,4-D pest control products. Despite the fact that REV2016-08 states that “[a]ll currently registered pest control products containing the above forms of 2,4-D are considered in this special review”, and lists products in the Appendix 1, the proposed special review decision does not assess the ‘potential carcinogenicity’ of each end use pest control product containing 2,4-D based on the level of human exposure that may result from the permitted uses. The proposed special review does not even assess the health risks from the various formulations of 2,4-D pest control products: as free acid, as amine (dimethylamine, DMA; isopropylamine, IPA; or triisopropanolamine, TIPA) or choline salts, or in ester form (2ethylhexyl, EHE; butoxyethyl ester, BEE).

Lack of Consideration of Cumulative and Synergistic Effects

A review of the Pesticide Products Information Database shows that 2,4-D pest control products often contain other active ingredients. In addition, 2,4-D pest control products may also be used with other pesticide products. The proposed special review does not assess the cumulative or synergistic effects of 2,4-D and the other active ingredients that may also be used with 2,4-D.

Lack of Health Risks Assessment

The proposed special review does not evaluate the health risks of 2,4-D products contrary to the requirements of the Act under section 19(2), and limits the review of health effects to a general assessment of the potential carcinogenicity of 2,4-D. Section 19(1) places the burden of proving that the health risks from a pest control product are acceptable on the registrant. The special review does not provide any indication that the applicants has provided sufficient information to prove that 2,4-D pest control products are safe, if that is the case than the products should not be registered, which should preclude approval of the pesticide.

In evaluating health risks, section 19(2)(b) requires a number of specific considerations including: aggregate exposures, cumulative effects of the pest control product and other pest control products that have a common mechanism of toxicity; different sensitivities to health effects by subgroups such as pregnant women, infants, children, women and seniors; and threshold effects for products used in and around homes to take into account toxicity to infants and children. The proposed special review fails to conduct any of the analysis required under section 19(2)(b).

IARC classification of possible human health carcinogen versus conclusion of not classified

Despite the International Agency for Research on Cancer (IARC) of the World Health Organization classification of 2,4-D as a possible human carcinogen, the proposed special review concludes that 2,4-D cannot be classified as a human health carcinogen. The proposed special review states that the IARC assessment is not a health risk assessment as the level of exposure that determined the actual risk are not taken into account. However, the proposed special review does not contain an assessment of the

levels of exposure of 2,4-D in Canada to assess the “actual risk”. Health Canada has assessed the risk of 2,4-D in drinking water and found it to be possible human carcinogen.¹

The proposed special review decision states that “while some of the studies suggest a possible association between 2,4-D exposure and increase in these tumors in humans, other epidemiological studies fail to support such association.” In support of this statement, the proposed special review decision cites past re-evaluations of 2,4-D and several studies published since those re-evaluations, listed as: Burns and Swaen, 2012; Pahwa et al. 2012; Ntzani et al. 2013; von Stackelberg, 2013; and Schinasi and Leon, 2014. The full references are provided in the proposed special review document REV2016-08. Our review of those studies found that all but Burns and Swaen, 2012 found a correlation between pesticide, or specifically 2,4-D, exposure and cancer. It is worth noting that Burns and Swaen, 2012 study was conducted by Dow Chemical whose subsidiary, Dow Agrosciences Canada Inc., is one of the registrants of 2,4-D pest control products in Canada. A systemic study cited in the proposed special review reported that exposure to chlorophenoxy compounds, particularly 2,4-D and MCPA, may be associated with increased risk of non-Hodgkins lymphoma, Hodgkin’s disease, leukemia, and soft-tissue sarcoma.²

The proposed special review also notes the lack of incident reports relating to exposures to 2,4-D products in dismissing possible links to cancer from 2,4-D exposures, however incident reports can only report on acute impacts from 2,4-D exposure and cannot be used to assess chronic effects such as cancer that may occur many years after 2,4-D exposure or due to multiple or longer term exposures, and potentially even cancer in future generations caused by gene mutations.

In addition to cancer, 2,4-D has been linked to toxic effects on the thyroid and gonads following exposure, raising concern over potential endocrine-disrupting effects. 2,4-D has also been linked to potential reproductive effects in animals.³

Contrary to the findings of the PMRA as stated in the proposed special review, there is sufficient evidence to support a finding of 2,4-D as a possible human carcinogen, as has been determined by IARC, the world leading cancer research agency, especially when considering the precautionary principle. In addition, 2,4-D may have other effects on human health. Overall, the PMRA cannot be reasonably certain that no harm to human health or future generations will result from exposure to or use 2,4-D.

No Assessment of the Risk Posed by Impurities

The active ingredient 2,4-D has been found to contain dioxins⁴ as impurities related to the manufacturing. Dioxins are persistent, bioaccumulative and highly toxic chemical compounds associated with a myriad of human health impacts including skin disorders, liver problems, impairment of the

¹ Health Canada. Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – 2,4-Dichlorophenoxyacetic Acid <http://healthycanadians.gc.ca/publications/healthy-living-vie-saine/water-dichlorophenoxyacetic-eau/index-eng.php#a5>

² Katherine von Stackelberg. A Systematic Review of Carcinogenic Outcomes and Potential Mechanisms from Exposure to 2,4-D and MCPA in the Environment. *Journal of Toxicology*. Volume 2013, 53 pages

³ National Pesticide Information Center. <<http://npic.orst.edu/factsheets/archive/2,4-DTech.html#reprod>>

⁴ Four Corners By Janine Cohen (22 July 2013). <<http://www.abc.net.au/news/2013-07-22/four-corners-dangerous-dioxins/4833848>>

immune and endocrine system, reproductive functions, effects on the developing nervous system and other developmental events, and certain types of cancers in humans.⁵ The proposed special review does not assess the risk posed to human health or the environment from the dioxin impurities found in 2,4-D, nor does it provide any data on the frequency of detection or concentrations of the dioxin impurities in 2,4-D products registered in Canada.

Widespread Presence of 2,4-D in the Environment

The proposed special review finds that 2,4-D is highly mobile in soils and is expected to runoff from treated areas into aquatic system. In fact, 2,4-D is commonly found in Canadian waterways and wetlands. A 2011 Environment Canada report⁶ reporting on the presence of pesticides in Canadian waters from 2003 to 2005 frequently reported detections of 2,4-D in surface water and groundwater of in BC's Lower Fraser Valley and Okanagan Basin. The same study found 2,4-D was in 100% of samples from wetlands in Alberta, Saskatchewan and Manitoba. 2,4-D was also the most frequency detected pesticide in river water and reservoirs in Alberta, Saskatchewan and Manitoba. Of 162 water samples from 21 sites around the Great Lakes in Ontario, 2,4-D was the most detected at 97.5%. Of the 228 water samples from small tributaries sites and amphibian breeding sites in Ontario, 2,4-D was detected 80.7% of the time. Studies have reported higher concentrations during and after precipitation, indicating runoff is a major source of 2,4-D in waterbodies.⁷

In each case, a number of other pesticides were also detected, further demonstrating the need to assess the cumulative impacts of exposure to a number of pesticides. The Environment Canada report found that 2,4-D was detected less frequently in Quebec, which may be due to the Quebec's cosmetic pesticide ban on lawns that was already in force at the time of the sampling.

The herbicide 2,4-D has also been detected in air at great frequency near application sites in Canada.⁸ In addition, there have been detections of 2,4-D in drinking water in Canada, although recent data has not been made publically available.⁹

Failure to Consider the Risk to Aquatic Ecosystems

Even with evidence of runoff and widespread presence in the environment, as shown by the studies we cited above that were not considered as part of the proposed special review, the proposed special review does not examine the risk to aquatic organisms or other species from exposure to 2,4-D.

⁵ Health Canada <<http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/enviro/dioxin-eng.php>>

⁶ Environment Canada. PRESENCE AND LEVELS OF PRIORITY PESTICIDES IN SELECTED CANADIAN AQUATIC ECOSYSTEMS. Water Science and Technology Directorate Environment Canada. March 2011.

⁷ Nancy E. Glozie, John Struger, Allan J. Cessna, Melissa Gledhill, Myriam Rondeau, William R. Ernst, Mark A. Sekela, Steve J. Cagampan, Ed Sverko, Clair Murphy, Janine L. Murray, David B. Donald. Occurrence of glyphosate and acidic herbicides in select urban rivers and streams in Canada, 2007. *Environ Sci Pollut Res* (2012) 19:821–834

⁸ Yuan Yao, Ludovic Tuduri, Tom Harner, Pierrette Blanchard, Don Waite, Laurier Poissant, Clair Murphy, Wayne Belzer, Fabien Aulagnier, Yi-Fan Li, Ed Sverko. Spatial and temporal distribution of pesticide air concentrations in Canadian agricultural regions. *Atmospheric Environment* 40 (2006) 4339–4351.

⁹ The Health Canada 'Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – 2,4-Dichlorophenoxyacetic Acid' reports that 2,4-D was detected in 52 of 805 samples of raw and treated drinking water from municipal and private supplies in surveys conducted in six Canadian provinces from 1971 to 1986.

The US National Marine Fisheries Service examined the toxicity of pesticides, including 2,4-D, to pacific salmon and other species as a requirement under the US Endangered Species Act. The study evaluates a number of toxic effects on salmon and other species due to exposure to 2,4-D, for example olfaction, reduced growth and developmental abnormalities and acute toxicity are all linked to 2,4-D exposures.¹⁰

Incongruent finding on Risk to Aquatic Plants

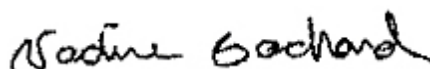
The proposed special review does assess the risk to aquatic plants from 2,4-D laden runoff and finds that the acid, amine and ester forms of 2,4-D all exceed the levels of concern for turf uses, and to a lesser extent for agriculture/non-crop/forestry uses too. This would indicate that these uses are having an unacceptable impact on aquatic plants, but the proposed special review dismissed these findings as being based on conservative assumptions, and therefore considered unlikely and not of concern. Once again it would seem that the conclusion of the proposed special review does not correlate with the actual analysis presented, and is contrary to the precautionary principle. Based on the proposed special review analysis, the use of 2,4-D pest control products in Canada is causing an unacceptable risk to aquatic plants.

Thank you for considering these comments. We hope to have the opportunity to comment again on a revised special review document that evaluates all the risks and the values of the registered end-use products containing 2,4 D.

Sincerely,



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¹⁰National Marine Fisheries Service. Endangered Species Act Section 7 Consultation Biological Opinion. Environmental Protection Agency Registration of Pesticides 2,4-D, Triclopyr BEE, Diuron, Linuron, Captan, and Chlorothalonil < http://www.nmfs.noaa.gov/pr/pdfs/consultations/pesticide_opinion4.pdf> p. 471-477