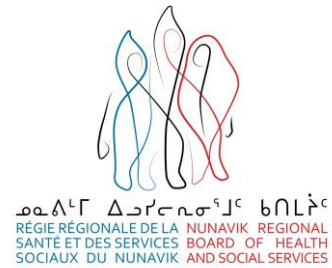




**Canadian  
Environmental Law  
Association**  
EQUITY. JUSTICE. HEALTH.



April 17, 2018

Honourable Catherine McKenna  
Minister of Environment and Climate Change  
Ottawa

**Subject: Lead in ammunition and fishing gear**

---

Dear Minister McKenna:

We commend your government for its expressed commitment to reduce Canadians' exposure to lead. We welcome the two studies the government released on April 5, 2018, one on lead ammunition and non-lead alternatives<sup>1</sup> and one on lead in fishing sinkers and jigs and non-lead alternatives<sup>2</sup>. The studies provide compelling evidence that the use of lead in ammunition and fishing gear is causing harm to human health and to wildlife and should be stopped.

We applaud the message that Environment Canada has placed on its website urging Canadians to move towards using more lead-free ammunition and lead-free fishing tackle. We note that on its website the government is inviting Canadians to participate in a conversation to design an approach that encourages the use of lead-free ammunition and lead-free fishing tackle. We note that no time limit has been placed on this conversation.

While conversation and encouragement are good things, they are not sufficient. As the two reports the government has released clearly demonstrate, voluntary approaches to stop the use of lead ammunition and fishing gear, using conversation and encouragement, have proven ineffective.

.../2

---

<sup>1</sup> Environment and Climate Change Canada (ECCC). 2018. Study to gather information on uses of lead ammunition and their non-lead alternatives in non-military activities in Canada. 156 p. <https://www.canada.ca/en/environment-climate-change/services/management-toxic-substances/list-canadian-environmental-protection-act/lead/using-more-lead-free-ammunition.html>

<sup>2</sup> ECCC. 2018. Study to gather use pattern information on lead sinkers and jigs and their non-lead alternatives in Canada. 107 p. <https://www.canada.ca/en/environment-climate-change/services/management-toxic-substances/list-canadian-environmental-protection-act/lead/using-more-lead-free-fishing-tackle.html>

It is the responsibility of government to show leadership and act, when the evidence clearly demonstrates that action is necessary, as is the case here. We therefore call on the government, in consultation and collaboration with Canadians, to draw up an action plan to eliminate the use of lead in ammunition and fishing tackle.

We wish to bring the following points to your attention:

- The government has taken action in the past to protect Canadians from lead exposure by regulating the use of lead in gasoline, paint, and other consumer products.
- While Environment Canada banned the use of lead shot for hunting most migratory game bird species in 1999, lead shot and ammunition and lead fishing gear continue to be allowed for fishing and hunting activities that do not involve migratory game bird species.
- Scientific studies show that the continued use of lead-based ammunition and fishing gear poses significant health risks to humans and wildlife.<sup>3</sup>
- The World Health Organization (WHO) notes that lead poisoning has devastatingly harmful effects on children, affecting the development of the brain and nervous system. The WHO has concluded that there is “no known level of lead exposure that is considered safe.”
- In addition, the WHO notes that the neurological and behavioural effects of lead are believed to be irreversible.<sup>4</sup>
- Research shows that lead causes harm at far lower levels of exposure than was previously recognized.<sup>5</sup> Even the lowest levels of lead exposure can injure the developing brains of infants and young children.
- The United States Centers for Disease Control and Prevention (CDC) state that there is no level of lead exposure in children known to be without adverse effects.<sup>6</sup>
- Health Canada itself admits that its Guidelines on blood lead levels requiring intervention are grossly inadequate and fail to take into account the latest scientific evidence of lead’s toxicity. Health Canada states:

.../3

<sup>3</sup> Pain D.J., Cromie R.L., Newth J., Brown M.J., Crutcher E., Hardman P., Hurst L., Mateo R., Meharg A.A., Moran A.C., Raab A., Taggart M.A., Green R.E. 2010. Potential hazard to human health from exposure to fragments of lead bullets and shot in the tissues of game animals. *PLoS ONE*, 5 (4): 1-17. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2859935/> / Bellinger D.C., Burger J., Cade T.J. et al. Health Risks from Lead-Based Ammunition in the Environment. *Environmental Health Perspectives*, 2013. <http://dx.doi.org/10.1289/ehp.1306945>. / Arnemo, J.M., Andersen O., Stokke S. et al. Health and Environmental Risks from Lead-based Ammunition: Science Versus Socio-Politics. *Ecohealth*, 2016; 13(4): 618–622. <https://link.springer.com/article/10.1007%2Fs10393-016-1177-x>. / Haig S.M., D’Elia J., Eagles-Smith C., Fair J.M., Gervais J., Herring G., Rivers J.W., Schulz J. H. 2014. The persistent problem of lead poisoning in birds from ammunition and fishing tackle: Review. *Cooper Ornithological Society*, 116: 408-428. <https://pubs.er.usgs.gov/publication/70116361>

<sup>4</sup> WHO, 2017. *Lead Poisoning and Health*, <http://www.who.int/mediacentre/factsheets/fs379/en/>.

<sup>5</sup> Lanphear B. *Still Treating Lead Poisoning After All These Years*. *Pediatrics*. 2017;140(2): e20171400. DOI: <https://doi.org/10.1542/peds.2017-1400>. Lanphear B., Rauch S., Auinger P., Allen R.W., Hornung R. *Low-level lead exposure and mortality in US adults: a population-based cohort study*. *Lancet Public Health*, 2018. [http://dx.doi.org/10.1016/S2468-2667\(18\)30025-2](http://dx.doi.org/10.1016/S2468-2667(18)30025-2).

<sup>6</sup> CDC Response to Advisory Committee on Childhood Lead Poisoning Prevention Recommendations in Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention. 2012. [http://www.cdc.gov/nceh/lead/ACCLPP/CDC\\_Response\\_Lead\\_Exposure\\_Recs.pdf](http://www.cdc.gov/nceh/lead/ACCLPP/CDC_Response_Lead_Exposure_Recs.pdf).

“Studies clearly document adverse health effects – including neurodevelopmental, neurodegenerative, cardiovascular, renal and reproductive effects – at blood lead levels below 10 micrograms per deciliter (10 µg/dL), the current Canadian blood intervention level. There is sufficient evidence that blood lead levels below 5 µg/dL are associated with adverse health effects.”<sup>7</sup>

- Indigenous communities that depend on hunting and fishing for their food supply are at particular risk of lead poisoning from the use of lead ammunition and fishing gear.<sup>8</sup>
- Your government has expressed deep commitment to taking immediate, concrete action to protect the health of Indigenous communities, particularly the health of children in these communities.
- The Cree Board of Health & Social Services of James Bay (CBHSSJB) has expressed concern that the use of lead-based ammunition can result in toxic effects, especially for pregnant women and young children, such as learning and behaviour problems among school children, even at levels below Health Canada’s guideline level. It therefore passed a resolution on March 31, 2017 to develop a strategy for eliminating the use of lead ammunition.<sup>9</sup>
- Recognizing the nutritional and cultural value of hunting and fishing for Indigenous communities, the CBHSSJB advises its communities to continue eating locally harvested game animals and birds; however, in fulfillment of its mandate to protect, maintain, and enhance the health and the well-being of the population, the CBHSSB is calling for action to protect the population from lead poisoning caused by use of lead ammunition.<sup>9</sup>
- The Nunavik Regional Board of Health and Social Services (NRBHSS) and the Nunavik Hunting, Fishing and Trapping Association (NHFTA) encourage Nunavimmiut to eat country foods as they are an excellent source of many essential nutrients, such as proteins, omega-3 fatty acids and iron. Hunting is part of a healthy and active lifestyle and plays a central role in the well-being and cultural identity of the Inuit communities. However, the use of lead-based ammunition may be harmful to their health, especially for developing babies and young children. Results from the Nunavik Child Development Study (NCDS) observed adverse effects of prenatal and childhood exposures to lead.<sup>10</sup> Nonetheless, lead ammunition is currently available and used in most Nunavik communities. The Qanuipitaa health survey conducted in Nunavik in 2004 revealed that close to 10% of

.../4

---

<sup>7</sup> Health Canada, *Risk Management Strategy for Lead*, February 2013, [http://www.hc-sc.gc.ca/ewh-semt/alt\\_formats/pdf/pubs/contaminants/dhssrl-rpecscepsh/dhssrl-rpecscepsh-eng.pdf](http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/contaminants/dhssrl-rpecscepsh/dhssrl-rpecscepsh-eng.pdf).

<sup>8</sup> Tsuji L.J.S. & Nieboer E. *Allowing First Nation Children to Reach Their Full Cognitive Potential: Questioning the Use of Lead Shotshell for the Harvesting of All Game*. *The Canadian Journal of Native Studies* XIX, 1(1999):37-50.

[http://www3.brandonu.ca/cjns/19.1/cjns19no1\\_pg37-50.pdf](http://www3.brandonu.ca/cjns/19.1/cjns19no1_pg37-50.pdf) / Juric A.K., Batal M., David W., Sharp D., Schwartz H., Ing A., Fediuk K., Black A., Tikhonov C., Chan H.M., Chan L. 2017. Risk assessment of dietary lead exposure among First Nations people living on-reserve in Ontario, Canada using a total diet study and a probabilistic approach. *Journal of hazardous material*, 344: 55-63. [http://www.fnfnes.ca/docs/Amanda\\_Lead\\_2017.pdf](http://www.fnfnes.ca/docs/Amanda_Lead_2017.pdf)

<sup>9</sup> Motion adopted by Board of Directors of the Cree Board of Health and Social Services of James Bay. *Mandate for the Public Health Department to work with other Cree entities to develop a strategy for eliminating the use of lead ammunition in Eeyou/Eenou Istchee*. March 31, 2017.

<sup>10</sup> Weihe P., Bonefeld-Jorgensen E., Debes F., Halling J., Skaalum Petersen M., Muckle G., Dudarev A. 2015. Health effects associated with measured levels of contaminants in the Arctic. In *Arctic Monitoring and Assessment Programme (AMAP): Human Health in the Arctic* (pp.77-98). Oslo, Norway.

individuals and 2% of women of childbearing age had blood lead levels exceeding 10 µg/dL.<sup>11</sup> Exposure among pregnant women remains high compared to the Canadian population.<sup>12,13</sup>

- The NRBHSS and the NHFTA<sup>14</sup> fully support the introduction of an action plan to phase out the use of lead-based ammunition and the promotion of non-toxic alternatives. This action plan should involve the close collaboration of Inuit health and hunters organizations to ensure a smooth transition.
- A statement released by scientists, doctors and public-health experts in the United States in 2013 and a similar statement released by European scientists in 2014 note that lead hunting ammunition poses a serious danger to people and wildlife and should be phased out.<sup>15</sup>
- Research has determined that ingestion of small lead fishing sinkers and jigs is a major cause of death in breeding common loons in eastern Canada and the United States.<sup>16,17</sup>
- The US Center for Biological Diversity, the American Bird Conservancy, the Association of Avian Veterinarians and other experts have documented extensive harm to birds from the use of lead ammunition and fishing gear and called for an end to their use.<sup>18</sup>
- Non-lead ammunition and non-lead fishing jigs and lures are already available for most purposes, are effective and cost only slightly more.<sup>19</sup>

.../5

---

<sup>11</sup> Dewailly É., Ayotte P., Pereg D., Déry S., Dallaire R., Fontaine J. and Côté S. 2007. Qanuippitaa? How are we? Exposure to environmental contaminants in Nunavik: Metals. Quebec, Canada: Institut national de santé publique du Québec and Nunavik Regional Board of Health and Social Services. [https://www.inspq.qc.ca/pdf/publications/661\\_esi\\_contaminants.pdf](https://www.inspq.qc.ca/pdf/publications/661_esi_contaminants.pdf).

<sup>12</sup> Lemire M., Ayotte P., Furgal C., Pirkle C. et al. (In press). Exposure to food chain contaminants in Nunavik: evaluating spatial and time trends among pregnant women and implementing effective health communication for healthy pregnancies and children (Year 1 of 3). In Synopsis of Research Conducted under the 2016–2017 Northern Contaminants Program, Indigenous and Northern Affairs Canada, Ottawa, Canada.

<sup>13</sup> Haines D.A., Saravanabhavan G., Werry K., Khoury C. 2017. An overview of human biomonitoring of environmental chemicals in the Canadian Health Measures Survey: 2007-2019. *International Journal of Hygiene and Environmental Health*, 220: 13-28. <https://www.sciencedirect.com/science/article/pii/S1438463916300888>.

<sup>14</sup> Resolution No. 2016-11-17-02 adopted during the Nunavimmi Umajulirijit Katujiqatinginga (NHFTA/RNUK) Annual General Meeting, Salluit, Nunavik, Lead-based ammunition. November 14-17, 2016.

<sup>15</sup> Health Risks from Lead-Based Ammunition in the Environment – A Consensus Statement of Scientists. 2013 <http://escholarship.org/uc/item/6dq3h64x>. Wildlife and Human Health Risks from Lead-Based Ammunition in Europe: A Consensus Statement by Scientists. 2014 <http://www.zoo.cam.ac.uk/leadammunitionstatement/>.

<sup>16</sup> Environment Canada. Wildlife and landscape science research topics: metals toxicology. <https://www.canada.ca/en/environment-climate-change/services/wildlife-research-landscape-science/research-topics/metals-toxicology.html>.

<sup>17</sup> Wilush M. *Hunters and anglers should stop using lead products, vet says*. CBC, May 10, 2016, <http://www.cbc.ca/news/canada/nova-scotia/hunters-anglers-switch-from-lead-to-copper-1.3575131>. *Fishing tackle kills a shocking number of loons*. CBC, October 21, 2017. <http://www.cbc.ca/radio/quirks/october-21-2017-1.4363723/fishing-tackle-kills-a-shocking-number-of-loons-1.4363730>. Chiu, E. CBC News, Dec 29, 2016. *Hunters urged to switch to copper ammo after bald eagle dies of lead poisoning*. <http://www.cbc.ca/news/canada/nova-scotia/hunters-copper-ammo-cape-breton-eagle-lead-poisoning-1.3914901>.

<sup>18</sup> US Center for Biological Diversity, the American Bird Conservancy, the Association of Avian Veterinarians et al. Petition to the Environmental Protection Agency to Ban Lead Shot, Bullets, And Fishing Sinkers under the Toxic Substances Control Act. August 3, 2010. [http://www.biologicaldiversity.org/campaigns/get\\_the\\_lead\\_out/pdfs/Final\\_TSCA\\_lead\\_ban\\_petition\\_8-3-10.pdf](http://www.biologicaldiversity.org/campaigns/get_the_lead_out/pdfs/Final_TSCA_lead_ban_petition_8-3-10.pdf).

<sup>19</sup> Thomas V.G. 2013. *Lead-free hunting rifle ammunition: product availability, price, effectiveness, and role in global wildlife conservation*. *Ambio*. <https://link.springer.com/article/10.1007/s13280-012-0361-7>.

- In 2004, Canada's Minister of the Environment announced the government's intention to prohibit the import, manufacture and sale of lead fishing weights in Canada.<sup>20</sup> It is time to implement this commitment.
- The state of California is phasing in a ban on lead ammunition by 2019<sup>21</sup> and many EU countries and U.S. states have restrictions on the use of lead ammunition and lead in fishing gear.
- Denmark has moved to ban lead ammunition.<sup>21</sup>

### **The true costs**

We recognize that ending the use of lead ammunition and fishing gear would require change on the part of hunting and fishing communities and companies selling these products. We recognize that, understandably, there is frequently resistance to change. It is said that lead products cost less. However, it must be noted that the price of lead ammunition and fishing gear does not reflect the true cost, as the cost of the serious health and environmental harms caused by these products is transferred to taxpayers and future generations.

If the true cost of lead ammunition and fishing gear was charged, they would cost more than their non-lead alternatives. In addition, if the use of non-lead ammunition and fishing gear was required, their use would increase and their cost would diminish.

### **We are therefore calling on you to show leadership and to:**

- 1) Respect the clear scientific evidence that there is no safe level of exposure to lead.
- 2) Change Health Canada's outdated, dangerously inadequate Guidelines for determining whether Canadians – and, in particular, young children – have harmful levels of lead in their blood.
- 3) Respect the scientific evidence that the use of lead ammunition and fishing gear is causing serious harm to the health of hunting and fishing communities and to wildlife.
- 4) Recognize that aboriginal communities, particularly children, are especially at risk because of reliance on hunting and fishing for sustenance.
- 5) Support the call of the Cree Board of Health and Social Services of James Bay, the Cree Trappers Association, the Nunavik Regional Board of Health and Social Services and the Nunavik Hunting, Fishing and Trapping Association to take action to eliminate the use of lead shot and ammunition.

.../6

---

<sup>20</sup> Environment Canada, 2005, *Fishing Lead Free: A regulatory Proposal*. <https://www.pca.state.mn.us/sites/default/files/leadfree-canada2005.pdf>

<sup>21</sup> Kanstrup N., Thomas V.G., Krone O., Gremse C. 2016. The transition to non-lead rifle ammunition in Denmark: National obligations and policy considerations. *Ambio*, 45: 621-628. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4980320/>.

- 6) Introduce an action plan to phase out the use of lead in ammunition and fishing gear, working in collaboration with Indigenous communities, the provinces, non-governmental organisations and commercial interests.
- 7) Set up a fund for the specific purpose of assisting aboriginal communities to make the transition to non-lead ammunition and fishing gear.

## Conclusion

We commend your government for its expressed commitment to respect scientific evidence, to make a priority of protecting the health of Indigenous communities, particularly children, and to be responsible stewards of the environment and wildlife.

We call on you to demonstrate that this commitment is genuine by putting into action the above recommendations without delay.

We await your response with hope.

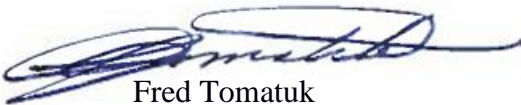
Respectfully,



Kathleen Ruff  
Director  
RightOnCanada



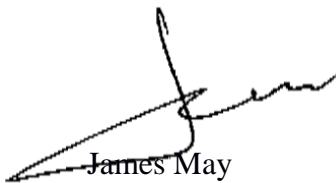
Theresa McClenaghan  
Executive Director and Counsel  
Canadian Environmental Law Association



Fred Tomatuk  
President  
Cree Trappers Association



Paul Linton  
Assistant Executive Director  
Chishaayiyuu (Public Health)  
Cree Board of Health & Social Services of  
James Bay (CBGSSJB)



James May  
President  
Anguvigaq Regional Nunavimmi  
Umajulirijiit Katujiqaqtiginninga  
(RNUK)/Nunavik Hunting, Fishing and  
Trapping Association (NHFTA)



Lucy Carrier-Tukkiapik  
Chairperson  
Nunavik Regional Board of Health and  
Social Services (NRBHSS)



**ON BEHALF OF:**

**THE FOLLOWING ORGANISATIONS**

**Kativik Regional Government**, Nunavik, Quebec, Canada. Jennifer Munick, Chairperson, Board of directors.

**Nunavik Research Centre, Makivik Corporation**, Nunavik, Quebec, Canada. Dr. Ellen Avard, Director.

**Nunavik Nutrition and Health Committee**, Nunavik, Quebec, Canada. Dr. Françoise Bouchard, MD, MPH, FRCPC, Director of Public Health, Nunavik Regional Board of Health and Social Services.

**David Suzuki Foundation**. Bill Wareham, Science Projects Manager of BC and Western Region.

**Environmental Defence Canada**. Tim Gray, Executive Director.

**National Wildlife Centre**, Canada. Dr. Sherri Cox. President and Wildlife Veterinarian.

**Canadian Association of Physicians for the Environment (CAPE)**. Kim Perrotta, MHSc, Executive Director.

**Canadian Veterinary Medical Association**. Shane Renwick, DVM, Msc, Manager, National Issues & Animal Welfare.

**Prevent Cancer Now**, Canada. Meg Sears, PhD, Chair.

**Friends of the Earth Canada**. Beatrice Olivastri, Chief Executive Officer.

**Learning Disabilities Association of Canada**. Barbara McElgunn, RN, Health Policy Advisor.

**Cobequid Wildlife Rehabilitation Centre**, Brookfield, Nova Scotia. Helene Van Doninck, DVM, founder, wildlife veterinarian and Executive Director.

**Nova Scotia Bird Society**, Canada. David Currie, President.

**Ontario Turtle Conservation Centre**, Selwyn, Ontario, Canada. Dr. Sue Carstairs.

**Port Morien Wildlife Association**, Nova Scotia, Canada. Jeff McNeil, Director.

**Green Communities Canada**. Clifford Maynes, Executive Director.

**Sandy Pines Wildlife Centre**, South Eastern Ontario, Canada. Sue Meech, Director.

**The Trumpeter Swan Society** (Canada and the USA). Carey Smith, President.

**Halifax Wildlife Association**, Nova Scotia. T. Devon Buell, President.

**Canadian Canoe Foundation**. Patrick Henry, Chair.

**Somenos Marsh Wildlife Society**, Vancouver Island, BC. Paul Fletcher, President.

**Center for Biological Diversity**, USA. Jeff Miller, Conservation advocate.

**Natural Resources Defense Council**, USA. Erik Olson, Senior Director, Health & Food.

**Occupational Knowledge International**, USA. Perry Gottesfeld, President.

**The Interfaith Council for the Protection of Animals & Nature**, USA. Lewis Regenstein.

**Environmental Protection Information Center**, Arcata, CA, USA. Thomas Wheeler, Executive Director.

**Lane County Audubon Society**, Oregon, USA. Debbie Schlenoff, PhD, Conservation Chair.

**North County Watch**, Templeton (San Luis Obispo County) California, USA. Susan Harvey, President.

**Klamath Forest Alliance**, Orleans, CA, USA. Kimberly Baker, Executive Director.

**Western Nebraska Resources Council**, USA. Buffalo Bruce, Staff Ecologist.

**Animals Are Sentient Beings Inc.**, USA. Sarah B. Stewart, President.

**Wild Wings Raptor Rehabilitation**, Sisters, Oregon, USA. Gary Landers, President.

**National Center for Healthy Housing**, USA. David E Jacobs, PhD, CIH, Chief scientist.



**THE FOLLOWING INDIVIDUAL SCIENTISTS, HEALTH PROFESSIONALS AND ENVIRONMENTALISTS**

**Note:** Titles and affiliations of individual signers are given for identification purposes only.

**Mélanie Lemire**, PhD, Assistant Professor in Environmental Health, Département de médecine sociale et préventive, Université Laval; Titular of the Nasivvik Research Chair in Ecosystem Approaches to Northern Health; Centre de recherche du CHU de Québec – Université Laval; Département de médecine sociale et préventive, Université Laval, Québec, Canada.

**Bruce Lanphear**, MD, MPH, Faculty of Health Sciences, Simon Fraser University, BC, Canada.

**Marie-Jo Ouimet**, MD, MSc, public health physician, Miyupimaatisiwin aa uhchi pimipiyihtaakinuwich utih iiyiyuu aschiihch, Public Health Department of the James Bay Cree Territory, Québec, Canada.

**Anne Andermann**, MD, MPhil, DPhil, CCFP, FRCPC, Medical Specialist – Public Health and Preventive Medicine, First Nations and Inuit Health Branch, Health Canada; Public Health Department, Cree Board of Health and Social Services of James Bay; Family Medicine Centre, St Mary's Hospital, Faculty of Medicine, McGill University, Montréal, Québec, Canada.

**Helene Porada**, Registered Dietitian and Certified Diabetes Educator, Chronic Disease Prevention team, Public health department, Cree Board of Health and Social services of James Bay, Québec, Canada.

**Michael K. H. Kwan**, PhD, Toxicologist, Nunavik Research Centre, Makivik Corporation, Kuujuaq, Québec, Canada.

**Lucie Guilbault**, inf. MSc, IBCLC, PPRO Breastfeeding, Awash team, Public health department of James Bay Cree territory, Québec, Canada.

**Myriam Fillion**, PhD, Professor of Environmental Health, Département Science et Technologie, Université TÉLUQ, Montréal, Québec, Canada.

**Benoit Lévesque**, MD, MSc, FRCP, Médecin spécialiste en santé publique et médecine préventive, Professeur agrégé de clinique, Département de médecine sociale et préventive, Faculté de médecine, Université Laval, Québec, Canada.

**Donna Mergler**, PhD, Professor Emerita, Université du Québec à Montréal, Québec, Canada.

**Louise Meunier**, Professional Engineer, Professor and Researcher in Chemical and Environmental Engineering, Kingston, Ontario, Canada.

**Benoit Gingras**, MD, MSc, Médecin en santé environnementale, Direction de santé publique, Chaudière-Appalaches, Québec, Canada.

**Donald W Spady**, MD, MSc, FRCPC, Adjunct Professor of Paediatrics, University of Alberta, Edmonton. Member: Stakeholders Advisory Council, Chemicals Management Plan, Health Canada, Environment & Climate Change Canada, Chair: Advisory Committee, Children's Environmental Health Clinic, University of Alberta, Edmonton, Canada.

**Colin L. Soskolne**, PhD, Professor emeritus, University of Alberta, Edmonton, Canada; Adjunct Professor, Health Research Institute, University of Canberra, Australia; Fellow: American College of Epidemiology; Fellow: Collegium Ramazzini; 2007-2011: President, Canadian Society for Epidemiology and Biostatistics; 2014-2016: Chair, International Joint Policy Committee of the Societies of Epidemiology (IJPC-SE). Montreal, Canada.

**Paivi Abernethy**, PhD, MRes, MSc, Adjunct Professor, School of Environment, Resources and Sustainability, University of Waterloo, Ontario, Canada

**Martin Haulena**, DVM, MSc, DACZM, Head Veterinarian, Vancouver Aquarium, Vancouver, BC, Canada.

**Miriam Diamond**, Dept of Earth Sciences, University of Toronto, Toronto, Ontario, Canada.

**Robert Alvo**, M.Sc., Conservation Biologist and Author: BABINA, Being a Bird in North America, North of Mexico, [www.babina.ca](http://www.babina.ca), Ottawa, Ontario, Canada.

**Gaile Whelan Enns**, Director, Manitoba Wildlands, Manitoba, Canada.

**Marianne Levitsky**, MES, CIH, ROH, FAIHA, Secretary and Founding President, Workplace Health Without Borders, Mississauga, Ontario, Canada

**Leslie Collins**, M.Sc., Biologist and Training Coordinator, Institute for Watershed Science, Trent University, Ontario, Canada

**Fabien Gagnon**, Médecin conseil, Direction de santé publique, Centre intégré de santé et de services sociaux de Laval, Québec, Canada

**Margaret Keith**, PhD, Adjunct Professor, Faculty of the Sociology Department, University of Windsor, Ontario, Canada.

**Jim Brophy**, PhD, Adjunct Professor, Faculty of the Sociology Department, University of Windsor, Ontario, Canada.

**Christine Till**, PhD, C.Psych, Associate Professor, Department of Psychology, York University Toronto, Ontario, Canada.

**Jane E. McArthur**, Doctoral Candidate, Department of Sociology, Anthropology and Criminology University of Windsor, Ontario, Canada.

**John R. Calvert**, PhD, Associate Professor, Faculty of Health Sciences, Simon Fraser University, Burnaby, BC, Canada.

**R. Warren Bell**, BA, MDCM, CCFP, FCFP(LM), Past Founding President, CAPE (Canadian Association of Physicians for the Environment); Founding President, WA:TER (Wetland Alliance: The Ecological Response); Rural Preceptor, University of BC, Salmon Arm, BC, Canada.

**Mel Coulson**, P.Eng (life member), Director, Bulkley Valley Naturalists; Director, Bulkley Valley Outdoor Recreation Society and Bulkley Valley Stewardship Coalition, BC, Canada.

**Evi Coulson**, Director, Bulkley Valley Naturalists, BC, Canada.

**Josette Wier**, MD, Hazelton, BC, Canada.

**Ellen Sweeney**, PhD, Research Scientist, Dalhousie University, Halifax, Nova Scotia, Canada.

**Daryl and Dina Hanson**, Members, BC Nature Federation; Community Partner with Rec Sites and Trails BC, in managing the Bulkley River Rec Site, Telkwa, BC, Canada.

**Karen Fediuk**, R.D. M.Sc. Human Nutrition; Senior Researcher, The Firelight Group, Victoria, BC, Canada.

**Amber Peters**, BSc, Biologist; Campaigner, Valhalla Wilderness Society, BC, Canada.

**Kyna Intini**, Registered Veterinary Technician, BSc in Biodiversity, licensed wildlife rehabilitator; Ontario Trumpeter Swan Restoration volunteer, Hamilton, Ontario, Canada.

**David Bowering**, MD, MHSc, retired Chief Medical Health Officer, Northern Health, BC, Canada.

**Philip J. Landrigan**, MD, MSc, FAAP, Dean for Global Health, Professor of Environmental Medicine, Public Health and Pediatrics, Arnhold Institute for Global Health, Icahn School of Medicine at Mount Sinai, USA.

**Rhys E. Green**, PhD, Honorary Professor of Conservation Science & Principal Research Biologist (RSPB), Department of Zoology, University of Cambridge, UK.

**Julia Ponder**, DVM MPH, Executive Director, The Raptor Center, College of Veterinary Medicine, University of Minnesota, USA.

**Donald Smith**, PhD, Professor, Microbiology and Environmental Toxicology Department, University of California, Santa Cruz, CA, USA.

**Mark A. Pokras**, DVM, Associate Professor Emeritus, Wildlife Clinic & Center for Conservation Medicine, Cummings School of Veterinary Medicine, Tufts University, N. Grafton, MA, USA.

**Howard W. Mielke**, PhD, Department of Pharmacology, Tulane University School of Medicine, New Orleans, Louisiana, USA.

**Mohamed F Jeebhay**, MChB, DOH, MPhil (Epi), MPH (Occ Med), PhD, Head of Occupational Medicine Division, School of Public Health and Family Medicine, Faculty of Health Sciences, University of Cape Town, South Africa.

**Richard Rabin**, MSPH, Retired, Director, Occupational Lead Poisoning Registry, Massachusetts Department of Labor, Arlington, MA, USA

**Larry Allan Boersma**, Ph.D., FRPS, CEO/Chairman, Preserve Our Wildlife Organization, USA.

**Arthur L. Frank**, MD, PhD, Professor of Public Health and Professor of Medicine, Drexel University, Philadelphia, PA, USA.

**Barry Castleman**, ScD, Environmental Consultant, Garrett Park, MD, USA.

**Jennifer Sass**, PhD, George Washington University, Dept. Environ Occup Health, Washington DC, USA.

**Tushar Kant Joshi**, FRCS., FFOM., Advisor on Environmental Health, Ministry of Environment, Forests and Climate Change, Government of India.

**Francesco Forastiere**, National Research Council (CNR), Italy.

**Domyung Paek**, MD, MSc, ScD, Professor, Occupational and Environmental Medicine, School of Public Health, Seoul National University, Korea.

**Craig Slatin**, ScD, MPH, Professor Emeritus, Department of Public Health, University of Massachusetts Lowell, USA.

c.c. Honourable Ginette Petitpas Taylor, Minister of Health, Ottawa

Honourable Carolyn Bennett, Minister of Crown-Indigenous Relations and Northern Affairs, Ottawa

Honourable Jane Philpott, Minister of Indigenous Services, Ottawa