PREVENT CANCER NOW

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Laurel McCreight
Planner File Lead
Planning Services, City of Ottawa
Email: kanatalakes@ottawa.ca

Re: Kanata Golf Club Environmental Site Assessment - toxic elements, environmental assessment and concerns with re-development

Dear Ms McCreight,

I am writing with regard to the Environmental Site Assessment II (ESA-II) of the Kanata Golf Club, in order to draw your attention to important shortcomings with regard to toxic elements that are likely to be on the site.

Golf courses rely heavily on fungicides to prevent mould and mildew diseases, as well as herbicides used against weeds, insecticides against insects, and rodenticides against rodents. Four major toxic elements – arsenic, cadmium, lead and mercury, were historically used as fungicides, and some used as herbicides.

According to the ESA-II, five surface samples of silty clay were analysed for a panel of metals and metalloids. One sample contained mercury above soil guideline levels; arsenic and lead were detected at levels above background, while cadmium was not detected. This sampling of weathered soil is inadequate to assess prevalence and levels of these toxic elements, that historically would have been applied intensively and repeatedly over small areas of fine turf.

The Kanata Golf Club first opened in 1968, when fungicides and other pesticides contained these four toxic elements. In recent times these were all measured in Canadian golf course compost at levels surpassing Canadian soil guidance levels, according to research by McCartney et al. (2013, attached to this letter).

Although pesticide products used over time have changed, some ingredients are very persistent or have persistent, highly toxic contaminants such as dioxins in phenoxy herbicides used on turf. These were not assessed. Importantly, the pesticides as well as contaminants may be harmful to non-pest species, including humans.

Arsenic, cadmium, lead and mercury are among the most toxic common elements to which humans are exposed. Briefly, these potent toxicants increase the probability of chronic diseases and cancers. They affect many organs including the brain, harming the unborn child and young children with lifelong consequences for physical development and health, and poor cognitive and neurological outcomes. Consequently, these chemicals should be catalogued, screened for ecotoxicological profiles, and considered for inclusion in a systematic soil sampling regime.

Toxic elements were reported in the ESA-II for the Kanata Golf Club in five surface samples, but were not sampled in or underlying greens or tees. It would be expected that significant quantities accumulated on the course during its earlier years, and that these elements remain under and around current and past sites of greens (and possibly tees) to this day. It is

essential to assess a complete suite of elements in locations where they are expected to be found in highest concentrations. Furthermore, soil over the entire course should be thoroughly investigated for hotspots, because toxic contaminants may have been redistributed during and since the course's 1990 redesign (noted on their website).

When the land is used as a golf course, exposures to contaminants beneath the tight turf might not be substantial, but disruption and dust associated with construction may greatly increase toxic exposures. It is possible that such redevelopment should be managed as a brownfield. For example, the upper Rideau River is lined with contaminated sites, and the "Greystone Village" construction required extensive measures to control contaminated dust from soils removed during construction. I understand from conversations at the time with people at the local school in the surrounding community that these measures were imperfect and of great concern in the nearby working-class neighbourhood. In the case of the Rideau River development, the construction was at a distance away from homes – not adjoining peoples' backyards.

For more fulsome investigation of these toxic elements, I would suggest sampling fatty tissues in downstream aquatic life for methyl mercury, and selective sampling of plants for hyperaccumulation of toxic elements, as part of a further Environmental Site Assessment. As an example, tobacco is a substantial source of cadmium for smokers, because the plant hyperaccumulates it from the soil. This is exacerbated by high levels of cadmium in Canadian potash fertilizer.

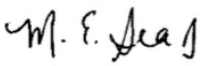
The historical pesticide labels are not available using Health Canada's label search tool, so I have requested information from the Pest Management Regulatory Agency (PMRA). I will share that information if and when it is available.

I could share much more on the topic of health effects, if you desire. Dr. Riina Bray, Medical Director of the Environmental Health Clinic at University of Toronto, and I conducted a large review of arsenic, cadmium, lead and mercury in Canadian environments, impacts on health and medical approaches, with funding from the Canadian Institutes for Health Research (CIHR) and Social Sciences and Health Research Council (SSHRC). Related publications are listed below, and the large, broader review and appendices are available upon request.

I hope that this is helpful in your further investigations. If I may be of any assistance, please do not hesitate to contact me directly.

Finally, I would be pleased to speak to these considerations at the upcoming public meeting on November 26th. Please share further details when available.

Sincerely,



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cc. Barbara Ramsay,
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chair@ourkanatagreenspace.ca

Publications arising from the CIHR/SSHRC funded scoping review of toxic elements:

Sears, Margaret E., and Stephen J. Genuis. “Environmental Determinants of Chronic Disease and Medical Approaches: Recognition, Avoidance, Supportive Therapy, and Detoxification.” Journal of Environmental and Public Health, no. Article ID 356798 (2012). https://doi.org/10.1155/2012/356798

Sears, Margaret E., Kathleen J. Kerr, and Riina I. Bray. “Arsenic, Cadmium, Lead, and Mercury in Sweat: A Systematic Review.” Journal of Environmental and Public Health, 2012. https://doi.org/10.1155/2012/184745.

Sears, Margaret E. “Chelation: Harnessing and Enhancing Heavy Metal Detoxification—A Review.” The Scientific World Journal 2013 (April 18, 2013). https://doi.org/10.1155/2013/219840.

Genuis, Stephen J., Margaret Sears, Gerry Schwalfenberg, Janette Hope, and Robin Bernhoft. “Incorporating Environmental Health in Clinical Medicine.” Journal of Environmental and Public Health 2012 (2012). https://doi.org/10.1155/2012/103041.

Review of pesticide assessment and toxicities of the commonly used turf herbicide 2,4-D.

Sears, Meg, C Robin Walker, Richard HC van der Jagt, and Paul Claman. “Pesticide Assessment: Protecting Public Health on the Home Turf.” Paediatrics & Child Health 11, no. 4 (April 2006): 229–34. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2528613/.