

SURVEILLANCE OF POTENTIAL ENVIRONMENTAL EXPOSURE TO GOLF TURF PESTICIDES

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Background and Aims: In Canada, golf courses are often permitted continued use of pesticides banned for cosmetic purposes, including those classified as “possible” carcinogens by the International Agency for Research on Cancer (IARC). As part of a National Carcinogen Surveillance Project (CAREX Canada), we geographically estimate environmental exposure potential for “possibly” carcinogenic pesticides applied to golf turf in Canadian watersheds.

Methods: Pesticide type, application frequency, and course size were obtained from Canadian Golf Superintendents’ Association surveys (2004, 2008). Estimated annual use (kilograms active ingredient) were calculated using product label application rates from the Pest Management Regulatory Agency. A Canadian golf course database was compiled in a geographic information system (GIS) from national landuse, business directories and online sources. GoogleEarth was used to verify locations and rank courses by relative surrounding housing density (n): Low 0-2; Low-Medium 2-10; Medium-High 10-20; High >20. A method to develop an average course perimeter polygon for estimating adjacent populations is being developed.

Results: Data sources of course locations were frequently inadequate. Locations were corrected to more accurately assess adjacent housing density. We identified three IARC “possible” carcinogens being used: 2,4-D, MCPP and chlorothalonil. Average annual use was calculated for a typical course and multiplied by number of courses in each watershed. For example, an average course applies 158 kg chlorothalonil annually. We identify hotspot watersheds, such as that in Western Canada using up to 19,586 kg (lower Fraser Valley). Percentage of courses with highest surrounding housing density varies by province: 11.8% British Columbia, 8.6% Alberta, and 1.4% Saskatchewan. Exposure surveillance information is disseminated in map format for comparison within and across provinces.

Conclusions: We geographically assess golf course pesticide use across Canada at the watershed level to identify areas with greatest potential for environmental exposures. Ongoing research will provide more detailed population estimates that account for residential proximity to golf courses.