

# SURVEILLANCE OF AGRICULTURAL PESTICIDE USE AND POTENTIAL ENVIRONMENTAL EXPOSURE

**Nichole Garzia**, *University of British Columbia, Canada*

**Karla Poplawski**, *University of British Columbia, Canada*

**Anne-Marie Nicol**, *University of British Columbia, Canada*

**Paul Demers**, *Occupational Cancer Research Centre, Toronto, Canada*

**Background and Aims:** Limited information exists on pesticide exposure in Canada, and some of the most prevalently used pesticides are classified as “possible” carcinogens by the International Agency for Research on Cancer (IARC). The objective is to characterize environmental exposure to “possibly” carcinogenic IARC pesticides used for agriculture in Canada.

**Methods:** Region-specific annual agriculture use (AAU) estimates for selected pesticides are derived by multiplying crop production areas (hectares) obtained from the Interpolated Census of Agriculture (2006) by crop-specific intensity use weights (grams/hectare per year) developed using national and provincial pesticide use information. Total AAU (tonnes) is derived for each pesticide as the sum of active ingredient used on all crop types within a sub-provincial region. Regional estimates are mapped using a Geographic Information System (GIS). Population estimates corresponding to sub-provincial AAU estimates are determined using Census of Population (2006) data. These estimates represent the number of persons at risk of environmental exposure to “possibly” carcinogenic pesticides, by exposure potential (i.e. AAU estimate).

**Results:** AAU estimates were derived for chlorothalonil in Western provinces: British Columbia (BC), Alberta (AB), Saskatchewan (SK). Regions that use chlorothalonil were classified into four ‘usage groups’ based on AAU (tonnes) quartile distribution: Low (>0-21), Low-Medium (>21-82), Medium-High (>82-273), High (>273-1597). The percent of the total provincial population living in ‘High’ chlorothalonil use regions are approximately: 16% (n=595,353) for BC; 24% (n=790,014) for AB; and 62% (n=594,712) for SK. When mapped, the regions in which these populations reside are identified. Regions with no chlorothalonil use were classified as ‘no use’ (0 tonnes); corresponding populations were considered to not be at risk (62% of BC population; 54% of AB population; 5.6% of SK population).

**Conclusions:** Surveillance of IARC “possible” carcinogenic pesticides provides knowledge on environmental exposure potential, in terms of geographic variation and extent (population counts) across Canada.