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Dear British Columbia Members of the Legislative Assembly:

I am writing in support of the need for strong pesticide legislation in British Columbia. As Professor and Canadian Cancer Society Chair in Cancer Primary Prevention, my role includes evaluating the research evidence regarding factors that increase the risk of cancer. Cosmetic pesticides are among these risks.

Considerable evidence supports a link between pesticides, including agents in cosmetic pesticides, and cancer incidence (that is, new cases of cancer). According to Dr. John Spinelli of the BC Cancer Research Centre, "...there is now sufficient evidence to conclude that there is likely a causal relationship between pesticide use and lymphatic malignancies" (1). Many studies have been based on the experience of individuals who have high occupational exposures, such as farmers, with accumulating evidence that cancers in addition to lymphomas are also caused by pesticide exposure, such as prostate and brain cancers (2). Recent evidence from Saskatchewan indicates that family history and pesticide exposure may interact to greatly increase the risk of multiple myeloma; as the authors state, "A positive family history and/or shared environmental exposure to agricultural chemicals play an important role in the development of cancer" (3). These effects may be particularly evident in children: a systematic review published just this year from the University of Ottawa found that exposures to residential pesticides or insecticides in utero or during childhood were linked with significantly higher rates of childhood leukemia (4).

As is the case with most population-based research, not every study has the same findings. And the specific question of whether a ban on cosmetic pesticide use will lead to decreases in BC's cancer rates cannot be answered conclusively. The exact extent of cancer attributable to cosmetic pesticide exposure is unlikely ever to be definitively specified for the following reasons:

- A randomized, controlled trial, in which individuals are randomly assigned to be exposed to pesticides or not, with a record of cancer rates in each group, would be the optimal scientific design to answer this question. For ethical reasons, such a study will never be conducted.
- The amount of time between exposure to a cancer-causing agent and the development of cancer is many years; such long-term research is rare.
- Methods don't exist for measuring accurate exposure to pesticides. Biomarkers in the blood offer promise for future research.

- Most research looks at short-term, high intensity exposures. The effects of long-term, low intensity exposures (such would be the case for home use of cosmetic pesticides) are not well-established.
- The combination of different exposures and risk factors is very likely highly important, but very few studies to date have looked at multiple risk factors. This is due to the difficulties of identifying, quantifying, and analyzing many variables at the same time – not only different pesticides, but different lifestyles, diets, and so on.

Despite these limitations, there is evidence that suggests that pesticide bans do result in lower cancer rates. Lower rates of lymphoma have been reported in countries after they enact pesticide bans (e.g., Sweden, Finland, Denmark), whereas declines are not observed in countries without such bans (e.g., UK, Norway, Israel) (5). Given current evidence, coupled with the probability that a definitive cause-and-effect relationship between cosmetic pesticide use and cancer is unlikely to be firmly established in the foreseeable future, I believe it is prudent to take protective measures regarding cosmetic pesticides. Cosmetic pesticides are not necessary for everyday life, and exposure can be eliminated.

The unfortunate farmers who developed lymphoma because of pesticide exposure provide an indication of cancer risk for the rest of the population, much in the way that a canary provides an early warning of toxic gases in a coal mine. We should heed this warning, ban cosmetic pesticides, and protect the health of BC residents.

Sincerely yours,



Carolyn C. Gotay

References:

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4. Dreiherr, J, Kordysh, E. (2006). Non-Hodgkin lymphoma and pesticide exposure: 25 years of research. *Acta Haematol* 116:153-64.
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