



UNIVERSITY OF
SASKATCHEWAN

Toxicology Centre

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Exponent

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“50 Years after *Silent Spring*: Have Organophosphate and Carbamate Pesticides Met the Challenge? ”

Although the insecticidal properties of organophosphate compounds were discovered in the 1930's, these chemicals were first developed as nerve gas agents for use in World War II. After the war, their use as insecticides increased significantly, as noted in *Silent Spring*. Carbamates were not discovered until the 1950s and are infrequently mentioned by Rachel Carson. Use of both insecticide groups increased during the 1970s, following the banning of DDT and reduction in use of organochlorine pesticides. Their short environmental half-lives and low chronic toxicity in people, plus the availability of a treatment antidote for accidental acute poisoning, made them a reasonable solution to some of the concerns raised in *Silent Spring*. However, birds and fish are particularly sensitive to cholinesterase inhibitors and continue to experience acute poisonings. A large die-off of Swainson's hawks in Argentina in 1996 following a monocrotophos application for grasshopper control alerted the wildlife community to the potential for large-scale wildlife poisonings, either from direct exposure to spray or from eating contaminated prey. Other products, notably carbofuran, are frequently used illegally to purposefully kill wildlife for predator control, crop protection, or food. There is concern that the cumulative use of multiple pesticides may affect populations of endangered salmon. These pesticides also may cause sublethal effects at lower concentrations in both people and wildlife, such as acting as androgen receptor antagonists. Because these products are inexpensive relative to newer pesticides that have fewer nontarget effects, and because they are still effective for controlling a broad-spectrum of common agricultural pests, they remain an important component of large-scale agriculture. However, the total amount of all insecticidal chemicals used in the U.S. has significantly decreased since the 1980's and the relative amounts of organophosphate products has declined in the past 5 years. Rachel Carson noted "[We are] challenged as mankind has never been challenged before to prove our maturity and our mastery, not of nature, but of ourselves." If we are to continue to use toxic, broad-spectrum pesticides, we can demonstrate our maturity by acknowledging that they are only one of a larger set of tools for integrated pest management (IPM); by treating them with respect as highly toxic substances and restricting access to only those who need them; and by maintaining an awareness of local wildlife vulnerabilities.

Thursday, 13 December, 2012

3:30 PM

Room ARCH 124

All are welcome to attend