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Organochlorine Pesticide Contamination in Gray Wolves (*Canis Lupus*) and Northern White Cedar (*Thuja Occidentalis*) from Northern Minnesota

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Poster Presentation P13

ORGANOCHLORINE PESTICIDE CONTAMINATION IN GRAY WOLVES
(*CANIS LUPUS*) AND NORTHERN WHITE CEDAR (*THUJA OCCIDENTALIS*)
FROM NORTHERN MINNESOTA

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Although some organochlorine (OC) pesticides have been banned in the U.S. for up to thirty years, they are still found in biota in North America. Other studies have found that OCs are deposited in North America from the atmosphere more heavily in the northern latitudes. However, no studies have been conducted that have documented OC pesticide contamination in wolves in North America, and few studies have looked for OCs in vegetation. We characterized the OC pesticide levels in gray wolves (*Canis lupus*) and Northern White Cedar (*Thuja occidentalis*) bark collected from northern Minnesota. Of the 17 OC pesticides and metabolites for which we surveyed, 14 compounds were documented in wolf kidneys. The four most prevalent compounds were p,p'-DDT (26/49 wolves), methoxychlor (21/49 wolves), α -BHC (19/49 wolves), and heptachlor (17/49 wolves). The minimum and maximum levels of the compounds were: p,p'-DDT 8.04-393.54 ng/g (i.e., parts per billion), methoxychlor 10.24-68.54 ng/g, α -BHC 9.67-109.68 ng/g, and heptachlor 7.52-149.16 ng/g. There was no significant effect of age, sex, or the interaction between age and sex on mean total OC levels. All six samples of the Northern White Cedar bark were contaminated. The four most prevalent compounds in bark were heptachlor (5/6 bark samples), p,p'-DDT (4/6 bark samples), methoxychlor (4/6 bark samples), and Heptachlor epoxide (4/6 bark samples). The minimum and maximum levels of the compounds were: heptachlor 40.0-1372.093 ng/g, p,p'-DDT 122.11-1596.90 ng/g, methoxychlor 124.726-537.65 ng/g, and heptachlor epoxide 25.26-120.35 ng/g.

This was the first study to document the presence of OC compounds in wolves from North America. It is interesting to note that p,p'-DDT is present in relatively high levels in both the wolves and tree bark. While DDT has been banned in the U.S. since 1972 because of its documented adverse effects on wildlife, it is still used in developing countries to fight malaria. Our data indicate that DDT and other OCs are persistent and are found even in areas where they were not directly applied. Future aspects of our study include analyzing white-tailed deer (*Odocoileus virginianus*), which are a major prey item of wolves, for the presence of OCs. If OCs are present in deer, we will determine if biomagnification has occurred in this food chain.