(continued Mason and Lawson)

Treatment	% Mortality (24 hours)	% Mortality (48 hours)	Phytotoxicity (Aspen Leaves) 1 wk	2 wk	3 wk	Phytotoxicity (Understory Veg) 1 wk	2 wk	3 wk
Controls	0	0	---	---	---	---	---	---
Carbaryl (Sevin) (80% WP) .1 oz/gal	100	-	none			none		
Carbaryl (Sevin) (80% WP) .2 oz/gal	100	-	none			none		
Carbaryl (Sevin) (80% WP) .3 oz/gal	100	-	none			none		
Malathion (Cythion) (57% EC) 1 tsp/gal	92	95	none			none		
Malathion (Cythion, (57% EC) 2 tsp/gal	100	-	none			none		
Malathion (Cythion) (57% EC) 3 tsp/gal	100	-	none			none		

CONIFERS IN GENERA: Abies, Picae, Pseudotsuga and Pinus
Western spruce budworm; Choristoneura occidentalis Freeman
Douglas-fir tussock moth; Orgyia pseudotsugata (McDonnough)

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COMPARATIVE TOXICITY OF TECHNICAL ORTHENE AND ORTHENE 75S TO WESTERN SPRUCE BUDWORM AND DOUGLAS-FIR TUSSOCK MOTH, 1979: [illegible]ron Chemical Co. is changing the formulation of acephate for forestry used from 75% a.i. (Orthene 75S) to 97% a.i. (technical Orthene). Orthene 75S is registered for control of western spruce budworm (WSBW) and Douglas-fir tussock moth (DFTM), at the present time, [illegible] whether the change in formulation would affect toxicity, feeding tests were done on 6th stage WSBW and 4th stage DFTM. Both formulations were dissolved in distilled water on the basis of weight/volume concentrations of the active ingredient. Eight concentrations serially diluted from a freshly prepared concentrate were used in each of 3 to 6 replications for each formulation and species. Two hundred µl of each concentration were added to 10 cc aliquots of liquefied artificial diet, and the mixture was stirred thoroughly in a plastic pill cup. When gelled, each died mold was removed from the pill cut and fed to 10 larvae. Mortality was tallied after 3 and 7 days of feeding.

The responses of each species to both acephate formulations were not significantly different after 3 days. This was true for DFTM at 7 days, also. For WSBW, however, the response curves at 7 days for the two acephate formulations had significantly different slopes and intercepts. WSBW appears to be more sensitive to technical acephate than to the 75S formulation at LD_{90}. We concluded, therefore, that a change in acephate formulation for forestry uses will not adversely affect control of either DFTM or WSBW. Rather, Orthene technical may be effective at even lower rates than Orthene 75S for WSBW.

Species	Formulation	Number of insects Control* No treatment	Treated	Slope±S.E.	LC_{50}**	95% CL	LC_{90}**	95% CL
				3-day mortality				
Choristoneura occidentalis	Orthene tech.	100	911	3.70±0.22	13.0	10.0-17.6	29.0	20.8-61.8
	Orthene 75S	60	520	3.17±0.24	12.8	10.0-16.0	32.2	24.2-52.8
Orgyia pseudotsugata	Orthene tech.	140	940	2.86±0.16	90.6	79.2-104.4	254.2	206.6-333.6
	Orthene 75S	140	940	2.59±0.14	81.6	69.2-96.8	254.4	198.2-357.8
				7-day mortality				
Choristoneura occidentalis	Orthene tech.	120	1071	4.11±0.30	6.0	5.6-6.6	12.4	11.2-14.2
	Orthene 75S	60	520	2.19±0.23	5.2	2.8-7.2	20.0	14.2-37.6
Orgyia pesudotsugata	Orthene tech.	140	1060	3.19±0.19	27.6	17.6-37.8	69.8	49.2-148.0
	Orthene 75S	160	1180	2.87±0.18	25.0	15.0-35.0	70.0	48.2-158.2

*Control mortality was 0.0 for both formulations and both species.
** Dosage expressed as ppm acephate in diet. Probit analysis performed by POLO, of Russell, R.M., J. L. Robertson, and N.E. Savin. 1977. POLO: a new computer program for probit analysis. Bull. Entomol. Soc. Amer. 23(3):209-13.

CONIFERS IN GENERA: Abies, and Pseudotsuga
Douglas-fir tussock moth; Orgyia pseudotsugata

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TOXICITIES OF TOPICALLY APPLIED INSECTICIDES TO DOUGLAS-FUR TUSSOCK MOTH, 1979: Topical application assessments were performed to determine the toxicities of 13 insecticides to 4th instar Douglas-fir tussock moth. Insects were selected at random from the 8th generation of a laboratory colony. Eight concentrations of each chemical were serially diluted from a concentrated source prepared for each of three replications of each bioassay. Each chemical was applied in reagent grade acetone. Treatment was performed with an ISCO model M microapplicator equipped with a 0.25 cc tuberculin syringe. A dosage rate of 1 µl/100 mg body weight was used to apply the insecticide to the thoracic dorsa of CO_2-anesthetized larvae weighing 40-90 mg. After treatment, larvae were fed artificial diet. Mortality was tallied 7 days after treatment.

Only one of the insecticides was less toxic than carbaryl, the standard for comparison. The most toxic insecticide, NRDC-161, was 10833 x more toxic than carbaryl at LD_{50}.

Insecticide	No. insects treated	Slope±S.E.	LD_{50}*	95% CL*	LD_{90}*	95% CL*
NRDC-161	760	1.13±0.12	0.0012	0.0003-0.0024	0.017	0.0083-0.092
FMC 55381	580	1.07±0.05	0.0045	0.0026-0.0081	0.070	0.027-0.69
FMC 55383	562	2.72±0.43	0.0070	0.0051-0.0085	0.021	0.015-0.040
FMC 30980	520	1.58±0.18	0.011	0.0065-0.016	0.068	0.039-0.20
FMC 35171	519	2.28±0.30	0.012	0.0099-0.015	0.044	0.034-0.067
NRDC-143	959	2.96±0.27	0.024	0.019-0.028	0.064	0.052-0.087
Pydrin	598	1.04±0.09	0.024	0.013-0.052	0.41	0.14-0.42
Bolstar	560	2.41±0.29	4.00	1.90-5.60	13.5	9.30-31.2
M 8983	480	3.48±0.63	7.20	5.30-8.80	16.9	13.1-29.1
Idinfos	520	2.36±0.27	9.90	7.10-12.7	34.6	24.5-67.0
M 10364	478	2.75±0.22	12.8	10.1-15.9	37.5	28.9-53.3
Carbaryl	719	1.38±0.15	13.0	8.40-18.7	110.	62.4-304
M 10445	480	0.88±0.15	49.6	22.8-126	1410.	365-70400

*Dosage expressed as µg/g body weight. Probit analysis performed by POLO (Russell, R.M., J. L. Robertson, and N.E. Savin. 1977. POLO: A New computer program for probit analysis. Bull. Ent. Soc. Amer. 23(3):209-13).