

**LABORATORY EVALUATION OF LOCALIZED TREATMENTS FOR
CONTROL OF THE WESTERN DRYWOOD TERMITE, *Incisitermes minor*
(HAGEN) IN CALIFORNIA**

Vernard R. Lewis^{1,3}, Robert Williams², Salvador Rubio-Garcia¹, Gail M. Getty¹, Michael
I. Haverty^{1,4}

¹Structural Pest Research and Extension Center, Forest Products Laboratory, University
of California, 1301 So. 46th Street, Richmond, CA 94804, USA

²Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268, USA

³Insect Biology, Department of Environmental Science, Policy and Management, 201
Wellman Hall, University of California, Berkeley, CA 94720, USA

⁴Pacific Southwest Research Station, Forest Service, USDA, P.O. Box 245, Berkeley, CA
94701, USA

Laboratory studies were conducted using aqueous formulations of spinosad, disodium octaborate tetrahydrate (DOT) and aerosol chlorpyrifos to assess efficacy in controlling the western drywood termite, *Incisitermes minor* (Hagen). Suspensions included two spinosad (Dow AgroSciences, Zionsville, IN) concentrations of 2,300 (NAF-371) or 5,000 (NAF-85) ppm, disodium octaborate tetrahydrate (DOT) at 100,000 ppm (TIM-BOR, U.S. Borax, Valencia, CA) and aerosol chlorpyrifos at 5,000 ppm (PT-270, Whitmire, St. Louis, MO). Field collected boards (170 in total) with signs of drywood termites were collected from Monterey and Marina Del Rey, California. Dimensional size and length varied among boards; 2.5 cm by 10 cm to 10 cm by 30 cm in cross-section and 0.7 m to 3.5 m, respectively. In the laboratory, drywood termite infestations were identified using a portable acoustic emission (AE) device (Locator™ Insect Detection Device, Dow AgroSciences, Zionsville, IN). Sensors were attached to boards nondestructively with an adhesive clay-like material. Boards with AE readings of 5 counts or greater per 30 seconds were considered active for drywood termites and were included in the study. Fifty boards determined to contain live drywood termites were randomly assigned among five treatments (four chemicals and untreated check), 10 replicates per treatment. For each treated board, a 2.4-mm diameter hole was drilled every 45 cm for the entire length, plus all visible kick-holes and galleries. Spinosad treatments were injected into boards using a hand-held, pressurized, injection device (Dow AgroSciences, Indianapolis, IN). Chlorpyrifos was injected as an aerosol and the TIM-BOR treatment was administered using a 10-ml syringe fitted with a 16-gauge needle. Drilled holes were chemically treated until galleries were intersected and at least 5 ml, but not more than 50 ml, of chemical was administered per hole. All drilled holes were plugged with wooden dowel sticks. All treated and untreated boards were maintained at ambient temperature and humidity and stored in a greenhouse at Berkeley, CA. At eight weeks post-treatment, all boards were dissected and live and dead termites counted. Mortality was high, > 95% regardless of treatment. However, false positives were high 44% among boards. The reliability of the detection device used (Locator™)

and length of AE detection time are discussed. Comparisons of surface versus subsurface sensors will also be included in the discussion.