Reprinted from Journal of the American Mosquito Control Association
Vol 6 September 1990 Number 3

A NEW HOUSING FOR THE BATTERY-OPERATED AEROSOL DROPLET SAMPLER MODEL 312[1]

DARREL K. FRITZ AND LEWIS R. BOOBAR

U.S. Army Biomedical Research and Development Laboratory, Fort Detrick, Frederick, MD 21701-5010

ABSTRACT. Rotating impactors are more efficient aerosol droplet collectors than stationary impactors. Breakage of the phenolic plastic housing on a commercial rotating impactor during shipment has reduced this laboratory's ability to collect droplet data. Directions for replacing that housing with an aluminum BUD box are presented

Rotating impactors were developed because the efficiency of stationary impactor samplers is low and highly variable over the range of wind speeds. The first battery-powered rotating impactor was the rotorod (Perkins and Leighton 1957) which used small diameter rods as a collection surface. The use of slides as a collection surface in rotating impactors, although not in a manner employed by mosquito control professionals (Perich et al. 1990), was developed by Brookhaven National Laboratory (Ogden and Raynar 1967). The United States Army Biomedical Research and Development Laboratory has used commercial impactors for many years to assess droplet sizes during pesticide application; however, breakage of impactor housings during shipment to field locations has been excessive and reduced this laboratory's ability to collect droplet data. The objective of this work was to provide a solution to our breakage problem. Replacement of the phenolic plastic housing on the commercial impactor "Battery-operated Aerosol Droplet Sampler Model 312" (John W. Hock Company, Gainesville, FL) with an aluminum housing "Minibox Small Cabinets Model CU-3003-A" (BUD Radio, Inc., Willoughby, OH) (Fig. 1) improved durability. No measurable change in performance (i.e., rotational speed at 71°C for 24 h) resulted from the new housing and shock testing by dropping the impactor 1.2 m onto a hardwood surface showed the impactor with an aluminum housing to remain functional, thereby solving the breakage problem.

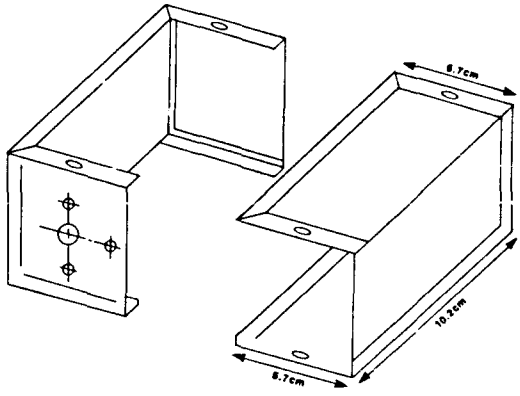

Fig. 1. BUD Box with template showing location of mounting holes for the "Battery-operated Aerosol Droplet Sampler Model 312."

Replacement of the phenolic housing costs U.S. $3.80 for the aluminum BUD box, requires drilling 4 holes (three 0.63-cm holes and one 0.95-cm hole) and takes 20 min.

[1]The opinions or assertions contained herein are the private views of the author(s) and are not to be construed as official or as reflecting the views of the Department of the Army or the Department of Defense.

REFERENCES CITED

Ogden, E. C. and G. S. Raynor. 1967. A new sampler for airborne pollen: the rotoslide. J. Allergy. 40:11.

Perich, M. J., M. A. Tidwell, D. C. Williams, M. R. Sardelis, C. J. Pena, D. Mandeville and L. R. Boobar. 1990. Comparison of ground and aerial ultra-low volume applications of malathion against *Aedes aegypti* in Santo Domingo, Dominican Republic. J. Am. Mosq. Control Assoc. 6:1-6.

Perkins, W. A. and P. A. Leighton. 1957. The rotorod sampler. Second Semiannual Report, CNL 186, Aerosol Laboratory, Stanford University.