

# EFFECTS OF VARIOUS INSECTICIDE SOLUTIONS ON DIFFERENT KINDS OF INSECT SCREENS

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As part of its program of insect and rodent control equipment and methods, the Sanitary Engineering Branch of the Engineer Research and Development Laboratories, Fort Belvoir, Va., investigated the effects of various insecticide solutions on different kinds of insect screens for the purpose of determining whether insecticide solutions would corrode metal screens or soften or dissolve plastic and plastic coated screens.

The kinds of screens tested were as follows: A. Copper; B. Brass; C. Bronze; D. Galvanized; E. Saran; F. Vinyl Plastic Coated Fiberglass; G. Aluminum.

† The screens were framed in wood and

set up in wooden racks (Fig. 1) at the following locations where insecticides were first applied to them on the given dates: 1. Fort Belvoir, Va., May, 1954; 2. Fort Churchill, Canada, June, 1954; 3. Yuma, Arizona, Oct., 1954; 4. Coco Solo, C. Z., Nov., 1954.

Screens in some barracks and mess halls were also treated with insecticides at the military installations at Miami Beach, Florida, starting in May 1955, at Fort Baker, California in February 1955, and at Fort Sam Houston, Texas in August 1955.

Tests were performed at Fort Churchill and Yuma by the Corps of Engineers



FIG. 1. Arrangement of screen rack for tests of insecticide solutions.

Field Test Teams, Arctic and Desert respectively; those at Miami Beach, Florida, by District Engineer personnel; Fort Sam Houston, Texas, and Fort Baker, California, by Post Engineer personnel; those at Fort Belvoir, Virginia by ERDL personnel; and the ones at Coco Solo, C. Z., by personnel of the Naval Research Laboratory.

**INSTRUCTIONS.** The initial application of insecticides was made by one of the authors of this paper at each of the test sites, where the following instructions were given, under the heading "Insecticide Treatment of Insect Screens":

1. The upper panel of screen set will be treated with various forms of insecticides, their effects on the screens will be observed on monthly inspections, and these effects will be noted in monthly reports.

2. Mark out vertical lanes on upper panels by means of strings or wires attached to the wooden frames. The width of the lanes will be four inches, with approximately one and one-third inches of untreated space between lanes.

3. Insecticides used will be as follows:

- a. DDT in kerosene, 5 percent—Quartermaster issue
- b. DDT emulsion, 5 percent with xylene as solvent—1 part and 4 parts  $H_2O$
- c. DDT wettable, 5 percent—1 lb. 50 percent powder and 1 gal.  $H_2O$
- d. DDT 5 percent, Chlordane 2 percent—Quartermaster issue

4. Application of insecticides should be made with a soft paint brush of about three inches to both sides of the screens starting from the bottom of the panel and working up to keep solutions from running down onto the frame and lower panel.

5. Reapply insecticides every sixty days during insect season exactly as applied initially.

6. In regular monthly inspection the following should be observed and reported.

- a. Severance of yarn fibers
- b. Dissolving of plastic coating
- c. Tackiness of coating
- d. Corrosion or discoloration of screen
- e. Any dimensional distortion
- f. Any unusual occurrence not covered by inspection check sheet

**OBSERVATIONS.** Besides receiving and evaluating monthly reports (for over a year in some cases) the authors have visited each of the locations of the screens, observed them, and consulted with the people performing the tests.

The first effects of the application of insecticides to the screens were a white appearance to the screen treated with wettable powder and a darkening of the screen treated with emulsion. These effects were noted at all test sites. The discolorations to the screens were removed easily by scrubbing with a brush, soap and

water. A heavy coating of pollen or "arctic cotton" adhered to some of the screens at Fort Churchill, but it was also easily removed by cleaning. After the removal of the discolorations on the screens by scrubbing they had a similar appearance to the untreated screens, but were somewhat cleaner. The metal screens were not rusted or corroded and no softening or dissolving of the plastic or plastic coated screens was observed.

Treatment of the screens will continue at the several test sites during their insect seasons, the screens will be inspected

by testing personnel, and any unusual occurrence will be noted and reported. However, monthly reports will be replaced by semi-annual ones. The test sites will also be visited every six months by ERDL personnel who will inspect and evaluate the tests with the local people.

To date, negligible changes have occurred in the screens—metal, plastic, or plastic coated because of insecticide applications to them. As a result of the described tests it is concluded that the insecticides used have had no harmful effects on the insect screens.