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RODENT RESISTANT CABLE MATERIALS
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U. S. Army Electronics Command
Fort Monmouth, New Jersey

INSECTICIDES AND RODENTICIDES LABORATORY
Pioneering Research Division
U. S. Army Natick Laboratories
Natick, Massachusetts

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RODENT RESISTANT CABLE MATERIALS

Purpose:

The purpose of this program is to develop materials and methods for protecting electric cable from attack by rodents and other animals.

Technical Approach:

The following areas are being investigated: 1. Methods for coating, impregnating or otherwise compounding electrical cable coating materials with known rodent repellents. 2. Laboratory and field tests on the resistance of repellent-treated cable coatings to various animals. 3. Investigation of other methods (such as ground application) of using repellents for protecting cable coatings. 4. Determining the effects of successful chemical treatments on the electrical and physical characteristics of cables. 5. Correlation of the resistance of cable coatings to animal attack with their chemical nature, hardness, color and shape.

Technical Progress:

Nineteen formulations of various organic tin compounds known to be repellent to rodents were tested for repellency to mice. The repellents were formulated with various binders (mostly polymeric compounds) suitable for application to the polyethylene coating of WF-16 cable. These were applied to small burlap bags. The bags were filled with wheat and each of 10 bags of each treatment were placed in a cage with house mice. These tests showed that the nature of the binding material used for formulation affects the efficiency of the

repellent. For example, tributyltin fluoride was not repellent when formulated in an asphalt compound, gave medium repellency when formulated in a lacquer, and was highly repellent when formulated in a clay (bentonite) slurry.

Two types of field tests were established: One to test the effectiveness of various treatments against pocket gophers; the other to test the effectiveness of tributyltin chloride in protecting cable against wood rats. In the pocket gopher tests, trenches were dug in an area known to have colonies of pocket gophers. WF-16 wire was laid in the trenches and the trench and wire sprayed at the rate of two pounds of test chemical per linear mile. One-half inch of treated soil was then placed over the wire and the trench filled. The chemicals being tested are diesel oil, tributyltin chloride, tributyltin fluoride and tertiary butyl sulfenyl dimethyl dithiocarbamate. A soil compacting agent and gravel are being tested as physical barriers. Damage to the wire will be determined by weekly electrical continuity tests.

The wood rat is a good test animal for evaluating cable protectants because it is a "pack rat". Such rats have the habit of clearing the paths they use in going from nesting sites to food sources, by removing any objects they can. A wire laid across a path will be dragged off the path or severed and the ends removed from the path. If the cable is treated with a repellent the rat will not attempt to sever or remove the wire. Field tests have been established in New Mexico with WF-16

cable treated with tributyltin chloride. Results will be available for the next Quarterly Report.

A laboratory method is being developed for evaluating repellent treated cables using wood rats. If the method is successful, considerable time will be saved in evaluating treatments to be selected for large scale field tests.

Dispensers for WF-16 cable treated with an unknown amount of tributyltin chloride were tested for repellency. The dispenser material showed considerable resistance to penetration by rats since only 4 of 10 samples were gnawed through. There appeared to be an ineffective amount of tributyltin chloride on the dispensers because an equal number of untreated (2) and treated (2) dispensers were penetrated.