COMPOUND PA-14
AVIAN STRESSING AGENT

EPA Registration No. 6704-73

For control of roosting red-wing blackbirds, rusty blackbirds, common grackles, brown-headed cowbirds, and starlings. Use of this product in avian population control is limited to use by or under the supervision of government agencies trained in bird control, in accordance with applicable State and Federal regulations. For use directions, see Instructions for use of PA-14 avian stressing agent. Write to Section of Animal Depredations Control Studies, Patuxent Wildlife Research Center, Laurel, Md. 20810 for instructions. Do not use without reading instructions.

ACTIVE INGREDIENT

a-Alkyl (C_{11}-C_{15})-omega—hydroxypoly (oxyethylene); average poly (oxyethylene) content 9 moles*	99.5% minimum

INERT INGREDIENT

water	0.5% maximum

*ethoxylate of isomeric linear secondary alcohol

DANGER: KEEP OUT OF REACH OF CHILDREN

Corrosive. Causes eye damage and skin irritation. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful if swallowed. Avoid contamination of food.

FIRST AID

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes call a physician. Remove and wash contaminated clothing before reuse.

If swallowed, drink promptly a large quantity of milk, egg whites, gelatin

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes call a physician. Remove and wash contaminated clothing before reuse.

If swallowed, drink promptly a large quantity of milk, egg whites, gelatin solution, or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsion may be needed.

Keep all unprotected persons out of the operating area or vicinity where there may be danger of drift.

ENVIRONMENTAL PRECAUTIONS

Fish and other aquatic life may be killed at application rates recommended. Keep out of lakes, streams, ponds, and estuaries. Do not apply to water drainage areas where runoff of flooding will contaminate water by disposal of waste or cleaning of equipment. Apply this product only as specified on this labeling.

Packed for U.S. Dept. of the Interior
Fish and Wildlife Service
Washington, D.C. 20240

NET CONTENTS 55 GALLONS LIQUID (460 lbs.)
Store at 60°-120°F.

ACCEPTED
FEB 3 1976
Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 6704-73
Comment

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INSTRUCTIONS FOR USE OF PA-14
AVIAN STRESSING AGENT

EPA REGISTRATION NO. 6704-73

United States Department of the Interior
Fish and Wildlife Service
Division of Population Regulation Research
Patuxent Wildlife Research Center
Section of Animal Depredations Control Studies
Laurel, Maryland 20811

Instructions for use of PA-14 avian stressing agent

INTRODUCTION

PA-14 is a nonionic surface-active agent, or surfactant--a substance which is capable of lowering the surface tension of water, thereby enhancing wetting. The potential of this material for bird control lies in the fact that treatment of roosting birds during or immediately preceding cold wet weather induces mortality. The exact physiological mechanisms involved in this mortality are not yet known completely, but it is believed that wet plumage, resulting from the combination of surfactant application and rainfall, increases heat conductivity from the bird's body. This energy transfer is enhanced by evaporation. If the energy transfer is not met by increased metabolism, the bird's body temperature drops, eventually falling to a lethal level.

PRETREATMENT SITE APPRAISAL

It is difficult to lay down hard and fast rules as to criteria which would make a site acceptable or unacceptable. Acceptability judgments are made jointly by field and supervisory personnel when new sites are considered. However, the responsibility for sites previously treated lies primarily with field personnel.

Of prime importance in the treatment of any site with a control chemical is the necessity to ensure, insofar as possible, that the treatment will result in a minimum of adverse effects on the environment, especially to plant or non-target animal species. This can be assured only by thorough pretreatment ecological investigations of candidate treatment areas. In addition to considering effects of the treatment chemical on roost sites, personnel should try to project long-term effects on both roost sites and adjoining areas likely to be affected. The first question to be answered should be, "Where will the material go, and once there, what harm is it likely to do?" Only when this question is satisfactorily resolved can a roost be considered for treatment.

PA-14 should not be considered completely innocuous. This material is toxic to fish, and for this reason it should not be applied on areas supporting valuable commercial or sport fisheries. Surface drainage should be carefully checked for destination and volume of flow to ensure that PA-14 runoff will not contaminate such areas downstream or, more importantly, enter a domestic water supply.

Although more difficult to ascertain, sub-surface drainage should not be ignored. This is of special importance when local domestic water supplies are drawn from wells. Often the best source of information on likely underground water movement is the local county office of the Soil Conservation Service.

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Prospective treatment sites should also be thoroughly checked for the presence of non-target animals, especially those protected by law.

PA-14 is somewhat phytotoxic to actively growing plants, and application to valuable timber or nursery stock should be confined to the dormant period.

GENERAL CONSIDERATIONS

1. Permission. Permission to conduct the treatment should be obtained from the landowner and/or tenant. This should be in the form of a waiver or cooperative license agreement prepared in duplicate. In obtaining permission, the Government representative should apprise the landowner of his rights and of the possible hazards involved in the treatment.

   Where necessary, local government agencies (Game and Fish Commission, State Plant Board, etc.) should be informed and kept advised of the operation.

2. Permits. Personnel directly involved in the treatment should have valid Federal and State collecting permits for the area concerned.

3. Publicity. Residents in the immediate area of the treatment site should be informed of the operation and possible hazards associated with it. It is important, however, that publicity be kept to a minimum. Newspaper, radio, or television coverage could attract large numbers of observers who would present a serious safety problem.

4. Weather. Since success of the technique is dependent on rain and low temperatures following the surfactant application, arrangements should be made to obtain the most accurate weather forecasts possible. Some sources are ESSA forecasters at large metropolitan airports, FAA personnel at Flight Service Stations, and military forecasters at air bases.

   Satisfactory bird mortality results when Fahrenheit temperatures are in the lower 40's or below, and when at least 0.5 inch of rainfall occurs prior to the departure of birds from a roost at dawn. Laboratory and field trials have shown that suitable weather conditions up to three nights post-treatment can result in mortality.

5. Histoplasmosis. All personnel working in or near the roost should be skin-tested for histoplasmosis prior to work in roosts. Those testing negative should be especially cautious and, if possible, not enter roosts known to harbor Histoplasma. They also should be informed of the symptoms of histoplasmosis and be cautioned to wear suitable respirators when in a roost.

AIRCRAFT AND PILOT

1. Requirements. Pilots must obtain permission and, if necessary, a waiver to conduct each operation from the cognizant FAA General Aviation District Office. This should be done well in advance of the proposed treatment date, to allow time for the FAA to investigate the situation if necessary.

   The spray pilot must hold a commercial license (preferably with instrument rating) and an Agricultural Aircraft Operator's Certificate (FAR 137). He also should carry a minimum of $100,000/$300,000 liability insurance. The Government representative should check with the insurer to be sure the policy is valid under proposed flight conditions.

   Regulations applying to Fish and Wildlife Service flight operations are listed in 23AM8.6K.

   Aircraft involved must have day and night VFR equipment (FAR 91.33). Additionally, IFR equipment would be desirable. Minimum equipment requirements are: air speed indicators, altimeter, magnetic compass, tachometer for each engine, oil pressure and temperature gauges for each engine, manifold pressure gauge for each engine, fuel gauge, landing gear position indicator, approved position lights, anti-collision light, electric landing light, and an adequate power source for all electrical devices and radio. Radio communication with ground observers has proved very helpful.

2. Airport facilities. Runways used for nocturnal spray operations should be lighted, and preferably paved. If sod runways must be used, they should be flat, smooth, and well mowed. If a public airport is used, permission should be obtained from the airport manager, and control tower personnel advised of proposed activities.

3. Payment rates should be arranged with the contractor beforehand. Usually this involves payment of an hourly spraying rate of $75 to $100 as determined by his engine-hours meter, and a guaranteed minimum of $50 to $75 for each day's operation. Rates for ferry and standby time also should be pre-arranged. All rates will vary with locale, equipment used, and degree of hazard to plane and pilot.

DELIVERY

The spray pilot should be thoroughly familiarized with the roost area by day and night from the ground and the air. Particular attention should be paid to both aerial obstructions such as high trees and powerlines, and to locations of residences and farm buildings. He should know exactly where in the roost he is to release treatment materials. It should be established beforehand whether he is to spray only pre-determined swaths, or spray visible concentrations of birds.

Efficacious use of PA-14 at volumes attainable by agricultural spray aircraft is dependent upon certain weather conditions. Applications must be limited to nights when at least 0.5 inch of rain and temperature below 45°F can be reasonably expected to occur after treatment and before the birds leave the roost area at dawn. For maximum safety to fixed wing aircraft, treatment should not be made while rain is occurring.

Treatment must not exceed 20 gallons of actual PA-14 per acre, but effective concentrations may vary from 8 to 25% actual material depending on the application technique used. Two application methods are recommended:

1. Single-pass. If pretreatment observations by individuals having knowledge of blackbird roosting behavior indicate that roosting birds under a spray swath are likely to flush to another area after a single pass, treatment should be made in a series of single contiguous swaths at the higher concentrations (e.g., 80 gpa of 25% actual material). Delivery at this volume may be obtained by use of a venturi spreader, perforated-wing spray apparatus or helicopter.

2. Multiple-pass. If birds are not expected to flush under the spray plane, better distribution of the material is obtained by using a lower PA-14 concentration and making repeated passes over a given area until the total 20 gpa of actual material is delivered. For example, using an 8% solution, treatment might be made in 10 passes at 25 gpa with a boom and nozzle sprayer or three passes of 80 gpa with a perforated-wing sprayer. Helicopters are especially effective with a multiple-pass technique.

Rain during or immediately following the application of the product is required to achieve the highest rate of efficacy. Application, therefore, must not be made until weather requirements are likely to occur.

Generally, spray flights should not be made when wind velocities during spraying exceed 10 mph.

The spray apparatus, of whatever type, should be calibrated to ensure it is delivering solution at the desired rate.

Actual delivery should be at an altitude high enough to minimize bird reaction and reduce danger of collision. This height will vary with different roosts and aircraft, but usually will be approximately 75 to 150 feet above ground level. The pilot should be kept aware of wind velocity and direction throughout the actual spraying.

When possible, solutions from aborted missions should be released under the direction of the biologist in charge.

EQUIPMENT NEEDS

The following list covers major items which are generally needed for most roost treatments. Individual roosts may require additional equipment and supplies.

1. Tanks, pump(s), and hoses for mixing solutions and loading aircraft. All should be checked before use, and necessary repairs made well before the equipment is needed. Tanks and barrels must be thoroughly cleaned of any pesticide residues before use, and well rinsed after use to remove PA-14 which is corrosive when mixed with water. Specialized hose fittings may be necessary for loading certain aircraft.

2. Heated storage (60°+F) must be provided to keep undiluted PA-14 in a liquid state.

3. Alcohol. If air temperatures are low, or if high PA-14 concentrations are to be sprayed, isopropanol or ethanol should be added to make up 5 percent of the solution as an antifreeze and thinner. Methanol should not be used.

4. Hot water is necessary for mixing solutions unless alcohol is to be used for the initial dissolving. Cold water may be used for mixing if alcohol is first added to the liquid PA-14.

5. Maps. USGS 7½' topographic quadrangles and ASCS 660-scale aerial photos are most useful. The latter may often be obtained from local county seat ASCS offices. Maps and photos, however, should not be considered substitutes for thorough on-ground reconnaissance.

6. Lights. Battery-powered lights of the type used to mark highway obstructions are useful for pilot guidance. To be completely satisfactory, however, they should have dome-shaped lenses to provide 360° visibility, and be steady-burning rather than flashing.

7. Respirators. Filters used must be capable of filtering particulate material smaller than one micron. The MSA Type H Ultrafilter is one of the acceptable brands.

8. Weather monitoring equipment should include a recording or maximum-minimum thermometer, rain gauge, and anemometer.

EVALUATION

1. Pretreatment appraisals should include counts or estimates of bird and animal numbers by species. Individual situations will dictate the estimating method to be used. Aerial flights at 500 to 2,000 feet altitude over the roosting birds on moonlit nights are useful in determining extent and distribution of roost concentrations.

2. Application accuracy should be checked by observers at various vantage points around, and possibly in, the roost. Percent of each load hitting birds should be estimated, and bird reactions noted.

3. Post-treatment estimates of kill should be as accurate as possible and incorporate valid statistical sampling procedures. The following method has proved the most satisfactory of those tried so far. The

outline of the kill area is determined by observations; then it is squared-off and marked with flagging tape. Total acreage is determined by pacing the perimeter. The sample size then is chosen on the basis of desired percentage of kill area.

Actual sampling is accomplished by running randomly chosen 3-foot-wide transects perpendicular to a base line, usually the long axis of the kill area. Transects are run after stringing twine along a compass bearing from the selected beginning point to the end point of each transect. Counts of dead birds then are made to one side of this string, using a 3-foot stick as a reference width. When time permits, dead birds are removed from the transects to simplify re-checking for residual kill after possible subsequent rainfall.

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