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RECENT DEVELOPMENTS IN BIRD DAMAGE CONTROL CHEMICALS

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ABSTRACT: A number of actions are under way which could reduce or severely restrict the availability of chemicals presently available for controlling bird damage. The current status of 17 federally registered chemicals, representing approximately 57 products, is discussed with regard to registration, re-registration, or de-registration actions that are pending.

The developmental status of a number of new chemicals or new uses for existing chemicals is also discussed, along with an appraisal of the effects of current federal registration requirements on the eventual availability of these compounds.

INTRODUCTION

During the time I have allotted I would like to discuss with you the changes that have occurred over the past 2 years in the availability of bird damage control chemicals. I will attempt to cover those chemicals with which I am most familiar, as thoroughly as possible, and other chemicals to the best of my knowledge. I will limit my comments to those changes that have or may affect the availability or usefulness of bird damage control chemicals.

EXISTING CHEMICALS

Many chemicals are available for bird damage control at the present time, however, a number of actions are underway which could severely reduce or restrict their availability. The status of various federally registered products is as follows:

4-Aminopyridine - 4-Aminopyridine (Avitrol^R) is registered for bird control use in urban sites (pigeons, sparrows, etc.), in feedlots (starlings, blackbirds), at airports (gulls), in ripening sweet and field corn (blackbirds), and in ripening sunflowers (blackbirds). Potential uses contemplated for the next 2 years are ripening sorghum and sprouting seed rice. State emergency registrations were granted in 1976 and 1977 for the latter use in three southern states. The future availability of this compound may be jeopardized if the Environmental Protection Agency (EPA) follows through with its present requirements that all chemicals be re-registered every 5 years, and must meet the existing registration requirements at the time of re-registration (implementation of this requirement expected October 1, 1977, was delayed). EPA has indicated that laboratory studies at a minimum of \$300,000 need to be completed before re-registration can be considered. Since Avitrol Corporation (the registrant) is in business to make a profit, and because Avitrol is a minor use pesticide (as are most, if not all, vertebrate control chemicals), there is considerable reason to believe that Avitrol Corporation cannot afford to underwrite the entire cost of re-registration. State or Federal help may be required if Avitrol is to remain available for many or all uses, particularly those involving agricultural crops.

Azacosterol - This chemical, trade named Ornitrol, is the only avian reproductive inhibitor currently registered by EPA for controlling urban birds (pigeons). Use and effectiveness of this material have been limited by cost of the baits and a lack of persistence on the part of applicators. Ornitrol also is due for re-registration, but because of the limited use pattern, additional data may not have to be provided to maintain registration. If additional data are requested, the product will probably not be re-registered.

Captan - This chemical, a fungicide that also is incorporated in some seed treatments for controlling bird damage, is currently being considered for RPAR (Rebuttable Presumption Against Registration) action by EPA due to possible teratogenic or mutagenic effects. The outcome of this possible action is not known, but could result in the loss of captan from the list of available bird damage control chemicals.

Coal-tars and derivatives - These materials are used in seed repellents, however, it is doubtful whether they will be re-registered due to a lack of efficacy data and the high potential of these materials as carcinogens, teratogens, or mutagens.

Copper Oxalate - This, too, is used in seed repellents. Efficacy data are lacking, but no adverse carcinogenic, teratogenic, or mutagenic activity is known.

Endrin - This material is used as a perch toxicant and seed repellent. It is currently undergoing RPAR action by EPA. Because of this action and the probable outcome (loss of registration for most uses), it will probably no longer be available for some bird control uses. Because of a restrictive use pattern, its use in wicked perches may be allowed to continue, if sufficient efficacy and hazard data are provided to EPA.

Fenthion - This chemical (Baytex^R) is used as a wicked perch toxicant for controlling

pest birds. It, too, will have to be re-registered, however I anticipate that because of its wide use as an insecticide, the expensive toxicological data required (if any) will be obtained by the producer, Chemagro, Division Mobay Chemical Company. Efficacy data for bird control use will probably have to be strengthened to allow continued use as a wicked perch toxicant. The amount of efficacy data required will probably determine whether it is re-registered by Rid-A-Bird, Inc.

Lindane - Although currently used as a seed repellent, this material is under RPAR action by EPA and will probably not be available in the future.

Methiocarb - This material, trade named Mesurol, will also need to be re-registered for many uses. The basic toxicology data required by EPA will probably be gathered by the producer, Chemagro. Efficacy data already developed for registered bird control uses (seed corn, cherries) should satisfy current registration requirements. Additional field testing of this material in grapes, blueberries, seeded rice, and domestic and wild ripening rice planned for the next 2 years should allow registration for one or more of these uses provided that satisfactory efficacy can be demonstrated.

Mineral Oil - This material is used to treat building ledges to make them unattractive to roosting or loafing urban or pest birds. Re-registration will probably affect availability of this material in that conclusive data will need to be obtained to document efficacy.

Naphthalene - This material is used inside structures as a repellent for pest bird species. Re-registration of naphthalene will probably involve the gathering of efficacy data, and perhaps additional toxicological data. If the latter is required, the product will probably not be available for use in bird control.

PA-14 - This surfactant is currently registered as a stressing agent for controlling (killing) pest populations of starlings and blackbirds in roosts. Re-registration of PA-14 will require the gathering of additional toxicological data. Whether the limited usefulness of this compound will justify the expenditures of an additional \$250,000 to obtain re-registration, will have to be decided soon by the U.S. Fish and Wildlife Service. Loss of this registration could mean that no chemical capable of killing birds in roosts would be available for at least 5-10 years.

Polybutenes and Polyisobutenes - These materials are used in the tacky roost or ledge repellents often to repel pest birds from buildings and structures. Although re-registration requirements will probably be limited in the toxicology area, extensive efficacy evaluations of most products will probably be required, and may eliminate some of the existing products from the market.

Quinone - This material is used as a woodpecker repellent on utility poles. Re-registration will undoubtedly require additional efficacy studies, and may require additional toxicological tests. Because of the limited market, quinone's use in bird control could be terminated by these requirements.

Strychnine - This chemical is currently used to kill pest bird species in urban and agricultural areas. Strychnine is currently under RPAR action for all above-ground uses, and data requirements for re-registration will be considerable assuming that it is not de-registered. The probability of this material remaining available for above-ground use is, in my opinion, negligible.

Starlicide^R - This material, also known as DRC-1339, is used to control starlings in feedlots and gulls on nesting islands. Assuming no use pattern changes are attempted, re-registration should entail only limited additional data requirements. DRC-1339 is, however, also being considered as a bait material for use in pre-roosting or staging areas in the southeastern U.S. If these uses are proved to be effective, a considerable amount of additional toxicological and residue data will have to be gathered. Because of limited market potential, the producer, Ralston Purina Company, will probably not conduct these studies.

POTENTIAL NEW CHEMICALS

Repellents

CURB; RETA - These chemical repellents, which are used on agricultural crops in Europe and the Middle East, have recently been proposed for introduction in the U.S. Both of these materials are multiple ingredient formulations based on the ammonium, sodium, and potassium salts of aluminum sulfate (Alum). Alum is a bitter material that is distasteful to humans and many animals. Although these formulations have shown some degree of repellency in the field, effective application rates are often extremely high (5-20 lb/acre) and residue problems may preclude their use on agricultural crops that are not washed prior to use. Additional field evaluations of these materials in the U.S. need to be conducted to determine potential usefulness.

U-12171 - This compound, being tested by the Upjohn Company in limited trials on

seed crops, has been shown to be highly effective for a variety of uses. U-12171, a butyramide, was originally discovered about the same time as methiocarb, and was an equally effective repellent. Production costs precluded further development at that time. Assuming that production costs can be lowered to levels competitive with or below methiocarb, and that Upjohn wishes to pursue registration, this material could eventually become available for use in the U.S.

Others - A number of other potential avian repellents have been patented over the past 10-20 years, however, as of this time, I am not aware of any that are actively being pursued or developed in this country. Should economic conditions dictate or relaxation of EPA regulations occur, one or more of these materials could become available for testing.

Toxicants

DRC-1347 - Two compounds, both related to DRC-1339, have been proposed and/or are being pursued as oral or dermal toxicants. The first of these chemicals, coded DRC-1347 and known as CPT, has been evaluated as a dermal toxicant for application in roosts, in wicked perches, or in tacky perch formulations. This material is relatively short-lived, being rapidly degraded by sunlight and heat, and may provide an environmentally acceptable material for some uses. Its major advantage is also its major disadvantage, however, since it is selectively toxic to blackbirds and starlings, and only marginally effective on pigeons and ineffective on sparrows.

DRC-2698 - The second compound in this group is known as DRC-2698 or CAT. It is currently being investigated as a dermal toxicant for application to blackbird/starling roosts and as an oral toxicant for use in agricultural areas. Its main advantages are that it is relatively less toxic to mammals than DRC-1347 or DRC-1339, appears to be better accepted orally than DRC-1339 and is more stable than either of the other compounds. For roost use, however, its stability may be its greatest disadvantage, since residues would persist for long periods of time.

Others - A number of other compounds have been experimentally tested as bird toxicants over the years, however I know of no chemical, other than those listed above that could potentially be available for use in the next 5-10 years.

Immobilizing Agents

Methiocarb - This chemical has also been successfully used on baits to capture large numbers of blackbirds for banding and laboratory study. It has also been tested on pigeons and waterfowl, however, its efficacy on these species is marginal.

Tribromoethanol - This chemical has been around for a long time, but its use as an immobilizer has never been registered. It is an effective immobilizing agent for pigeons and some wild game birds.

Alpha-Chloralose - This is another old timer that is also an effective immobilizing agent for pigeons and some species of waterfowl.

Methoxymol - This relatively new compound combines many of the positive aspects of tribromoethanol and alpha-Chloralose, but acts more quickly and is shorter lasting. It has successfully been used on a large number of species, often with dramatic results. This compound is, however, in the same situation as the three above listed compounds, in that there is little or no incentive to pursue registration because of the expense involved and the limited use pattern that could be developed for any one compound. Other compounds in this category have also been tested (i.e., barbiturates, hypnotics, etc.) but their outlook is similar.

Frightening Agents

Methiocarb - This multipurpose chemical was also successfully tested on baits as a frightening agent in feedlots but unsuccessfully in field corn. Although the feedlot use was evaluated, market potential was limited and thus nothing has been done. I am unaware of any other effective compounds that fall into this category at this time.

Chemosterilants

Thiotepa - This chemical is an insect chemosterilant that has shown a high degree of potential as a male blackbird/starling chemosterilant. Considerable laboratory and field data need to be generated before the practicality of this material can be properly assessed.

TEM - TEM is a classical mammalian/avian chemosterilant with properties and current status similar to Thiotepa. Even if one or both of these compounds can be proved efficacious, the problem with registration will have to be overcome since both of these materials are highly teratogenic, mutagenic, and/or carcinogenic.

CONCLUSIONS

It should be obvious from what I have discussed above that the use of chemicals as tools to control bird damage is approaching a critical point. Current EPA regulations are slowly reducing the availability of control tools, and RPAR and re-registration actions could severely cripple the bird control industry. I hope changes in the registration process will be made to allow small or large businesses to make a profit from producing or using effective minor-use pesticides.

EPA regulations are also playing a very important role in restricting the future availability of new control tools, by forcing companies and government agencies to continually generate additional data to maintain or retain existing registrations, curtailing efforts in research and development. If the trend continues, it will force government into the position of developer and marketer for most, if not all, bird damage control chemicals.

Lastly, I would like to make a few comments that may be of interest to everybody. There is no panacea in bird damage control, just like in any other pest control situation. For one to obtain a reasonable degree of damage reduction with any control technique requires persistence, understanding, and innovation. The old adage that "you don't get something for nothing" is very appropriate, thus, don't expect results greater than the amount of effort you are willing to expend. Chemicals can usually provide only short-term answers to long-term problems. The long-term solutions to most bird problems lie in changing the public's attitudes and practices that bring them into conflict with birds.