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DATA ACCESSION NO(S) 433310-01

PRODUCT MER. NO. 14

PRODUCT NAME(S) ReJeX-iT AP-50
ReJeX-iT TP-40

COMPANY NAME PMC Specialties Group

SUBMISSION PURPOSE Supply data on old formulations in hopes that we will
find them relevant to current formulations

CHEMICAL & FORMULATION 58035-6: 50% Methyl Anthranilate dry concentrate

58035-7: 40% Methyl Anthranilate liquid concentrate

Efficacy Review: ReJeX-iT™ AP-50, 58035-6
ReJeX-iT™ TP-40, 58035-7
PMC Specialties Group, Inc.
Cincinnati, OH 45217

200.0 INTRODUCTION

200.1 Uses

58035-6 is a 50% Methyl Anthranilate dry concentrate Federally registered

"to repel ring-billed gulls, Canada geese, and mallards from temporary pools of standing water and landfills that are not in or bordering airports."

58035-6 is a 40% Methyl Anthranilate liquid concentrate Federally registered

"to repel ring-billed gulls, Canada geese, and mallards from temporary pools of standing water and landfills that are not in or bordering airports."

200.2 Background Information

See efficacy reviews of 5/24/93 and 3/25/95 (you might have to look for them in jacket for 58035-8), along with other information in the jackets for PMC's Methyl Anthranilate (MA) products.

This review discusses a report of field efficacy trials which appears to pertain to earlier formulations tested in the development of these products. The report was submitted to EPA on 8/8/94 by Judith M. Hushon of ERM Program Management Company of McLean, VA.

201.0 DATA SUMMARY

The report submitted is identified and discussed below.

Dolbeer, R.A. and Clark, L. (1991?) Evaluations of Methyl Anthranilate formulations as bird repellents in water. Experiment 1: Preliminary field evaluations of two formulations of Methyl Anthranilate (TP250, AP75) as bird repellents in temporary pools of water at JFK International Airport, May-August 1991. Manuscript, Ohio Field Station, Denver Wildlife Research Center, Animal and Plant Health Inspection Service, USDA, 10 pp.

MRID# 433310-01

This research was conducted at New York's JFK airport during three periods during the Spring and Summer of 1991 when the rainfall was sufficient to produce temporary pools of standing water. Such pools are attractive to certain types of birds and, therefore, are potentially hazardous to air transportation. According to information cited by the authors, planes taking off or landing at JFK strike more than 300 birds annually.

The methods use varied from one testing period to another. The testing periods were 5-6 days long, apparently being ended when one or more of the pools being monitored completely dried up.

The first testing period (5/14-19/91) was the only one in which untreated pools were monitored throughout the trial. In this case, two pools at each of two sites were monitored throughout the study period. At one site, one pool was treated with the TP25 product by an individual who walked through the pool and use a hand-held sprayer to apply the product at 20 ml/m² of surface water. The person also walked through the pool that was not treated, presumably wearing uncontaminated clothing. At the other site, one pool

MAY 14-19, 1991, TRIALS	POOL			
	H1	H2	FA1	FA2
SURFACE AREA (m ²)	150	1300	4000	300
AVERAGE DEPTH (cm)	10	30	40	25
TREATMENT GIVEN	Sham	TP250	Sham	AP75
BIRDS SEEN/5 MIN.				
Pretreatment Mean (SD)	1.3 (1.6)	4.1 (2.6)	4.3 (2.7)	1.2 (1.1)
Posttreatment Mean (SD)	1.4 (1.2)	0.5 (1.0)	9.0 (2.5)	0 (0)
BIRD TYPES SEEN				
Ducks	14	84	122	11
Geese	0	4	0	0
Gulls	16	6	5	0
Others	20	6	13	1

was given a treatment with the AP75 product and the other pool got a walk-through. The AP75 was sprinkled from a bucket at 1 g/L of water. Observers counted numbers of birds "in or entering the water" during 5-min observation periods which occurred "throughout the day".

Dolbeer and Clark (1991?) report significant ($p < 0.03$, t-test) declines in bird usage of treated ponds at both locations. Numerical results are shown in the table above. In one pair, the larger pond was treated with repellent while the smaller pond was treated for the other pair. Although likely to be the first to dry up, the smallest pond (H1) remained large enough to attract a few birds after the time of treatment. Use of a t-test for pond FA2 was inappropriate as there was no posttreatment variation in results. Any of several nonparametric tests (not to mention visual inspection of the data) would reveal a significant treatment effect in this pool, however.

Only the AP75 product was used in the second set of trials, run from 7/8-12/91. All 4 pools were monitored first in an untreated state and then after all were treated at 1 g/L. Results of this trial are summarized in the table below.

JULY 8-12, 1991, TRIALS	POOL			
	V	ZG	WW13L	WA
SURFACE AREA (m ²)	75	5	24	39
AVERAGE DEPTH (cm)	4	1	2	2
TREATMENT GIVEN	AP75	AP75	AP75	AP75
BIRDS SEEN/5 MIN.				
Pretreatment Mean	6.0	4.0	4.0	1.0
(SD)	(0)	(0)	(0)	(0)
Posttreatment Mean	0.1	0	0	0.1
(SD)	(0.3)	(0)	(0)	(0.4)
BIRD TYPES SEEN				
Ducks	1	0	0	0
Geese	0	0	0	0
Gulls	12	4	4	3
Kildeer	0	0	0	1

The authors report a significant ($p < 0.01$, t-test) decline in bird use of ponds following treatments. One t-test was run on the pooled data from all ponds, as opposed to the comparing of each pool to its pretreatment self which was performed for the results of the May trials. There was only one pretreatment observation at three of the four pools. There were two pretreatment observations on the V pool. After treatment there were a total of 29 observation periods completed for the 4 pools, with 13 of these having been done on the V pool. As shallow as these pools were to begin with, and as small as ZG was, it is hard to imagine them becoming more attractive over time. There would be expected to be progressively less water in them and, in July, the water would be expected to get hotter over time. In the absence of data from untreated pools monitored over the same period of time, it is not appropriate to ascribe all of the reported changes in attractiveness to the effects of the repellent.

The third test series was run from 7/28 through 8/2/91. The pools observed were on "two taxi-way ramp areas". In one area, 8 pools were observed for several days and then treated with AP75 (rate not indicated). The other area included 9 pools which also were treated with AP75 on 8/1/91. No untreated pools were monitored throughout the study although, following treatment, the authors monitored "a few minor pools on the peripheries" which were not treated

"because we noted no bird use of them during pretreatment observations."

At these sites, bird observations were conducted for about straight hours "2-4 times daily".

Results of the taxi-way ramp trials are summarized in the table below. Despite complete cessation of bird activity at one site (WA) and a 60% drop in mean numbers of birds at the other (B), the authors reported that the overall mean bird numbers for the two sites pooled were not significantly different for the pretreatment (15.7 birds/2-hr period) and posttreatment (3.7 birds/2-hr period) phases of the study. The reason why these means were not significantly different using a t-test is readily apparent when the standard deviation results are examined. There simply was too much within-cell variance in this study for significant differences to have been detected using parametric methods with no data transformations. Nevertheless, the authors felt that the 2-hr observation periods gave them better results than the 5-min periods used in the two earlier trials.

JULY 28-AUGUST 2, 1991, TRIALS

POOL AREA

	WA	B
SURFACE AREA (m ²)	348	374
AVERAGE DEPTH (cm)	3	3
TREATMENT GIVEN	AP75	AP75
BIRDS SEEN/120 MIN.		
Pretreatment Mean (SD)	12.8 (19.8)	18.6 (28.3)
Posttreatment Mean (SD)	0 (0)	7.5 (8.7)
BIRD TYPES SEEN	% of Total for Both Sites	
Pigeons	34%	
Laughing Gulls	31%	
Ring-billed Gulls	23%	
Herring Gulls	9%	
Common Crows	3%	

Because concurrent controls were not run in this series of trials, the apparent reductions in bird usage of treated pools cannot be fully attributed to the effects of MA. The authors report observations of increased bird use of the peripheral pools that originally were overlooked as insignificant following the time of treatment of the larger, more centrally located pools. This qualitative assessment is consistent with the notion that MA was responsible for the likely reduction in use of the treated pools.

Noting problems of globulation of repellent in pools, the authors recommended that dispersing agents be added to the products to promote even distribution of repellent throughout treated pools. Even with the globulation problem and the methodological flaws (no concurrent control groups in the second and third trials), the data reported are consistent with the hypothesis that Methyl Anthranilate treatments can reduce the likelihood that birds will utilize temporary pools (i.e., big puddles) of water that result from rainfall.

202.0 CONCLUSIONS

The efficacy trials conducted at JFK International Airport in 1991 were beset with globulation problems for both formulations tested and the methodological flaws in that there were no concurrent control groups in the second and third trials. The lack of concurrent controls is particularly important for work with temporary pools of water because factors such as drying up and increased temperature over time would be expected to make these pools progressively less attractive to birds.

Despite these problems, the data reported are consistent with the hypothesis that Methyl Anthranilate treatments can reduce the likelihood that birds will utilize temporary pools (i.e., big puddles) of water that result from rainfall at airports. Adding effective dispersing agents to the formulations that were tested would be expected to make them more effective.

The application rate for the successful use of the TP-25 formulation appears to convert to about 21.4 gallons of product per acre. For the TP-40 formulation (58035-7), the equivalent amount would appear to be about 13.4 gal/acre. The current label for 58035-7 permits treatments to **"Non-fishbearing bodies of water"** at

"a rate of 20 lbs per acre (8 lbs per acre [sic]) of water."

Assuming that the "20 lbs per acre rate is correct and the area unit in parentheses was supposed to be "hectare" (in which case "8 lbs" should be converted to "3.6 kg"), the rate specified on the current label would be about 1-1/2 times that which was used at JFK. This means that the 58035-7 product would be expected to be effective at the labeled rate when applied to temporary pools at airports. The label's current rate might even be excessive.

The rate used for treating pools successfully with the AP-75 product appears to us to exceed by about 4% the upper end of the rate range indicated on the current accepted label for 58035-6. We do not feel that this discrepancy is large enough to warrant adjustment of the range of treatment rates specified on the current label.

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