

Dr. S. S. S.

July 21, 1998

MEMORANDUM

SUBJECT: Review of Domestic Animal Incident Data for Diazinon

DP Barcode: D247878
Case: 818962

PC Code: 057801
Submission: S528166

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EXECUTIVE SUMMARY

Approximately 200 diazinon reports for domestic animals in the Incident Data System (IDS) were reviewed. Due to the poor and inconsistent quality of the reports, causality determinations could not be established, and only general impressions can be provided in this review. Those reports which have come from the ASPCA/NAPCC do have causality assessments. Of these, the vast majority with moderate or high suspicion of causality were in avian species and included many deaths. Diazinon is a known toxicant in birds. The majority of the incident reports involved three products, two for lawn and garden use and one for treatment of fire ants. It is recommended that labels for products such as these be reviewed to ensure that they contain precautions about exposure to birds.

REVIEW

Diazinon Products Registered for Veterinary Use

According to REFS, the only products in which diazinon is applied directly to domestic animals are flea collars for dogs and cats and ear tags for cattle. Other domestic animal exposures are via

agricultural and residential use products.

Incident Data Review

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Some of the earlier reports in IDS do not identify the species involved but just refer to "animal" and provide only number, observed signs, and the registrant's rating of causality (high, moderate, low or doubtful). Almost none of the reports contain any details about the exposures, except to indicate the route of exposure. The majority of the later reports in IDS give summaries of the incidents for all the products for a registrant by registration number. This type of reporting makes it difficult to sort out exactly which are diazinon products. The summaries have been generated by the American Society for the Prevention of Cruelty to Animals/National Animal Poison Control Center (ASPCA/NAPCC), a hotline for veterinary poisonings similar to human Poison Control Centers. Calls to ASPCA/NAPCC are received by veterinary toxicologists who provide advice on diagnosis and treatment. Follow-up is performed to ascertain the outcome of an exposure. The reports of poisonings are then assigned causality on a scale of suspicion that includes high, moderate, low and doubtful designations. All the cases are entered into a computerized data base.

The majority of the diazinon domestic animal reports come from two registrants, Monsanto and United Industries Corporation, and involve three products, Spectracide Fire Ant Killer (Reg. No. 8845-101), Spectracide Lawn and Garden Insecticide (Reg. No. 8845-092) and Spectracide 6000 Lawn and Garden Insecticide (Reg. No. 8845-095). Very few incident reports were submitted for the products applied directly to animals. It cannot be assumed that these three products are necessarily associated with more adverse reactions in domestic animals. In the past, incident reporting has not been consistent from one registrant to another. The majority of the reports involved dogs, cats and birds. Of those for dogs and cats, most were classified by ASPCA/NAPCC with low or doubtful causality. The most frequently reported clinical signs included gastrointestinal upset (vomiting, diarrhea) and neurological effects (salivation, tremors, seizures). Death was reported infrequently. Of those reports which were classified with moderate or high ratings, the vast majority occurred in avian species, which were referred to as "poultry" in most instances without a species designated. Most of the animals had gastrointestinal and neurological signs; a large percentage died. One report involved chickens that became ill after eating earwigs that were treated with diazinon.

Veterinary Literature

A search of the veterinary literature on diazinon poisonings was not conducted, however several articles from the NAPCC were reviewed for yearly incidences of poisonings in domestic animals. In the 1984 report, the incidences of individual agents was not reported, however insecticides

ranked number one and two in exposures for cats and dogs, respectively. It was noted in the article that most species of birds are sensitive to chlorpyrifos, diazinon and certain other organophosphates.¹ In 1986, a list of the top generics with causality classifications for poisonings was published.² The diazinon data are presented in the table below. At the time of this report, the classification system included toxicosis, suspected or doubtful designations for poisonings plus exposure only, information and other when clinical signs were not reported.

	Total No. (%) ¹	Toxicosis No.(%)	Suspected No.(%)	Doubtful No.(%)
Canine	134 (2)	10 (7.5)	30 (22.4)	43 (32.1)
Feline	54(2.8)	6 (11.1)	15 (27.8)	20 (37.0)
Avian	13 (2.1)	4 (30.8)	3 (23.1)	0 (0.0)

¹ Refers to percentage of total number of incidents reported for that species.

Diazinon was 14 on the list for the number of canine calls. It was number 9 and 4 for feline and avian calls, respectively. As demonstrated in the table, there were more poisoning incidents reported for dogs, however the percentage assigned to the toxicosis or suspected toxicosis category was higher for cats and birds.

A list of the top 25 generic agents involved in calls to NAPCC in 1992 was published, but incidence rates and causality were not provided.³ Diazinon was number five and eight on the list for dogs and cats, respectively.

Conclusions

The following general impressions can be made on the incident data in IDS:

1. The major source of domestic animal incidents for diazinon is from household products, rather than products registered for direct application to animals.
2. The majority of the incident reports were in dogs, cats and birds. The avian species was most

¹Beasley VR. Prevalence of Poisonings in Small Animals. In: Kirk RW (ed.) Current Veterinary Therapy IX. Philadelphia: W.B. Saunders Co., 1986, pp. 120-129.

² Beasley VR, Trammel HL. Incidence of Poisonings in Small Animals. In Kirk RW (ed.) Current Veterinary Therapy X. Philadelphia: W.B. Saunders, 1989, pp. 97-113.

³ Buck WB. Top 25 Generics Involving Dogs and Cats Managed by the National Animal Poison Control Center in 1992. In Bonagura JD (ed.) Kirk's Current Veterinary Therapy XII. Philadelphia: W.B.Saunders Co., 1995, p. 210.

severely affected (as determined by causality and clinical signs) by diazinon exposure. Death was reported in many incidents. Diazinon is a known toxicant in birds⁴, therefore this finding is not unexpected.

⁴ Briggs SA. Basic Guide to Pesticides. Washington: Hemisphere Publishing Corporation, 1992, p.130.