Special Report Rapport spécial

A survey for small animal veterinarians regarding flea and tick control pesticide products

Vanessa Turner, Cheryl Chaffey, Patricia Ferrao

Abstract – The Canadian Veterinary Medical Association administered a survey to capture the clinical experiences of small animal veterinarians regarding adverse effects observed in cats and dogs following the use of flea and tick control pesticide products. Results of this survey are discussed and compared with pesticide incident reports collected by Health Canada.

Résumé – Sondage auprès des vétérinaires pour petits animaux concernant les produits antiparasitaires pour la maîtrise des puces et des tiques. L'Association canadienne des médecins vétérinaires a mené un sondage afin de consigner les expériences cliniques des vétérinaires pour petits animaux concernant les effets indésirables observés chez les chats et les chiens après l'usage de produits antiparasitaires pour la maîtrise des puces et des tiques. Les résultats de ce sondage sont discutés et comparés aux rapports d'incidents liés aux produits antiparasitaires recueillis par Santé Canada.

(Traduit par Isabelle Vallières)

Can Vet J 2011;52:1080–1082

Health Canada's Pest Management Regulatory Agency (PMRA) regulates pesticide use in Canada. As part of Health Canada's commitment to protecting the health of Canadians and the environment, data on incidents relating to the use of pesticides are collected (1). If a pesticide manufacturer receives information about an incident involving one of their products, the manufacturer is required by law to submit that information to the PMRA.

Between April 2007 and May 2009, the PMRA received 708 companion animal incident reports involving spot-on flea and tick control pesticide products. A total of 821 animals were affected. Accordingly, an analysis of these products was undertaken, including an assessment of trends observed in the incident reports and possible correlations with toxicology information for Canadian registered pesticide products.

Of the 708 companion animal incidents received, 453 occurred in Canada and involved 522 animals. As a result of the requirements under the Pest Control Products Incident Reporting Regulations, an additional 283 animal deaths (245 incidents) that had occurred in the United States were reported. Of the Canadian incidents, a total of 305 cats and 217 dogs were affected. Most of the reported Canadian incidents were classified by severity as either minor (minimally bothersome symptoms that resolved rapidly without medical intervention) or moderate (more pronounced or prolonged symptoms that required some form of treatment). Major effects (that is, life-threatening symptoms or symptoms resulting in chronic disability) were reported in 14 animals. Death was reported in an additional 15 animals. Sales data suggested that Canadian sales of spot-on pesticides are in the order of 3 million units per year.

The PMRA solicited information from small animal veterinarians regarding their clinical experience with all flea and tick pesticide treatment products to supplement the analysis. Flea and tick control products that are sold as veterinary drugs were not included in the survey or the Health Canada evaluation. The survey was administered by the Canadian Veterinary Medical Association (CVMA). It was sent electronically to registered CVMA members (4563 individuals in English and 328 individuals in French) in early October, 2009. The timeline for survey completion was 3 wk.

There was a total of 238 responses representing most regions of Canada (response rate of 5%). Veterinarians were asked to respond to the survey based on recall alone; they were not asked to go through medical reports. This may have introduced some bias, as respondents may not have recalled all medical case reports equally, depending on their opinion of pesticide products.

Pest Management Regulatory Agency, Health Canada, 2720 Riverside Drive, Ottawa, Ontario K1A 0K9.

Address all correspondence to Vanessa Turner; e-mail: vanessa.turner@hc-sc.gc.ca

The survey was administered by the Canadian Veterinary Medical Association.

Table 1. Type of adverse effects observed from the use of all flea and tick control pesticide products, as identified by respondents to the survey

Type of adverse effect	Cat	Dog
Weight loss/decreased appetite	17	8
Nervous and/or muscular effects	145	41
Skin effects	105	99
Gastrointestinal effects	60	40
Hematological effects	0	0
Respiratory effects	27	5
Eye effects	11	8
Death	42	1
Other	5	8

Table 2. Suspected contributors to the adverse effect(s) observed, as identified by respondents to the survey

Suspected contributor	Cat	Dog
Accidental transfer of a product from a treated animal to another pet	43	6
Breed sensitivity	8	22
Pre-existing health condition	11	19
Sensitivity of young animals	31	31
Sensitivity of senior animals	13	15
Label directions were not followed with respect to:		
weight of animal	40	36
age of animal	18	12
species (cat product used on a dog or a dog product used on a cat)	124	2
site of application	19	12
application frequency	18	16
Other	1	0
Unknown	51	69

Survey respondents were first asked to report how often they had cats or dogs arrive in their clinic for adverse effects relating to flea and tick control pesticide products. Generally, cats were treated for adverse effects more frequently than dogs. Two percent of respondents had treated cats more than 10 times per year, while no respondent indicated that they had treated dogs this frequently. Responses to this survey question were consistent with incident reports received by the PMRA; spot-on incidents involving cats were reported more frequently to the PMRA than incidents involving dogs. Several survey respondents stated that they were practicing in regions that did not experience a significant flea season (such as Alberta), and as such, rarely or never treated cats or dogs for adverse effects caused by flea and tick control pesticide products.

Most survey respondents associated spot-on type products with the adverse effects they had observed, followed by collars, sprays, powders, foams, and shampoos. Similarly, of the incidents relating to flea and tick control pesticide products reported to the PMRA, over 75% involved spot-on products.

Survey respondents were asked to identify the type of adverse effect(s) observed following the use of flea and tick control pesticide products (Table 1). In cats, the types of adverse effects most often cited by respondents were nervous and/or muscular effects, followed by skin and gastrointestinal effects. In dogs, skin effects were most often observed, followed by nervous and/or muscular effects, and gastrointestinal effects. Notably for cats, death was the 4th highest ranked adverse effect observed.

A similar pattern of effects was observed by the PMRA during the evaluation of all incident reports relating to spot-on pesticide products. Skin effects were most frequently reported, followed by neuromuscular effects, general effects such as abnormal behavior, and gastrointestinal effects. Skin effects were reported nearly twice as often as neuromuscular effects, likely due to the fact that the products involved were topically applied. Respiratory, eye, renal, and blood effects had a low reporting frequency. This may relate to the fact that most reports (approximately 75%) are submitted to the manufacturers by pet owners who are less likely to observe these effects than are medical professionals (who reported just over 20% of the submitted incidents).

Survey respondents were asked to identify factors that may have contributed to the adverse effects observed (Table 2). Half of the veterinarians replied that the most important factor contributing to effects observed in cats was the use of a dog product on cats. Other important contributors to adverse effects observed in cats included the accidental transfer of a product between animals, such as by grooming, and the use of an inappropriate product based on the weight of the animal. According to veterinarian responses to this survey, adverse effects in cats are most often associated with pesticide product misuse.

According to the survey responses, no one factor seemed to be clearly identified by veterinarians as most important in contributing to adverse effects in dogs. Failure to follow label directions with respect to weight ranges was indicated as a factor contributing to the adverse effects observed in dogs. Sensitivity of young animals was also identified as a contributing factor by respondents. Unlike cats, dogs were not considered to be affected by the accidental transfer of a product between animals, but breed sensitivity was considered a factor contributing to the noted adverse effects.

As with the survey, the PMRA identified product misuse as a contributor to the adverse effects noted in the incident reports. These incident reports were screened to isolate incidents involving violations of label directions. Canadian spot-on product labels include directions regarding the species of animal to be treated (cat or dog), the minimum age of animal that can be treated with that product, and weight restrictions. In the incident reports received by the PMRA, 12% (101 animals) of the total number of animals affected had been treated with the incorrect product for their age, weight, or intended species. Of these, 93 cats had been treated with a product that was intended for use on dogs only.

According to the incident reporting data submitted to the PMRA, cats and dogs that died tended to weigh less than those that had experienced minor or moderate effects. Dogs that died (mean age 2.9 y) were younger than those that did not die (mean age of all dogs reported was 3.7 y). Incident reports involved smaller breeds of dogs more often than larger breeds. Since most spot-on products have a set dose for a range of animal body weights, smaller animals (cats and dogs) received a higher dose of product per kilogram body weight compared to larger animals. Typically, animals that received these higher doses experienced more serious side effects compared with larger

animals that received a lower dose. The weight-related observations do not include those incidents resulting from the misuse of a dog product on a cat.

The survey included a question on rating of 3 risk mitigation options to address the issue of adverse effects from the use of spot-on products on a scale of 1 (least important) to 5 (most important). The options 'Improved label clarity or content' and 'Increased education' were deemed more important than 'Require a larger therapeutic index' (increased safety margin) by respondents.

Some veterinarians commented in the survey that the flea and tick pesticide product issue was "overblown" or that they had observed no or minimal adverse reactions from the use of flea and tick control pesticide products. Others commented that the therapeutic index is too small for these products. Permethrin-based dog products were often cited as being a major cause of observed adverse effects because of their toxicity to cats. A common suggestion was to make label changes to better inform the consumer of the dangers of using dog products on cats.

Forty-six of the 238 survey respondents commented that the over-the-counter flea and tick control products are problematic, less safe, or less effective compared with products sold through veterinary clinics. It was suggested that purchasers do not understand the importance of following the directions on the label and that these products should be removed from the retail stores. However, there were 3 respondents who reported adverse effects, and 9 who implied adverse effects observed following the application of flea and tick pesticide products sold through veterinary clinics.

In conclusion, the information gathered from the Small Animal Veterinary Survey was an important contribution to Health Canada's review of spot-on flea and tick control pesticide product incident reports. Survey results were consistent with the information gathered from incident reports, increasing confidence in the Health Canada analysis.

In light of the findings from Health Canada's analysis, label changes are required to all spot-on pesticide product labels by summer 2011 to help provide clearer language to the user. Specifically, products containing the active ingredient permethrin, which is toxic to cats, will now have strengthened language on the labels, including a pictogram on the primary panel of the label indicating that the product is not to be used on cats. Stronger standardized precautionary statements were also added to all other spot-on flea and tick products.

In addition to these short-term mitigation measures, Health Canada is pursuing other mitigation options. Health Canada has created an online YouTube video, as well as other documentation, in order to communicate the findings of the spot-on flea and tick pesticide product analysis to the public.

For further information, please visit the Health Canada Web site: http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/epir-edirp2010-flea-tick-antipuces-antitiques/index-eng.php

Acknowledgments

The authors thank the CVMA, Janice Lemieux, for her assistance, as well as all those who participated in the Survey for Small Animal Veterinarians — Flea and Tick Pesticide Treatment Products. CVJ

References

1. Pesticide Incident Reporting Database [database on the Internet]. Health Canada c2007. Available from http://pr-rp.hc-sc.gc.ca/pi-ip/disclaimer-avertissement-eng.php Last accessed July 19, 2011.