

K8 A Veterinary Forensics Review of Pesticide Toxicity in Canines

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Learning Overview: After attending this presentation, attendees will be familiar with pesticides that may affect canine health and safety, toxicological and clinical parameters following incidents of canine pesticide intoxication, and the present state of knowledge/awareness held by veterinarians and canine care providers relative to pesticide intoxication.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by addressing a knowledge gap and dearth in availability of consolidated tools. As such, the field of forensics will gain merged data on the toxicity of varying pesticides in dogs for use in related investigations, diagnoses, treatment, toxicological analysis, and pesticide management. This will especially benefit veterinary practices, forensic toxicologists, forensic veterinarians, pesticide users, pet dogs (and their owners), and dogs working in various disciplines ranging from detection to agricultural sectors.

Proximity to humans, a curious nature, and (where applicable) their assigned duties, can all predispose dogs to pesticide intoxication. In this context, “pesticides” describes chemicals manufactured for agricultural/gardening pest control or health purposes. This definition includes rodenticides, insecticides, fungicides, nematocides, and veterinary medications, such as heartworm or flea/tick treatments. Veterinary products, insecticides, rodenticides, and garden products accounted for some of the top toxins that affected pets in 2017.¹ While data exists on doses of pesticides toxic to dogs, such information remains disparate; a corresponding consolidation of chemical analysis of pesticides, and diagnoses/treatment of pesticide intoxication related to dogs, is not yet available in one place. An extensive literature review and data mining were conducted to evaluate the existing information and collate it to facilitate interpretation and access.

Toxicological and chemical variables of varying pesticides are provided to aid in evaluating toxic doses and help steer analytical screening of pesticides to confirm or rule out involvement in cases of canine toxicosis. These data were mined from previous pharmacology studies and pesticide reviews conducted by regulatory agencies and industrial pesticide manufacturers. Clinical data are provided to educate on toxicosis symptoms and treatments associated with varying pesticides and routes of exposure. This was gathered from case studies and data provided by veterinary practices.

A survey was conducted to glean information concerning pesticide toxicity in canines directly from practicing veterinarians across the United States. Over 1,000 surveys were sent through email or an anonymous link, and 57 responses were obtained. Results of the survey provide insight in the prevalence of pesticide intoxication in dogs and awareness of veterinarians to its existence, and to existing veterinary capacity in place to identify, address, and prevent such cases. For example, while 66% of respondents have someone working in the practice that has been educated on the topic of pesticides exposure in companion animals and 75% have a dependable reference source for identification/treatment of pesticide intoxication, 46% are not aware of ways to report these incidents and 58% do not report incidents. Further findings from the survey will be presented, with future recommendations based on the consolidated datasets as they relate to the survey findings.

Reference(s):

¹. Top 10 Animal Toxins of 2017. *ASPCAPro*, last modified March 29, 2018, <https://www.aspcapro.org/resource/top-10-animal-toxins-2017>

Pesticide, Toxicity, Canine