

Veterinary Toxicology

Veterinary toxicologists based in the California Animal Health and Food Safety Laboratory System and the Department of Molecular Biosciences contribute to the school's teaching and research programs and provide essential diagnostic services to the state. They respond quickly to detect toxicants affecting livestock and food products of animal origin, including large-scale events of food animal contamination and incidents that threaten public health.

Rapid response and diagnosis – Performing up to 15,000 tests each year, the toxicology group has participated heavily in the diagnosis of individual poisonings, herd-level toxicity events and rare cases so that producers can minimize losses of their stock and the public can count on food safety. Cases include issues such as:

- Melamine found in meat
- Antibiotic residues in dairy products
- Phorate pesticide contamination of animal feed
- Lead in contaminated soil
- Oleander poisoning in dairy cows –among the top 5 toxicants of cattle, sheep, horses and goats
- Blue-green algae in a livestock pond
- Mushroom toxicity
- Non-steroidal anti-inflammatory drugs
- Pyrrolizidine alkaloids, naturally occurring toxic compounds found in many plants

Botulism–Veterinary toxicologists determined that the cause of a serious outbreak of botulism that killed 430 of 460 dairy cows was traced to ingestion of the botulinum toxin in feed containing the remains of two dead cat carcasses. In another large case in which 135 of 644 cows died, the veterinarians found that water-damaged hay was the source of the toxin.

Reopening fisheries after Gulf oil spill – After the Gulf of Mexico oil spill of 2010, laboratory toxicologists tested seafood for contamination by petroleum-based chemicals, including some that have the potential to cause cancer in people. Their results helped the federal government identify which fisheries remained uncontaminated so that those areas could be reopened for fishing.

Pet food recall solved – Veterinary toxicologists from the school discovered that the combination of melamine and cyanuric acid, found in samples from a massive pet food recall in 2007, can be lethal to cats. Results of this groundbreaking study have helped veterinarians better diagnose the causes of kidney failure in cats.

Working dogs exposed to environmental toxins – Livestock and poultry are not the only animals exposed to toxins. A five-year health surveillance program for the New York Police Department assessed acute injuries and exposure to environmental toxins in working dogs following the September 11, 2001, World Trade Center terrorist attack. The scientists were able to reassure police and the public that the dogs had recovered from their injuries and remain healthy.

Toxicology publications – Faculty have published valuable case reports, seminal textbooks, book chapters and lay articles on veterinary toxicology, including the following:

- “Mushroom poisoning in dogs, horses and cats”
- “The effects of cyanobacteria from blue-green algae on dogs”
- *Livestock-Poisoning Plants of California* (with tips to avoid or mitigate problems with toxic plants)
- *Poisonous Plants, a Veterinary Guide to Toxic Syndromes (veterinary text)*
- *Plant Poisoning and Biotoxins*
- *Plant poisoning in small companion animals*
- “Anticoagulant rodenticide screening in dogs: 123 cases (1996-2003)”
- “Anticoagulant rodenticides on our public and community lands: spatial distribution of exposure and poisoning of a rare forest carnivore”
- “Death by caffeine: presumptive malicious poisoning of a dog by incorporation in ground meat”
- “Commercial and industrial chemical hazards for ruminants”
- “Impact of the California lead ammunition ban on reducing lead exposure in golden eagles and turkey vultures”
- “Osteoporosis associated with pulmonary silicosis in an equine bone fragility syndrome”

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