Frequently Asked Toxicology Questions

Q: My client has found material that they think contains poison of some sort in their garden. Can you analyse this?
A: Yes, all kinds of liquid and solid material are suitable for GC-MS analysis. We have assayed suspect fish, pies, liquids and jelly. Toxins are initially extracted into an organic solvent before analysis so there is no limitation on the sample type except faeces which are unsuitable.

Q: How do I choose which panel of toxins to test for?
A: As with all laboratory tests we start with a likely differential list based on the clinical signs and from that consider what would be the most likely toxins based on the signs and select a panel on that basis. We are happy to advise on panel selection before the sample is submitted; in some cases we will look for the most likely compounds first and progress to further panels if we do not find anything during the initial analysis.

Q: What should I send you?
A: Ideally we analyse blood (heparin, 2ml min), urine (plain 5ml min) and the suspect material if available. Vomitus is useful and material obtained from gastric lavage is also suitable if toxin ingestion has been recent. It's very important that reception and support staff know to ask clients when they contact the practice to bring in material, packaging or vomit obtained at the onset of clinical signs. Some panels have specific sample requirements; for animals that present with convulsions or in status common causes include neuromycotoxins ingested associated with mouldy food. These are included in the convulsant panel and can only be assayed on the suspect material or vomitus.

Q: My client thinks their animal is ill because of "something the council put down", can you help?
A: The organic toxic compound panel (TO22) includes a wide range of herbicides, pesticides and insecticides and would cover this range of compounds.

Q: My client reports their pet has suddenly started behaving very oddly after eating something in the park. They are worried about drugs of abuse - can you test for these?
A: We run a panel of common drugs of abuse including Morphine, Codeine, Amphetamine Cannabis, Cocaine metabolites, Methadone and its metabolites and Buprenorphine.
The best sample for this panel is urine and we strongly recommend this over blood. Bear in mind however that negative findings on this panel do not exclude the possibility of exposure as many legal highs are still in circulation and these may not be detected by conventional tests.
Bear in mind too that cannabis is metabolised differentially in dogs to people so it can be worth requesting a general toxicology panel (TO1) in addition the drugs of abuse (TO8) as human assays used in the latter panel focus on metabolites rather than cannabis itself, which is detected in TO1.

Q: What about toxic plants such as lilies, can you test for them?
A: Many plant toxins are identified in the Organic Compounds Toxicology panel (TO22) and this is the panel to use if this is a concern or where pesticides and herbicides are possible causes of the signs. However, for a number of common plant and produce related intoxications such as lilies or grapes the toxic components have not been elucidated and cannot currently be detected.

Q: A dog presented with abnormal bleeding and I suspect poisoning with a warfarin derivative anticoagulant rodenticide. Should I submit blood for the Coumarin and derivatives panel and does it matter if I have already given vitamin K?
A: By the time an animal is showing clinically abnormal haemostasis resulting from vitamin K antagonist toxicity in most cases the actual toxic agent will have been cleared from the blood. For this reason, we recommend submitting blood for the K1EP panel which evaluates the level of vitamin K1 and the K1 2,3 epoxide which accumulates where there has been K1 antagonist exposure. The epoxide remains high for some weeks making it a better tool to identify toxicity. However, the toxic compounds themselves will be present for weeks in liver so should the animal die fresh liver is very likely to be positive. Prior therapy with vitamin K does not affect the assays we use for the compounds (in this case a form of liquid chromatography).

Q: I have an animal in renal failure and suspect ethylene glycol toxicity. Can you test for that?
A: Ethylene glycol can be detected as a single agent or as part of the General Toxicology Panel (TO1). However, it takes several days for the increases in nitrogenous waste products to accumulate after the renal damage is caused by ethylene glycol, by which time the compound itself usually has been excreted. So often by the time the animal is presented the ethylene glycol has gone from blood and urine. However, urine cytology can be helpful in that it will identify both acute renal tubular injury and the presence of calcium oxalate monohydrate crystals which very commonly accompany this specific toxicity.

Q: My client’s pet has been discovered dead after no apparent illness. They don’t want a post mortem but they wonder about poisoning. What can be done?
A: It’s quite possible to obtain blood by cardiocentesis, urine by cystocentesis and gastric contents via a stomach tube quickly and use these samples to help exclude a toxic cause. As the signs are unknown often it would be appropriate to run the General Toxicology Panel (TO1) on blood and urine and the convulsant panel (TO21) to exclude neurotoxin ingestion on the gastric contents.

Q: My client has had a sudden unexpected death and they really want to know the cause. I don’t feel able to offer a full post mortem in the practice; can you help?
A: We offer a full independent post mortem service in conjunction with the University of Edinburgh R(D)SVS Necropsy service based at the Easter Bush site. We collect cadavers which undergo full post mortem, sampling for histopathology and where appropriate microbiology and deliver complete and comprehensive PM reports within 14 days. Our fees include routine cremation but individual cremation and return of ashes to your client is available upon request. If no organic disease cause of death is identified the pathologists retain samples for toxicology and these can be assayed subsequent to the post mortem examination where this appears indicated.

Q. How do I send the material/samples to you?
A. These can be sent either fresh or frozen but please do not send fixed tissue samples. Please package securely in a sealed bag or tube ideally within a Tupperware container or similar along with absorbent material. We can arrange a courier collection for a minimal fee if required or you may post the samples although we usually recommend tracked mail.

Q.I think the police/RSPCA will be involved with the suspected poisoning, what should I do?
A. In these cases chain of evidence is critically important. If in doubt please contact the lab and we can advise on chain of evidence procedures and transportation by tracked mail or courier.

Q: Diagnostic toxicology is quite new to me, where can I find more information?
A: Please call the laboratory on 0113 2870175 and we will be happy to help.