Chemical poisoning in animals. 4. Phosphorus

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White or yellow phosphorus was at one time widely used in poison baits for crows, rats, foxes and rabbits. Although it has now been largely replaced, it is still an important cause of accidental death by poisoning.

Grazing sheep and cattle may lick at discarded bait tins, especially if suffering from a phosphate deficiency which leads to depravity of appetite. Alternatively, contaminated pasture may be the source of poisoning.

Dogs, cats and pigs may eat the carcasses of vermin which have been poisoned with phosphorus. Some rat baits contain phosphorus in a finely divided form, usually mixed with a suitable grease or fat to improve its taste; this increases the rate of absorption after swallowing.

Symptoms and Diagnosis:
Because phosphorus is an irritant, corrosive poison the symptoms it produces are those of a severe gastro-enteritis with intense abdominal pain. The initial symptoms may be delayed for several hours after ingestion, but their onset is always sudden.

Dogs and cats vomit profusely and their rejected stomach contents may have a characteristic "garlic" odour and appear luminous in the dark. The abdominal pain is intense and animals will bite or kick at their bellies.

Cattle usually arch their backs and stand without moving for long periods, looking dull and dejected.

After these initial symptoms, there may be a period lasting a few hours to several days in which the animal appears to recover. The secondary symptoms are then ushered in with recurrence of abdominal pain, vomiting, jaundice, nervous symptoms and diarrhoea. Death will often follow a period of mania, convulsions and coma, occurring two to three days after eating the poisonous material.

Horses usually vomit (through the nose) and salivation is common. However, the symptoms in both horses and fowls are often not sufficiently specific to establish a diagnosis.

Occasionally an animal will recover spontaneously, but this is often followed by digestive disorders with jaundice and wasting.
Post Mortem Signs:
The carcass shows indications of severe gastro-intestinal irritation. There is severe inflammation of the inner linings of the stomach and intestines. Haemorrhages under the skin are common and the carcass is usually jaundiced. On opening the abdomen or stomach the characteristic "garlic" smell of phosphorus may be noticed and the gizzard of birds may give off visible fumes which glow in the dark.

Treatment:
Delay in treatment may mean the difference between survival and death. Vomiting should be induced in dogs, cats and pigs by drenching with either a strong salt solution, or with a 1 per cent. solution of copper sulphate (bluestone). This is equivalent to about \(\frac{1}{4}\) oz. in a pint of water.

After vomiting, a further drench with a weak bluestone solution (0.5 per cent.) should be used to coat any remaining phosphorus with insoluble copper phosphide. Alternatively, a week solution of potassium permanganate (Condy's crystals) may be used in the same way.

Any remaining phosphorus should be removed from the intestinal tract by a non-oily purge. Oils and fats (including milk) should not be used as they increase the absorption of phosphorus.

Epsom salts and Glauber's salts are recommended for this purpose as they are non-oily and non-irritant. A drench at the following dose rates should be used for adults, using less for young animals and those in poor condition:

- Horses 1 to 4 ozs.
- Cattle 8 to 16 ozs.
- Sheep 2 to 4 ozs.
- Pigs 1 to 4 ozs.
- Dogs 1/10 to 1/5 oz.

After-care should incorporate an adequate supply of water and a concentrate diet high in calcium, B vitamins, carbohydrate and protein, as these help to minimise liver damage. Injections of sterile glucose solution subcutaneously will also help recovery.

A NEW RACE OF WHEAT RUST

A race of wheat rust which could have considerable economic importance to wheat farmers was recognised in Western Australia for the first time last season.

It is the race 21-7, which was responsible for heavy infection of crops of the Eureka variety grown at Esperance. It was also found at the Gascoyne Research Station (Carnarvon) and at Naraling in the northern wheatbelt.

Both Eureka and Wongoondy are susceptible to the new rust race. These two varieties are semi-resistant to the race 21-2, which also occurred generally last season. Both races 21-2 and 21-7 attack Gabo, Insignia 49, Claymore and other varieties with the same resistance.

Varieties resistant to both races of rust include Gamenya, Mengavi, Moora, Festival and Spica. Gamenya and Mengavi are now under test on the Department's research stations.

Rust resistance is an important aspect of the Department of Agriculture's wheat breeding programme. A number of promising crossbreds are now in the final testing stages, and it is hoped that at least one of these will be suitable for release.