

Chemical Food Safety

CHEMICAL FOOD SAFETY QUARTERLY REPORT
NO. 25
POTENTIAL FOOD SAFETY INCIDENTS JANUARY TO MARCH 2009

FSI No	Date	Regional Lab	Species	Confirmed Toxin (suspected toxin)	Source
2009- 001	09-01-09	Penrith	Cattle	Lead	Paint
2009- 002	05-02-09	Sutton Bonington	Cattle	Lead	Metallic
2009- 003	22-01-09	Thirsk	Sheep	(Melamine)	Feed
2009- 004	30-01-09	Preston	Cattle	(Botulinum)	Silage
2009- 005	10-02-09	Leahurst	Cattle	Lead	Mortar
2009- 006	10-02-09	Truro	Sheep	Copper	Feed
2009- 007	17-02-09	Sutton Bonington	Sheep	Botulism	? Carcase
2009- 008	19-03-09	Thirsk	Sheep	Lead	Geochemical
2009- 009	27-02-09	Thirsk	Cattle	Lead	Paint
2009- 010	03-03-09	Thirsk	Sheep	Botulism	Poultry litter
2009- 011	04-03-09	Thirsk	Sheep	Botulism	Poultry litter
2009-012	06-03-09	Bury St Edmunds	Cattle	Urea	Fertilizer via water bowser
2009-013	26-03-09	Sutton Bonington	Cattle	Lead	Geochemical

Lead poisoning incidents dominated the first quarter of 2009, a trend similar to that in 2008. In an attempt to address this issue, FSA, together with VLA, produced an advisory leaflet warning of the hazards of lead. The leaflet was published in March 2009 to pre-empt spring turn out which usually results in an increase in lead poisoning incidents. The leaflet is available on <http://www.food.gov.uk/multimedia/pdfs/publication/leadpoison0209.pdf>

A hard copy of the leaflet can also be obtained at VLA's Regional Laboratories. Hard copies of the leaflet are also available from the FSA Publications. Contact details are:

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Quote the appropriate code:

UK version: FSA/1315/0209

Welsh language version: FSA/1316/0309

Scottish version: FSA/1317/0309

Northern Ireland version: FSA/1318/0309

The Food Standards Agency (FSA) has amended its advice on the management of outbreaks of suspected botulism in sheep and goats. This follows recommendations in a report by the Advisory Committee on the Microbiological Safety of Food (ACMSF). The change brings the FSA's advice in to line with the current advice on botulism in cattle, which was amended in 2006.

The ACMSF report concluded that current restrictions on food from clinically affected sheep and goats should remain in place. However, based on current scientific evidence it considered the restrictions on unaffected animals from farms where there have been cases of botulism in sheep and goats to be over-precautionary, primarily because the botulinum toxin types in animals (C and D) have rarely been associated with disease in humans. In addition, there is little evidence of any human cases of botulism from meat and milk. The report therefore recommends that in the absence of other signs, there should be no restrictions on milk or meat from healthy sheep and goats from affected farms. The report was published on the FSA's website on 18 March at <http://www.food.gov.uk/multimedia/pdfs/botulisminsheepgoats.pdf>. The FSA will review the advice if new evidence emerges that the botulinum toxin types that affect humans (such as A, B and E) cause outbreaks in ruminants. Suspected cases should still be reported to the FSA via the veterinary authorities, as there may be additional issues to consider ensuring that the food chain is protected.

LEAD INCIDENTS

Lead source	Nos of cases where tissue lead exceeds regulatory limits	Actual poisoning cases	Animal species
Battery	0	0	
Paint	2	2	Cattle (1); sheep (1)
Other	2	2	Cattle (2)
Geochemical	2	0	Cattle (1); sheep (1)

Lead incidents involving cattle

FSI 2008-01

Lead poisoning was confirmed in a 6 week old suckler calf which had presented blind, pyrexia with nervous signs and died shortly after. This was the second death to occur, the first was in a calf of a similar age and the cause of death in this first calf was not investigated. The calves were originally part of a group of eight comprising 4 suckler calves and 4 adult suckler cows. At post mortem of the second calf, the kidney lead concentration was 3498 µmol/kg dry matter (DM), equivalent to 161 ppm wet weight (WW) and the liver lead concentration was 833 µmol/kg DM, equivalent to 46 ppm WW (VLA/FSA action concentration is 0.5 ppm WW). The source of lead was suspected to be an old painted wooden board which had been placed in the feed trough. The paint was flaking. The board has been removed from the trough and the 6 remaining cattle moved into a different pen. No further cases have occurred. The adult cows are not intended for the food chain and the calves are not intended for the food chain until 2010. The farmer has verbally agreed to observe a 16 week withdrawal on the remaining 6 cattle.

FSI 2008-02

A raised kidney lead concentration was found in an 8-month old suckler calf which had been found dead in a field by a mains operated electric fence. The kidney lead concentration was 34.8µmol/Kg DM, equivalent to 1.55 ppm WW. This is a lead residue and not a toxic concentration of lead. The calf was one of a group of 106 cows, fattening cattle and calves. Post mortem examination was carried out. The carcass was in advanced autolysis. No cause of death was confirmed. Blood samples taken from other cows in the cohort gave blood lead concentrations of 0.52, 0.48, 0.66, 0.55, 0.70, 1.59, 0.81, 0.87, 0.77, 0.39 and 2.06 µmol/l respectively (VLA/FSA guide line action concentration 0.48 µmol/l). These blood results confirm wide spread exposure of the group of cattle to a source of lead. A farm visit was carried out on 27th January 2009. The visit confirmed that the cattle had access to two fields, both fields were walked and various suspect sources of lead collected for analysis.

	Lead ppm
Paint on wheel rim used to feed mineral block	919
Paint from sheet of lead. (Lead sheeting was not tested)	1012
Paint from wooden post	30271

The paint on the wheel, used as a feed trough for the minerals, was considered the most likely source of lead exposure. The other potential sources were found between the hedge and the electric fence and so access to these items would have been very difficult. The paint on the wheel was flaking and the cattle were gradually licking it off. All items of potential lead have been removed. The adult suckler cows are not intended for the food chain. The fattening calves will be moved to permanent pastures in the spring for autumn finishing. The farmer has verbally agreed to observe a 16 week withdrawal on this group of cattle.

FSI 2008-05

Lead poisoning was diagnosed in a 9 week old dairy heifer calf which died following nervous signs and seizures. This was the third death to occur in the same pen over a 5 week period. A visit was carried out on 29th January 2009. Three potential sources of lead were identified:

	Lead ppm
Red paint on gate	24037
Green paint on gate	31079
Mortar on wall of calf shed	48544

A further pen-mate calf was blood sampled at the visit and a blood lead concentration of 3.90µmol/l obtained. Two older calves from the same building, but a different pen, with no access to the mortar but possible access to the painted gates were also blood sampled at the visit and blood lead concentrations of 0.06 and 0.07 µmol/l obtained, confirming that there had been no exposure to lead. The two painted gates have been removed. The farmer is considering how best to remove the mortar. This is a council owned rented property. The affected calf pen will not be used for calves until remedial action has been undertaken. Mortar from other cattle housing will be also be checked for lead content. The affected calves are dairy heifer replacements and are not intended for beef production. The calves will enter the dairy herd in approximately 2 years. The farmer agreed to observe a 16 week withdrawal.

FSI 2008-09

Lead poisoning has been confirmed in a group of 9 beef finishing bulls. One bull died but was not submitted for investigation. Only one other bull showed clinical signs which included depression, anorexia and lethargy (unusual for lead toxicity). Blood lead concentrations from the group ranged from 0.83 µmol/l to 3.41 µmol/l. The source of lead is suspected to be lead paint on some Yorkshire boarding in the bull pen. Previously this boarding had never been accessible to the bulls as straw bales had been stored in front of the boarding but this was not the case this year. Cattle access to the boarding has since been removed. Four fattening bulls in the next door pen and which did not have access to the lead paint were also blood sampled. These bulls were otherwise on the same diet as the affected group. Blood lead concentrations in this group were not raised. All nine bulls from the affected exposed group are due to be slaughtered into the food chain within

3 months. The farmer voluntarily agreed that no bull would be slaughtered until the blood lead concentration had fallen to < 0.48 µmol/l.

FSI 2008-13

Veterinary Laboratories Agency was requested to carry out diagnostic post mortems on cattle involved in an investigation lead by the Local Authorities and Animal Health. A high kidney and liver lead concentration were obtained on analyses of tissues from an 18-month-old heifer and a calf of a few months old. The heifer had a kidney lead concentration of 46.8 µmol/kg DM, equivalent to 1.56 ppm WW and a liver lead concentration 82.3 µmol/kg DM, equivalent to 5.08 ppm WW. The calf had a kidney lead concentration of 79.1 µmol/kg DM, equivalent to 2.78 ppm WW and a liver lead concentration of 108.9 µmol/kg DM, equivalent to 5.42 ppm WW. The source of lead is suspected to be geochemical.

Lead incidents involving sheep

FSI 2008-08

A raised liver lead concentration was confirmed in a neonatal lamb. A liver lead concentration of 21.8 µmol/kg DM equivalent to 1.07 ppm WW was obtained. The flock history was of an increase in congenital abnormalities, especially spina bifida, in newly born lambs. VLA thinks that this is most likely to be due to genetics but preliminary investigations indicate that the genetic influence is not straightforward. A farm visit was carried out to try to establish the cause of congenital abnormalities and also to investigate whether there were food safety concerns in other groups of sheep or other stock associated with lead exposure. The source of lead was confirmed as geochemical. Stock graze close to a river which is prone to flooding and some of the soil is known to contain high concentrations of lead. Pregnant ewes are sometimes grazed on this high lead land. Silage is also conserved from this high lead land. The visit confirmed that there are no animals entering the food chain which had been grazed in the high lead areas or which had received silage made off the high lead area. VLA raised the farmer's awareness to lead residue issues and highlighted the need for a withdrawal period of 16 weeks to be built into his management systems. A further visit will be carried out in autumn 2009 when ewes are being tugged as part of the continuing investigation into congenital abnormalities. This will allow VLA to establish what other risk factors might have been involved. The flock will be followed into the next lambing season to assess whether the problem reoccurs.

BOTULISM INCIDENTS

FSI	Nos. Affected	Type	Age	Direct/indirect	Results
09/004	24 out of 27	Cattle	12 – 18 months	Direct spoiled silage	No toxin and organism identified
09/007	5 out of 10	Sheep	Adult ewes		Not tested
09/010	4 out of 6	Sheep	Adult ewes	Direct. Poultry litter used as bedding.	Toxin type D
09/011	36 out of 166	Sheep	12 months	Direct. Poultry litter stacked in grazing field.	No toxin and organism identified

FSI 2009-004

An outbreak of disease and suspected botulism occurred in 27 beef and dairy replacements aged between 12 to 18 months. Three pens of cattle presented with nervous signs and recumbency. Two of these pens were in one shed and the third pen was in a separate building. The clinical signs were dullness without pyrexia, depression, anorexia, staggering gait, recumbency (sternal progressing to lateral), opisthotonus, paddling, remaining aware of the surroundings, not blind and

with good muscle tone. Eighteen cattle died and six showed clinical signs. Blood samples taken by the private vet prior to treatment were tested at the veterinary practice and hypomagnesaemia confirmed. However there was no improvement in clinical signs following treatment with magnesium and calcium which did not support of a diagnosis of hypomagnesaemia. At post mortem there was widespread serosal haemorrhage with fibrinohaemorrhagic enteritis and abomasal ulceration. Clostridium perfringens was isolated from small intestine content. A visit to the farm was carried out as part of the investigation. The common link between the affected groups was found to be spoiled, virtually composted, silage being fed. The silage was withdrawn on 19th January 2009. The spoiled silage likely contained many spoilage organisms, chiefly bacteria, which were all contributing to the clinical presenting signs and post mortem appearance of the carcass. VLA advised that the silage was disposed of safely and that in future silage of this quality should not be fed. Following notification of the disease outbreak the affected cattle exposed to the spoiled silage were placed under a three week verbal restriction. Other stock on the farm included a milking herd and a flock of over wintering ewes. These animals did not receive the spoiled silage and there is no evidence of disease in these groups. These animals were inspected at the visit and observed to be well.

FSI 2009-007

Suspected botulism was diagnosed in a group of 10 adult ewes. Five of the group initially became weak on their legs which progressed to sternal recumbency. Affected ewes continued to be able to eat and drink. However all of the affected ewes later died. The disease progression varied from one to ten days. A visit was carried out to investigate the outbreak. Although at the time of the visit there were no further clinical cases the farmer and veterinary surgeon confirmed that the clinical signs observed were the same as those shown on a video clip of sheep with botulism. No source of botulism was confirmed. There was no known link to poultry litter. It is likely that the source was a point source such as a carcass in the forage. The remaining five sheep were moved and no further cases occurred. The farmer agreed to observe 18 day voluntary restrictions on the remaining 5 sheep in the exposed group.

FSI 2009-010

Suspected botulism was diagnosed in a group of 6 adult sheep. One ewe was found dead and three tups showed nervous signs, flaccid paralysis and recumbency. Two of these rams died and the third affected ram was euthanased. The source of botulism was broiler litter spread on 50 acres of grazing and forage land at the farm. The litter contained many entire and fresh chicken carcasses. This was reported to Trading Standards as it was a clear breach of the By-products regulations. A post mortem examination was carried out on one ewe and one tup. The remaining 2 exposed sheep were moved and no further cases occurred. The rest of the flock (130 ewes) was unexposed as ewes were indoors for lambing. The farmer agreed to observe an 18 day voluntary restrictions on the remaining sheep in the exposed group.

FSI 2009-011

Suspected botulism was diagnosed in a group of 166 breeding gimmers (12 month old breeding ewes). Over several days sheep were found dead and others showed signs of ataxia and malaise. In total 36 sheep died or were euthanased. A post mortem examination was carried out on one ewe. The source of botulism was 2 loads of broiler litter which were stacked on the field that the sheep were grazing approximately 3 weeks before the first deaths. No carcasses were observed in the litter. It is thought that the cold spell of weather contributed to the sheep's interest in the litter stacks. The sheep were moved to a different field. The farmer agreed to observe an 18 day voluntary restrictions on the remaining sheep in the exposed group although they are not intended for the food chain.

COPPER TOXICITY INCIDENTS

FSI 2009-06

Copper toxicity was diagnosed as the cause of death of an adult castrated male sheep (a wether). A liver copper concentration of 29269 µmol/kg DM, equivalent to 561 ppm WW, was obtained at

analysis. A food safety incident is triggered when liver copper concentrations exceed 500 ppm WW. Post mortem examination confirmed jaundice and a haemolytic crisis typical of copper toxicity. The wether had been kept with a debilitated Texel ram as a companion since October 2008, both separate from the main flock. Both had been fed concentrate ration. Retrospectively it was considered that the wether had probably eaten most of the concentrate on offer. The wether died of copper toxicity a few days after housing. The precipitating factor was thought to be the stress of housing. No other sources of copper were found. The other sheep and lambs on the farm are in separate management groups. All other sheep appear healthy.

OTHER INCIDENTS

FSI 2009-03

A urolithiasis problem presented from approximately 10th December in 20 fast growing yearling tups (entire male sheep) which were receiving approximately 1 kg concentrate feed/day/head. Three tups in two groups had developed urolithiasis and two had died. Mineral analysis of the feed showed magnesium at 0.19 mg/kg DM, phosphorus at 0.47 mg/kg DM and calcium at 0.82 mg/kg DM. Laboratory examination of urine confirmed bacteria, red blood cell casts, unexpected purple crystals and triple phosphate crystals. A urine sample was also analyzed for melamine concentrations at Eurofins Laboratories Ltd. Melamine concentrations were <0.5 mg/kg which was below the minimum detection limit of 0.5 mg/kg. The purple crystals observed at Veterinary Laboratories Agency were thought possibly to be associated with the plastic container used to store the urine sample. Indigo crystals can be formed by oxidation of indican which is found in urine which has become alkaline due to bacterial contamination combined with indirubin dissolved in the plastic of the container (also known as purple urine syndrome in hospitals). VLA conclusions were that this was a case of uncomplicated urolithiasis associated with the feeding of concentrates to fast growing housed tups probably triggered by a spell of cold weather and suboptimal access to trough water.

FSI 2009-12

Urea toxicity caused the death of 9 two-year-old finishing cattle in a group of 10. The tenth animal was found recumbent but made a rapid full recovery over 18 hours. A farm visit and three post mortems were carried out on 4th March 2009. In two of the three carcasses examined there was a very strong smell of ammonia when the rumen was opened and the rumen content pH was alkaline. The source was suspected to be reflux from a fertilizer tank into a water bowser supplying water to the cattle. The water bowser had been used to dilute urea in a fertilizer tank via a pumping system on 2nd March 2009. The following day the water bowser had again been connected to the water trough in the cattle pen. Nine cattle had been found dead when the cattle were checked 5 hours later. The tenth animal was recumbent and groaning. All the other unaffected cattle were in pens which had a mains water supply. The straw and feed were not considered to be associated with the incident. The farmer verbally agreed to voluntarily restrict all his cattle (85 in total) for a period of two weeks.

PLANT TOXICITY

Onion poisoning (toxic principle: n-propyl disulphide and thiosulphinate compounds) was suspected to have caused deaths in 7 ten-week-old calves in a group of 140 suckler cows and calves. The affected calves either presented with opisthotonus and fitting or were found dead. This calf submitted had been seen fitting 3 weeks prior to submission, had been treated with multivitamins and initially appeared to have recovered but then died. The group of cattle were fed adlib onions, sprouts and potatoes and silage twice weekly. No creep was fed to the calves. At post mortem the carcass was pale suggestive of anaemia and blood appeared watery. Histopathology of brain tissue revealed moderate oedema with astrocytosis and minimal multifocal neuronal necrosis most likely associated with fitting. There was no evidence of longstanding laminar necrosis that would be associated with CCN. No further cases occurred following the withdrawal of onions.

Yew poisoning: A group of 25 suckler cows were turned out onto an area of rough hill where scrub clearing had recently been carried out. One animal died overnight a few days after turnout. Examination revealed a large amount of yew twigs and leaves in the rumen indicating that this was a case of yew poisoning. It was suggested that the animals were immediately removed from this area.

Pieris poisoning: Plant poisoning was suggested as the cause of a death of a ewe, one of five to have died after breaking out of a field into neighbouring gardens. Examination of rumen contents revealed plant material resembling ivy and *Pieris* sp. Although both plants are toxic, *Pieris* sp. would be more likely to prove fatal if ingested in sufficient quantity.

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