



# Chemical Food Safety

QUARTERLY REPORT

NO. 49

## POTENTIAL FOOD SAFETY INCIDENTS JANUARY TO MARCH 2015

FSI No	Date	Regional Lab	Species	Confirmed Toxin (suspected toxin)	Source
2015-001	20.01.15	Thirsk	Cattle	Lead	Battery
2015-002	20.01.15	Shrewsbury	Cattle	Lead	Lead shot
2015-003	06.02.15	Shrewsbury	Sheep	Ethylene glycol	Vehicle antifreeze
2015-004	02.02.15	Sutton Bonington	Cattle	Lead	Geochemical
2015-005	18.02.15	Bury St Edmunds	Cattle	Botulinum	Ensiled goose
2015-006	23.02.15	Langford post mortem service provider	Cattle	Lead	Battery

### HIGHLIGHTS

APHA continues to restructure and during this quarter Regional Veterinary Investigation Centres (VICs) at Bury St Edmunds, Carmarthen, Penrith, Shrewsbury, Starcross, Sutton Bonington and Thirsk contributed to this report. Many of the external post mortem service providers are now up and running with most still sending postal samples to APHA for analysis and all providing invaluable surveillance data for APHA to scrutinise. This model of surveillance needs to be bed in to ensure that information is not lost and that new and emerging diseases are recognised. There is still work to be done in this area to ensure surveillance remains fully effective.

Year (1st quarter)	Total FSIs	Lead	Botulism
2015	6	4	1
2014	9	6	2
2013	15	7	4
2012	13	5	7
2011	14	6	8

The table indicates that the number of incidents identified in this first quarter of 2015 is down on previous years. It is suspected that this is primarily due to the reduction in submissions and post mortem work carried out within APHA.

## **LEAD INCIDENTS**

**An incident is recorded where the kidney or liver lead concentrations exceed 0.5 parts per million (ppm) wet matter (WM), muscle lead concentration exceeds 0.1 ppm WM, milk lead concentration exceeds 0.02 ppm or blood lead concentration exceeds 0.48  $\mu\text{mol/l}$ .**

**(ppm equates to mg/kg)**

Most incidents arise from cases that are submitted to APHA following animal disease outbreaks. APHA receives clinical samples or carcasses for investigation enabling confirmation of lead poisoning. However, occasionally as a result of laboratory testing, we come across high blood or tissue lead levels that, although not high enough to cause clinical signs of poisoning, are still important in terms of food residues and food safety.

### **Lead incidents in cattle**

#### **FSI 2015-001**

Lead poisoning was confirmed in a group of 15 adult beef suckler cows with 12 young calves at foot. Six adult cattle and one calf were affected with neurological signs and one adult cow died. Blood lead concentrations of four affected cattle were 3.96, 2.26, 4.78 and 3.60  $\mu\text{mol/l}$ . Some battery parts were observed in the rumen content of the dead cow when she was post mortemed. The lead content of the metallic bits analysed was 701858 ppm. The source of lead was suspected to be parts of a broken battery from within big bale silage. Parts of broken battery were found in the field from where the silage was cut. The bales made from this field were identifiable and discarded by deep ploughing into arable land. Fortunately only the adult cows in the group could reach the silage. The affected calf was the calf of the worst affected adult cow and it is suspected that it was exposed to lead via the cow's milk. The calf recovered. A visit was carried out by APHA to establish that no other groups were likely to have been exposed to lead. Additional blood samples were taken to check this and blood samples analysed were all  $<0.01 \mu\text{mol/l}$ , indicating no exposure to lead. The farmer agreed to observe a 16 week withdrawal restriction on the cattle in this group after which he will blood sample all the cows to establish which cows were not exposed and which cows will need to be monitored long term and require food chain information at sale or slaughter. The recovered calf will also be sampled. At the time of the incident none of the cattle were close to being slaughtered into the food chain.

#### **FSI 2015-002**

Raised kidney lead concentrations were detected following post mortem of two nine-month old dairy heifer replacements in an organic herd. The heifers were two of five that died. The actual cause of death was considered most likely to be due to bloat associated with the type of diet. The kidney lead concentrations were 53.6 and 59.2  $\mu\text{mol/kg DM}$ , equivalent to 1.96 and 2.02 ppm WM. The group of 75 heifers were strip grazing a field of kale and turnips. The kale was described to be the 'best crop ever'. After the diagnosis was reached the group were moved and straw was introduced; no further clinical cases occurred. The raised lead was suspected to be due to the ingestion of lead shot as the field that was being strip grazed had previously been part of an estate and shooting had occurred across this field. Up until this year the field had only been used for cut grass and barley production. APHA thought that the

current use of the field was ill advised as there was likely to be an increased soil uptake by the cattle and also that the brassica crops were more likely to accumulate lead in the leaf than grass and barley. A cohort of heifers was blood tested to establish that this hypothesis was feasible with the lead results mostly being undetectable which was supportive of sporadic ingestion of lead shot. The farmer agreed that the field will, in the future, only be used for grass and barley production. The farmer agreed to observe a 16 week withdrawal restriction on the cattle in this group after which he will re-blood sample the ten heifers with raised blood lead to establish whether lead concentrations have reduced to <0.15 µmol/l or whether any further monitoring is required. None of the cattle are currently close to producing milk for the food chain. Milk production from these heifers is expected to commence in 2016.

**FSI 2015-004**

Lead poisoning was confirmed in a beef suckler that presented with nervous signs. The blood lead concentration was 0.66 µmol/l. The source of lead was suspected to be geochemical as there were lead workings in the vicinity associated with historic lead mining. The farmer agreed to observe a 16 week withdrawal restriction on the cattle in this group after which he will blood sample the recovered affected animal and a cohort of others in the group to establish what further risk management advice is required. The farmer has been advised that it is likely that the cattle will need to be sold with food chain information stating that offal should be removed and discarded if they are slaughtered for food production. None of the cattle are currently close to being slaughtered into the food chain.

**FSI 2015-006**

Suspected lead intoxication was investigated by Langford, University of Bristol, an APHA post mortem service provider. A lead battery was discovered in the feed mixer wagon at the weekend. The feed was fed to a group of 25 dry cows. Fourteen of these cows died, some being found dead and others died following clinical nervous signs. None of the milking cows showed any clinical signs despite the mixer and wagon having also been used to mix and transport their feed. APHA advised that the farmer completely cleans the mixer and feed wagon to ensure no parts of battery remain in the machinery. The farmer was advised to immediately blood sample the remaining dry cows to establish whether they have been exposed and determine what measures are required once they calve to protect the food chain. APHA advised the private vet and the farmer to inform his Dairy about the incident. APHA advised that the Dairy holds back the bulk tank milk until lead analysis was carried out to confirm that the milking cows had not been exposed to lead.

**BOTULISM INCIDENTS**

**In botulism incidents, produce from cattle and sheep showing clinical signs should not enter the food chain.**

FSI	Nos. Affected	Species	Type & age	Source of exposure
2015-005	8	Cattle	Beef heifers	Carcase in silage suspected

**FSI 2015-005**

Suspected botulism was diagnosed in a beef suckler herd consisting of 38 animals. In total 8 heifers were affected and 5 heifers died. The animals were housed in a straw yard when the outbreak occurred. The suspected source was a goose carcass within the silage being fed.

Post mortem examination was carried out on one heifer. No other causes of death were found. Clostridium botulinum type C/D toxin and organism were detected in intestinal content. Following the initial cases the group were turned out to grass and no further cases occurred. APHA gave the farmer and vet advisory information about botulism and discussed potential risk factors. The farmer agreed to observe a voluntary restriction on affected cattle which is to extend for 18 days following complete recovery.

## **OTHER INCIDENTS**

### **FSI 2015-003 – ethylene glycol poisoning**

Suspected ethylene glycol poisoning was detected in a group of 26 ten-month old lambs intended for future breeding. The group of lambs was let into a small yarded area of old agricultural buildings to graze down grass. Within three days they started to show clinical signs of malaise and die. In total ten lambs died. Post mortem examination revealed very pale kidneys, typical of nephrosis, and histology confirmed crystal deposits compatible to ethylene glycol toxicity. APHA visited the farm in January to investigate further. There was machinery present in the yard and metal work within the grassed area. There were plastic containers on the ground, with several underneath vehicles. Some were identified as anti-freeze containers, some of which contained liquids. There was also a broken battery found. Tissue lead concentrations were checked and all concentrations were found to be within background levels. Sheep were removed from this yarded area and will in the future be permanently excluded. The farmer agreed to clean up the area, secure chemicals appropriately and discard the batteries correctly. APHA advised the farmer that the remaining lambs should be placed under voluntary restrictions for 28 days preventing movement off the farm or to slaughter. In reality the lambs are intended as ewe replacements.

## **PLANT-RELATED INCIDENTS**

**In general, except for ragwort and bracken fern, plant toxicity incidents are not considered to pose a significant risk to the food chain.**

None reported.