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Agency

Chemical Food Safety quarterly report

July to September 2021

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APHA is an Executive Agency of the Department for Environment, Food and Rural Affairs and also works on behalf of the Scottish Government, Welsh Government and Food Standards Agency to safeguard animal and plant health for the benefit of people, the environment and the economy.

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Potential food safety incidents July to September 2021

FSI No	Date	APHA VIC or contracted post mortem provider (ppp)	Species	Toxin (reported toxic agent)	Likely source
2021-024	02-07-21	Private Vet	Cattle	Lead	Battery
2021-025	09-07-21	Private Vet	Cattle	Lead	Lead water piping
2021-026	13-07-21	Carmarthen	Cattle	Lead	Battery
2021-027	30-07-21	Shrewsbury	Cattle	Lead	Battery
2021-028	16-07-21	Shrewsbury	Cattle	Lead	Scrap metal
2021-029	30-07-21	Starcross	Pigs	Bracken	Outdoor pen
2021-030	05-08-21	Shrewsbury	Cattle	Lead	Battery
2021-031	05-08-21	PPP- Liverpool	Cattle	Ragwort	Hay
2021-032	03-09-21	APHA surveillance	Cattle	? Erucic acid	Organic rape meal feed
2021-033	08-09-21	Starcross	Cattle	Lead	Lead flashing
2021-034	10-09-21	Starcross	Sheep	Copper	Total exposure

Key: Incidents in Wales highlighted in grey**.**

Highlights

Year (3rd quarter)	Total FSIs (E & W)	Total FSIs Wales	Lead (E & W)	Total lead Wales	Botulism (E & W)	Total botulism Wales
2021	11	1	7	0	0	0
2020	15	1	5	1	4	0
2019	9	1	3	1	3	0
2018	13	1	4	0	6	1
2017	11	2	3	0	2	0

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 0.1ppm WM, bulk milk lead concentration exceeds 0.02ppm or blood lead concentration exceeds 0.48µmol/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 carcases 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.

Risk management measures for lead incidents involve:

- Removal of animals from the source of lead.
- The implementation of a sixteen-week voluntary withdrawal from slaughter; Should emergency slaughter of any of the clinically unaffected cattle in the exposed group be required during the restriction period then the animal should be accompanied by food chain information stating that offal should be discarded.
- Further blood sampling for blood lead analysis. This is used as a biomarker of internal (carcase) lead residues.

Should the animals be close to or at finishing weight or producing milk for dairy products, the following risk management guidance parameters should be considered:

- Bulk tank milk requires monitoring if there is evidence of exposure of milking cows to lead. The lead concentration of bulk tank milk must remain below 20 parts per billion. If there is initially uncertainty at the start of an incident then bulk tank milk must be held to allow for testing or milk discarded.
- Blood lead concentrations of < 0.15 µmol/l: no restrictions required.
- Blood lead concentrations of 0.15 µmol/l to 0.48 µmol/l: provide food chain information (FCI) to the abattoir and ensure offal is discarded. Bulk tank milk is likely to remain compliant.
- Blood lead concentrations of > 0.48 µmol/l: provide food chain information to the abattoir, ensure offal is discarded and make an additional risk assessment as to whether carcase meat requires testing prior to carcase release into the food chain.
- Blood lead concentrations of >1.21 µmol/l: Clinical toxicity is likely. Ideally a further withdrawal period should be observed. If slaughter is essential then provide FCI to the abattoir ensuring offal is discarded and that carcase meat is tested for lead residues prior to carcase release into the food chain.

Lead incidents in cattle

FSI 2021-024

Acute lead toxicity was diagnosed in a group of 24 beef sucklers, comprising 12 adult cows and 12 calves. One cow and four calves died and one calf presented with clinical nervous signs but recovered. Two calf carcases underwent post mortem. Kidney lead concentrations were analysed at 73.8 and 74.4 mg/kg WM, confirming lead poisoning. The source of lead was a split lead acid battery which has since been removed and appropriately discarded.

FSI 2021-025

Acute lead toxicity was diagnosed in a group of 25 beef sucklers comprising cows and calves. Two three-month-old calves died and one other was affected with clinical nervous signs, but is now recovering. Post mortem examination was carried out. Kidney lead concentrations were analysed at 184.0 and > 250.0 mg/kg WM, confirming lead poisoning. The source of lead was old weathered lead piping attached to two upturned baths that were being used as horse jumps in the field where the group was grazing. The source has since been removed and surrounding soil turned over.

FSI 2021-026

Lead toxicity was diagnosed in a group of 17 comprising beef suckler cows and calves. They had been out for 8 weeks and were grazing with no supplementation. There were two affected animals reported to be blind and ataxic, both died within 48 hours of the onset of clinical signs. The carcase of one yearling Hereford cross heifer was submitted for post mortem examination. Epicardial and subendocardial haemorrhages and petechial haemorrhages throughout the thymus, were observed. A kidney lead concentration was analysed at 8.46 mg/kg WM, confirming lead exposure. An old battery was found in the field on the morning of submission. The group were immediately housed and no further cases occurred.

FSI 2021-027

Acute lead toxicity was diagnosed in a group of 130 twelve to eighteen-month-old beef cattle. Five animals died following nervous signs which included head pressing, depression and blindness, within a few days of one another. Two others were clinically affected with clinical nervous signs. A post mortem was carried out and no significant pathology was reported. Blood lead concentrations from affected animals were 2.43, 2.24 and 2.87 µmol/l. An old split battery was found the morning of submission and there was evidence of interference by cattle. This has since been removed, and appropriately discarded, and since there have been no further clinical cases nor deaths reported.

FSI 2021-028

Acute lead toxicity was diagnosed in a 12-month-old beef fattener from a group of 6. The carcase of a Charolais-cross heifer was submitted for post mortem examination to investigate the cause of nervous signs and death. At post mortem there were petechial haemorrhages throughout the length of the tracheal mucosa. There were extensive subendocardial haemorrhages in the left side of the heart. The brain was congested and there were some discrete areas of the meninges with subtle opacity. No ultraviolet light fluorescence was detected but cerebrocortical necrosis was later confirmed on histology. A second concurrent issue, false blackleg, was also detected. There were very dark red to black dry flexor muscles in proximal left hindlimb and dark red oedematous fluid in intermuscular fascia, due to a *Clostridium novyi* necrotising myositis. The kidney lead concentration was analysed at 24.20 mg/kg WM, confirming lead toxicity. The source of lead was confirmed to be a battery that was amongst other farm rubbish in the field to which the cattle had been given access. This area is not usually used for cattle and will not be used in the future.

FSI 2021-030

Acute lead toxicity was diagnosed in a group of 4-month-old beef sucklers from a group of 30 cows and calves. Three calves were affected with two deaths and one with clinical nervous signs. The blood lead concentration of the clinical case was 2.58 µmol/l,

confirming toxicity. The source, found four days later, was a broken lead acid battery. This has been removed and safely discarded and the surrounding area cleaned up.

FSI 2021-033

Lead toxicity was diagnosed in a group of 6 to 8-month-old dairy cross cattle from a group of 25. Seven animals were affected with six deaths, two of which were euthanased, and one other with milder clinical nervous signs that recovered. The blood lead concentration of the clinical case was 1.97 µmol/l, confirming toxicity. The source was found to be lead flashing around a drainpipe. Cattle access to this has since been prevented and the surrounding area cleaned up.

Botulism

An incident is usually recorded when more than one animal is affected with clinical signs deemed typical of botulism and with no other explanatory diagnosis following veterinary investigation.

Most incidents arise from cases that are submitted to APHA and post mortem providers for post mortem examination following animal disease outbreaks. Some botulism cases are notified verbally especially when there is an obvious association with the use of broiler litter.

Risk management measures to protect the food chain during botulism incidents is as follows:

- Clinically affected animals should not be presented for slaughter into the food chain and neither should produce from clinically affected animals be used. Recovered clinical cases should not be presented into the food chain for 17 days following recovery.

Botulism incidents

None reported

Copper incidents

FSA/APHA incident trigger is when the liver copper concentration exceeds 500 mg/kg WM.

Especially in sheep, chronic copper poisoning can also occur when liver concentrations of copper are well below this incident trigger value. The same food safety advice is still provided. The APHA normal reference range for liver copper concentrations in cattle and sheep is approximately 300 to 8000 µmol/kg dry matter (DM), equivalent to approximately 5 to 125 mg/kg WM. Advice given is that copper supplementation is withdrawn from sheep

where possible and additional forage fed and that a two week withdrawal period is observed.

Other diagnoses of copper poisoning do get confirmed following post-mortem examination but often do not meet the incident trigger criteria as stated above.

FSI 2021-034

Copper toxicity was diagnosed in a two-year-old ram, one of 6 rams in a commercial lowland flock. No other ram developed clinical signs. The ram was found dead and submitted for post mortem examination. Gross post mortem findings were typical of copper toxicity. The tissue copper concentrations were kidney 500 µmol/kg DM (reference 0-787 µmol/kg DM) and liver 31,900 µmol/kg DM (reference 314-7850 µmol/kg DM) and equivalent to 594 mg/kg WM. The ram had been purchased just over a year and had been out at pasture prior to death. There had been no recent minerals introduced and so the source of copper is unclear but most likely related to previous concentrate feeding with liver copper loading. Copper poisoning associated with grazing clover pastures was considered.

Other incidents

FSI 2021-032

Organic rape meal

Through scanning surveillance APHA have become increasingly aware of outbreaks of haematuria in cattle being fed organic rape meal. APHA received 5 recent enquiries from private vets and, via questionnaires, collated further information in order to reach this conclusion. This condition has not been reported frequently until this year. APHA believe the cause of the clinical signs may be due to erucic acid and/or glucosinolates in the organic rapeseed meal. APHA's main aim has been to raise awareness of the issue across Government, the feed industry and other interested parties. The clinical signs appear to relate to the total amount fed and dropping the level of rape meal intake to less than 2kg daily per head results in resolution of signs.

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.

FSI 2021-029

Bracken poisoning was suspected to have caused the death of a 51kg Berkshire pig. The pig was one of four purchased by a holiday park three months previously. They had been kept on a paddock, containing bracken, with access to a pig ark lined with straw. Tourists

were seen by the park owner to be feeding bracken fronds to the pigs. The first affected pig displayed a short period of weight loss before dying. A second pig presented with vomiting, malaise and anorexia and then death. The carcase was submitted to APHA for post mortem examination. Grossly there was a large volume of thoracic fluid, pericardial fluid and free serous fluid in the abdominal cavity. Lungs were severely affected with extensive interlobular oedema. The trachea contained a large volume of froth. The heart was globular in shape with rectangular areas of myocardial pallor. Histopathology revealed a severe myocardial necrosis, severe hepatic congestion, moderate to severe pulmonary congestion, oedema and fibrin thrombi with the top differential of bracken toxicity. The owner will clear the bracken from the original paddock before returning pigs. Signs have gone up to advise tourists not to feed the pigs. This advice is also very important regarding the risk of introducing viral swine fevers.

FSI 2021-031

Ragwort poisoning was considered the most likely differential diagnosis of the cause of ill thrift and liver pathology in a group of 13 yearling dairy heifers which were being reared off farm. Five to date were affected, with three deaths. A second group of 6 cattle, of the same age as the heifers, but which had stayed at the home farm, were also affected. One had died with one other affected with clinical signs of liver disease. Clinical signs are of progressive ill thrift and jaundice leading to hepatic encephalopathy and clinical nervous signs. To date one heifer carcase has been submitted for post mortem examination. Liver pathology and histopathology is consistent with a toxic cause with ragwort being suspected to be the most likely cause of the clinical signs in relation to the clinical history and timeline. The source of the ragwort is suspected to be some bought in hay that was fed to both groups on the home farm approximately three months before and prior to the dairy heifers being sent away for rearing. All potentially exposed cohort cattle will be sent for salvage slaughter, where possible, and will not be reared as dairy heifer replacements.

Other plant poisonings

Other plant poisoning cases investigated included yew poisoning in sheep and cattle, suspected nightshade poisoning, Pieris in sheep and azalea poisoning in goats.