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Agency

Chemical Food Safety quarterly report

July to September 2020

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Any enquiries regarding this publication should be sent to us at

Jo Payne

02080 261291
jo.payne@apha.gov.uk

Aidan Dryden
aidan.dryden@apha.gov.uk

Alan Murphy
alan.murphy@apha.gov.uk

www.gov.uk/apha

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.

Contents

Potential food safety incidents July to September 2020

FSI No	Date	APHA VIC or contracted post mortem provider (ppp)	Species	Toxin (reported toxic agent)	Likely source
2020-022	06-07-20	Thirsk	Sheep and cattle	Botulinum	Broiler litter
2020-023	09-07-20	Penrith	Sheep	Copper	Cattle minerals
2020-024	23-07-20	Starcross	Cattle	Lead	Battery
2020-025	27-07-20	PPP Langford	Cattle	Botulism	Carcase in grass silage
2020-026	04-08-20	Starcross	Cattle	Lead	Battery
2020-027	10-08-20	Penrith	Cattle	Lead	? vehicular scrap
2020-028	26-08-20	Shrewsbury	Cattle	Botulism	Carcase/organic matter
2020-029	14-08-20	Starcross	Cattle	Bracken	Grazing
2020-030	19-08-20	Shrewsbury	Cattle	Lead	Battery / ash
2020-031	25-08-20	Bury St Edmunds	Pigs	Rodenticide	Accidental access to place stored
2020-032	27-08-20	Thirsk	Cattle	Herbicide	Seed grain
2020-033	28-08-20	PPP Langford	Cattle	(Lead)	Painted walls
2020-034	09-09-20	Penrith	Cattle	Botulinum	Broiler litter
2020-035	11-09-20	Bury St Edmunds	Pigs	Coccidiostat	Feed error

FSI No	Date	APHA VIC or contracted post mortem provider (ppp)	Species	Toxin (reported toxic agent)	Likely source
2020-036	21-09-20	Shrewsbury	Pigs	(Mycotoxin)	Feed residue

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
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
2016	10	3	5	1	0	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 2020-024

Lead poisoning was confirmed as the most likely cause of death of a yearling beef suckler heifer from a group of 42 twelve to twenty-four month-old heifers intended for breeding. One other from the group had recently be found dead but the cause of death was not investigated. This heifer presented with blindness and neurological signs and lead poisoning was immediately suspected by the private vet. A tractor battery was found and removed. A blood sample was taken and blood lead concentration found to be 6.28µmol/l, confirming lead poisoning. This heifer subsequently died. The farmer agreed to place the group under a 16 week restriction and towards the end of this period to blood test a cohort of others to determine if there is any evidence of a wider subclinical exposure to lead but subclinical exposure seemed unlikely given the lead source detected. The group were

intended for breeding and were not intended to be presented to the food chain for many years.

FSI 2020-027

Lead poisoning was confirmed in a six-month-old dairy heifer from a group of 40 which had been turned onto a silage aftermath. Blood lead analysis revealed a lead concentration of 4.3 µmol/l, confirming exposure and lead poisoning. The first case occurred after the group had been on the aftermath for three weeks. The affected heifer was found recumbent appearing blind and with bruxism. She was treated for listeria and cerebrocortical necrosis but there was no improvement so she was euthanized. A second heifer presented similarly a few days later and died but the rest of the group appeared not to be affected. The source of lead was not confirmed but it was thought might be related to scrap cars on neighbouring waste land about 100m away. The group were moved and the field searched. The farmer agreed to place the group under a 16 week restriction and towards the end of this period blood test a cohort to determine if there is any evidence of a wider subclinical exposure to lead. There was no immediate risk to the food chain as the heifers are not expected to calve for at least 15-18 months being intended for milk production and not for slaughter. The main milking herd was not involved.

FSI 2020-030

Exposure to lead was confirmed as likely to have contributed to the cause of death of a yearling beef animal from a group of 13. The group broke out into some rough grazing a week before the first case occurred. The animal presented blind, dull with a mild pyrexia and there was no response to any treatments. A second animal presented blind the following day with head pressing. This animal responded to treatment with antibiotics and vitamin B12. The first case was submitted for post mortem examination. There was no obvious gross pathology and lead poisoning was considered a differential diagnosis. A kidney tissue sample was collected and tested for lead. The lead concentration was 6.52 mg/kg wet weight confirming exposure to lead. The source of lead was later reported as a partially burned out and rusting tractor that has been left in the field that the cattle broke into. The group were moved out and there have been no further clinical cases reported. The farmer agreed to place the group under a 16 week restriction and towards the end of this period to blood test the others and the recovered clinical case to determine if there is any evidence of a wider subclinical exposure to lead.

FSI 2020-033 (not confirmed)

APHA were alerted to a suspected lead poisoning incident in a group of nine 10 to 12-day-old calves that were presenting with blindness and nervous signs. Three calves were found dead and one showed clinical signs. Clinical signs initially appeared 24 hours after the calf group were put into the calf pen. The calves were seen licking an old brick wall that was partially painted and some of the paint appeared to be flaking. Post mortem

examination of the three carcases revealed little gross pathology but calves were dehydrated and one calf had a scour and another blood stained abomasal content but there was no visible ulceration. No lead was detected on analysis of a blood sample so lead poisoning was ruled out. Cryptosporidiosis was diagnosed in one calf. The full aetiology was considered to be complex involving secondary metabolic acidosis and a cerebrocortical necrosis which was confirmed by histology.

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 in cattle

FSI 2020-022

APHA investigated an outbreak of botulism in a flock of ewes and lambs and a group of 15 suckler cows with calves at foot grazing land that had previously been used to rear broiler chickens and pigs. Clinical signs were first observed in the flock. There was a general ill thrift and variable neurological signs including ataxia and hind limb paresis. Some of the ewes appeared to have a dropped jaw and difficulty swallowing. A ewe and a lamb were euthanased and submitted for post mortem examination. The gross findings in both submitted animals were unremarkable. Bacteriology, including specific selective culture for Listeria, was unrewarding. There were no specific microscopic changes in the central nervous system (CNS) of either animal, and inflammatory CNS diseases, cerebrocortical necrosis and copper deficiency were ruled out. Laboratory testing for Anaplasma phagocytophilium (Tick Borne Fever) and botulism PCR were negative. Clinical chemistry on tissues for copper, lead and molybdenum was unremarkable. The sheep were moved off the area and improvements were noted.

Fifteen suckler cows and calves were then turned out onto the same area. After 8 weeks they then presented with similar clinical signs of ill-thrift, recumbency and flaccid paralysis.

A three-month-old calf was submitted to investigate the cause of death. There was no significant gross pathology observed however small intestinal content was positive for toxin type D and Clostridium botulinum B and D/C were detected by PCR. Faecal content was also positive for toxin type D and Clostridium botulinum D/C was detected by PCR.

The botulism results confirmed the suspicions that botulism was likely to be the underlying cause of the clinical disease in both the sheep and cattle. APHA gave advice on animal health and welfare and discussed causes of botulism and prevention. APHA advised that affected animals should not be presented to the food chain and should any recover that there is a further 17 day restriction following cessation of clinical signs.

FSI 2020-025

An outbreak of suspected botulism was investigated in association with APHA. The cattle groups thought to be involved included 190 lactating cattle, 40 weaned 5-month-old calves and an in calf heifer group. Clinical signs started in two cows following an alteration of the ration being fed. Straights had been removed from total mixed ration and an increased proportion of grass silage incorporated, including a second cut baled silage.

The first cases were found recumbent with hind leg weakness and twitchiness. The cows were treated with subcutaneous magnesium and calcium but remained down. A day later an in-calf heifer was found in sternal recumbency and a weaned calf was found dead. In total 13 cattle died or were euthanized over three weeks.

The dead weaned calf was submitted for post mortem examination. Gross examination of the carcase was unremarkable and bacteriology unrewarding. Intestinal content was sent for botulinum toxin testing and was confirmed to be positive for toxin type D and Clostridium botulinum D/C was detected by PCR. APHA gave advice on animal health and welfare and discussed causes of botulism and prevention. Newly introduced silage was removed. The farmer has since vaccinated all of his cattle. APHA advised that affected animals should not be presented to the food chain and should any recover that there is a further 17 day restriction following cessation of clinical signs.

FSI 2020-028

APHA investigated an outbreak of suspected botulism in a group of 50 suckler cattle comprising 45 heifers, two cows and three calves. Three heifers were affected with the first found dead, whilst the second and third developed progressive weakness, progressing to recumbency before they were euthanized or died. One carcase was submitted for post mortem examination and there was nonspecific pathology and no alternative diagnosis. Animals had been grazing the same pasture throughout the year, coming into yard daily to be fed a barley/protein/mineral mix.

APHA visited the premises to obtain further information and review some concerns. At the visit the investigating officer suspected that the affected animals ingested remains of a carcase of bird/mammal at edge of field, or in one of two water troughs in the feeding yard area as both were contaminated with organic material. APHA advised that the farmer clean out and disinfect the troughs and search the entire field perimeter, though the potential source may have gone/been ingested.

FSI 2020-034

APHA investigated an outbreak of suspected botulism in a group of 19 suckler cows, consisting of cows and calves. The first case was suspected to have been a four-year-old cow that was found dead having fallen off cliff ledge with a 40 foot drop. The following day a similar age cow was seen to be ataxic with hind limb weakness and stiff faeces. She later became recumbent. One further cow and calf were affected over a 5 day period. One cow carcase was submitted for post mortem examination. There were no significant laboratory findings. Botulism was suspected with the source of botulinum linked to broiler litter that had been applied to grazing pasture 2 ½ weeks prior to the cows becoming recumbent and dying. APHA gave advice to the farmer and his family on animal health and welfare and discussed the risks associated with using broiler litter as a fertilizer on grazing grounds. Advice on vaccination was also given.

Botulism incidents in sheep

FSI 2020-022

See above in the cattle section.

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 2020-023

Copper poisoning was diagnosed in a dead ewe from a group of 50. Post mortem examination found mild subcutaneous jaundice, biliary fibrosis, diffusely bronze liver and slightly dark kidneys. The liver copper concentration was confirmed on analysis to be 38100umol/kg DM (reference value 314-7850 umol/kg DM), equivalent to 609.6 mg/kg WM. The source of copper was identified as cattle minerals which had been given in error to the sheep daily instead of sheep minerals. The cattle minerals have since withdrawn. There are no clinical signs apparent in rest of flock. The farmer agreed to remove the minerals and place the group under a 2 week withdrawal.

Other incidents

FSI 2020-031

APHA was informed that three twelve-week old fattening pigs weighing approximately 40 kg each were accidentally exposed to a rat poison containing Brodifacoum. Exposure occurred when the pigs broke into a farm shed where a container was being stored. They had access to 60g of rat poison during several hours of one night. APHA advised the private vet that the pigs were not likely to ever be considered fit to enter the food chain due to the long half-life of second generation rodenticides. Options were discussed such as holding a carcase after slaughter to allow liver analysis to assess whether the pig had been exposed were discussed. It was finally decided that all three pigs would be euthanized and their carcases disposed of as a Cat1/2 waste by incineration.

The owner is storing the product safely and ideally wishes to remove the substance from the premises all together.

FSI 2020-032

APHA were notified by the Health and Safety Executive about some beef cattle that might have been fed 11 tonnes of fungicide treated barley. The grain was treated with Redigo Pro. APHA contacted the farmer to discuss the issue with him. The farmer denied feeding the treated grain and it was not possible to prove otherwise due to the time lapse. APHA verbally reminded the farmer of his responsibilities to protect the food chain and followed this up in writing. The farmer was told that if he had fed the fungicide treated barley to the cattle then they should be placed on a 28 day withdrawal prior to sale or entering the food chain.

FSI 2020-035

APHA were informed of an incident about which FSA was already aware and was liaising with the Veterinary Medicines Directorate. The finisher pigs had unknowingly been given a feed in which a poultry premix containing a coccidiostat accidentally added instead of the intended finisher pig premix. The poultry premix contained a coccidiostat containing

Nicarbazin and Narasin. The pigs remained well and were voluntarily held on farm allowing a 28-day withdrawal period to be observed. The feed mill error was investigated by other appropriate authorities.

FSI 2020-036

A very unusual acute and transient disease episode was investigated which involved severe ventro-lateral skin and ham skin lesions resembling urine scald with multiple pig deaths. The clinical history and presentation, pathology and information from a veterinary investigating officer following a farm visit led APHA to believe that the clinical signs could be related to residual mouldy feed released from the feed silo after the silo was refilled. It was speculated that moisture/condensation within one silo may have allowed feed to clump and stick and the high ambient temperatures in late summer/early autumn predisposed to mould growth. The weight of the new feed then dislodged the clumped mouldy feed allowing it to be fed. The actual new batch of feed itself was not implicated as other pigs receiving that same feed were unaffected. Similar incidents have been seen occasionally before by APHA on different farms over several years without a specific cause being confirmed despite extensive investigations and laboratory tests. Feed and stomach contents have been sent for analyses and results are pending. The disease episode occurred over a 24-hour period with skin lesions later healing in surviving pigs which were not close to entering the food chain.

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 2020-029

Bracken poisoning was suspected to have caused the death of an 18-month old beef fattener from a group of 35 to 40 cattle. A total of nine cattle had died during the previous month some having a short malaise prior to death or euthanasia. Exposure to bracken occurred as the group were grazing rough poor pasture with bracken fern present and had been on this grazing all summer. Affected animals showed frothing at the mouth, pyrexia and in some cases red haemorrhagic faeces. One animal showed incoordination and was found in a stream. Some cattle also presented with increased upper respiratory tract noise. One carcase was submitted for post mortem examination following euthanasia. The post mortem revealed anaemia, jaundice, oedema and widespread haemorrhages. There were diptheritic ulceration of the Peyers patches, large linear blood clots in the large intestine and ulceration of the oesophagus. Laboratory testing to rule out differential diagnoses did not reveal any other cause of death. Differential diagnoses included Salmonellosis, BVD mucosal disease and Malignant Catarrhal Fever. Bracken fern poisoning was suspected and histology pursued. Histopathology revealed a severe, trilineage bone marrow hypoplasia supporting the diagnosis. APHA gave advice on animal health and welfare and

also gave advice on the current food safety guidance regarding withdrawal periods which suggests a withdrawal period of at least 4 days for milk and 15 days for edible tissues.

Reference: COT statement on the risk to consumers of eating foods derived from animals that have eaten bracken (2008) and FSA risk assessment.

Hemlock water dropwort poisoning

Oenanthe crocata (hemlock water dropwort) poisoning was diagnosed as the cause of death of a 13-month-old beef suckler following post mortem examination. The rumen contents were observed to be pale yellow to tan with rubbery fragments and an abnormal celery-like odour considered to be consistent with water hemlock tubers and roots.

The plant contains the toxic principle oenathetoxin, a polyunsaturated higher alcohol, with convulsant effects. Most of the toxicity of water hemlock lies in the chambered root and is rapidly absorbed across the mucous membranes or in the digestive tract. The toxin acts primarily on the brain affecting the inhibitory neurons causing violent convulsions and respiratory failure. Ingestion of less than 0.2% to 0.5% of an animal's body weight can be lethal. Signs of toxicosis in all species including humans may appear within 15 minutes of ingestion and include nervousness, excessive salivation, weakness, tremors, violent convulsions and death.

Water hemlock prefers to grow in wet marshy sites in meadows, along streams, irrigation ditches and often develops with its roots in water. Predisposing factors to ingestion can include recent wet weather exposing tubers and roots and a lack of availability of other vegetation.