April – June 2011

AHVLA Animal Health and Veterinary Laboratories Agency

Chemical Food Safety

QUARTERLY REPORT **NO. 34**

POTENTIAL FOOD SAFETY INCIDENTS APRIL TO JUNE 2011

FSI No	Date	Regional Lab	Species	Confirmed Toxin (suspected toxin)	Source
2011-020	18-04-11	Shrewsbury	Sheep	Lead	? Lead shot
2011-021	08-04-11	Aberystwyth	Cattle	Volatiles	Floor sealant
2011-022	11-04-11	Leahurst	Cattle	Botulinum	Poultry litter
2011-023	11-04-11	Langford	Cattle	Botulinum	Poultry litter
2011-024	12-04-11	Winchester	Cattle	Ragwort	Forage
2011-025	11-04-11	Shrewsbury	Cattle	Botulinum	Poultry litter
2011-026	18-04-11	Sutton Bonington	Cattle	Lead	Paint
2011-027	27-04-11	Starcross	Cattle	Lead	Paint
2011-028	27-04-11	Penrith	Cattle	Botulinum	Poultry litter
2011-029	07-04-11	UK wide	Sheep	Vitamin A	Milk replacer
2011-030	04-05-11	Bury St Edmunds	Cattle	Unknown	Spoiled feed
2011-031	10-05-11	Winchester	Avian	Bromadiolone	Rodenticide
2011-032	06-05-11	Penrith	Cattle	Botulinum	Poultry litter
2011-033	10-05-11	Penrith	Cattle	Botulinum	Poultry litter
2011-034	11-05-11	Luddington	Cattle	Botulinum	Poultry litter
2011-035	11-05-11	Shrewsbury	Sheep	Lead	Geochemical
2011-036	13-05-11	Carmarthen	Sheep	Lead	Geochemical
2011-037	26-05-11	Shrewsbury	Cattle	Lead	Geochemical
2011-038	17-05-11	Aberystwyth	Cattle	Lead	Geochemical

2011-039	13-05-11	Thirsk	Cattle	Botulinum	Poultry litter
2011-040	24-05-11	Aberystwyth	Sheep	Selenium + lead	Fertilizer (note 047)
2011-041	17-05-11	Preston	Cattle	Botulinum	Poultry litter
2011-042	25-05-11	Carmarthen	Cattle	Lead	Battery
2011-043	27-05-11	Sutton Bonington	Cattle	Lead	Battery
2011-044	27-05-11	Preston	Cattle	Lead	Battery
2011-045	25-05-11	Thirsk	Cattle	Botulinum	Poultry litter
2011-046	27-05-11	Leahurst	Cattle	Lead	Battery
2011-047	24-05-11	Aberystwyth	Sheep	Selenium	Fertilizer (note 040)
2011-048	27-05-11	Thirsk	Cattle	Lead	Railcar shelter
2011-049	27-05-11	Preston	Cattle	Botulinum	Poultry litter
2011-050	20-05-11	Preston	Avian	Monensin	Feed
2011-051	03-06-11	Preston	Cattle	Lead	Putty
2011-052	01-06-11	Starcross	Avian	Lead	Lead shot
2011-053	01-06-11	Preston	Cattle	Lead	Battery
2011-054	03-06-11	Starcross	Cattle	Lead	Battery
2011-055	03-06-11	Winchester	Cattle	Lead	Bonfire ash
2011-056	06-06-11	Starcross	Cattle	Lead	Battery
2011-057	20-06-11	Sutton Bonington	Cattle	Lead	Geochemical
2011-058	08-06-11	Starcross	Sheep	Copper & Thiomolybdate Tx	Cattle cake & bolus & treatment
2011-059	08-06-11	Bury St Edmunds	Cattle	Lead	Not established
2011-060	10-06-11	Luddington	Cattle	Lead	Sump oil
2011-061	10-06-11	Truro	Cattle	Lead	Battery
2011-062	20-06-11	Preston	Cattle	Copper (& selenium)	Total dietary intake
2011-063	20-06-11	Carmarthen	Cattle	Lead	Battery
2011-064	15-06-11	Winchester	Cattle	Lead	Battery
2011-065	22-06-11	Newcastle	Cattle	Lead	Battery
2011-066	15-06-11	Starcross	Cattle	Botulinum	Poultry litter
2011-067	22-06-11	Newcastle	Cattle	Lead	? Paint
2011-068	28-06-11	Langford	Cattle	Lead	Battery
2011-069	28-06-11	Preston	Cattle	Botulinum	Poultry litter
2011-070	28-06-11	Shrewsbury	Cattle	Botulinum	Poultry litter + crow (?)
2011-071	29-06-11	Thirsk	Cattle	Lead	Battery
2011-072	29-06-11	Carmarthen	Cattle	Lead	Battery

HIGHLIGHTS

This has been a very busy quarter for potential chemical food safety incidents contrary to predictions as we thought that a reduction in surveillance submissions to AHVLA might have a knock on effect on this project work. But the incident numbers above confirm that this is definitely not the case. There have been 53 incidents compared to 20 incidents in the 2nd quarter of 2010.

Year (2nd quarter)	Total	Lead	Botulism
2011	53	29	14
2010	20	16	2
2009	29	19	8
2008	40	26	9
2007	35	25	9

Some thoughts on why are as follows:-

1) As it was a dry year, turnout was early and so incidents started to increase earlier.

2) The early spell of dry weather meant that grass growth was poor leaving swards poor. As a consequence, animals were even more likely to forage in hedgerows and explore the unusual.

3) Fertilisers used on grass were not readily washed in and animals have been exposed to chemicals eg selenium as a result. Also there have been more botulism cases due to direct application of broiler litter to grazing land. An AHVLA advice note was prepared:-

Photo courtesy of: www.dardni.gov.uk/ruralni/fertiliser

AHVLA have investigated several cases of poisoning in grazing stock associated with the application of fertilisers and conditioners onto grass land in dry conditions. The products implicated vary in type and include nitrogen based fertilisers which have caused nitrate/nitrite toxicity and selenium supplemented fertilisers which have caused selenium toxicity. In these recent incidents investigated by AHVLA poisoning has been as a result of moving stock back onto treated pastures when the fertiliser is still visible on the ground. This is primarily due to a lack of rain which would normally dissolve and allow the chemicals to soak into the ground. AHVLA advise that, prior to moving stock back to treated pastures, farmers carefully check that any fertiliser applied is not visible.

AHVLA also continues to be alerted to incidents of botulism associated with spreading of broiler litter onto grazing land. AHVLA do not advocate the use of broiler litter on grazing land advising that its use is limited to fields that are to be deep ploughed directly after application. More information on botulism associated with the use of broiler litter is available on http://vla.defra.gov.uk/science/docs/sci_botulism.pdf

LEAD INCIDENTS

An incident is recorded where the kidney or liver lead concentrations exceed 0.5 parts per million (ppm) wet weight (WW), muscle lead concentration exceeds 0.1 ppm WW, milk lead concentration exceeds 0.02 ppm or blood lead concentration exceeds 0.48 µmol/l.
Risk management of lead incidents usually involves the farmer observing a 16 week withdrawal on exposed stock, once exposure to the source of lead has been fully removed, to allow lead residues to decline.
AHVLA advises that background blood lead concentrations should be expected to be < 0.2 µmol/l.

Lead source	Nos of cases where tissue lead exceeds regulatory limits	Actual poisoning cases*	Animal species
Battery	14	14	14 cattle
Paint	3	3	3 cattle
Other	7	5 cattle; 1 avian	5 cattle; 1 sheep; 1 avian
Geochemical	5	2 cattle	3 cattle; 2 sheep

***** Most incidents occur following animal disease outbreaks ie are actual poisoning incidents. However, occasionally as a result of laboratory testing, we come across high blood or tissue lead levels that are not high enough to cause clinical signs but which are still important in terms of food residues and food safety. These are also taken as incidents.

Lead incidents in cattle

Due to the high number, individual incidents will not be summarised. Should readers require further details of a particular incident, please contact a member of the team below.

Comment

Lead toxicity was frequently diagnosed during May and June with the majority of incidents caused by lead acid batteries. These cases usually occur when cattle, particularly young calves of a few months of age, are turned out onto fresh pastures or silage aftermaths. Their inquisitive nature predisposes them to poisoning. This was likely to have been made worse this year by the early turnout, dry weather and poorer grass growth leaving animals more likely to forage in hedge rows. What continues to be disappointing is that these cases are preventable with a little time and effort. A quick walk round a field provides an opportunity to check fencing, water supplies and look for other hazards eg fly tipping, bonfire ash, plant clippings; all of which have been known to cause problems. An advisory leaflet on lead toxicity is available on:
http://www.food.gov.uk/multimedia/pdfs/publication/leadpoison0209.pdf

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	Direct/indirect exposure
2011-022	6 out of 33	Cattle	dairy heifers	Indirect
2011-023	9 out of 130	Cattle	dairy cows	Indirect
2011-025	2 out of 20	Cattle	dairy heifers	Direct
2011-028	8 out of 200	Cattle	dairy cows	Indirect
2011-032	5 out of 54	Cattle	18 m o beef fattener	Indirect
2011-033	1 of 15	Cattle	2 y o dairy heifer	Indirect
2011-034	2 out of 40	Cattle	dairy heifer & cow	Direct
2011-039	3 out of 35	Cattle	18 m o beef fattener	Direct
2011-041	3 out of 14	Cattle	dairy heifers	Direct
2011-045	13 out of 41	Cattle	12 m o beef fattener	Indirect
2011-049	3 out of 60	Cattle	18 m o beef fattener	Direct
2011-066	10 out of 150	Cattle	beef	Indirect
2011-069	2 out of 69	Cattle	Immature beef & dairy	Indirect
2011-070	13 out of 28	Cattle	dairy heifers	Indirect

Due to the high number, not all incidents will be summarised. Should readers require further details of a particular incident, please contact a member of the team below.

Comment

Botulism in cattle, associated with the use of broiler litter on grazing land and surrounding fields, was diagnosed in April, May and June. The number of cases was higher than the previous 4 years. The reason for this may reflect the earlier turn out. Other factors worth consideration include the harsh, snowy winter leading to frozen ground which could not be worked earlier in the year, NVZ controls and grassland derogations.

COPPER TOXICITY INCIDENTS

FSA/AHVLA incident trigger is when the liver copper concentration exceeds 500 mg/kg WW

FSI 2011-058

Copper toxicity was confirmed in a two-year old Texel ram, intended for breeding purposes, one of a group of 17 other rams (mostly a year old) fed small amounts of concentrate on upland pasture. Post mortem confirmed classic clinical signs of copper toxicity. The liver copper concentration was 30,640 µmol/Kg DM, equivalent to 514 mg/kg WW. The investigation revealed that for quite a period of this ram's life it had been fed a low level of cattle concentrate. This was because the company manufacturing the cattle cake, when questioned, indicated that it contained no supplementary copper. The shepherd incorrectly interpreted this as meaning that the cake would be safe to feed to sheep. AHVLA have since clarified this point with him. Also, due to some confusion the affected ram also received a bolus containing copper. The veterinary practice has administered ammonium thiomolybdate as a precaution to the rest of the group of rams. Unfortunately this is not approved for use in food producing animals and AHVLA have informed the shepherd that new owners need to be made aware that the rams should never enter the food chain.

Ammonium tetrathiomolybdate (ATTP) is often quoted in veterinary literature as an antidote to copper poisoning. Whilst the health and welfare of the stock is paramount, it needs to be remembered that ATTP is not an authorised veterinary medicine. Under Regulation (EC) No 470/2009, pharmacologically active substances used in a veterinary medicinal product administered to a food-producing animal under the cascade must be listed in Annex I, II or III

Commission Regulation (EU) No 37/2010. As ATTP does not appear in any of these Annexes it should not be administered to an animal intended for food production.

FSI 2011-062

Raised liver copper concentrations were identified in pooled liver samples taken from adult dairy cows. In one pool (4 cows) the liver concentration was 32679 µmol/kg DM, equivalent to 515 mg/kg WM. In the second pool (3 cows) the copper concentration was 26792 µmol/kg DM, equivalent to 422 mg/kg WM. The cause is likely to be due to excessive mineral supplementation, a problem encountered on many dairy farms. The farm reports that they believe they have recently 'doubled up' on bolus and compound feed. The private veterinary advisor and farmer were reminded of their duty to protect the food chain. AHVLA have advised that supplementation is reduced and further monitoring carried out.

With the support of the Advisory Committee on Animal Feedingstuffs (ACAF) a guidance document for copper supplementation has been prepared. A link to the full document can be found at http://acaf.food.gov.uk/papers/supplementingcoppertobovines

The guidance is as follows:

The need for copper supplementation of cattle should be regularly assessed in consultation between the farmer, veterinary and nutritional adviser.

Copper inputs from *all* applicable sources (e.g. grass, forages, compounds, straights, mineral powders, mineral blocks, mineral buckets, boluses, injections and water supply) should be estimated as accurately as possible to ensure that, in total, there is no excess.

Under normal conditions, and in the absence of significant antagonists, copper concentration in the total ration should typically be formulated to 20 mg/kg DM.

If there is any doubt about the dietary trace element input, feeds (including pasture and forage) should be analysed.

Feed analysis reports should not report estimated copper "availability" levels. The concentrations of copper antagonists should be measured and individually reported.

If all interested parties agree that it is necessary to exceed 20 mg/kg DM of copper in the total ration (but not exceed the statutory limit), supplementation levels should be fully considered and the course of action agreed.

Before prescribing copper supplementation which will bring the copper concentration in the total ration to more than 40 mg/kg DM, a full risk assessment should be carried out by a veterinarian.

Supplementation action plans should be regularly reviewed to assess effectiveness and outcome.

Records of changes to copper supplementation and protocols should be kept and included within herd health plans. All inputs of supplementary copper need to be considered.

OTHER INCIDENTS

Volatiles FSI 2011-021

Two yearling beef fattener calves died following ingestion of a red floor sealant when the group of 9 escaped into a farm yard during high winds. Building works were in progress in the yard. One calf was found dead, the other recumbent and shaking. Both animals had red paint round their muzzles. Post mortem was carried out on one carcase. Copious amounts of red sealant paint were present in the rumen content. There was a notable chemical smell. Death was considered to be associated with exposure to volatiles/solvents within the product. Laboratory testing did not confirm exposure to lead or cyanides. None of the calves were close to entering the food chain. The farmer agreed to observe a 28 day restriction on the other seven cattle in the group.

Vitamin A FSI 2011-029
An unusual clinical presentation in lambs being fed replacement milk raised concerns of a potential feed contamination problem. Lambs (from few days to < 4 weeks old) fed milk replacer through a communal feeder presented markedly "sweaty" with a moist "dermatitis" especially of the inguinal, perineal and axillary areas. Affected lambs had a tottering gait and appeared uncomfortable. Concerns were discussed with the company involved. Testing revealed the accidental inclusion of excessive vitamin A. The company traced and recalled affected products. For further information go to http://vla.defra.gov.uk/science/sci_lamb_milk_replacer.htm.

Selenium FSI 2011-040 and FSI 2011-047
Selenium toxicity was diagnosed as the cause of death of 11 hill sheep ranging in age from 4 weeks to adult ewes in a group of 350 ewes and lambs. Deaths occurred in multiple different groups. Diagnosis was made following post mortem of a single lamb. Liver selenium concentration was 663.0 µmol/kg DM (reference ranges: adequate > 5.0 µmol/kg DM; toxicity > 250 µmol/kg DM). A raised liver lead concentration was also identified. The liver lead concentration was 22.5 µmol/kgDM, equivalent to 1.0 ppm WW. The source of selenium was a combined grass fertilizer and conditioner. The incident happened as a result of a gate being left open accidentally. The Company has agreed to highlight best practice in their next farmers newsletter raising awareness of the problems associated with the dry weather. In this incident, following rain, the product dispersed and there were no further deaths. The low lead residue was considered likely to have been associated with the exposure and ingestion of a component of the product. The Company was made aware of this. The farmer agreed to observe voluntary restrictions for 16 weeks to allow lead residues to subside.

Selenium FSI 2011-062
Raised liver selenium concentrations were identified in pooled liver samples taken from adult dairy cows. In addition to raised copper, the pooled liver selenium concentrations were also very high at 490.0 and 383.0 µmol/kg DM. The AHVLA reference level for toxicity is > 250 µmol/kg DM, however these dairy cows were reported to be healthy. The cause was likely to be due to intentional but excessive mineral supplementation. The farm reports that they believe they have recently 'doubled up' on bolus and compound feed. The private veterinary advisor and farmer have been reminded of their duty to protect the food chain. AHVLA have advised that supplementation is reduced and further monitoring carried out.

Rodenticide FSI 2011-031
Rat bait poisoning was identified as the cause of death of a backyard hen. Post mortem examination revealed large amounts of material suspicious of rat bait throughout its intestinal tract. The clinical disease history was of 10 birds comprising chickens and ducks, dying over a period of a few days. Two ducks were also post mortemed but their intestinal content did not appear typical of rat bait. The rat bait used was bromadiolone. The Local Authority Pest Control had put down sealed containers which the owner opened transferring material to a non secure container. These were then used in other parts of the farm. AHVLA informed the Wildlife Incident Investigation Scheme of the incident:
http://www.pesticides.gov.uk/uploadedfiles/Web_Assets/PSD/WIIS_leaflet_2003.pdf.
Eggs produced are not for commercial use but are used for home consumption, friends and relatives. In line with the FSA risk assessment for FSI 2011-003, AHVLA advised that neither the eggs nor bird carcases are consumed.

Ionophores FSI 2011-050
Monensin toxicity was identified in a farm of broilers housed in three sheds of 27,000, 27,000 and 37,000. Batches of birds aged 28 days were submitted for post mortem examination. In some birds there were pale streaks and gelatinous fluid in skeletal muscles. The feed company incorrectly supplied feed which had included 'Coxidin' monensin at 1125 g/tonne rather than the recommended rate of 500-625 g/tonne. This feed was removed and replaced with ration with 'Coxidin' monensin at 500 g/tonne. There was a reduced feed and water intake affecting up to 50% of birds and clinical signs consistent with monensin toxicity; weakness and recumbency necessitating culling of about 1% birds initially and subsequently around 0.5% daily. Since some of the group of birds was due to be culled the following week this present feed was to be replaced with feed containing no Coxidin the following weekend. The stated withdrawal time (NOAH) for birds on

Coxidin is 1 day. All birds which showed clinical signs were euthanased and were not sent for slaughter. Affirmation was given that the owner could go ahead with sending birds for slaughter provided the withdrawal period was at least doubled.

PLANT RELATED INCIDENTS

Ragwort toxicity FSI 2011-024

Ragwort toxicity was identified in 4 beef suckler cattle ranging in age from 18 months to 8 years from a group of 6. A bull and 3 heifers died. Diagnosis was reached from the histopathology observed in liver tissue. The PVS reported that the forage being fed contained a high proportion of ragwort. The forage was changed.

- Ragwort is one of many plants that contain pyrrolizidine alkaloids (Pa).
- Pa poisoning is probably the most common cause of plant poisoning in wildlife and livestock and can also affect humans.
- Many Pa containing plants are not palatable to livestock when growing and usually are only eaten when other feed is restricted or when incorporated into forage.
- Pas can cause hepatotoxicty and pulmonary toxicity and some Pas are carcinogens.
- Human poisoning and increased long-term cancer risk may arise from food (e.g. milk, honey) contamination as a result of food animal exposure to Pas.
- Risk to public health is reduced by dilution of Pa contaminated food materials, such as milk and honey, during marketing and processing.
- There may be higher risk scenarios associated with locally produced foods in areas heavily contaminated with plants such as ragwort.
- Better control of ragwort should be promoted. See http://archive.defra.gov.uk/wildlife-pets/wildlife/management/weeds/pdf/cop_ragwort.pdf

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