2005 Commentary on non-compliant results

1. National Plan, Bovine QA Scheme and additional testing

Samples collected under the UK National Plan may be taken at abattoirs or on-farm. Samples collected under Northern Ireland's Bovine QA Scheme are collected at abattoirs only. Both of these schemes are designed to provide retrospective surveillance data. As a consequence, carcases are not detained pending the laboratory result.

a) Banned medicines and growth promoters

1. Metronidazole in chicken meat

Metronidazole is an antibiotic. Administration of metronidazole to food-producing animals is banned in the EU. Metronidazole was found in a chicken muscle sample collected at an abattoir. Movement of further birds off the farm was restricted until they had been shown to be free from metronidazole residues. Samples of chicken muscle and liver, feed and faeces were collected from each of the poultry houses at the farm, and together with the farm's retained feed samples, tested negative for this drug; indicating that the problem was unlikely to have originated there. This drug is licensed for treatment of various conditions in humans. As a consequence the possibility of carcase or sample contamination was investigated. Forty poultry muscle samples were collected from the processing plant and were shown to be free from residues. Production staff and DARD inspectors, who could have had access to the positive carcase up to the point in the processing plant where the original sample was collected, along with relevant laboratory staff, these were asked to disclose, in confidence, whether or not they had been receiving any treatment containing this drug. None was reported. As all follow-up samples tested negative, no further action was proposed.

2. Hormones in cattle and sheep urine

Progesterone is a female hormone. It is illegal to administer progesterone to food-producing animals to promote growth in the EU. However, progesterone is also a naturally-occurring female hormone. Progesterone was detected in urine collected from a male bovine, at a concentration greater than the tentative upper limit of normality established at this laboratory. The animal originated from the Republic of Ireland and the relevant authorities there were informed. The authorities in the Republic of Ireland took further samples at the farm of origin. As these were negative, no further action was indicated. Urine samples from four other steers, sampled under these schemes, contained progesterone at a concentration greater than the upper limit of normality. In follow-up investigations, one urine sample from one farm contained a high level of progesterone. This producer was flagged for further sampling. Progesterone levels in all of the other follow-up samples were normal.

Zeranol and taleranol. Zeranol is a growth promoting hormone and taleranol is its principal metabolite. Administration of zeranol and taleranol to food-producing animals is banned in the EU. However, both compounds can be found naturally in urine from various animal species, if their feed contains zearalenone, a chemical produced naturally by certain fungi. Both zeranol and taleranol were detected in urine

samples taken from ten cattle, zeranol alone in one sample and taleranol alone in samples taken from a further six cattle. Levels were compared with those of the zearalenone and other compounds produced naturally by the fungi. A statistical model, developed at VSD, was used to analyse the results. This analysis indicated that the zeranol and taleranol had occurred as a result of metabolism of zearalenone and related compounds and not as a result of zeranol abuse. Zeranol alone was detected in one sheep. While the VSD model was not developed for sheep, it did suggest that abuse had not occurred, given the concentrations of naturally-occurring zearalenone and related compounds that were also present in the sample. No further action is proposed.

Boldenone is a growth-promoting hormone. It is illegal to administer boldenone to food-producing animals in the EU. However, it is known that boldenone can occur naturally if certain natural chemicals are present in the animals' diets. Conjugated alpha-boldenone was detected exceeding the EU level in one sheep and free and conjugated boldenone in a further two sheep. No evidence of abuse was detected at any of the farms. Further work to investigate the natural occurrence of boldenone in sheep is needed.

Nortestosterone is a growth-promoting hormone. It is illegal to administer it to food-producing animals in the EU. 17α-19-Nortestosterone, its main metabolite, was detected in urine samples taken from 4 female cattle and 3 sheep. However, this hormone is known to occur naturally in female cattle and sheep at some life stages e.g. during late pregnancy, and VMD (the UK Competent Authority) has set an action level of 5 ppb in females. The concentrations detected in these cases were within this limit, but the gender of the sheep was unknown. **Taleranol** was also detected in one of these four cattle, and considered on statistical grounds to be naturally occurring (see above). Conjugated and unconjugated residues of **α-boldenone** (see above) were also detected in one of these two sheep. No evidence of abuse of boldenone was discovered during an on-farm investigation.

b) Veterinary medicines

Anticoccidial drugs in poultry

Nicarbazin is a coccidiostat, licensed for use in poultry. Although there is currently no EU MRL, the UK has adopted the Joint Expert Committee on Feed Additives' MRL of 200 ppb in liver. Nicarbazin was detected in two broiler chicken liver samples at levels above this MRL, one of which was more than 10 times the MRL. However, the corresponding muscle sample was less than the MRL. At the farm follow-up visits, feeding practices including bin management were evaluated, but no obvious factor was identified which could have caused the problem. Retained feed samples and meat samples from subsequent flocks were compliant. Nicarbazin, which is not licensed for use in egg-laying hens, was also detected in one egg sample above the UK Veterinary Residues Committee's Differential Action Limit. At the farm follow-up visit, it was suggested that the birds' feed may have been stored in a bin that previously contained turkey feed which had been medicated with nicarbazin. A follow-up sample comprising several eggs tested negative. No further action is proposed, but residues of this drug continue to be a cause of concern within poultry production.

Monensin is a coccidiostat, licensed for use in poultry. Monensin was detected in a chicken liver sample at a level below the European Food Safety Authority's provisional MRL. No further action is indicated.

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2. Meat Inspection Scheme

The carcase is detained at sampling, and discarded if a non-compliant result is obtained.

a) Banned medicines and growth promoters

Hormones in cattle urine

Progesterone is a female hormone. It is illegal to administer progesterone to food-producing animals to promote growth in the EU. However, progesterone is also a naturally-occurring female hormone. Progesterone was found above the VSD's suggested upper limit of normality in urine samples from two steers. Two of the additional samples taken during follow-up visits to the farms of origin contained progesterone slightly above this limit. As a consequence, the farm was flagged for further sampling under this scheme.

Nortestosterone is a growth-promoting hormone. It is illegal to administer it to food-producing animals in the EU. 17α-19-Nortestosterone its main metabolite was detected in urine samples taken from a cow at a concentration below VMD's suggested action limit. No action was needed. It was also found in a urine sample from a steer, in which this hormone is considered not to occur naturally. Control measures were taken to exclude the rest of the batch of animals concerned from entering the human food chain, and other animals, feed and dosing equipment at the farm's holdings of origin were sampled. Other hormones excluding nortestosterone, (testosterone, 17 α -oestradiol and progesterone), were found at levels exceeding the VSD's statistical upper levels of normality for these compounds in urine samples taken from a group of steers that were close to, but not yet in, slaughtering condition. Nortestosterone decanoate, an ester that is not licensed for veterinary use in the UK and has a history in Northern Ireland of being administered as an illegal growth promoter, was found on the outside of a syringe.

Zeranol and taleranol. Zeranol is a growth promoting hormone and taleranol is its principal metabolite. Administration of zeranol and taleranol to food-producing animals is banned in the EU. However, both compounds can be found naturally in urine from various animal species, if their feed contains zearalenone, a chemical produced naturally by certain fungi. Zeranol and taleranol were detected in five bovine urine samples, and taleranol alone in one. Levels were compared with those of the zearalenone and other compounds produced naturally by the fungi. A statistical model, developed at VSD, was used to analyse the results. This analysis indicated that the zeranol and taleranol had occurred as a result of metabolism of zearalenone and related compounds and not as a result of zeranol abuse. No further action is indicated.

b) Veterinary medicines

Oxytetracycline is an antibiotic that is licensed for use in a range of animal species in the EU. Oxytetracycline was found above the MRL in the muscle of one sheep and six cattle. The farms of origin were visited to investigate the cause of these residues. In two of the cattle and the sheep, it was not possible to trace where the drug was administered, because these animals had been sold through markets shortly before slaughter. In one bovine, the drug's dose and withdrawal time had been observed, but the volume administered at each injection site (40 ml) was greatly in excess of the licensed maximum (15 ml). Another possible factor for this residue could have been the animal's poor health (emaciation).

In the remaining three cattle, a failure to observe the relevant withdrawal time was probably the cause of the residues. One farmer cited a communication breakdown,

whereby the decision to slaughter the animal was taken without knowing that it had been treated by another person. Another farmer contacted the abattoir after sending his animal for slaughter, having realised, after it was killed, that this animal had not completed the withdrawal time.
The third farmer may have mistakenly injected a long-acting preparation rather than a short-acting one (with a shorter withdrawal period, which was completed), as both drugs were held at this farm.

Chlortetracycline is an antibiotic that is licensed for use in a range of animal species in the EU. Chlortetracycline was found above the MRL in the muscle of one bovine. There was a record of recent treatment with oxytetracycline (the withdrawal period was observed), not with chlortetracycline. However, the farmer mixed a chlortetracycline feed premix into calf milk replacer. It was speculated that this was the source of the residue found. The farmer was advised that it is illegal to top-dress feed on-farm with a medicated premix. These are licensed to be incorporated into the final feed only by an authorised mixer.

Penicillin G is an antibiotic that is licensed for use in a range of animal species in the EU. One bovine carcase was condemned following the finding of a very high result. At the follow-up visit, the farmer cited a communication breakdown, whereby the decision to slaughter the animal was taken without knowing that it had been treated with penicillin G by another person; the treatment had not been recorded and the animal had been slaughtered inside its withdrawal period. A notice to the effect that all treatments must be recorded has been placed on the door of the medicines cupboard. Toward the end of 2005, the UK Veterinary Medicines Regulations were issued, coming into force in 2006. These direct farmers to maintain a time-of-use medicines record for livestock; it will be an offence under these regulations not to record all farm animal treatments when they are given.

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3. Pigs Testing Scheme

At Phase 1 of the Pigs Testing Scheme, the carcase is not detained at sampling. The producer is allocated to Phase 2 sampling, where intensified sampling of carcases, detained in the abattoir take place. Non-compliant carcases at Phase 2 are condemned.

a) Banned medicines and growth promoters

No positive samples were found.

b) Veterinary medicines

Sulphadiazine was identified at levels above the MRL in two Phase 1 kidney samples from different producers. On-farm visits were requested and these producers were placed on Phase 2 testing. Three sets of compliant samples were obtained from each of the 3 producers allocated in 2004 to Phase 2 sampling, and these were returned to Phase 1 sampling. During 2005 one of these producers was prosecuted and fined under the NI regulations.

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4. Other sampling in 2005

Notifications from the Republic of Ireland
The Republic of Ireland notified DARD about two pig carcases that were found to contain antibiotics residues at slaughter in the Republic, and which had been exported in two different consignments from Northern Ireland.

The producer of one of these pigs was visited, but as the identity of the antibiotic causing the residue had not been established, it was not possible to establish whether or not a treated animal had been sent for slaughter too soon after a recorded treatment. As this farm is phasing out pig production, no further action is indicated. It was not possible to trace the producer of the other pig, which had been exported in a dealer's mixed consignment; only the dealer's ear tag was recorded when the carcase was sampled at the abattoir in the Republic of Ireland. Hence the NI Veterinary Service has requested that Inspectors in the Republic of Ireland record all the ear tags of sampled animals that are exported from NI, to help identify the farms of origin.

Over Thirty Months (OTM) survey
One of the BSE eradication measures taken within the UK was to exclude the carcases of animals over thirty months of age from the human food chain. Farmers presenting OTM animals for slaughter under this scheme were compensated. Before resuming the slaughter of animals of this age for human consumption and discontinuing the scheme, VMD and DEFRA randomly sampled 400 cattle slaughtered under the scheme, to establish whether or not they contained illegal residues (100 animals were tested for each of the following: ß-agonists, phenylbutazone, dexamethasone and antimicrobials). In Northern Ireland, the RAG scheduled 60 samples to be taken, to check the Northern Irish population of OTM cattle for residues. All 60 samples were tested for chloramphenicol (kidney), and phenylbutazone (plasma), ß-agonists (liver) and anabolic hormones (urine). All samples were compliant. Hence the OTM scheme has now been discontinued throughout the UK and alternative arrangements agreed for the disposal of older animals.

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