

Commentary on non-compliant results for 2010

1. National Surveillance Scheme (NSS),
2. Additional testing on NSS samples
3. Bovine QA Scheme
4. Meat Inspection Scheme
5. Pigs Testing Scheme

1. National Surveillance Scheme (NSS)

Samples collected under the UK National Plan may be taken at abattoirs or on-farm, and provide retrospective surveillance data. As a consequence, carcasses are not detained pending the laboratory result.

a) Prohibited and unauthorised substances

1. Boldenone. 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. In addition, it can occur in urine samples, especially those taken on farm, if faecal contamination of urine has occurred. The EU has set criteria against which to interpret boldenone results. The boldenone metabolite, α -Boldenone, was detected in four bovine urine samples. Analysis to measure free and conjugated boldenone suggested that no abuse of this hormone had occurred, that this was a natural occurrence, and therefore no further action was taken.

2. Thiouracil. Administration of all thyrostats to food-producing animals has been prohibited within the EU for more than 20 years. It is now established that thiouracil can occur naturally as a result of consumption of diets rich in cruciferous vegetables (e.g. cabbages), or which contain ingredients derived from rapeseed. Thiouracil was detected in urine samples taken from three cattle. In one case, rape straw (a possible source) was being fed. In the other two cases, there was no evidence of the feeding of Brassicas. However, in all 3 cases, there was no evidence of abuse. It is possible that increased production of rapeseed oil cake, as a consequence of increased global bioethanol production, may have resulted in different varieties of rapeseeds, with higher concentrations of the thiouracil precursors, being used in feed production. None of the five follow-up urine samples that were subsequently collected from each farm contained thiouracil. In the absence of any evidence of abuse, no further action was taken.

3. Testosterone. Testosterone is a naturally occurring sex hormone, which is banned from use in the EU as a growth promoter. A serum sample, collected from one heifer on farm, exceeded the UK Action Level. A subsequent investigation on farm suggested that no misuse of testosterone had occurred and showed that five follow-up samples were compliant. It was concluded that this represented a natural occurrence and no further action was taken.

b) Veterinary medicines

1. Nicarbazin. Nicarbazin is a coccidiostat that is widely used in production of chicken meat. Prior to 2011, no EU Maximum Residue Limit (MRL) had been established for nicarbazin. In the UK, the MRL established by the WHO-FAO Joint Expert Committee on Food Additives (JECFA) of 200 µg/kg had been adopted as the UK Action Limit. Residues of nicarbazin above the JECFA MRL were detected in the liver of three chickens in 2011. However, the EU adopted an official MRL for nicarbazin of 15,000 µg/kg during 2011. All three of the results were far below the newly-established EU MRL and all follow-up investigations were cancelled.

2. Nitroxynil. Nitroxynil is an anthelmintic drug, which is active against immature and adult liver fluke and some gastro-intestinal roundworms in cattle & sheep. It has an EU MRL in muscle & liver, but has no EU MRL in milk (or in any other country). However, an ambiguity in the wording of the product licence, may have mistakenly given the impression that it could be used to treat dairy cows in the dry period. Residues of nitroxynil were detected in farm bulk tank milk from four producers (1.2 – 8.8 µg/L). Following consultation with the UK Veterinary Medicines Directorate and the Food Standards Agency, it was agreed that milk from these animals could continue to enter the food chain, as there was no risk to human health from consuming the milk. It was agreed that a threshold of 40 µg/L (in line with GB) would be used as a trigger for a risk assessment - on a case-by-case basis – in addition to on-farm follow up visits, which would occur in response to any finding of nitroxynil. On farm investigations took place and advisory letters were issued to farmers. The follow-up samples indicated that the milk concentrations continued to decline in all cases. No further action was indicated.

c) Contaminants

1. Cadmium. Cadmium was detected at concentrations ranging from 1.5 – 2.2 mg/kg in four bovine kidney samples. In the EU, a Maximum Permitted Limit of 1.0 mg/kg has been established for this heavy metal. The corresponding muscle samples from all four animals were compliant. No obvious sources of environmental contamination were found at the on-farm investigations. It was concluded that the results were most probably due to the age of the animals (which were at least seven years old) as tissue cadmium concentrations tend to increase with age. No further action was taken, other than to flag the herds on APHIS for further sampling at slaughter. Subsequently, two further kidney samples, collected at slaughter tested non-compliant for cadmium, again with the corresponding muscle samples being found to be compliant.

2. Additional testing on NSS samples

The analytical method used to detect hormones in the NSS in Northern Ireland is capable of detecting a wide range of hormones, in addition to the compound(s) specifically targeted in the NSS. This section details those positive results found as a result of this “non-targeted” analysis.

a) Prohibited and unauthorised substances

1. Zeranол. Zeranол is a growth promoting hormone and taleranол is its principal metabolite. Administration of zeranол and taleranол to food-producing animals is banned in the EU. However both compounds, and other related metabolites, can be found naturally in urine from various animal species, if their feed contains zearalenone, a chemical produced naturally by certain *Fusarium* fungi. Zeranол/taleranол and the *Fusarium* spp. toxins were confirmed in urine samples taken from two cattle. A statistical model, developed at VSD for cattle, indicated that one of these was due to metabolism of the naturally-occurring fungal metabolites, and probably not as a result of zeranол abuse. No further action was therefore taken. In the second case, the statistical model suggested that the animal was not part of the normal population. An on-farm investigation was therefore carried out. No evidence of abuse of zeranол was found and the original animal (and four others) was re-sampled. All were compliant and therefore no further action was proposed.

2. Testosterone. Testosterone is a naturally-occurring male hormone. It is illegal to administer testosterone to food-producing animals to promote growth in the EU. Residues of testosterone were detected in a male bovine urine sample at a concentration greater than the laboratory's statistically-based upper limit of normality for steers. At a farm follow-up visit, no evidence of hormone abuse was found, and no further action was taken.

3. Boldenone. Boldenone is a growth-promoting hormone. It is illegal in the EU to administer boldenone to food-producing animals. However, it is known that boldenone and its metabolites can occur naturally if certain natural chemicals are present in the animals' diets. In addition, it can occur in urine samples (especially those taken on farm) if faecal contamination of urine has occurred. 1,4 Androstadiene-3,17-dione (ADD, a metabolite of boldenone) was observed in the urine of one steer. No evidence of hormone abuse was found at the farm, and follow-up samples were compliant. No further action was taken.

b) Veterinary medicines

No non-compliant results.

3. Bovine QA Scheme

Bovine QA samples are taken at abattoirs, and are designed to provide retrospective surveillance data. As a consequence, carcasses are not detained pending the laboratory result.

a) Prohibited and unauthorised substances

1. Zeranол. Zeranол is a growth promoting hormone and taleranол is its principal metabolite. Administration of zeranол and taleranол 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 (and/or other related metabolites), a chemical produced naturally by certain *Fusarium* fungi. Taleranол and the *Fusarium* spp. toxins were detected in one bovine urine sample. A statistical model, developed at VSD, indicated that these results were

due to metabolism of the naturally-occurring fungal metabolites, and probably not as a result of zeranol abuse. No further action was taken.

2. Testosterone. Testosterone is a naturally-occurring male hormone. It is illegal in the EU to administer testosterone to food-producing animals to promote growth. Residues of testosterone were detected in two male bovine urine samples at a concentration greater than the laboratory's statistically-based upper limit of normality for steers. At farm follow-up visits, no evidence of hormone abuse was found, 5 urine samples collected from each farm tested compliant, and no further action was taken.

b) Veterinary medicines

No non-compliant results.

4. Meat Inspection Scheme

Under this Scheme, the carcass is detained at sampling, and excluded from the food chain if a non-compliant result is obtained.

a) Prohibited and unauthorised substances

No non-compliant results.

b) Veterinary medicines

1. Oxytetracycline. Oxytetracycline is an antibiotic that is licensed for use in a wide range of animal species. Residues of oxytetracycline above the MRL were found in the muscle of ten cattle. Two main causes for the residues were identified, during on-farm investigations. In four cases, there had been a breakdown in communication between the herd owner and either his PVP or the herd keeper, that resulted in the animals being presented for slaughter before the withdrawal period had expired. In a further three cases, the animal had been purchased shortly before they were submitted for slaughter and accurate Food Chain Information was not supplied to (or sought by) the purchaser.

2. Penicillin G. Penicillin G is an antibiotic that is licensed for use in a wide range of animal species. Residues of penicillin G above the MRL were detected in a muscle sample from the carcass from a bovine. An on-farm investigation revealed that medicines records were incomplete and unclear. However, the farmer maintained that he had not treated the animal in question.

3. Amoxicillin. Amoxicillin is an antibiotic that is licensed for use in a wide range of animal species. Residues of amoxicillin above the MRL were detected in a muscle sample from the carcass from a bovine. The animal was a direct import from the Irish Republic. Information was passed on to the relevant authorities for action.

4. Ampicillin. Ampicillin is an antibiotic that is licensed for use in a wide range of animal species. Residues of ampicillin above the MRL were detected in a

muscle sample from the carcass from a bovine. An on-farm investigation revealed that the drug had been administered to the animal in question by a part-time employee, who failed to record the treatment in the medicines records. The animal was inadvertently sent for slaughter before the end of the withdrawal period.

5. Sulphamethazine. Sulphamethazine, at a concentration of more than 100 times the MRL was detected in the carcass of a cull cow. In addition, a lower concentration of sulphadiazine, 40% above the MRL, was detected in the same animal. Although it was established, at an on-farm investigation, that the animal had been treated with sulphadiazine, there was no obvious explanation for the presence of the very high sulphamethazine concentrations.

6. Marbofloxacin. Marbofloxacin, a fluoroquinolone antibiotic, was detected (253 µg/kg) above the MRL (150µg/kg) in the muscle from one bovine. The medicines records on the farm showed that it had been treated twice and the withdrawal period adhered to. It was suggested that the poor physical condition of the animal may have prolonged the excretion of the drug & contributed to the violative finding.

7. Nitroxylin. Nitroxylin was found in the muscle of a bovine at a concentration of 516 µg/kg. At a farm follow-up, the medicines records showed that the animal had been treated 68 days prior to slaughter (withdrawal period 60 days). It was suggested that a mistake had been made in estimating the weight (and hence the dose) of the drug administered.

5. Pigs Testing Scheme

At Phase 1, the carcass is not detained at sampling, but if found to contain non-compliant residues, the producer is allocated to Phase 2 intensified sampling with carcass detention. Non-compliant carcasses at Phase 2 are condemned. (After 3 consecutive, clear rounds of Phase 2 sampling, the producer is returned to Phase 1 sampling).

a) Prohibited and unauthorised substances

No positive samples were found.

b) Veterinary medicines

1. Dihydrostreptomycin. Dihydrostreptomycin is an antibiotic that is licensed for use in a wide range of animal species. Dihydrostreptomycin residues were detected, above the MRL, in three kidney samples. In one case, which occurred on an otherwise well-run farm, it was suspected that accidental mis-identification of a pig led to an animal being sent for slaughter prior to the end of the withdrawal period. In a second case, a mistake was made regarding the withdrawal period and in the third case, it was suspected that the medicine had been administered twice to the animal concerned, but that only one treatment was recorded in the medicines records. Samples were collected from 60, 17 and

60 pigs at intensified Phase 2 sampling. No non-complaint results were obtained and the three producers were returned to Phase 1 sampling.

2. Chlortetracycline. Chlortetracycline is an antibiotic that is licensed for use in a wide range of animal species. Chlortetracycline residues, in excess of the MRL, were detected in a kidney sample taken from two fattening pigs. In the first case, the on-farm visit showed that medicines records were adequate. The animal in question had not been treated with this medicine, although the farmer (a licensed home-mixer of medicated feedingstuffs) had prepared chlortetracycline-containing feeds for treatment of sows on the farm. It was concluded that the most probable cause of the positive was that a small amount of medicated feed on a trailer was covered with unmedicated feed and that this mixture was accidentally fed to the fattening pigs. In the second case, it was concluded that the affected pig had had access to a small amount of medicated feed in a wheelbarrow that had been intended for weaning pigs. In each case, a total of 60 pigs were sampled over three rounds of intensive Phase 2 testing. All were compliant and both producers were returned to Phase 1 sampling.

3. Marbofloxacin. Marbofloxacin is an antibiotic that is licensed for use in a wide range of animal species. Marbofloxacin residues, in excess of the MRL, were detected in a kidney sample taken from a fattening pig. Medicines records showed that the animal in question, along with several others had been treated with marbofloxacin and suggested that the withdrawal period had been observed. No obvious cause of the violative residue was noted. Samples were collected from 50 pigs over three rounds of intensified Phase 2 testing. All were compliant and the producer was returned to Phase 1 sampling.

4. Sulphadiazine. Sulphadiazine is an antibiotic that is licensed for use in a wide range of animal species. Residues of sulphadiazine were detected in the carcass of one pig, taken at Phase 2, arising from a Phase 1 positive from 2009. The carcass was condemned and the remaining 79 samples collected from this producer (over a total of four Phase 2 sampling times) were compliant. The producer was returned to Phase 1 sampling.