

Page 116-117 of the Danish Pig Industry Quality Manual

5.1.2 Monitoring of residues

The Danish industry has built up a food surveillance programme to detect the presence of residues in all foods including meat. The following categories of residues are included in the surveillance programme (see also Appendix 7):

Antibiotics and chemotherapeutics
Hormones and growth promoting substances
Pesticides, including dioxins and dioxin-like substances
Heavy metals.

The surveillance programme is planned by the Danish Veterinary and Food Administration in compliance with EU legislation 96/23/EEC.

The surveillance programme is undertaken by The Danish Veterinary and Food Administration which carries out analysis and sampling. The self-audit component is performed by the slaughterhouses which are responsible for random sampling. The samples are analysed at the slaughterhouses by approved laboratories.

Antibiotics and chemotherapeutics

For the last 20 years, the Danish Veterinary and Food Administration has conducted random tests for residue concentrations of antibiotics and chemotherapeutics in meat in compliance with Danish legislation. The analyses are based on biological and chemical tests of kidney tissue in accordance with EU requirements.

In the last ten years, these analyses have detected minimal presence of residues of antibiotics and chemotherapeutics in the range of zero to 0.23% of the samples analysed. In recent years, between 18.000 and 20.000 samples per year have been analysed (see Appendix 7). An increase in the number of positive samples of Sulphadimidin in pigs in 1989 and 1990 resulted in an industry ban on its use in pig production.

If the analyses carried out as part of the statutory surveillance reveal any presence of residues, the result is reported to the District Veterinary and Food Control Authorities, who then assess whether legislation has been transgressed, in which case the producer will receive a fine. A veterinarian visits the herd, usually in company with the local vet and a report on the use of antibiotics is then prepared. On the basis of this report, the District Veterinary and Food Control Authorities then decide whether the case should be submitted to the police for criminal investigation.

If the analysis from the self-audit system reveals presence of a residue at a level **below** the permitted maximum level, the producer is informed and a report is produced as part of the self-audit documentation.

If presence is established **above** the permitted maximum level, the authorities are notified and a pig veterinarian will visit the herd to discuss improvements. A report is then sent to the producer and the slaughterhouse company, who then determine whether or not to add the producer to a special list, which entails additional testing of future deliveries. An example of the Danish approach is also provided by the action taken in respect of the antibiotic Sulphadimidine, whose usage for livestock is still permitted in some countries. A rise in the number of samples showing residues of Sulphadimidine in pigs began to appear in 1989 and 1990. Although the problem was primarily due to the substance remaining in the production environment rather than any malpractice by the farmer, it was decided to introduce a ban on its use in pig production in Denmark.

Hormones

There is a ban in the EU on usage of hormones for growth-promoting purposes. Since 1986, Danish meat has also been analysed on a random basis for presence of residues of hormones. The analyses for various hormones are conducted on samples of muscles, urine, blood and faeces. Residues of hormones have never been detected in Danish pork (see Appendix 7).

Pesticides and PCB

The use of chlorine-based pesticides and PCBs (Polychloride biphenyls) by farmers is not permitted, and nor must any such products be held in areas where food or feedstuffs are being produced. The use of DDT, Dieldrin and Lindane was banned in the early 1980s.

Since the 1980s, the Danish Veterinary and Food Administration has planned and conducted random tests for residue concentrations of pesticides and PCBs in food – both in animal and vegetable products (See Appendix 7). The random tests for pigs are performed on kidney fat and for a number of years only trace amounts of pesticides and PCBs have been detected. However, the maximum recommended limits have never been exceeded. Low levels of residues of these substances are still occasionally detected because of their slow biodegradability.

Dioxins

Since 2003, the Danish Veterinary and Food Administration has conducted dioxin analysis in slaughter pigs. Approximately 100 samples are analysed for dioxin per year and so far, there have been no instances where the EU's limits have been exceeded.

Heavy metals

The random tests for residues of heavy metals in meat are undertaken by the Danish Veterinary and Food Administration (see Appendix 7). Samples of muscles, kidneys and liver are examined for residues of lead, cadmium and mercury and for trace elements of nickel, selenium and chromium.

For a number of years, only a single sample has revealed residues of heavy metals above the Maximum Recommended Level (MRL). The low levels of mercury and selenium have been unchanged in the last ten years, while that of cadmium, lead, nickel and chromium has been decreasing.

5.1.3 Physical risks

All extraneous matter such as bone fragments, cartilage, remnants of equipment and labels are regarded as foreign bodies.

Through strict enforcement of product specifications and comprehensive training of employees, the industry works to ensure that pig meat is free from bones, cartilage and other foreign bodies. In addition, all finished products are subject to detailed inspection. Where defects are found, these are rectified and the working processes are examined and steps taken to avoid any repeat occurrence.

5.1.4 Biological risks

Disease

Healthy livestock are crucial to production of safe food. Danish farmers seek to prevent transmission of diseases from the surrounding environment, through pest and insect control and by safeguarding the farm buildings against intrusion by predatory animals.

Good housing design and batch or multi-site production systems also help in ensuring high health levels.

Bacteria

The Danish industry implements rigorous controls to prevent the spread of pathogenic zoonotic bacteria. These are described in detail in Section 5.2.

Resistant bacteria

In Denmark, strategies have been implemented to prevent the development of resistant bacteria. This approach led to a ban on the use of the growth promoters avoparcin and virginiamycin and a voluntary ban on the use of all antibiotic growth promoters in Danish pig production from January 2000.

The Danish authorities monitor the development of resistant bacteria by regular analysis of random samples from animals, meat products and the human population (DANMAP).