

SUMMARY

Rendering is the only biosecure treatment option that can handle all three categories of animal by-product material AND produce products of value to the animal feed chain.

ANIMAL BY-PRODUCTS AND BIOSECURITY

If animal by-products (ABPs) are not managed appropriately they present a serious health risk.

ABPs consist of microbiologically active material that may also contain pathogens such as viruses, bacteria, protozoa, parasites, prions, toxins, drug residues, and other chemicals. These active materials must be reduced to safe levels, eliminated, or sequestered to minimize their potential hazard.

The primary purpose of treating or disposing of ABPs is the protection of environmental, animal and public health against these potential microbiological threats.

PROCESSING OPTIONS AND BIOSECURITY

The processing of ABPs is highly regulated and there are rules for the storage, collection, transport, processing and disposal of ABPs and the use of ABP-derived products. Refer to the factsheet *Animal By-Products – Regulatory Controls*¹.

All processing of ABPs must be undertaken at Animal Plant Health Agency (APHA)-approved facilities and these must implement and maintain hygiene procedures based on Hazard Analysis and Critical Control Point (HACCP) principles to comply with the health rules laid out in the Animal By-Product Regulations².

The options available for biosecure processing of ABPs depend on the category of material to be processed (refer to the factsheet *What are Animal By-products?*³ for further information on categories). Possible processing options for each category are set out in Table 1, and Table 2 lists the outputs from each of the processing options.

Further information on the sustainability of the various treatment options - including rendering – can be found in the factsheet *The Circular Economy and Animal By-products*⁴.

Table 1 – Biosecure treatment options

Process	CAT 1	CAT 2	CAT 3
Rendering	✓	✓	✓
Anaerobic digestion		(✓) ^a	✓
Composting			✓
Incineration	✓	✓	✓

Notes: a = restricted ABP materials only or with preliminary pasteurisation – Refer to factsheet *Animal By-Products - Treatment Options*⁵

Table 2 – Outputs from biosecure treatment options

Process	
Rendering	<ul style="list-style-type: none"> ● Tallow – biodiesel and oleochemical feedstocks, biofuel ● Petfood and animal feed (from Category 3 ABPs) ● Meal – pet food and animal feed ingredient, fertiliser (from Category 3 ABPs), biofuel (from Category 1 ABPs)
Anaerobic digestion	<ul style="list-style-type: none"> ● Biogas – biofuel/electricity generation ● Digestate – soil conditioner
Composting	<ul style="list-style-type: none"> ● Compost – soil conditioner
Incineration	<ul style="list-style-type: none"> ● Energy - optional energy recovery ● Ash – soil conditioner (depending on fuel source and regulatory approval)

Rendering

Rendering provides safe processing of all three categories of ABPs with the advantage of useable end products. Further information is given later in this factsheet.

Anaerobic digestion and composting

APHA approved anaerobic digestion (AD) and composting facilities can process Category 3 ABPs, restricted Category 2 ABPs and with a preliminary pasteurisation step, AD plants can also process other Category 2 materials. AD plants produce renewable fuel in the form of biogas and both processes give rise to soil conditioning products. AD plants receiving ABPs must meet the processing criteria set out PAS 110⁶ which specifies the pasteurisation requirements for the production of digestates.

Incineration

Like rendering, incineration or co-incineration (if energy is recovered) can handle all three categories of ABP material but the process does not produce the same range of useable products. Subject to regulatory approval, the ash from incinerated Category 1 meat and bone meal can be used as a renewable fertiliser that is rich in key nutrients and is an effective replacement for traditional, expensive, manufactured fertilisers.

RENDERING AS A BIOSECURE PROCESS

The rendering process

Rendering provides safe and secure treatment of ABPs to break the disease cycle (see Figure 1), making the material safe and available for reuse in a range of applications.

The process uses heat and pressure to destroy pathogens and stabilise the ABPs. This kills harmful microorganisms, eliminates disease risk and removes water (45-65% by weight), preventing further decomposition. The remaining material is segregated into fat and protein fractions for further processing into useful low carbon products. Further information about the rendering process can be found in the factsheet *Rendering – Process and Benefits*⁷.

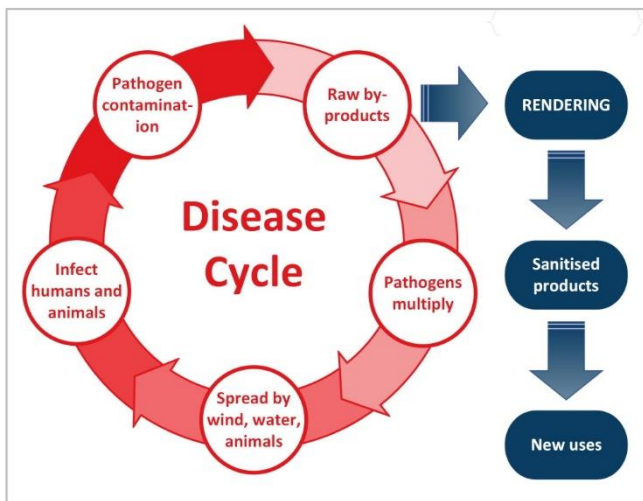


Figure 1 - Rendering breaks the disease cycle

Disease control in rendered products

During the rendering process checks are carried out and samples collected for testing, to fulfil regulatory requirements. These ensure the rendered products are fresh and safe to use.

Specific and approved methods, typically from the British Standards Institute, are used to analyse the protein meal and oil products for microorganisms, such as Salmonella and Enterobacteriaceae, to ensure these materials are fit for feed.

Disease outbreaks and fallen stock

The collection and disposal of fallen stock without undue delay is an important component of farm biosecurity in both normal and disease outbreak scenarios.

The Government has obligations to ensure the safe disposal of fallen stock to safeguard both public and animal health which normally means disposal by rendering or incineration. However, under ABP legislation, the Government does have limited powers to authorise on-farm burial under certain circumstances such as for remote locations.

At times of crisis, FABRA UK renderers provide essential secure animal disease control and waste disposal services to Government and its agencies.

REFERENCES

1. Animal By-products – Regulatory Controls, FABRA Factsheet FABRA-FS-006
2. EU Animal By-Product Regulation 1069/2009 implemented by Commission Regulation 142/2011 brought into force in the UK under separate implementing legislation by the devolved legislatures.
3. What are Animal By-products? – Factsheet FABRA-FS-001.
4. The Circular Economy and Animal By-products Factsheet FABRA-FS-004.
5. Animal By-Products - Treatment Options, Factsheet FABRA-FS-009.
6. <https://www.wrap.org.uk/content/bsi-pas-110-specification-digestate>
7. Rendering – Process and Benefits, Factsheet FABRA-FS-002.

This factsheet is produced by FABRA UK, the Foodchain & Biomass Renewables Association and is based on our current understanding only and is subject to change. This factsheet must not be relied upon as reflecting the official UK Gov position and FABRA UK takes no responsibility for the accuracy of this information.

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