



Shellfish Waste Utilisation and Disposal

In recent years, waste policy and legislation has focussed on promoting sustainable utilisation of resources and reducing emissions. Concerns about farm animal diseases, particularly those transmissible to humans, have introduced additional controls resulting in the closure of traditional routes for utilising waste and added further restriction and costs to waste disposal.

This has affected the seafood industry which faces major problems due to the current lack of infrastructure to treat different types of seafood waste, particularly shell. This is causing problems to companies throughout the UK.

Waste Legislation

The production, utilisation, handling, transport and disposal of all waste, particularly animal waste, are strictly regulated by numerous pieces of complex waste legislation. The costs of operating waste facilities to the specific standards are passed onto disposers of waste, encompassing the polluter pays principle.

Of primary importance for all animal waste are the Animal By-product Regulations (ABPR) which came into force in 2003 after concerns about Foot & Mouth disease and BSE. They introduced greater controls on seafood waste and, for the first time, on shell which was included without any formal risk assessment.

In addition, many other pieces of legislation stipulate additional requirements for waste activities. These include; Waste Framework Directive 91/156/EEC, Environmental Protection Act 1990, Pollution Prevention and Control Regulations 2000, Waste Management Licensing Regulations 1994, Landfill Tax Regulations 1996, EU Landfill Directive, Food and Environment Protection Act 1985 amongst others.

It is extremely difficult if not impossible to get a comprehensive summary on waste legislation as so many different regulators, agencies or departments are involved. For seafood waste in England this includes Defra Animal Health, the Environment Agency, the Food Standards Agency and Local Authorities etc. Each regulator has a different remit, responsibility and concern. The complexity is compounded by differences between devolved regions.

Because of the complexity of waste legislation, what can look like a promising outlet by one piece of legislation is often stymied by another, or additional requirements only become apparent further down the line. This is usually because different regulators are unaware of other legislation that is outwith their remit.

Options for waste disposal

The ABPR permits specific waste disposal methods for animal waste, which are;

- Incineration
- Rendering including fishmeal production
- Rendering followed by incineration
- Rendering followed by landfill

- Transformation into technical products
- Used as a raw material in pet foods & animal feeds
- Digestion
- Composting
- For material of fish origin, ensiled
- Where authorised, used as a feed for zoo, circus, fur animal, hounds, maggot / worm (as bait)

Animal waste must only be used or disposed of in premises approved under ABPR or through specific licensed or registered outlets.

Despite the apparent number of options available, in reality many are limited or unavailable for shellfish waste. For example, anaerobic digestion is not suited for hard shell, renderers do not want to take seafood waste as it taints their output (e.g. tallow), incineration is also unsuitable as shell has little calorific value meaning that it can be undesirable in an energy recovery system.

Of the main routes available (composting, land application, utilisation at sea) only composting is available for large quantities of shell, however, few facilities currently exist in the UK. Land application and utilisation at sea are heavily regulated by other legislation so are of limited availability, with utilisation at sea a non-viable option.

Disposal outlets that are available are often outside shellfish processing regions meaning shellfish waste has to be transported long distances to a suitable facility, incurring additional transport costs.

The cost of waste disposal is now significant at a minimum of £60 per tonne. This comprises £50/tonne for disposal plus approximately £10/tonne for transport. At worst, this figure can be as high as £200 per tonne. This is often too expensive for businesses to sustain and in some cases makes it very difficult for a business to continue operating. It has even forced some businesses to dispose of waste through unlicensed routes.

Industry Assistance

Seafish has initiated a number of projects and services over the past 5 years to assist industry with the issues.

Projects; land application, evaluation of options for crustacea processors, utilisation at sea, composting, digestion (aerobic and anaerobic), use of mollusc shell in aggregates as well as some more novel uses such as use of shell in filtration media and extraction of high value chemicals from scallops and *Nephrops*.

Legislation; we have liaised with regulators on several issues, notably the Animal By-products Regulations, Food & Environmental Protection Act (for disposal at sea), Waste Management Licensing, used cooking oils etc. Other organisations such as the National Industrial Symbiosis Programme (NISP) have also made very useful consultations and changes on our behalf.

Information; we have freely provided information on waste on our website, we distributed information and newsletters to all sectors of industry and continue to look into this issue and possible solutions on behalf of businesses. We've provided a waste advisory service for businesses to ensure they receive targeted information and advice. We established the Waste Strategy Group which included industry and regulators, to enable constructive discussion and agree a way forward.

Where does this leave the processor?

The following table summarises the main options available for shellfish processors.

Option	Issues	Comments
Landfill	<ul style="list-style-type: none">• Not permitted for raw or untreated material• Former foodstuffs (cooked) products permitted until July 2009• Landfill sites may not be licensed for it	Landfill is only available for some products for a short period of time so should not be relied on indefinitely.
In-house treatment (prior to using the products for other purposes)	<ul style="list-style-type: none">• Major legal restrictions• Very high costs• Lack of outlets for converted products• Economies of scale• Food companies are often unable to treat wastes on site	Only suitable for specific products. Can be effective as a local solution but it is not available in every region or for every product or company. There are major issues with it so cannot be relied on as a wide scale solution.
Waste disposal outlet	<ul style="list-style-type: none">• Lack of suitable facilities• Not all approved methods suitable for shell• High costs	Businesses must use licensed companies but the high costs and limited availability make them difficult to access. There are more facilities coming online but the costs are too high for many.
Utilisation at sea	<ul style="list-style-type: none">• Only permitted for certain shell types• High costs• Major legal restrictions	Not a viable outlet for the majority of processors. Cultch and bait are permitted but they are usually local solutions that may be seasonal.
Land application	<ul style="list-style-type: none">• Legal restrictions• Product needs treating before used on land• Limited uptake across the UK• Costs can be high	Worth considering for shell but there are no guaranteed outlets for the products. Must be undertaken in conjunction with local farmer.

Conclusion

Despite all the effort that has gone into this issue, it has been impossible to determine an answer to this problem. In fact there is no singular answer and certainly none that are widely affordable. This is an extremely frustrating situation for processors who feel that their very real problems have largely been ignored.