

Cynulliad Cenedlaethol Cymru Pwyllgor Amgylchedd a Chynaliadwyedd	National Assembly for Wales Environment and Sustainability Committee
Egwyddorion cyffredinol Bil yr Amgylchedd (Cymru)	General principals of the Environment (Wales) Bill
Ymateb gan Mechline Developments Ltd	Response from Mechline Developments Ltd
EB 37	EB 37



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Consultation: General principles of the Environment [Wales] Bill.

Mechline Developments Ltd are submitting this evidence to the Environment and Sustainability Committee of the Assembly, in response to its consultation on the Environment (Wales) Bill. We are generally supportive of the Bill and its objective of minimising waste, enhancing recovery and re-use of materials and reducing the amount of food waste sent to landfill. Our concerns relate to the 'single solution' model for separate collection of commercial food waste to Anaerobic Digestion - as well as placing a blanket ban on commercial food waste to sewer, which has failed to consider significant innovation in this sector. As written, this Bill will prevent certain on-site innovative technologies from being used in Wales and we believe this is a significant opportunity lost for Wales. The evidence we present shows that our *on-site* process (enzyme bio-digestion accompanied by a waste reduction programme) **does** and **should** have a place in the sustainable management of end-of-life food waste in Wales. We call for an urgent amendment to the Bill to allow commercial foodservice operators to use enzyme bio-digestion processes, where it can be considered to be the most Technically, Economically, Environmentally and Practical (TEEP) solution in that given scenario.

Our substantive concerns:

- A) The Cost Benefit Analysis¹ created by Eunomia for the Welsh Government to examine if a ban on food waste to sewer could be justified is *fundamentally incorrect* when applying the assumptions to on-site enzyme bio-digestion and therefore *cannot* be relied upon.**
1. This assessment only focused on maceration of (*untreated*) food waste to sewer. We know that if this model were run again, using metrics for use of enzyme bio-digestion, there would be an economic and environmental case for sending some *treated* food waste to sewer. Our main criticism of this model is that:

¹ Eunomia (May 2013). Report for Welsh Government: Additional Policy Options Analysis for Welsh Government: Costs and benefits of Extending Waste Framework Directive requirements, Waste Treatment Restrictions, Requirement to Sort and a Ban on the Disposal of Food waste to Sewer. Chapter 4 focuses on the ban on disposal of food waste to sewer.

- a. Enzyme bio-digestion **does not** cause drain blockages², which as Eonomia puts it ‘*contributes significantly to the total impacts*’ (pg 50).
 - b. The **Water Research Council (WRc)** were commissioned in 2013 to review the outputs from Mechline’s enzyme bio-digestion system and concluded:
 - c. ‘*Waste₂O™ is the only digestion system to gain WRc approval. To gain it, a product must be subjected to a rigorous series of technical tests. In the case of Waste₂O™’s certification, WRc independently confirmed that the waste water released from the machine meets with accepted industry norms and is 100% safe for the public sewer systems.*’ Andy Drinkwater (2013) Senior Programme and Project Manager, WRc
 - d. Enzyme bio-digestion outputs are substantially different to macerated food waste in terms of treatment requirements (and costs) at the sewage treatment works.
 - e. Enzyme bio-digestion uses at least *50 times less water* than maceration
 - f. Enzyme bio-digestion consumes slightly more than 1/3 of the energy used in an equivalent maceration process
 - g. Purchase and installation costs of an enzyme digestion system is half that of an equivalent maceration process
2. The ban on food waste to sewer (Section 34D 5 of the Environment Bill) is enhanced, through the notion of protecting the sewer network from high load organic disposal, created by traditional macerators / food waste disposers – even though domestic macerators are not affected by the proposed legislation. Waste water discharge from enzyme bio-digesters have been proven by **WRc** to cause no damage to sewers and are below the water industry norms. Yet through association our innovative British solution, with a strong Welsh Bio-Science partner will be banned due to legislative inflexibility within the current bill.
 3. In reality enzyme bio-digestion reduces food waste to a microscopic liquid suspension that has a far finer consistency than that of drinks such as milk, orange juice, shakes, smoothies etc, or from macerators fitted with dewatering equipment that the legislation *may* allow.
 4. We call on Wales to re-visit the ‘evidence’ under which they are introducing a ban on all generic food waste to sewer.

B) The Bill (as written) will have a *direct negative* impact on Welsh businesses, in two ways:

1. **Impact on Welsh Hi-Tech Bio-Science Industry.** Significantly for the Welsh economy, Mechline Developments have for 10 years, been in partnership with ‘Biological Preparations Group’ – currently employing 62 people directly, through their manufacturing base in Caerphilly and head office in Cardiff – with considerable more local businesses engaged through their supply chain. They are UK and European market leaders in biological science, basing their products on microbial, enzyme and plant extract technology – they spend approximately £2.5 million with their UK based suppliers, with Welsh suppliers including Gwalia, Tower Print, Brenntag, SEIP, Cambrian, Albany Oak, Berry Smith,

² WRc were commissioned in 2013 to examine the sewer outputs from Mechline’s ‘Waste₂O’ system and agreed these outputs are *fundamentally different* to macerated food waste and certified the outputs as being ‘*100% safe for the public sewer system*’. We can share these reports and certification from WRc if the Welsh Government require.

Teamworks and others. They are already suppliers for all 400+ UK enzyme bio-digestion systems as well as those in Europe, the USA and the Middle East. Furthermore the export market for Mechline's enzyme bio-digestion system is currently flourishing in the USA and Middle East (for example the major USA supermarket chain Walmart is currently trialling the system), all of which provides the potential for greater employment growth for Biological Preparations in Wales and their supply chain. Banning usage of such technologies could create a business vacuum and do irreparable harm.

- 2. Impact on hospitality and food service sector.** The Catering Equipment Suppliers Association (CESA) indicate this sector is a significant employer with 15,121 catering outlets in Wales, with approximately 2,400 outlets predicted to have Food Waste Disposal (FWD) units. Although, for environmental reasons, many of these maceration type processes are not a good food waste disposal system - from the operational and functionality perspective of a commercial kitchen, they provide a very hygienic (bin and vermin free) solution. Introducing separate collections, especially when space is limited, could impose an undue cost and bureaucracy on sector that is only just recovering from deep recession.

C) The 'single solution' separate collection model that the Environment Bill advocates, could for some hospitality and food service sector establishments, cause considerable problems and costs that have not been addressed. The 'TEEP' test should be applied.

1. Part 4, Section 67 (6) of the Environment (Wales) Bill, states that the Welsh Ministers may by regulations, allow food waste to be sent to sewer in specified 'circumstances'. We would like clarity over what would qualify as an 'exception' to this rule.
2. Under the Waste Framework Directive, waste producers can deviate from the rules for separate collections of dry recyclables (not currently applied to food waste) if they apply the 'practicality test'. Under this test separate collections are only necessary if they are technically, environmentally and economically practical (the 'TEEP' test). This is intended to be quite a high legal hurdle, but does allow for some flexibility in some circumstances. We believe hospitality and food service establishments should be exempt from separate collections of food waste and allowed to discharge food waste to sewer, under TEEP principals, in the following scenarios:
 - a) **Where bin storage space presents a major risk to the business.** Bin / Waste storage areas can have a lot of issues associated with them such as unsightly high street storage, mal odour and vermin or insect infestations. If the food waste bin area is particularly close to the kitchen, this could create a major hygiene and infection risk to the business – which is one reason why macerators became so popular. Similarly, if the logistics required to transport the food waste creates transfer risk (contamination) or requires significant additional infrastructure, possibly because storage space simply does not exist or is impractical, or where 'hygiene' risk (especially in Hospitals, Care Homes, Schools etc) was identified as a major issue, then we believe businesses should be able to opt out of these schemes, if it put their business at genuine risk or cost disadvantage.

- b) **Where the AD plant is too far away to make it the best economic or environmental solution for the food waste.** As yet, Wales have not constructed all the AD plants they need to meet their food waste requirements – and there is always a risk the proposed plants will not get built. This could add considerable ‘food waste miles’ and cost onto collection rounds, the burden of which will fall on the catering establishments in Wales. Mechline are in the process of commissioning a Life Cycle Analysis (LCA) from one of the UK’s leading waste consultancies to determine the point at which AD does not make sense and enzyme digestion becomes economically and environmentally more favourable. In these circumstances, the producers **should** be able to choose enzyme bio-digestion as their preferred food waste treatment route.
- c) **In the healthcare sector/ NHS Wales:** Mechline have installed over one hundred enzyme bio-digestion units in hospitals in England, Wales, Scotland and Northern Ireland. At Stockport NHS Foundation Trust near Manchester, the hospital replaced their macerators with enzyme digestion units and have shown projected savings of more than **£96,000 over 5 years, with payback on the machines achieved within 12 months** (see NHS Case Study in Appendix A). Primarily hospitals use macerators to get rid of food waste because it provides them with a very practical simple solution to manage their hospital food waste simply. Adding extra bin routes (through the hospital) as well as providing additional collection points will cost the NHS time, money and resource. We are concerned the Welsh Government has not assessed the impacts of this legislation on the NHS or checked they have the capacity to meet these requirements. We believe they should also be given the choice to ‘opt’ out of this scheme.
- d) **In high security settings (for example at the Ministry of Justice, Ministry of Defence, Prisons, Hospitals etc):** These sites require very minimal vehicle movements, to reduce security risk and may not wish to introduce additional collections for food waste – we therefore believe this provides good enough grounds for an exemption.
- e) **Plan B?** : Any disruption of the collection system due to bad weather, mechanical breakdown or through disputes will only exasperate storage issues and health risks from putrefying waste. There is a ‘cost’ to ensuring that a satisfactory Plan B model exists. This does not appear in the Bill or Explanatory notes.
- D) Treatment of *all* food waste through the planned Welsh Anaerobic Digestion network should be considered as a ‘risk’. Enabling secondary choices could help ‘de-risk’ this proposal.**
1. Although we are supportive of AD being used to recover food waste for the energy from waste principle as yet Wales have not constructed all the AD plants they need to meet their food waste requirements. There is always a risk that construction is severely delayed through lack of finance, planning permission and/or environmental permits – the latter of which both require public consultation. There is always the risk that an existing plant can also have an operational failure and close.

2. Our enzyme bio-digestion system (and potentially others), and other technologies can provide a service in the 'gaps' that cannot be serviced by the current infrastructure, or in scenarios where a proposed plant does not get built (or fails). In a scenario where the plant does not get built, a whole region could meet TEEP criteria and it is vital a hospitality establishment, can choose to reduce their business costs by selecting other treatment routes. We do not require public consultation or planning scrutiny, or require complex financing (or external funding of any sort) and long-term commitments for our treatment process.
3. As explained, we are in the process of commissioning a Life Cycle Analysis (LCA) from one of the UK's leading waste consultancies to determine qualification of TEEP principles, relative to location, logistics, energy consumption / pollution, site conditions, infrastructure costs, risk, etc, to qualify where enzyme bio-digestion becomes economically and environmentally the more favourable solution than other options. By not keeping the door open for such technologies such as enzyme bio-digestion, we believe Wales will have missed a key opportunity to build a resilient food waste strategy.

E) Additional food waste prevention and reduction strategies will need to be introduced (and paid for) alongside AD infrastructure to ensure this part of the waste hierarchy is delivered.

1. There is no incentive for AD or In-Vessel- Composting operators to encourage food waste prevention or reduction in Wales, because they make generate more profits the more food waste they process. This means the Welsh Government will need to subsidise communication campaigns aimed at food waste reduction and re-use, to ensure this part of the waste hierarchy is delivered.
2. When customers use systems such as enzyme bio-digestion, once the initial capital investment has been made, running costs are reduced the less end-of-life food waste that is thrown away. In Mechline's case all Waste₂O units are now sold with inbuilt bluetooth technology (which in turn helps us sell our machines), which allows the user to instantly see how much waste (and money) they have thrown away *that* day (with collection rounds you may only find this out once a week or even once per month). This waste reduction system was developed with waste specialists in Ricardo-AEA Group, who based the concept (and accompanying waste reduction programme) on WRAP's work, both of whom are experts at maximising waste reduction at customer premises. When we commission an LCA on our process, we intend to monetise the benefits of our waste reduction strategy (using WRAP's look-up tables) and share this with the Welsh Government. Mechline are already seeing customers using our metric management techniques, reduce food waste by up to 50%.
3. We would also highlight recent French legislation, which prohibits supermarkets from sending edible in date food to waste processing facilities. Instead they must set it aside and facilitate distribution to food charities. The new Environment (Wales) Bill, could also

adopt a holistic approach to reducing food waste and help the nation's poor and destitute – currently this is a golden opportunity, which appears to have been missed.

F) Environment Bill clarity, enforcement and cost.

1. As discussed, the Bill specifically introduces a ban on all generic food waste to sewer: 67 34D (b) 'knowingly cause or knowingly permit food waste produced on or brought onto the premises to be discharged, into a public sewer or a sewer or drain communicating with a public sewer.
2. However the Bill then makes numerous statements identifying exceptions. 34 D 6–7. Clarification is sort, over the definition and application of the '**circumstances**', '**exceptions**', and '**different**' situations that will exist, whereby discharge of food waste to sewer could be allowed. No references exist in the guidance notes, which will provide confusion with compliance issues.

G) Background to Mechline Developments Ltd and the Waste₂O Enzyme Bio-Digestion Process

Mechline are a wholly British, multi-award winning³ manufacturer of equipment to the commercial hospitality and food service industry. We have over 30 years experience in understanding how a commercial kitchen needs to function to maximise operational (profitable) capacity, ensure kitchens meet legislation and environmental and corporate social responsibility (CSR) targets.

Of note, is the patented and multi-award winning⁴ enzyme bio-digestion product Mechline Developments developed, the '**Waste₂O**' – which utilises innovative bio-science techniques and enzymes developed by Biological Preparations Group. This provides an on-site treatment solution for a commercial kitchen's *unavoidable end-of-life* food waste. End-of-life food waste is placed in the unit and treated using enzyme bio-digester technology (similar to enzymes found in your stomach), producing a 'grey water' discharge that is safely sent to mains sewer. The system operates in a very different way to maceration – both in terms of its outputs (see below) and resource usage. Maceration utilises approximately 3 times as much electricity as Waste₂O and approximately 20-36ltrs of water per minute (4,000 to 7,000ltrs per day), whereas Waste₂O uses a maximum of 600ltrs of water per day.

Mechline commissioned **WRc** (the Water Research council) to do *extensive* and *frequent* testing of the Waste₂O wastewater discharge to demonstrate the outputs are very different to macerated (untreated) food waste. They subsequently certified the outputs as being '*100% safe for sewer discharge*' – meaning they do not cause drain blockages. The small amount of organics and the water extracted from the food waste in Waste₂O is subsequently recovered at the sewage treatment works. The results (from Waste₂O samples) indicates that:

- The pH values are within the pH 6.0 to pH 8.0 range required.
- The BOD and COD values were within the range required for sewer discharge
- The suspended solids values are within and towards the lower end of the "normal" trade effluent range
- The Fats Oils and Grease values are within and towards the lower end of the "normal" trade effluent range.

Waste₂O in use in commercial environment



³ Mechline have won the Caterer & Hotelkeeper's Equipment & Supplies Award for Best Product in 2012, 2011, 2010, 2009, 2008.

⁴ CEDA Innovative Product of the Year 2010, National (FCSI)/ Catering Equipment Suppliers Association (CESA) Best Product Award 2010, Commerce Business Excellence and innovation through Technology Award (2010), and Caterer & Hotelkeeper's Equipment & Supplies Excellence Award for Hygiene & Waste and overall 'Green Award' (2010). SPACE Group Best product award (2012).

Best Product award in 2015, 2013,

National (FCSI)/ Catering Equipment Suppliers Association (CESA) Best Product Award 2010, and North Buckinghamshire Chamber of Commerce Business Excellence and innovation through Technology Award (2010).

The Waste₂O by Mechline and Biological Preparations offers a very different model of end-of-life food waste treatment than that allowed by the Environment (Wales) Bill. The enzyme bio-digestion process avoids road transport and associated energy usage and pollution and does not require financing (or on-going subsidies) by investors or the Welsh Government.

We are about to commission a Life-Cycle-Analysis (LCA), from one of the UK's leading waste management consultancy companies, that should enable a comparison of our process against the model of separate collection and AD (as well as a comparison against other treatment technologies). We believe our process won't be the best solution in all scenarios but will be the best economic and environmental option in a range of other scenarios and therefore should have a place in the hierarchy of Wales's food waste treatment options. When the results of this LCA are published, we intend to share these with the Assembly, so they can be used to inform the final published version of the Bill.

Mechline would also like to emphasise to the Assembly that the Waste₂O is now also operating at the '**waste reduction**' end of the waste hierarchy. *All our new machines are sold with integrated waste volume sensors, operated through bluetooth technology, enabling the user to instantly download and view how much end-of-life unavoidable food waste has been thrown into the system that day and to inform the operator of the associated costs associated with throwing this food away using qualified WRAP figures.* Mechlines food waste reduction strategy was designed in collaboration with Ricardo-AEA Group, who followed WRAP's food waste reduction approach. This approach understands that when customers are made aware of the money they are throwing away, it has a huge impact on their behaviour. Mechline have shown that well managed kitchens, using metric management techniques can reduce food usage by 50%. Using WRAP's look-up tables, we intend to further monetise the benefits of our food waste reduction programme in our independently commissioned LCA.

Conclusions

Andy Drinkwater – WRc – Senior Project & Programme manager.

"the Waste₂O™ really does come into its own as a complementary process for sustainable food waste management – you don't have to wait for waste to be collected and driven off-site and it doesn't block the drains, so it seems like the best option."

Mechline Developments are concerned that current 'new' technologies have not been fully appraised and costed, which means the evaluation underpinning the Bill is incomplete. As it currently stands, this will mean innovative on-site solutions are barred from use in Wales and it could inhibit the opportunity for further innovation in this sector. We are also extremely concerned the impact the new legislation could have on the Welsh High-Tec Bio Science Industry, the Welsh hospitality and food service industry, the Welsh NHS and other sites that may wish to reduce vehicle movements due to security (such as prisons).

We strongly advocate waste producers being able to apply 'TEEP' principals to determine the best technical, economic, environmental and practical route available to them for their food waste, enabling them to opt out of separate collections and where necessary discharge their food waste to the sewer network, in a way that does **NOT** cause blockages or additional costs of the Water Authorities. We support the use of AD, but do not believe it can provide a universal solution for all food waste in all scenarios in Wales and should be complimented by other non-large scale alternatives.

We call for an urgent amendment to the Bill to allow commercial foodservice operators to use enzyme bio-digestion processes, where it can be considered to be the most Technically, Economically, Environmentally and Practical (TEEP) solution in that given scenario.

We are currently compiling further research on potential impacts of our process via a Life-Cycle-Assessment, which we would aim to forward to the Committee in the coming weeks. We would also be available to give more information and oral evidence to the Committee should that be requested.

Thank you for the opportunity to make comment on the Bill.

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Appendices :
Yorkshire Water Case Study
Hospital Case study
WRC Accreditation