Liquid hauled waste

High strength organic waste for co-digestion

In managing high strength organic waste we must balance the impact on our network, the environment and the cost of treatment.

We accept high strength, carbon rich organic waste from industry at our Glenelg Wastewater Treatment Plant. Here it is treated using anaerobic treatment processes, a well-established highly efficient method of managing industrial waste.

This guideline explains anaerobic co-digestion and how to have your wastewater assessed for acceptance at our co-digestion facility.

Co-digestion explained

Treatment plant process

Current biological wastewater treatment plants introduce air and biological organisms to the coarsely filtered raw sewage. This treatment removes the organic content which forms a solid leaving behind the treated used water.

The organic solid is a biologically active sludge containing carbon and nutrients. It must be constantly removed to prevent build up in the treatment plant reactors as this may adversely affect the treatment plant processes.

The activated sludge must be stabilised by removing:

- biological instability issues due to high fraction of biodegradable organic matter present
- hygiene issues such as viruses, bacteria and other pathogens
- excess liquid held within the sludge.

We generally stabilise excess activated sludge by using gravity thickening to help remove some excess liquid before moving the sludge to an anaerobic digester. Here, the sludge is retained at a specific temperature and pH for a fixed amount of time with no oxygen. This allows the organic volatile solids to be converted into a biogas containing mostly methane and carbon dioxide. This process destroys the pathogens present.

Further dewatering may then occur before the dried sludge is stockpiled for re-use as a component of compost.

The biogas produced is then used to power combined heat and power plants helping to power the treatment plant.

Co-digestion

Co-digestion is the introduction of high strength organic waste from industry into the digester along with the treatment plant excess sludge. In some instances, this extra organic load provides a higher yield of biogas which in turn produces more electricity to offset the extra cost of accepting the waste in this manner while leaving a little in excess.

The waste is segregated at source by the producer and is transported directly to our co-digester receival facility situated at the Glenelg Wastewater Treatment Plant.

Treatment of the high strength organic waste in this way has benefits to both SA Water and the customer.

Benefit to SA Water	Benefit to Customer
• Removal of corrosive waste from the sewerage network prolonging life of the network. • Increased biogas production in the treatment plant digester offsetting electricity costs. • Removal of significant contaminants incurring treatment costs in the treatment plant. • Removal of significant volume and contaminants which frees up capacity within the network and our treatment plant.	• Reduced volume of industrial waste to sewer. • Reduced weight of contaminants being discharged to sewer. • Reduced trade waste bills due to reduction in volume and contaminants. • May resolve compliance issues due to discharges having a greater contaminant concentration that authorised limits.

Anaerobic co-digestion gives the added environmental benefits of reduced greenhouse gas production through renewable energy and removing biodegradable waste from landfill while reducing the chance of pathogens entering our groundwater system.

High strength organic waste

High strength organic waste is waste we accept at our co-digestion facility. Ideally, the waste will contain a high concentration of highly biodegradable, carbon rich contaminants.

Food industry waste is generally regarded as a plentiful and beneficial source of co-digestible material. This includes but is not limited to wastes such as:

- dairy production waste
- starch products and sugar confectionary
- brewery waste

- distillation and fermentation waste
- vegetable processing waste
- meat processing waste.

Other types of waste that may be acceptable for co-digestion are the paper industry or chemical industries such as textiles and pharmaceuticals.

We can assess any waste for co-digestion though it should be noted that some wastes cannot be accepted if they contain components that are detrimental to the co-digestion process.

Getting approval for waste to be accepted for co-digestion

Application process

If you have waste you think may be suitable for co-digestion, you can lodge a *high strength organic waste disposal application form* with our Trade Waste team. Please include as much detail as possible about the waste to help speed up the assessment process.

You will then be contacted by our Hauled Waste Officer to discuss the process in detail and ask any questions arising from your application before moving on to the next stages.

Sampling

Some preliminary laboratory testing can help indicate how suitable a waste may be, such as a measurement of how much oxygen a certain portion of the waste will consume or a measurement of biodegradable solids opposed to total solids. Your specific business will help us assess which particular tests we must carry out as part of the assessment.

Laboratory trial

Due to the unpredictable nature of industrial wastes where problems may be encountered with ratios of nutrients compared to carbon levels or the presence of toxins, it is common practice to carry out some laboratory based simulations of a co-digester using the waste being assessed. These laboratory trials scale down co-digester conditions where the effect of the waste on gas production and digester performance can be measured. The trial is carried out under exactly the same conditions as the full scale digester and runs for the retention period of waste within our digesters of twenty one days. This allows us to assess the benefits of accepting the waste, if any, and what kind of feed rates produce the best results.

Final report

Following a full assessment including sampling and laboratory trials we will produce a final report detailing the performance of the waste before making a decision on our ability to accept the waste for co-digestion.

We must also consider the volume of waste being produced and the frequency of deliveries so we may schedule volumes within the capacity of our receiving station and ultimately the digesters.

If successful, you will be issued with a high strength organic waste disposal authorisation which contains the specific conditions which must be met while delivering the waste to our co-digester.

Fees and charges

Currently we accept high strength organic waste *free of cost* [1] at our co-digestion facility. This is due to the benefit of electricity offsets coupled with the benefits to our sewerage network.

Our Hauled Waste Officer is responsible for scheduling the acceptance of high strength organic waste and will work with you directly to ensure the best logistical outcome can be met for all parties.

You will be responsible for transporting the waste to our receival station at the treatment plant on the agreed dates. Waste can be transported by any authorised liquid waste hauler. The only requirement is that the specific hauler must be fully inducted for the use of the co-digestion receival facility.

A list of authorised liquid waste haulers can be found on our website.

Further information

Liquid waste haulers looking for details on the use of our co-digestion facilities can refer to the *delivery of high strength organic waste for co-digestion guideline* available on our website

Completed *high strength organic waste disposal application forms* can be lodged by email or in writing to:

Trade Waste
SA Water House
250 Victoria Square
SA 5000

tradewaste@sawater.com.au
Fax: 08 7003 3366

Further details about ESCOSA can be found on their website http://www.escosa.sa.gov.au/

[1] Under direction from the Essential Services Commission of South Australia, subject to review to ensure costs are recovered appropriately.