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AEBN TW Presentation

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Contents

Analytical Requirements

DICTATED BY:

AUTHORITY	CLIENT
Tests results are used to monitor impact on receiving sewer/stream/ treatment plants. Your TW agreement outlines sampling frequency and discharge obligations.	Test results can aid to understand process impacts on effluent streams. Consider not only process/product wastes but also solutions used in disinfection/cleaning processes.

Analytical Requirements - **Tests**

- Generally tailored to particular industry or specific site processes.
- A Chemicals Inventory held on-site can be useful.

BATCH TREATERS	• Receive and treat a range of wastes not suitable for direct discharge to sewer. Permission to discharge treated lots is strictly controlled. • e.g. pH, Inhibition test, Cyanide, Sulphide, metals, dissolved solids, ammonia, PFAs. • Each have specific tests appropriate for likely treated flow streams.	
METALS FINISHERS	• e.g. pH, metals, fluoride. • Acidic/basic conditions.	• Metals generally in dissolved states. • Settling/floatation tanks using Alum Sulfate can accumulate F from tap water.
FOOD MFRS	• e.g. pH, BOD/COD, N, Acetic acid, solids, dissolved solids. • Contribute Carbohydrates (sugars, starches etc) increase food loads on receiving TP processes markedly. • Biochemical Oxygen Demand show readily biodegradable loads.	• Chemical Oxygen Demand show prolonged load from non-readily biodegradables. • Nitrogen-Organic contribute to BOD and COD. • pH can change if dairy bacteria present. • Salts in effluent reduce possibility for recycling use.
PLASTICS / PAINTS	• e.g. Solvents, Organic compounds. • Thousands of possibilities, knowing what is used on site is critical to appropriate monitoring.	
COUNCIL DEPOTS	• e.g. Herbicides, Pesticides. • Toxicants to treatment process or recycled use to environments.	

All Compounds Put to Sewer Have Impact

SEWERS

- Very mixed volatile environments receiving a vast range of materials from a wide range of domestic, commercial and industrial sources.
  - e.g. pH changes can create dangerous headspace gases where sulphate may change to sulphides.
  - e.g. Hydrocarbons/Solvents can cause volatile gases leading to dangerous conditions in sewers and entry points to TPs.

Treatment Plants rely on natural sewage Bacterial processes.

- Heavily aerated tanks maintain optimal conditions for natural sewage organisms to break down compounds before release of effluents with reduced and less harmful compounds to environment.
- Toxic compounds can kill-off the bacteria causing process failure and effluent quality downgrade.
- Some compounds / colours are not readily biodegradable - these may flow through systems into final effluents reducing aesthetic quality of receiving environments.
- Anaerobic tanks treat solids fats and grease with another range of sewage organisms.
- Again, toxicants can have major impacts causing process failure and highly obnoxious odours to emanate.

Sampling Methods - Variations

TYPE	CONSIDERATIONS	SAFETY
In-situ grab tank	• Stratification (flotsam-sediment-fraction separation{oils}-adherence to wall{greases}). • Pipe length. • Tanks may require constant mixing to ensure consistency of samples.	• Sample access point risks must be considered. • Heights/harness/falls/headspace gases/etc.
In-situ grab tap	• Tap Outlet to source - pipe length. • Tap outlet may be some length from outlet flowlines. Ensure flush time is sufficient to ensure stale portions not collected.	• Tap outlets should be designed to reduce pressure and allow ease of bottle filling. Consider drainage of flushed wastes.
Auto-sampler – timed or flow-weighted These can run for extended periods as case needs.	• Timed events usually every hour takes a constant volume. • Flow-weighted take a set volume every set flow volume is attained. • Each collection can be analysed separately to understand hourly variation or composited to one sample for daily variations. • Position of tubing inlet in well mixed zone.	• Samplers suck and purge initial sample so consider waste stream flow.

Sampler Devices

Ensure construct materials don't contribute compounds that contaminate sample.

- i.e. TEFLON > PFAs.
- i.e. Galvanised buckets > metals.

Documentation for Labs

CoC – Chain of Custody

Details include:

- Customer contacts for reporting and invoicing.
- Sample program sample point descriptors.
- Sampling date and times.
- Analytical tests required.
- Sample bottle list taken.
- Bottles clearly marked and match paperwork.
- In-situ data:
  - Flow/meter readings.
  - Site test values.
    - pH
    - Temperature
    - Chlorine

Lab Testing Requirements

- Compounds that could be tested are almost infinite. Labs like ALS run hundreds of tests and gear their methods to particular test concentration ranges.
- Many samples require dilution before testing to get valid results. Samples with very high concentrations can have drastic effect on Lab test instruments or even prove hazardous to staff. Please check with Labs if you suspect high/hazardous amounts are present.
- Many compounds can change rapidly within hours, over days or slowly over weeks.
- Timely delivery of samples to Labs critical ensuring tests are conducted within acceptable timeframes.
- Many require specific containers based on type(plastic/glass {reduce compound adherence, oil-grease}, clear/opaque {to reduce UV effect}.
- Compounds can be preserved using various chemicals that prolong shelf life before testing is required.
- Containers vary in size related to lab test volume sizes.

Talk to the Lab

- Good to check with Labs for their specific container needs to ensure best results are attained.
- Labs can advise on their needs and provide appropriate paperwork and containers or sampling if required.

Testing Times

- Like many services some things take time to organise. Samples can require specialised preparation before being ready to test. Some tests have long digest/incubation/run times.
  - e.g. Inhibition (Anaerobic Toxicity) runs over night for a minimum of 20 hours.
  - e.g. TKN has a 6-hour digest before instrument read preparation.
- Best to ask Labs for result availability/timeliness for your requirements.

Reporting

Labs should have **NATA accreditation** (small % of all tests may not be covered but lab integrity/results is ensured)

ALS have a team of **Client Managers** with decades of individual experience and are highly respected by their clientele.

Thanks for your time today.

Any questions?

Contact us

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