



ACCEPTANCE CRITERIA FOR INDUSTRIAL WASTE – PUB 06

This publication describes the applicable acceptance criteria for various types of waste discharged to the wastewater system

The Water Corporation's wastewater system is designed primarily to service households with normal domestic wastewater. However, we endeavour to make the wastewater system available for Industrial Wastes wherever it is safe and appropriate to do so.

Not all Industrial Wastes are compatible with our system. Before we can accept your wastewater into our sewer, we must first ensure that it's safe to do so.

Individual Assessments

We individually assess your business when you first apply for an Industrial Waste Permit.

We identify any things you need to do to make sure your sewer discharge is safe for the wastewater system. We incorporate these requirements into your Permit Conditions, as part of our contract, and as a guide for you.

Pre-Treatment Fixtures

To meet our Acceptance Criteria, we may require you to partially treat your wastewater before it discharges to sewer.

If you do need pre-treatment, then it's usually something fairly simple, like a grease trap or oil arrestor. We may specify what sort of pre-treatment process you need (if any), or any limitations on your discharge, as an outcome of our assessment when you apply for the Industrial Waste service.

What Do I Have To Do?

- Apply for the service and await your assessment, and
- Comply fully with all of the conditions on your new Industrial Waste Permit.

Why do we Need Acceptance Criteria?

Discharges to sewer which do not meet our acceptance criteria could have serious consequences for people's health or the environment.

Unauthorised discharges could result in:

- A threat to the health and safety of workers within the wastewater system
- Damage to the urban wastewater system, or poisoning of the biological processes at our treatment plants
- A threat to public health directly from your discharge, or from any sewer failures which might be caused by your discharge
- An inability to reclaim and re-use our treated wastewater, or our 'Biosolids' treatment by-products, in industry or agriculture; or

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- A threat to the environment from any failure of the sewer system, or by contaminants which cannot be removed by our treatment processes.

By applying our Acceptance Criteria, and encouraging pre-treatment at source, we can maximise the availability of our wastewater system for industrial wastes, while keeping the environment and our community safe.

Substances Subject to Acceptance Criteria

The types of wastewater contaminants that we must limit in the system, their potential impacts, and our general approach to controlling them are summarised below. The actual limits for specific contaminants and wastewater physical characteristics are provided in the tables at the end of this brochure.

Please Note: These limits may be adjusted at some locations due to localised sewer network limitations or wastewater system constraints.

Biochemical Oxygen Demand (BOD)

Wastewater with very high organic content can overload our treatment plants, or disrupt them by altering the nutrient balance within our system.

Wastewater with excessive BOD also encourages the generation of toxic hydrogen sulphide gas within the sewers. This puts our workers and the public at risk. It also causes corrosion of the cement fabric of our sewers, pump stations and treatment plants.

A range of pretreatment options exist to bring high strength wastewater into the acceptable range. In many instances simple screens or settling tanks may be all that's required.

Suspended Solids (SS)

Suspended solids can accumulate within sewers and pump stations, leading to blockages, failures and overflows. Suspended solids also result in excessive grit at treatment plants, increasing costs and risk.

We generally require an appropriate form of pre-treatment to physically separate the solids from your wastewater before it goes to sewer. Pretreatment can range from simple bucket traps in a floor drain, to large scale DAF (dissolved air flotation) units at major food processors.

Fats, Oils and Grease (FOG)

Fats, Oils and Grease can coalesce and solidify in the sewer, particularly as it cools within the underground sewer system. Water level sensors and pump switches can get fouled by grease, causing sewerage overflows when pumps fail to start. Excessive amounts of FOG waste can interfere with our wastewater treatment processes.

We generally control FOG wastes by requiring pre-treatment at the source. This usually requires a grease trap for commercial kitchens, or an oil arrestor in automotive trades. More complex biological digestion pre-treatments could be economic for larger food and beverage processors.

Metals

The main reason for limiting metals is to protect the environment, which can only absorb these contaminants in relatively small quantities. Metals entering our system are not destroyed, and will ultimately re-enter the environment.

Excessive concentrations of metals can also destroy the bacteria that we use in our biological treatment processes, and compromise their operation.

To avoid these potential problems, we place strict limits on the amounts and concentrations of metals entering our system from each individual point of discharge. These limits are set such that the sum total of all metals discharges from all of our customers remains well within safe levels for the environment.

Details of these limits for a number of specific heavy metals are outlined in the tables at the end of this brochure.

If your metal concentrations and quantities are beyond these limits, then we will not be able to accept your waste, or alternatively, we will require an appropriate pre-treatment to remove them.

Chemicals

A wide variety of chemicals exist, many of which have a variety of impacts on our wastewater system, or present risks to the ultimate receiving environment.

Acceptability of chemicals laden wastewater is assessed on an individual case by case basis, and pre-treatment techniques specific to the particular chemicals of interest may be required, if they are available.

Extremes in pH

Excessive acidity or alkalinity can cause corrosion of our sewer system and pump stations, resulting in extensive damage across a wide area. They also pose an immediate danger to our wastewater system workers.

We generally require some form of dilution or neutralisation of excessive pH prior to sewer discharge.

Temperature

Hot water can flush grease and other deposits away and concentrate it in cooler parts of the sewer system, where it coalesces again to cause blockages.

We cannot accept any discharge above 38°C, and we require that any dishwasher or washing machine wastewater is separately plumbed to bypass any grease trap, oil arrestor, or similar pretreatment processes which you might have installed.

Flammable Liquids

Flammable or volatile liquids can cause fires or explosions in sewerage systems, and are a danger to our workers. They cannot be accepted into the sewer system.

Radioactive Substances

Disposal of radioactive wastes is guided and regulated by the Radiological Council of WA, and specific limits have been set for the discharge of radioactive wastes to sewer.

If your wastewater exceeds these limits, then it cannot be accepted into the wastewater system and an alternative disposal method must be used.

Infectious Substances, Pharmaceuticals and Cytotoxic Wastes

Infectious wastes, pharmaceuticals and cytotoxic wastes – predominantly from the healthcare industry – are subject to strict supervision and controls. Guidelines for the disposal of infectious wastes, and other health industry wastes, are available from the National Health and Medical Research Council.

Generally, infectious wastes, pharmaceutical and cytotoxic wastes cannot be discharged to sewer. In most instances, NHMRC guidelines recommend high temperature incineration for these and other clinical wastes.

Stormwater

Discharging stormwater to the sewer is not permitted, except where you have specific approval from us for connecting an uncovered outdoor wash bay.

Stormwater produces high peak flows well in excess of the design capacity of most urban sewer systems. Increasing the design capacity of sewer systems to accommodate these peak flows would increase the cost of infrastructure astronomically, and is uneconomic.

Surges of large volumes of fresh water through our treatment plants can also starve critical biological processes of nutrients, causing these processes to fail.

Consequently, it is standard practice to keep municipal stormwater and sewerage systems separate, and prohibit the discharge of stormwater to sewers.

Flow Rates of Discharge

The discharge of effluent into the sewer is also dependent on the availability of reserve capacity within the sewer. Sewer systems are designed primarily for urban residential users, and associated low volume flows.

Industrial customers may need to install a balancing tank to limit the flow rate of their sewer discharges. Alternatively, the Corporation may be able to enhance the sewer system to accommodate higher discharge rates, but the discharger will be required to fund these modifications.

Flexibility of Acceptance Criteria

These acceptance criteria are based on technical considerations of wastewater collection, transport, treatment and disposal across all our wastewater catchments and schemes. In some instances, an element of judgement has been necessary in order to set uniform guidelines for concentration or mass limits on some contaminants.

Accordingly, the Water Corporation exercises some flexibility in applying the criteria – relaxing or tightening the requirements in particular cases as the need arises.

This aside, the acceptance criteria tabulated overleaf are quite robust, and based on sound technical data. They are applied without modification in most instances.

More Information?

For further information on the potential effects of various contaminants discharged to sewer, and the usual approaches that water utilities take in managing these impacts, you can refer to the national guidelines developed under the national water management strategy:

“Guidelines for Sewerage Systems: Acceptance of Trade Waste (Industrial Waste)”, November 1994, Agriculture and Resource Management Council of Australia and New Zealand.

This publication is available from the Australian Water and Wastewater Association, or Commonwealth Government Bookshops.

Of course, our Industrial Waste Officers are happy to assist with any queries you may have in relation to your wastewater discharge.

You can find more information about the Industrial Waste service on our website at http://www.watercorporation.com.au/industrialwaste_index.cfm.

Or if you prefer, please call us on 13 13 95.

Section 1: Acceptance Criteria Table for Waste Components

Units mg/L- milligrams per litre
g/d - grams per day
kg/d - kilograms per day

For the purposes of this document, mg/L is equivalent to 'parts per million' (ppm).

Waste Component	Criterion
Alkali and alkaline earth metals (sodium, potassium, calcium, magnesium)	<ol style="list-style-type: none"> 1. Refer to limits for total dissolved salts 2. Limits to protect against scaling to be set on a case-by-case basis
Aluminium	100 mg/L
Ammonia	<ol style="list-style-type: none"> 1. 200 mg/L as nitrogen when pH is not greater than 8 2. Case-by-case limits if pH above 8. 3. Case-by-case limits on pH if ammonia above 200 mg/L 4. Mass limits determined by system capacity.
Biochemical oxygen demand (BOD ₅)	<ol style="list-style-type: none"> 1. Mass limits determined by system capacity Mass alarm limits for Subiaco and Beenyup WWTPs 200 kg/d Mass alarm limit for Woodman Point WWTP 300 kg/d 2. Maximum concentration 3000 mg/L 3. Discharge not to change overall C:N:P ratio of system
Boron	Mass limits determined on a case-by-case basis
Bromine and iodine	Sum of bromine and iodine not to exceed 10 mg/L
BTEX (benzene, ethylbenzene, toluene, xylenes)	Benzene 0.08 mg/L Ethylbenzene 1.0 mg/L Toluene 1.3 mg/L Xylenes 1.4 mg/L
Chloride	<ol style="list-style-type: none"> 1. 15000 mg/L 2. Refer to mass limits for total dissolved solids
Chlorine	10 mg/L as residual chlorine
Chemical oxygen demand (COD)	<ol style="list-style-type: none"> 1. Mass limits determined by system capacity Mass alarm limits for Subiaco and Beenyup WWTPs 300 kg/d Mass alarm limit for Woodman Point WWTP 400 kg/d 2. Maximum concentration 6000 mg/L
Colour	No discharge shall be permitted which contains colour which would interfere with wastewater treatment or disposal.
Cyanide	<ol style="list-style-type: none"> 1. 3 mg/L weak acid dissociable cyanide 2. Limits on dissociable cyanide may be varied depending on composition of waste 3. Mass limits on total cyanide determined by system capacity
Flammable materials	Prohibited
Fluoride	Mass limits determined by system capacity
Glutaraldehyde	<ol style="list-style-type: none"> 1. 1000 mg/L 2. Mass limit 1 kg/d
Heavy metals	Refer to Section 2
Iron	<ol style="list-style-type: none"> 1. 100 mg/L for mass discharge less than 700 g/d 2. Concentration limits set case-by-case for mass discharge greater than 700 g/d

Waste Component	Criterion
Kjeldahl nitrogen	1. Mass limit determined by capacity of the system Mass alarm limit for Subiaco and Beenyup WWTPs 30 kg/d Mass alarm limit for Woodman Point WWTP 50 kg/d
Oil and grease (non-petrogenic)	1. No free or floating layers 2. No unstable emulsions 3. Maximum concentration of emulsified oil and grease 500 mg/L
Organic compounds	1. Organic liquids immiscible with water will not be accepted.. 2. Limits for water-miscible compounds will be set on a case by case basis. Only dilute solutions which pose no threat to the wastewater system will be accepted.
Total petroleum hydrocarbons (TPH)	30 mg/L
PH	6-10
Phenols	Limits set on a case-by-case basis
Phosphorus	Mass limit determined by system capacity Mass alarm limit for Subiaco, Beenyup and Woodman Point WWTPs 10 kg/d
Radioactive materials	Prohibited above the safe limits prescribed by the Radiological Council of WA
Sulphate	Sum of sulphate, sulphite and thiosulphate not to exceed 600 mg/L as sulphur
Sulphide	5 mg/L
Sulphite	Sum of sulphate, sulphite and thiosulphate not to exceed 600 mg/L as sulphur
Suspended solids	1. No readily settleable solids which are likely to accumulate in the wastewater collection system 2. Mass limits determined by system capacity Mass alarm limits for Subiaco and Beenyup WWTPs 200 kg/d Mass alarm limit for Woodman Point WWTP 300 kg/d 3. Maximum concentration 1500 mg/L
Temperature	Maximum 38 C
Thiosulphate	Sum of sulphate, sulphite and thiosulphate not to exceed 600 mg/L as sulphur
Total dissolved solids	1. 20,000 mg/L 2.. Mass limits determined by system capacity Mass limits for large metropolitan WWTPs Mass limit for Beenyup WWTP 400 kg/d Mass limit for Subiaco WWTP 220 kg/d Mass limit for Woodman Point WWTP 450 kg/d Mass loads associated with the first 600 mg/L of concentration will be excluded in determining a customer's compliance with the mass limit. Mass limits for other WWTPs determined on a case-by-case basis.

Acceptance criteria in Section 1 are subject to ongoing review. In particular, the criteria for toxic or persistent contaminants will be progressively tightened. Implementation of best practice operations will be required in order to maintain compliance with future acceptance criteria.

Section 2: Acceptance Criteria for Heavy Metals

Beenyup, Subiaco & Woodman Point Wastewater Treatment Plants

- Where the daily mass discharged is below the lower alarm limit specified in the table, no concentration limits shall apply.
- Where the daily mass discharged is above the lower alarm limit specified in the table, the waste flow shall be treated prior to discharge to sewer to reduce the concentration of metal to not greater than that specified in the table.
- Discharges where the daily mass load is greater than the upper alarm limit specified in the table shall generally not be accepted.
- Heavy metals acceptance criteria will be progressively tightened. Implementation of best practice operations will be required in order to maintain compliance with future acceptance criteria.

Heavy Metals Table: Acceptance Criteria for Large Metropolitan WWTPs

Metal	Lower Mass Alarm Limit (g/d)	Concentration limit for daily mass load above the lower mass alarm limit (mg/L)	Upper Mass Alarm Limit (g/d)
arsenic	1	5	40
cadmium	1	5	15
chromium	30	10	1000
copper	30	5	120
lead	30	10	300
mercury	0.1	0.05	1
molybdenum	1	10	20
nickel	6	10	150
selenium	1	5	20
silver	2	5	10
zinc	50	10	500

Discharges to Wastewater Treatment Plants other than Beenyup, Subiaco & Woodman Point

Limits shall be determined on a case by case basis.