A Guide to Pre-Treatment of Trade waste for Commercial Customers

Introduction

In our efforts to both protect the environment and meet strict licence requirements with the Department of Environment and Conservation, Flow Systems requires assistance from businesses to provide trade wastewater that can be safely accepted and treated.

What does this Guide provide?

This guide offers information on minimum pre-treatment equipment requirements for trade wastewater discharged from Flow Systems trade waste customers.

You will find:

- a list of pre-treatment equipment for commercial businesses
- a description of what the equipment does
- the required minimum pre-treatment equipment
- guidelines on conserving water for business processes
- characteristically used by commercial customers
- a list of industrial business processes
- how to meet backflow prevention requirements
- trade wastewater plumbing and drainage connection guidelines.

Who is this Guide for?

This guide is for:
- plumbers
- environmental management and hydraulic consultants
- large commercial customers that have a variety of trade waste discharges.

All other customers need to refer to information on the local community website.

The impact of discharging trade wastewater

Discharging trade wastewater to the sewer places an additional load on the sewerage system, which can cause accelerated corrosion, generate odours and dangerous gases, affect sewage treatment processes or adversely impact biosolids and effluent reuse. It is the concentration of the substances discharged and their total mass that creates this additional load. Even more important, is that discharging trade wastewater to the sewer poses a health and safety risk to personnel working in and around the sewerage system due to substances in the trade wastewater or their reactions with other substances.
Obtain written permission before discharging

Before businesses can discharge any trade wastewater into the sewerage system, they need written permission from Flow Systems. Flow Systems will only accept trade wastewater that meets our published acceptance standards.

Some customers have ‘deemed low risk’ processes. ‘Deemed low risk’ processes discharge small quantities of wastewater to sewer and are permitted to discharge without negotiating a Commercial Trade Wastewater Permit subject to meeting certain standard pre-treatment equipment and other requirements. They are listed in the fact sheet Trade waste processes and on your community website.

Most trade waste customers need to install and maintain pre-treatment equipment to ensure the wastewater meets Flow Systems acceptance standards.

Trade wastewater

Pre-treatment equipment

Guidelines for installing trade wastewater pre-treatment equipment

Some customers require pre-treatment equipment in order to discharge trade wastewater to the sewer. It is critical to follow these key steps:

• Before installation, submit a trade waste application with details of the process and proposed pre-treatment equipment to Flow Systems.
• Equipment must be installed in accordance with the manufacturer’s instructions.
• A licensed plumber must supervise installation in accordance with the Australian and New Zealand standard (AS/NZS3500).
• All equipment must be installed in a location that allows safe and unrestricted access for inspection and servicing.
• All equipment must display a compliance plate with the product authorisation number, product and manufacturer’s details. (To see a list of authorised pre-treatment equipment, go to your community website).
• The equipment must be maintained regularly as determined by Flow Systems and as set out in the manufacturer’s manual. Maintenance failure will result in wastewater that does not meet the requirements of Flow Systems Trade waste policy. This may lead to higher costs and / or disconnection of your trade wastewater outlets from the sewerage system.
• All properties generating trade wastewater must have a Flow Systems meter fitted to all Non potable and potable water supplies.

Maintenance of pre-treatment equipment

Environmental degradation can be caused by failure to service pre-treatment equipment regularly as specified. Failure to dispose of the waste properly also carries risk to the environment. Check the equipment manufacturer, the maintenance contractor and Flow Systems for information on maintenance.

Types of pre-treatment equipment

The following list describes pre-treatment equipment authorised by Flow Systems and commonly installed to treat trade wastewater generated by commercial businesses such as:

• food services
• the motor vehicle industry
• photographic businesses
• and other businesses.
**Dilution pit**
Used to balance a small volume of low and high strength discharge “peaks”, e.g. mixing slightly acidic and alkaline waste to achieve a pH level acceptable for sewer discharge or to balance out small peak loads.

**Cooling pit**
Used to mix hot wastewater with cooler wastewater, enabling the cooling of trade wastewater prior to discharge to the sewer.

**General purpose pit / Solids settlement pit**
Used for both settlement and flotation of impurities within a wastewater stream in a few types of applications (does not apply to all applications).

**Screen**
Monitors and screens gross solids before the waste discharges to sewer and are often needed in fruit and vegetable processing, food processing, smallgoods and meat processing.

**Plaster arrestor**
Captures the plaster used in medical procedures. See authorised plaster arrestors in your community website the Trade Waste section.

**Amalgam separator**
Removes the amalgam produced as a result of dental procedures, and are normally fitted to the cuspidor.

**Multi-stage pit**
Contains a number of compartments separated by baffles and weirs, with each compartment enabling the solids to settle and oils to float to the surface. Treated wastewater is pumped from the last compartment for re-use or discharged to the sewer. These are often used in “tunnel” vehicle washes.

**Silver recovery unit**
Recovers silver from photographic solutions by either electrolytic or chemical processes. They are needed by businesses with photographic waste.

Silver recovery units must:
- achieve an effluent discharge of 50mg/L or less of residual silver have a PURE registration number
- have a warranty
- be maintained and serviced in accordance with the warranty conditions.

**Dry basket arrestor (trap)**
A pit fitted with a fixed screen and removable mesh basket, which captures large solids and fibrous material (e.g. lint, fish scales). Screened wastewater then, if required, passes through further pre-treatment such as a grease trap prior to discharge to the sewer.

**In-floor dry basket arrestor**
A dry basket fitted in a floor waste fitting, with a fixed screen and a removable mesh basket. Captures solids and fibrous material from the wastewater that has drained into the floor waste. Screened wastewater may then pass through further pre-treatment equipment such as a grease trap prior to discharge to the sewer. An improved version includes a shut-off valve mechanism that ensures no flow to sewer when the basket is removed.

**In-sink dry basket arrestor**
A dry basket fitted in a sink fitting, with a fixed screen, a removable mesh basket and a shut-off valve mechanism that ensures no flow to sewer when the basket is removed. It captures solids and fibrous material from the wastewater that has drained from the sink. Screened wastewater may pass through further pre-treatment equipment such as a grease trap prior to discharge to the sewer.
**Oil water separators**
Remove free oil from wastewater, and includes coalescing plate separators, vertical gravity separators and hydrocyclone separation systems. Oil water separators are designed to receive and deal with the residues of oily water produced as a result of washing down. Areas that should drain to an oil separator include:

- degreasing bays
- vehicle wash areas
- workshop floors.

Waste oils should be captured and stored in a drum for off-site removal by a transporter licensed by the Department of Environment and Conservation (DEC).

1. **Coalescing plate separator (CPS)**
   A gravity separator with a plate pack fitted to remove oils and solids. It utilises the difference in specific gravity (i.e. settling speed) between immiscible components of a liquid waste stream such as engine oil and water. The plates improve the gravity separation process by reducing the settling or rise distance. The pump supplied with the unit must be the pump authorised with the unit. Free standing, above-ground separators, with a pumped inflow, are the only CPS systems acceptable to Flow Systems.

2. **Vertical gravity separator (VGS)**
   An oil water separator that uses a vertical cylinder design containing a continuous truncated conical spiral pack to separate non-emulsified oils and sludges from wastewater. Each VGS model is supplied with a specific sized diaphragm pump.

3. **Hydrocyclone separator system**
   Uses centrifugal force to separate oils from water, and has a vertical installation with a small base so it can fit small locations.

**Culinary wastewater pre-treatment**
Trade wastewater from food preparation areas, floor wastes, kitchen sinks, dishwashers and garbage areas must drain by gravity through the grease trap to the sewer. If the sewer grade does not allow a gravity connection, the **preferred design** is to drain through the grease trap to a pump well and pump to the sewer. The **least preferred design** is to collect the culinary wastewater and pump it to the grease trap (note, although this often increases the occurrence of operational problems such as grease blockages). Lids for grease removal apparatus should be authorised by Flow Systems and suitable for the application.

**Grease traps**
Grease traps allow culinary wastewater to cool and the grease to separate from the wastewater and are available as above ground or in-ground units. They allow solids to settle at the bottom of the grease trap. Food preparation areas, floor wastes, kitchen sinks, dishwashers and garbage storage areas need to drain to a grease trap.

Grease traps need to be located as close to the wastewater source as practical. If long run lengths are necessary consider additional pre-treatment options to minimise the incidence of the pipe-work becoming blocked with grease.

The vertical clearance above the grease trap needs to be equal to the maximum depth of the grease trap. This space is needed so that the grease trap can be “sludge judged” to determine the pump-out frequency. Ensure the installation/provision of an accessible cold water tap with a backflow prevention device is fitted within five metres of the grease trap for cleaning and maintenance purposes.
**Grease extractor**
A grease extractor is a tank with an effluent filter on the outlet pipe-work of the tank. Grease extractors are not a suitable pre-treatment for high volume culinary wastewater discharges.

The vertical clearance above the grease extractor needs to be equal to the maximum depth of the grease extractor. This space is needed so that the grease extractor can be “sludge judged” to determine the pump-out frequency. Ensure the installation/provision of an accessible cold water tap with a backflow prevention device is fitted within five metres of the grease trap for cleaning and maintenance purposes.

**Modular grease trap (MGT)**
A polyethylene manufactured modular system of connecting units, where connecting configurations may not be less than 1,000 litres, or exceed 5,000 litres. A surge control device must be fitted in the last module.

No risers can be fitted to modular grease traps.

The vertical clearance above the MGT needs to be equal to the maximum depth of the MGT. This space is needed so that the MGT can be “sludge judged” to determine the pump-out frequency. Ensure the installation/provision of an accessible cold water tap with a backflow prevention device is fitted within five metres of the grease trap for cleaning and maintenance purposes.

**Under-sink pump unit**
In certain cases, it may be necessary to install and use an under-sink pump unit due to:
- space requirements
- building design
- excessive costs to drain by gravity.

It is preferable for grease traps to drain by gravity to the sewer as this causes the least problems in operation.

Under-sink pump units consist of a tank that contains no more than 40 litres of culinary wastewater. Within the tank is a pump that pumps the collected culinary wastewater to the grease trap. Each time the grease trap is pumped out, the under-sink pump unit must also be cleaned. When an application to use an under-sink pump unit is submitted for approval, Flow Systems requires that the applicant demonstrates and substantiates in writing why the waste fixture or fixtures cannot be drained to a grease trap by gravity.

If the Flow Systems Representative determines after a site inspection that it is impractical to discharge waste to the grease trap by gravity, we may permit the pumping of the culinary wastewater to the grease removal apparatus. For more information, see to the fact sheet: Under-Sink Pump Unit.

**Fixed pump out lines to service grease traps**
When a grease trap is inaccessible to tanker vehicles, fixed pump out lines may be used to empty them. Although, they are not recommended due to potential blockages. The grease trap must be serviceable and if a fixed pump out line is chosen, serviceability must be maintained.

A minimum of 50mm pressure pipe is recommended for fixed pump out lines, with a camlock fitting at the vehicle end with a cap to prevent odours and leaks. Lines should be as straight as possible, and where bends are necessary only long radius bends should be used. At the grease trap end, a fixed pump out pipe should terminate outside the grease trap. Fixed pipes must not be installed into the grease trap.

A cold-water tap protected with a backflow prevention device must be provided within five metres of the pre-treatment equipment.
Before installing a fixed pump out pipe refer to your grease trap pump out contractor’s requirements.

**Use of additives in pre-treatment systems**
Except by specific written application and subsequent authorisation by Flow Systems, adding solvents, enzymes, mutant or natural bacteria, odour control agents and pesticides to grease traps or biological pre-treatment systems is not permitted.

Additives for use in grease traps may be authorised by Flow after a rigorous evaluation conducted at the expense of the product supplier. Specific protocols for product testing are available on request from Flow. If granted, authorisation will stipulate the special conditions applying to the use of the product as part of a wastewater management program.

**Cleaning grease traps**
Grease traps become less effective as grease, oil and sludge accumulate in them. They require regular cleaning to prevent blockages, odour problems and health hazards. During the pump out operation, grease traps must be pumped out completely and the internal surfaces scraped and/or hosed off to clean the trap of coagulated grease, food solids and any other particles that could block or obstruct the outlet pipe. To ensure that businesses effectively dispose of grease trap waste, Flow Systems manages its collection, transportation, treatment and disposal.

For more information see the publications:
- Managing trade wastewater in the food service industry
- Recyclers of used cooking oil
- Fees and charges
- Under sink pump unit

To arrange collection of oil, contact the following companies:

- [www.aeoscanline.com.au](http://www.aeoscanline.com.au) or call (02) 9627 6600 (NSW) and (07) 3277 4546 (QLD)
- [www.remondis.com.au](http://www.remondis.com.au) or call 13 73 73
- [www.ptoilcollection.com.au](http://www.ptoilcollection.com.au) or call (02) 9086 9344
- [www.sydneyrecyclingservices.com](http://www.sydneyrecyclingservices.com) or call (02) 9544 4323

**Backflow prevention**
The installation of a backflow prevention device is required on properties identified as having high or medium hazards, and defined in Australian/New Zealand Standard 3500, National Plumbing and Drainage Part 1.2 Water Supply - Acceptable Solutions (AS/NZS 3500.1.2:1998).

**Backflow prevention in properties with grease traps**
All properties with grease traps (except existing stand-alone properties) are required to:
- install a tap (hose cock) with backflow prevention within five metres of the grease trap
- fit a backflow prevention device on the customer’s side of the water meter for containment protection.

**All authorised products mentioned above are listed online in your community website in the Trade Waste section.**