Laboratories and clinical practices

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The management and safe disposal of wastes generated in laboratories and clinical practices needs a systematic approach. Examples can be found in *AS/NZS 3816:1998 Management of clinical and related wastes* and *AS/NZS 2243 parts 2, 3 & 4 Safety in Laboratories.* This guideline gives information about managing contaminated wastewater discharges to our sewerage system.

This guideline applies, but is not restricted, to the following activities where chemicals might be contained in trade waste discharges to sewer:

- analytical, clinical pathology and industrial laboratories
- medical, dental and veterinary clinics
- universities and other research institutions

For school laboratories please see Schools and childminding guideline.

General considerations

Our sewerage system is mainly a route for sanitary wastewater disposal. Our treatment process comprises physical separation of solids, the biological decomposition of organic material and final disinfection of the treated water. Wastewater containing human urine, faeces, vomit or blood in dilute form are compatible with our process. Pharmaceutical drugs and their metabolic by-products excreted from patients undergoing therapy are also accepted.

Many chemicals are toxic to or inhibit our biological treatment processes or are only partly removed or not removed at all by our process and so remain in the treated water and residual biosolids. Some chemicals can generate explosive or toxic gases in sewers, corrode or otherwise harm the sewerage system.

Generally, we do not accept to our sewerage network chemicals in concentrated form, such as spent process solutions, reagents or unwanted pharmaceuticals/ antibiotics.

We may consent to accept chemicals in trace amounts in trade waste discharges, such as from the rinsing of laboratory instruments, glassware or work surfaces, providing they:

- do not pose a hazard to our workers
- can be safely transported in our sewerage networks
- are compatible with our treatment process
- do not adversely affect the quality of our treated water or residual biosolids.

Our Restricted Wastewater Acceptance Standards give limits for the more common chemicals and should be consulted in the first instance. However, further research to establish the biodegradability and environmental fate of each chemical on site is required before establishing acceptable management/disposal protocols.

Where discharge to sewer as trade waste is appropriate, pre-treatment to achieve acceptable discharge quality is often necessary.

Dilution is not an acceptable means of achieving acceptable quality.

Best practice management

- A comprehensive waste management plan is in place, which includes clear responsibilities and documented procedures for managing routine discharges as well as spills or leaks.
- A register is kept of all chemicals stored on site, including industrial strength detergents and other cleaners, with their respective volumes.
- All worksite staff are trained in the appropriate waste disposal methods.
- Equipment is readily available for managing spills and leaks.

Facility design

- Bulk chemicals, process and waste tanks shall be bunded in accordance with the *Bunding and Blind Tank Guideline*.
- Dedicated chemical storage rooms may have a floor drain that discharges to a blind tank sized to contain 120% of the combined stored chemical volume.
- All laboratory sinks shall have a raised outer edge above bench top level to prevent bench top chemical spills from flowing to sewer.
- Chemicals in rooms with floor drains are kept to a minimum and are stored in a tray or other secondary containment vessel to contain spills or leaks.
- Those wastewaters and process liquors not permitted to be discharged to the sewer must be contained in an approved blind tank and disposed of by a licensed liquid waste contractor in accordance with the *Bunding and Blind Tank Guideline*.

Specific requirements

- Wastewater containing **large solids** such as hair/fur, swabs or recognisable body parts shall discharge via a 225 mm silt trap fitted with a mesh basket or holed bucket (3 mm holes/mesh), including a fixed secondary strainer (maximum 3 mm hole size) or other approved screening device.
- Veterinary facilities with animal holding areas should also follow the *Animal Washing / Holding Areas Guideline*.
- Wastewater high in fine **suspended solids** (such as when working with plaster) shall be directed to a suitably sized and approved settling pit or plaster/solids trap.
- Wastewater with **pH not between 6 and 10** must be adjusted manually on a batch basis, or through an automated pH correction system before discharge to sewer.
- Unwanted samples of **human blood or bodily fluids where there may be sound biological risk** are disinfected before disposal to sewer.
- Disposal of **radioactive wastes miscible with water** must comply with your EPA approved Radiation Management Plan. Only radioactive wastes that are

miscible with water will be accepted. As a minimum, their management must ensure that sewer maintenance workers near the site discharge are not exposed to unsafe doses of radiation. Discharges go directly to sewer, via a flushing cone and drain that bypasses any trade waste pre-treatment device.

- Please read our guideline for full information on the disposal of glutaraldehyde and ortho-phthalaldehyde (OPA) disinfectant to sewer.
- For the disposal of photographic process wastewater, please read the Photographic Processing Guideline.
- **Heavy metals** in wastewater shall be removed by precipitation, ion exchange or other acceptable pre-treatment process.

The following shall not be discharged to sewer

- **Organic solvents** or aqueous solutions of organic solvents (without the expressed permission of our Trade Waste team).
- Liquids which are **immiscible with water**.
- Liquids that can release **toxic or anaesthetic vapours** from solution.
- Solutions of **resins or compounds that could solidify** and block sewers or pumping stations. This includes melted agar from autoclaving of cultures.
- Solutions of **explosive or combustible chemicals** (i.e. capable of exceeding 5% of the lower explosive limit in the sewer airspace at a water temperature of 38 degrees C).
- Chemicals which are **insoluble in water** (i.e. less than three percent soluble in distilled water).
- **Cytotoxic** substances.
- **Pharmaceutical products** or preparations.
- Used water containing **biohazards, GMO's, prions, etc** from facilities with **PC3 or PC4** Physical Containment Level.

more information

Mains Water Protection (AS/NZS 3500.1:2018)

Backflow Prevention Requirements - Office of the Technical Regulator

Batch Treatment Guideline