



GÖTEBORGS UNIVERSITET  
Naturvetenskapliga fakulteten  
MILJÖHANDBOKEN  
Tjärnö marina laboratorium

## Guidelines for Discharge to Drains from Research and Teaching Laboratories

At Tjärnö marine Laboratory

*These guidelines are adopted in consultation between Sven Lovén Center of Marine Sciences at the University of Gothenburg, the Department of Environment and Health and the Department of Technical services at Strömstad Municipality, 2010-10-12.*

*The guidelines are established by Ullika Lundgren, Environmental Coordinator at Tjärnö marine Laboratory*

### Aim

The aim is to provide guidance and support on how liquid waste from laboratories should be handled, and to provide information about what kinds of waste that can be discharged to the municipal sewer.

### Extent

The guidelines apply to the research and teaching laboratories at the Sven Lovén Center of Marine Sciences on Tjärnö in Strömstad Municipality, that through the municipal sewers are connected to the sewage treatment plant in Strömstad. These guidelines are an exception to relevant laws and have been approved in consultation with the Department of Environment and Health and the Department of Technical services at Strömstad Municipality.

The exception is based on the prevailing conditions at the mentioned laboratories, the relevant portions of the pipe network, and the capacity and dimensions of the sewage treatment plant.

### Responsibilities

Managers at the Sven Lovén Center of Marine Sciences are responsible of handling the chemicals and the drains at the center. The manager may appoint a person with the responsibility of the drains to support other members of the staff and the students.

## Questions

Questions are primarily answered by the person responsible of the drains at the center, secondarily by the Environmental Coordinator Ullika Lundgren, University of Gothenburg, +46702 788756, [mis@miljo.gu.se](mailto:mis@miljo.gu.se) / [ullika@gu.se](mailto:ullika@gu.se).

If you have suggestions for additional chemicals that should be put up on the list, e-mail the suggestions to the Environmental Coordinator.

If you have questions or doubts concerning chemicals in the municipal sewer, see:

<http://www.stromstad.se/omkommunen/forvaltningar/tekniska/kommunaltva-ttenochavlopp.125.html>

Or call: +46526-19000.

## Discharges

Discharges of substances/chemicals that does not fulfill the requirements of these guidelines shall, accordingly to relevant laws, immediately be reported to the Department of Environment and Health (+46526-19476), and SOS alarm (112).

## Background

To reduce our overall environmental impact and the risk of discharging harmful substances from our operations, it is very important that everyone helps to reduce discharges of chemicals into the sewer system as far as possible. Wastewater from the Sven Lovén Centre runs to the sewer treatment plant in Strömstad, and can only be accepted provided that it can be dealt with and does not ruin the biological processes of purification. The sewage treatment plant is designed to deal with the pollutants normally found in domestic wastewater. Hazardous and harmful substances, such as heavy metals and certain organic substances that are persistent, toxic, bio-accumulative or nitrification/denitrification inhibitors must not be disposed of into the sewer system.

## Basic principle

**All solutions of chemicals which chemically differ from normal household waste must be gathered in containers and sent for destruction as hazardous waste.**

**This means that only solutions which in the short term and long term are unequivocally completely harmless to people, drainage traps, the pipe network, plumbers, the different processes in the sewage treatment plant, the Koster sea and its organisms, the Skagerrak and the Atlantic etc., may be added to the outlet.**

## Exceptions from the basic principle

The University of Gothenburg has, after reconciliation with the appropriate authority and sewage treatment plant, received permission for the following exceptions to existing laws and principles.

The exceptions are based on the conditions at the relevant laboratories, the chemicals hazardousness and degradability, and the conditions in Strömstad municipality's pipe network, the sewage treatment plant and recipient.

**If a chemical is to be discharged into the sewer, the following three requirements must be met:**

**1. It must be small amounts of e.g. experimental remains or solvents, which are difficult to collect (for example when dishing).**

It is not allowed to pour out chemicals directly from the jar/container or similar. This list shall not be applied to disposal of chemicals etc. Make sure the solution does not contain any harmful components!

**2. The pH should be at least 6,5 and at most 8,5**

- Very acidic or basic solutions may harm the pipe network. The pH must therefore be adjusted.

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**3. The substance is one of the following:**

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Inorganic chemicals

Inorganic substances should be handled as hazardous chemicals. However, the following ions in aqueous solutions may be poured into the sewers in small amounts:

Cations:

Na <sup>+</sup>	Mg <sup>2</sup>	K <sup>+</sup>	Ca <sup>2+</sup>	Ti(IV)	Mn(IV)*	Fe <sup>2+</sup>
Fe <sup>3+</sup>	Al <sup>3+</sup>					

\*Note: Not Mn(VII)!! Permanganate is harmful and hazardous to the environment.

Anions:

Cl <sup>-</sup>	Br <sup>-</sup>	I <sup>-</sup>	CO <sub>3</sub> <sup>2-</sup>	NO <sub>3</sub> <sup>-</sup>	PO <sub>4</sub> <sup>3-</sup>	SO <sub>3</sub> <sup>2-</sup>
SO <sub>4</sub> <sup>2-</sup>	Silicates	Borates				

Organic chemicals

The substances concentration must not exceed 10 volume percent when poured out (pipes and drainage traps takes damage). A maximum of 1 liter of

solution/day and laboratory, or a maximum of 10 liters of solution/day for all laboratories is allowed to be poured into the sewer, provided that there is no risk of inhaling or ignition. This applies to the following substances:

methanol, ethanol, propanol, isopropanol, butanol propanone (acetone), acetonitrile
glucose, sucrose and other sugars
formic acid, acetic acid, propionic acid, citric acid

#### Radioactive isotopes

The University of Gothenburg is allowed to discharge certain isotopes into the sewer, in accordance with the Swedish Radiation Safety Authority's regulation 2010:2, see

<http://www.stralsakerhetsmyndigheten.se/Global/Publikationer/Forfattning/SMFS/2010/SSMFS-2010-2.pdf>