

Information Sheet

Neutralization of Liquids Containing Chlorine Bleach

Proper disposal of chemical waste

No longer required hazardous substances as well as chemicals and chemical waste from laboratories and workshops (even small quantities!) must not be poured down the sinks. This also holds true for liquids containing chlorine bleach, e.g. from chemical inactivation of liquid biological waste.

Legal foundation

- Waters Protection Act (WPA)
- Waters Protection Ordinance (WPO)

Explanations

Sinks in ETH laboratories and workshops are connected to the ETH chemical wastewater network. The network includes a neutralization plant where the pH-value of the wastewater is adjusted by adding acids and alkaline solutions. After the neutralization process, the wastewater is discharged into the public sewage network that leads to the local wastewater treatment plant (WWTP).

How to act

- Can your liquid waste be inactivated by autoclaving? Whenever possible, autoclave your waste instead of using chemical inactivation. Autoclaved liquid waste (NOT containing any hazardous chemicals or heat-stable antibiotics) can be disposed of via the sink into the chemical wastewater network.
- If you use other disinfectants than chlorine bleach, the liquid waste has to be discharged as hazardous waste.
- If you use chlorine bleach for chemical inactivation – and if your liquid waste does NOT contain any hazardous chemicals or antibiotics, you can neutralize the waste with thiosulfate. After adjustment of the pH, you can discard it via the sink into the chemical wastewater network.

Standard Operating Procedure (SOP) for neutralization with thiosulfate

IMPORTANT: Depending on the content of your liquid waste, you might have to adapt this SOP. Therefore, test / validate this SOP on your specific liquid waste, before discarding them via the sink!

The SOP is based on bleach containing 15% hypochlorite, i.e. 1 mol Cl_2 per L. If you use less concentrated bleach, you can reduce the amount of neutralizing solution.

- 1.) Preparation of the $\text{Na}_2\text{S}_2\text{O}_3$ neutralizing solution:
Dissolve 40 g of $\text{Na}_2\text{S}_2\text{O}_3$ or 65 g of $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ in 100 mL water. This solution is stable at room temperature, so you can prepare a larger amount as stock.
- 2.) Under a fume hood, add the necessary amount of neutralizing solution to your biologically inactivated waste containing the bleach. 100 mL are sufficient for neutralizing 1 L of bleach containing 15% hypochlorite.
- 3.) Let the mixture stir for approx. 1-2 minutes.
- 4.) Test if there is still any chlorine present (e.g. using KI / starch indicator paper, or with chlorine-specific test strips)
- 5.) Check the pH of the mixture. If necessary, add sodium carbonate until pH reaches at least 6.5 (caution: adding the carbonate might cause foaming!).

The opening hours of the hazardous waste disposal sites can be found on the SSHE website and via the attached QR code.

For appointments outside the designated opening times and collections by arrangement please get in touch with sgu-sonderabfall@ethz.ch → or use our [online form](#) →.

In case of questions, you are welcome to contact us via sgu-sonderabfall@ethz.ch →.



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