

# Tvärminne Handbook

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This handbook contains information for scientists working at Tvärminne Zoological Station (TZS), including the use of boats, diving, field equipment, experimental facilities, laboratories etc. It is meant as a complement to the condensed information available on the TZS website. All users of the facilities at TZS are required to familiarize themselves with these instructions. The handbook is only available in English. **Please refer to the TZS website for the latest contact details.**

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All those who plan to use TZS facilities or equipment are kindly asked to contact the staff well in advance. Applications for summer work are due at the end of March each year, which allows TZS to assess the demands of facilities and equipment, and to allocate resources to projects. All equipment requires permission for use; some also require special training.

## Boats and other vehicles

TZS has several boats / vessels for coastal research. The boats are presented [here](#).

Rowing boats can be used freely by those working at TZS. Motor boats require a [boat permit](#) and a fee is charged for their use. To get the permit, one must have sufficient technical skills and an understanding of one's responsibilities as a captain of the boat. Knowledge of the local waterways and conditions that may occur at sea is also required. After instruction lessons with the TZS research technicians, the permit is granted by the station director or senior technician.

Smaller boats can be booked via the [online booking system](#). You need to register for the system and admin will then grant you access to book the types of boats that you have a permit for (it might take a working day to get access, so please register in advance). You need to assign a "captain" for the boat (legal requirement) at least 48 hours before departure, otherwise the booking is cancelled automatically. Cancellations should be made as soon as they become evident, so that the boats can be used by others instead and so that you will not be charged for unnecessary reservations.

Please note that the driver is legally responsible for the boat and the safety of the passengers (see rules below).

The bigger vessels (*Saduria* and *J.A. Palmén*, and the hovercraft *Saga*) are always booked through our skippers. All boat reservations should be confirmed before use.

**Other vehicles.** The TZS car is meant predominantly for use by staff and will be rented only for special reasons. Scientists and course organizers must negotiate the use of the vehicles and charges in advance with the director.

### Rules for users of motorboats

1. A personal permit is needed for driving motorboats.
2. The boat driver is responsible for the boat and the safety of everyone on the boat. All people onboard have to follow the instructions of the driver.
3. For safety reasons, the number of people on a boat shall not exceed the limit. Maximum number of persons allowed on each boat can be found in the boat booking system. *Lota* can carry 8 persons. Maximum number of people on *J.A. Palmén* is 12. NB! Other cargo (including dive gear) will reduce the maximum number of persons in the ratio of 70 kg = one person.
4. All people on a boat with an outboard engine have to wear a life jacket at all times.
5. It is absolutely prohibited to drive a boat under the influence of alcohol or to consume alcohol onboard.
6. Before each trip, someone at the station has to be informed about the destination and estimated time of return.
7. The driver of the boat has to clean the boat and remove all sampling gear after every trip.
8. No equipment that belongs to the boat (e.g. anchor, bailer or tools) should be borrowed or removed from the boat.
9. Malfunctions of motor and groundings etc. have to be reported immediately to Göran Lundberg. Do-it-yourself repairs are absolutely forbidden. The permit will be cancelled immediately if one has not reported a boating accident.
10. Maximum allowed speed in the vicinity of the station is 9 km/h (5 knots).

## Diving

Please contact the TZS diving officer to discuss your diving plans. Please note that a diving permit is needed for diving at TZS. Terms and safety instructions have been described in the [permit form](#). A diver should also have a filled-in health report form or valid medical certificate and diver's insurance. Diving services at TZS include e.g. sampling, deployment of research equipment, checking of experimental set-up, and scientific diving training. These diving services are liable to charge. Some dive equipment can be borrowed for research and course work, and there is a compressor for filling tanks to 200 and 300 bar.

## Nature reserve

Please note that the area around TZS is protected as a nature conservation area. In this area, sampling of material, plants or animals is not allowed without a permit. Fishing is prohibited. Whenever possible, walk along tracks in the area. Visits to islands are allowed only under supervision of course teachers and if you must visit breeding islands during the breeding season of birds, you ALWAYS have to consult with Joanna Norkko first. A special permit is required for moving and sampling of educational or research material in the Station area and a permit from the landowner is required for moving in areas belonging to neighbours of TZS.

Avoid unnecessary visits to areas belonging to neighbours of TZS. There are several nature reserves in the vicinity of TZS (e.g. Ekenäs archipelago national park, Henriksberg nature reserve, Sandö bog) where moving and sampling is restricted. If you are planning to work on private land or water, you have to have permission from the landowner. Joanna Norkko will assist you with contacts.

## Experimental facilities

There are seven climate chambers and three aquaria rooms in the main building. The use of these rooms is requested in the application form and should be discussed beforehand with the TZS research technicians.

Seawater is supplied to the aquarium facilities via two joint pipes, with openings at 7 and 10 m depth outside the station. The water is not filtered, but runs through three sedimentation steps and is supplied to the aquaria from a large tank on the roof of the main building.

Details about the experiment, including temperature and light regime, should be written on the form on the door of the climate chamber. The contact information is needed so that users can be contacted quickly in the case of climate room malfunction. In wet rooms, only splash-proof fluorescent lamps are allowed. Formalin cannot be stored or used in these experimental facilities, since it can harm organisms that are cultured in them. After the experiment, one has to clean up, disassemble the set-up and leave the space ready for the next user. Used sand should be taken out or stored in a container for reuse, if so arranged beforehand.

Adjustments of lighting and temperature will be done by the TZS research technicians. Wall sockets with » marks in climate and aquaria rooms are computer-controlled. Wall sockets marked with S supply electricity all the time (for aeration devices, shakers etc.). Temperatures may fluctuate significantly in different parts of a climate chamber, so it is recommended that you use your own thermometer for logging the temperature in your experimental units. The temperature indicated on the screen outside each climate chamber should only be viewed as an approximate value.

If you notice changes in light regime or temperature, please immediately contact the TZS technicians (office-hours) or the caretaker (outside office-hours).

There are also some outdoor experimental facilities ('greenhouses'). A warehouse (called Majakka) and two buildings with transparent walls and roofs (greenhouse-like buildings called Lasipalatsi) can be used for summer-time experimental studies. The use of these facilities is requested in the application form and should be discussed beforehand with the TZS research technicians.

Construction or installation work needed for experiments (e.g. shelves, tubing, light) and the associated costs have to be agreed in advance. After the experiments, the facilities have to be cleaned similarly as climate chambers and aquaria rooms, so that the facilities are ready for the next users.

If harmful substances will be used in experiments, their collection has to be organized before starting the experiment. Disposal of sand and soil waste originating from experiments has to be agreed with the TZS research technicians.

## Field equipment

Field equipment should be reserved via the Booking system (<http://bookings.tvarminne.fi/Web/>) or by contacting the TZS research technicians in order to confirm their availability. Field equipment and sampling devices can mainly be found in the storage or rinsing rooms of the boathouse (plankton nets, Limnos water samplers and Limnos sediment sampler). The CTD sonde, YSI oxygen analyzer and LiCOR light meter are located in the basement of the main building (room K127C). Manuals for the CTD instruments, LiCOR light meter and YSI oxygen meter are available where the instruments are stored.

After use, all field equipment has to be cleaned, dried and returned. Plankton nets need to be hosed down in the rinsing room and are to be left to dry hanging from the ceiling. Please inform the TZS research technicians about broken equipment.

Before deploying any research material or equipment in the field, please consult the TZS research technicians. All research equipment in the field must be marked with your name and a TZS sticker. All material in the field has to be removed after the research.

Storing your own equipment at the station always has to be agreed beforehand. **Unmarked items will be disposed of annually.** For more information, please contact the TZS research technicians.

Manufacturing of research equipment, its costs and ownership has to be agreed in advance with the station director.

## Laboratory facilities

TZS has several laboratories in the main building. One of them is a multi-purpose laboratory whereas the rest are equipped for special purposes like nutrient analysis, C/N analysis (particulate and liquid samples), spectroscopy, electrophysiological studies, and an isotope laboratory (class C). One wet lab, one room for vacuum filtration and one room for microscopy are also available. All the laboratories are provided with 220 V AC (a few with 380 V AC) and tap water. Purified water (Milli-Q) and sea water (ca 6 ‰) is also available.

Laboratory chief Jaana Koistinen is in charge of the laboratory facilities and equipment. Jaana is also the occupational health and safety representative at TZS.

- Before using any laboratory facilities (or equipment, glassware or chemicals) please contact Jaana for general rules concerning the laboratories.
- Analyses (e.g. nutrients, chlorophyll, oxygen) or other laboratory services need to be agreed

beforehand with Jaana and an order form should be submitted.

- Eating and drinking is not allowed in the laboratory.
- Children are not allowed in the laboratory.

**Users of laboratories are expected to clean up the facilities when the work is finished, and properly mark hazardous waste and inform the staff about this hazardous waste.**

- General laboratory (room 211). This equipment is intended for both researchers and courses. Their use has to be agreed with laboratory staff beforehand to avoid double bookings.
- **Isotope laboratory** (room 105). Users need to have a radiation- and chemical laboratory safety training or equal skills. Working permission is granted by the station director. In this laboratory it is possible to work with H-3, C-14, P-32 and P-33 isotopes. There are detailed instructions for the use of the isotope laboratory. Project leaders are responsible for the supervision of their students.
- Microscopy room (room 223). Microscopes are booked via the TZS research technicians. Please fill in your usage hours in the log book by the equipment you are using.
- **Special laboratory** (room 215). Use has to be agreed with laboratory staff beforehand. Glassware, chemicals or consumables belong to specific projects.
- Special laboratory (room 230). In this laboratory working is allowed only under the supervision of the laboratory staff. After office hours and during weekends, the laboratory is closed.
- Spectrophotometers (room 219). For spectrophotometers, there is a separate lab, in which there is a fume hood for chlorophyll work. Use of spectrophotometers has to be agreed in advance via Jaana and every use has to be recorded in the log book by the instrument.
- Filtering (room 222). This lab is meant for filtering and staining with e.g. glutaraldehyde and acridinorange. Use of this lab has to be agreed in advance via the laboratory staff. For all filtering, filtering pumps should be used, instead of water flow. Filters and filtering services for seawater are available from TZS or one can use the system with own filters. Any hazardous waste has to be collected in separate containers. More information is given by Jaana.
- Washing-up room (209). Everyone is responsible for their own dishes. Laboratory glassware is to be washed using a different program than other dishes. Before loading into the dishwasher, dishes have to be pre-rinsed and after the wash, dishes have to be dried and returned to the storage cabinet. The staff will give instructions for the use of the dishwasher.

**NOTE! None of the equipment, microscopes, cameras, pumps, filtering devices etc. in these facilities can be used or removed without permission from the laboratory staff.**

Users are expected to use their own disposables and chemicals while working in the labs (everything has to be marked with the owner's name, date and content). For station glassware and storing samples in fridge/freezers see below.

## Laboratory equipment

Every user is obliged to become familiar with the equipment before using it. Operation manuals can be found in the labs. Users are expected to record the use of the equipment in the operation logbook, where separate log sheets for instruments can be found. The operation log booking is essential for estimating service needs of the equipment and tracking possible problems. The user may be liable for repair costs of broken equipment if operation instructions have not been followed. Problems or notes on equipment function are to be marked in the instrument log sheet. All broken equipment and problems requiring service are to be reported immediately to the staff.

### Autoclaves

There are two autoclaves, in rooms 208 and 209. Autoclaves cannot be used without permission and instructions from Jaana.

### Ice machine

There is an ice machine for research purposes next to climate room number 7. Use of this ice is not allowed for other purposes than science due to health risk!

### Fume hoods

All special laboratories have fume hoods, which should be used for working with hazardous chemicals or evaporating liquids. Fume hoods are not meant for storage. After work, things have to be removed from the fume hood and it has to be cleaned and ready for the next user. The power also needs to be switched off and the front panel lowered.

### Refrigeration devices, i.e. fridges and freezers

Refrigerators and freezers are designated for specific uses. Before starting work, agree with laboratory staff which device you can use. Due to limited space, one has to agree beforehand how long the samples will be stored.

- **All items to be stored have to be packed properly in storage containers and marked with your full name and date.**
- Chemicals and reagents in fridges have to be clearly labelled.
- Please list everything you put into a refrigeration device on the log sheet by the device. For emergencies (e.g. power failure) please add your contact information for samples in the ultrafreezer.
- The staff will check all fridges and freezers once a year and will remove all unmarked items.
- Most of the fridges and freezers are connected to the alarm system, but everyone stores samples in them at one's own risk.
- One laboratory refrigerator with explosion-proof interior is available. Other refrigeration devices at TZS are so called domestic devices and storage of flammable and vaporizing chemicals is absolutely forbidden due to danger of explosion and ignition.

## Laboratory supplies and chemicals

### Glassware and plastic stuff

Glassware for sample collection and storage can be found in room 208 and corresponding plastic stuff in the storage room 235. Laboratory glassware for general use (beakers, measuring bottles, flasks etc.) can be found in cabinets near room 235 and plastic laboratory stuff in a cabinet near room 208. Used stuff should be pre-rinsed, washed in the dishwasher, dried and returned to the storage, unless otherwise agreed.

- All glassware in laboratories has to be marked with content and name of the user.
- If you need acid-washed glassware, please contact the laboratory staff.

**Use of chemicals has to be agreed with the laboratory staff. Everyone has to report for the chemical register what chemicals they have ordered for their own use and what chemicals are to be stored at TZS. Chemicals have to be marked with date and name of the owner.**

- Chemicals are stored in air-conditioned special cabinets. There are separate, locked storages for both flammable liquids and acids in the main building (rooms K126A and 215). Do not use chemicals belonging to others without permission. Chemicals requiring ventilated storage can temporarily be kept in the fume hood.
- Safety regulations for storage and handling of chemicals must be followed, all users being responsible for their own reagents. Handle all chemicals with caution for your own and co-worker safety. Before starting work, check the properties of chemicals you will use. Safety data sheets (SDS) should be available for all chemicals in the SDS folder in the general laboratory (room 211).

**It is not allowed to pour any chemicals down the drain or in other ways try to dispose of the chemicals yourself. All chemical waste is potential hazardous waste and their treatment has to be agreed with laboratory staff.**

### Formalin

Work with formalin and storage of formalin has to be performed in fume hoods in the small room (room 232) between lecture room 1 (room 234) and the special laboratory (room 230). For instructions for handling of formalin waste, please see Hazardous waste below.

- Formalin has to be handled carefully since already small amounts can harm the algae cultures at TZS. Use of formalin is forbidden in climate chambers and aquaria rooms.
- Storage of formalin bottles or samples containing formalin is not allowed in refrigerators or inside the main building.
- **One has to agree on the storage of formalin samples with the laboratory staff.**

### Liquid nitrogen, dry ice, gas tanks

Liquid nitrogen and dry ice can be ordered from Aga. Ordinary regular gases can also be picked up from Hanko or Tammisaari. Please contact Jaana for more information and help with ordering.



## **Pure water**

Different kinds of pure water are available. Ultrapure water and deionized water are available in the washing-up room (room 209).

## **Handling of waste**

**All waste generated at TZS has to be sorted.** Waste containers and instructions for sorting can be found in laboratories, workrooms and lecture rooms. For more information about sorting of waste, ask Jaana. Station cleaners empty the litter bins, other waste is the responsibility of the users. Users must take care of appropriate handling of the waste they produce in the lab (for hazardous waste see below).

- Sharp objects such as needles and scalpels have to be collected in separate containers with lids in the laboratories to avoid hazard to others.
- Larger amounts of waste, such as cardboard boxes (flattened), styrofoam packages etc. have to be taken to the energy waste dumpster in the parking lot.
- Good quality cardboard boxes can be taken to the storage room near the letter boxes in the main building.

## **Hazardous waste**

**Staff needs to be informed of all hazardous waste and all waste should be marked using special forms, which are available from the laboratory staff. Storing of hazardous waste has to be agreed with Jaana.**

- Every batch of waste has to contain information on the content, quantity and producer of the waste.
- Before starting work, one has to identify the properties of the substances to be used, so risks can be minimized and handling of waste can be organized in an appropriate way.
- If your waste requires autoclaving (e.g. foreign or harmful algal cultures) contact laboratory staff.

## **Formalin waste**

All formalin waste needs to be collected in containers in the fume hood specially meant for formalin work in room 232. Small amounts of organic waste, residues of plants and organisms etc. are allowed in the formalin waste. Empty formalin vessels need to be rinsed with lots of water, drained in the fume hood and thereafter washed in the dishwasher. Markings and tapes need to be removed before that.

## **Isotope waste**

Isotope waste has to be collected in different waste containers depending on the waste. Detailed instructions are available on a notice board in the laboratory. All work with isotopes has to be performed in the isotope laboratory.

### **Other waste**

If your work will produce other kinds of waste than mentioned above, such as large amounts of fish waste or other organic waste, please contact in advance Jaana or the TZS researcher technicians for disposal of the waste. Small amounts of pure organic waste can be taken in closed biodegradable bags to the biowaste container in the waste disposal building in the parking lot.

## **The office, reservations and payments**

The office is located in the main building and is open during weekdays from 9.00 – 12 and 12.30 – 15.00. Please book your accommodation well in advance (+358-2941 28090, [tvarminnezool@helsinki.fi](mailto:tvarminnezool@helsinki.fi)), at the latest one week before arrival. Dining reservations should be made at least two days beforehand. Please also inform the office about special diets and allergies.

TZS mainly has double rooms for accommodation. Some single rooms and family apartments are also available. For family apartments, a separate, freely formulated application has to be sent to the office by email by the end of March.

When arriving TZS, check in at the office to get your key and further information. If you arrive during the weekend, don't forget to ask for the door code beforehand.

### **Payments**

Accommodation and dining costs can be paid in the office before departure. Long-term stays can be paid monthly. If you will not personally pay your expenses, please specify the invoicing address: paying organization, department, address and business ID. Also give your own reference for the organization (project name or number). If the payer is a foreign institute, please provide also the VAT number. Remember also to inform the office if you have used some other facilities like boats, laboratory etc. For more information, please contact the office (+358-2941 28090, [tvarminnezool@helsinki.fi](mailto:tvarminnezool@helsinki.fi)).

## **Shipments and orders**

Each researcher who works at TZS needs to take care of their own shipments and orders. Remember to use the correct reference (profit centre / WBS code / purchaser's name) for orders made via the University of Helsinki.