

Helmholtz Nano Facility (HNF)

UPDATE USER MANUAL 2022

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30 JANUAR 2022**

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September 2021

Dr. Wolfgang Albrecht – Director

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2 INTRODUCTION

HNF is committed to providing a safe work environment for all employees, users and visitors. This manual outlines for all users of the HNF the policies and procedures that must be followed for safe operation.

These operating instructions are intended to ensure safety and prevent accidents during day-to-day operations. It contains regulations that are binding for all persons working in the HNF. They sign as part of the registration that they have read this manual and understood everything.

It does not release them from the obligation to exercise caution at all times according to their own knowledge, even if no explicit instructions are given in individual cases.

In addition to these laboratory regulations the following regulations also apply:

- The statutory provisions (Chemicals Act, Hazardous Substances Act, etc.)
- The Guidelines for Laboratories (GUV- R 120)
- The relevant Technical Rules for Hazardous Substances (TRGS)
- The General Safety Regulations FZJ
- The Waste Disposal Regulations FZJ
- The applicable health and safety guidelines
- The Working Hours Act
- The Working Hours Regulation FZJ

3 CONDUCT IN THE WORKPLACE

Any person entering the HNF is required to conduct themselves in a professional, courteous and safety-conscious manner at all times while in the facility. Those who violate the facility's operating and safety rules, or endanger their own safety and the safety of others, whose access will be restricted, temporarily blocked or revoked at the sole discretion of the management.

All users must take reasonable care of their own health and safety and the health and safety of other users who may be affected by their actions or inactions at work.

All persons using the HNF are obliged to familiarize themselves with these guidelines and to follow them. The current version can be found on the HNF webpage - www.fz-juelich.de/hnf - and in PPMS. Ignorance is not an excuse or justification!

3.1 CENTRAL COMMUNICATION MEDIUM

The PPMS booking system <https://ibn-ppms.ibn.kfa-juelich.de> is the central communication platform of the HNF for all users working in the HNF. Here they can log in, see the status and availability of individual devices, general instructions for use, documents, announcement of a possible closure of the facility, etc. Visit the website regularly to keep up to date with what is happening at the facility. A valid email address is a prerequisite for using PPMS.

3.2 COMPUTER MISUSE

The abuse of computers violates the guidelines of the Research Centre Jülich. Computer abuse includes:

- Use of HNF computer systems or networks without proper authorization or for impermissible purposes; this includes use of a user account set up for another person
- Tampering or obstruction of the operation of the HNF computer systems
- Modification, distribution or copying of software or other data (including system software, data and files from other users).

3.3 ORDER AT THE WORKPLACE

- All workplaces inside and outside the clean room and all common facilities are to be left clean and tidy after use.
- Chemicals are to be checked regularly to determine whether they need to remain in the laboratory and, if necessary, handed in or disposed of.

3.4 CONFIDENTIALITY

The HNF considers the work of users to be confidential and takes appropriate measures to prevent breaches of confidentiality. HNF accepts no responsibility for the consequences of a breach of this confidentiality if third parties gain access to HNF information in an unauthorized manner.

3.5 PUBLICATION RULES

3.5.1 CO-AUTHORSHIP

If staff members of the HNF have contributed significantly to a project, they must be named as co-authors in the corresponding articles. The affiliation is: Helmholtz Nano Facility (HNF), Forschungszentrum Juelich.

3.5.2 WORKING IN THE HNF.

If the HNF Facility, equipment or personnel are used, the HNF shall be cited. The HNF shall be cited as follows:

Forschungszentrum Juelich (2017), HNF - Helmholtz Nano Facility, Journal of large scale research facilities, 3, A112. <http://dx.doi.org/10.17815/jlsrf-3-158>

3.5.3 PRESENTATIONS

For presentations, it is sufficient to list the Helmholtz Nano Facility along with the other acknowledgements.

3.5.4 PICTURES

When using images, the copyright of FZJ must be indicated.

3.6 STORAGE FACILITIES

Users have limited space available to store their specimens and materials (max. 3 boxes). Please ask the staff. There are no storage facilities outside the clean room in the HNF.

User items in the clean room must be labeled with the name of the user and the associated institute. Items that are not labeled will be disposed of at regular intervals. All specimens and masks that are not in your storage container will be placed in the lost and found box that evening. Items in the lost and found box will be disposed of every two weeks.

An inventory of all users storage boxes is taken at the end of the calendar year. Any storage boxes that cannot be assigned to a user after two requests for identification will be disposed of.

3.7 TOURS

We welcome guided tours of the facility for groups of all kinds. No special safety precautions need to be taken for a tour without entering the clean room (e.g., in the hallway).

Note: We have found that tours with more than 15 participants are difficult.

4 BACKUP OF PROCESS DATA

HNF is specified according to ISO 9000ff and has the obligation to record and log device and process parameters. For this purpose, HNF has a web-based system called "PPMS" for recording booking data of devices and run sheets (processes and usage parameters):

- Each user has a project in PPMS in which all bookings and rights to devices are recorded.
- Users are obliged to keep their run sheets in this project up to date at all times. Please inform project group member or email to at hnf-technologie@fz-juelich.de
- Before leaving the HNF or the research center, at any change of institute or purpose of use (Master->PHD-> Post-PHD), an appointment must be made with Mr. Grap (t.grap@fz-juelich.de) or Mr. Tu (j.tu@fz-juelich.de). The appointment is to discuss and review a final run sheet with all parameters used. Without the approval of Mr. Grap or Mr. Tu, the HNF management will not sign a release or change of usage for the user.
- The HNF guarantees the appropriate secrecy (-> chapter 3.4).

4.1 DATA PROTECTION INFORMATION OF HNF (ACCORDING TO ART. 13, 14 AND 21 DSGVO)

Data protection is an important concern for us. As the controller, Forschungszentrum Jülich has implemented numerous technical and organizational measures to ensure the most complete protection of your personal data. The responsible party within the meaning of the data protection laws is:

Forschungszentrum Jülich GmbH
Wilhelm-Johnen-Strasse
52428 Jülich/Deutschland
Tel: +49-2461-61-0
Website: <https://www.fz-juelich.de>

By registering via the PPMS system, you agree to the data protection regulations and the storage of personal data. Please read this carefully before you release it.

If you have any questions, please contact the data protection officer of the research center directly:

Frank Rinkens
Forschungszentrum Jülich GmbH
Wilhelm-Johnen-Strasse
52428 Jülich/Deutschland
Tel: +49-2461-61-9005
Email: DSB@fz-juelich.de

5 DUTIES OF ANY USER:

- The access is not allowed to unauthorized persons.
- Smoking is strictly forbidden throughout the HNF building.
- Persons from outside the laboratory may only be in the HNF with the permission of the management or in the company of an HNF employee or a user registered in PPMS.
- All exterior doors have to be kept closed.
- All doors in the HNF, especially in places with activities involving hazardous substances, have to be kept closed at all times. The supply and exhaust air works only with closed doors!
- Escape routes must be usable at any time. Corridors and stairwells are escaping spaces. The storage of flammable materials there is absolutely prohibited. The stairs and all corridors have to be kept permanently free.
- All doors leading from the stairs to the floors or into the workrooms, laboratories or clean rooms are fire doors and must always be closed. The doors do not close automatically in case of fire alarm.
- Work in which a release of hazardous substances cannot be excluded, has to be done in a fume hood.
- Eating, drinking and smoking are prohibited in all rooms where hazardous substances are handled. Food and beverages cannot be stored together with laboratory chemicals.
- Report disruptions in the technical building equipment (ventilation, heating, plumbing, electrical, water, gas) immediately to - 3193 or the HNF Office (Tel.: 6364)
- Report all accidents and other dangerous situations immediately to the security department or ZLT (Tel. 77).
- Experimental work and current devices or equipment can only be left alone
 - if they are monitored via the building management and safety system
 - if another employee who has been instructed in the operation and safety devices, takes over monitoring
 - If a corresponding hazard potential analysis states that permanent monitoring is not required.
- Each person working in a laboratory area must inform himself/herself about the locations and modes of operation of the safety equipment as well as about escape routes, fire alarms and alarm plans.
- Fire extinguishers are in the immediate vicinity of work stations:
 - Powder extinguishers in the corridors
 - Carbon dioxide extinguishers at the ends of the central corridor in the clean room.
- Respirators are allowed only for special work (e.g., with toxic gases).
- Emergency showers and eye showers are located near the room doors in all hazardous areas.
- Employees and users are obliged to provide immediate assistance in the event of an accident.
- Coats and jackets are to be deposited at the checkrooms in the entrance area, taking them into the HNF is not permitted. You will find lockers in the entrance area for free use. The HNF does not assume any liability for objects in the entrance area and in the lockers.
- Entering the HNF behind the entrance area is only permitted in overshoes or laboratory shoes!

If they want to use the HNF, they must apply for a user account. In addition, they must go through an orientation and training process before they receive a key to work at the facility. Once they have submitted all required documentation, orientation sessions can be scheduled.

The application for a user account must be submitted in PPMS online at <https://ibn-ppms.ibn.kfa-juelich.de>.

The procedure is coordinated by the HNF Office, which is the first point of contact for them with organizational questions. It organizes the application process, the acceptance of applications for scientific projects and the evaluation of their scientific and technical feasibility. The HNF Office does this in accordance with the guidelines of the Board of Directors and the recommendations of the Scientific Advisory Board.

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6.1 ELECTRONIC KEYS/ACCESS SYSTEM

Accepted users of the HNF will receive an electronic key to enter the building. The following rules apply:

- **Entering and leaving the building is exclusively via entrance E1.**
- Access keys may not be given or lent to other persons.
- Electronic keys are to be returned to the HNF Office upon expiration of use.

Attention! Your key is linked to your biometric signature. If you forget your key, you will not be able to enter the clean room. Temporary replacement keys cannot be created.

6.2 APPLICATION PROCEDURE

1. You apply for access online via <https://ibn-ppms.ibn.kfa-juelich.de>.

For users of the laboratories outside the clean room, the following applies: After approval of the registration and release by the person responsible for the laboratory, you receive an electronic access chip. Security briefings are provided directly by the person responsible for the laboratory.

For users of the clean room the following applies:

1. After the release of the registration by the HNF Office you create a project in PPMS. Explanations "How to do it" can be found in PPMS under "Public Documents" -> "How to register".

You should have prepared a run sheet (PDF or Word file) for your process. You have to upload it when you create the project.

2. The HNF-Office registers you at the server for the online security test. The server sends you a mail (hnf-osi@fz-juelich.de) with a link to the test. You can pass the test as many times as you want. After passing the test, you print the certificate, sign it and submit it to the HNF Office.

The basis of the safety test is the HNF Cleanroom Lecture. Here all valid rules for the cleanroom are given. You can find the HNF Cleanroom Lecture on the homepage <http://www.fz-juelich.de/hnf> under Downloads or in PPMS under Public Documents /Safety Briefing.

The validity of the safety test is one year. After that, the server will ask you to repass the test 6 weeks before it expires. If you do not provide the proof within this period, your account will be blocked.

3. The run sheet will be checked for feasibility. You will receive the run sheet back with comments. It shows you which devices you can use for your process.

4. When the security test certificate and an approved run sheet are available, you will be invited to a general security briefing at the HNF. After that, your project will be cleared and you can begin requesting training (training request in PPMS) on the equipment.

5. Only after the ok by the trainer, you can book the equipment independently. You will see in PPMS only the devices for which you are released.

If you are from outside the research center, you will only get access after funding is clarified.

It may take some time to get your project on track. Stay flexible! Experience has shown that many users want to make significant changes to their plans once they have started working and have become familiar with the facility, its staff and resources. Significant change (e.g., additional process steps, use of other/new chemicals) must be submitted to the HNF project group at hnf-technologie@fz-juelich.de for approval.

6.3 QUESTIONS ABOUT THE TECHNOLOGY OR PROBLEMS WITH PROCESSING

The central point of contact for questions or in case of problems with their processing is the technology group of HNF. It can be reached at any time at: hnf-technologie@fz-juelich.de

Or by phone:

Jürgen Moers

Tel.-Nr.: -2344

Mail: j.moers@fz-juelich.de

Thomas Grap

Tel.-Nr.: -9822

Mail: t.grap@fz-juelich.de

7 OPENING HOURS

The following access hours are specified in the HNF:

- a) Clean room: Mondays to Fridays from 8:00 - 16:30:
- b) Laboratories outside the clean room: Mondays to Sundays within the applicable flexitime (Gleitzeit).

Exceeding the working time: Every employer or institute director is responsible for his users sent to the HNF for the fulfillment of the requirements resulting from the Working Hours Act. (§§ 22, 23 ArbZG).

8 "RED CARDING" (SUSPENSION)

The "red card principle" is applied in situations where you refuse to immediately correct a safety-related or process-related problem.

Examples of violations:

- Violation of clean room regulations
- Leaving the wet-chemical work areas during booked use
- Violation of health and safety regulations (e.g. use or storage of chemicals at wet benches not approved for this purpose, use of equipment outside the parameters specified by the equipment manager, etc.)
- Intimidation of other users (taking over their workspace in the lab, damaging other users' equipment, etc.)
- Damage to equipment due to a violation of the work guidelines after sufficient instruction or unauthorized modifications to equipment
- use of equipment without proper confirmation of training
- Violation of the access time regulations
-, etc.

9 GUIDELINES FOR THE USE OF EQUIPMENT

Access to the facility does not automatically entitle the user to use a particular device. Some of the equipment in the facility is equipment that they can operate themselves after training. For each device there are responsible employees and trainers. They apply for the training in PPMS. The trainers teach them how to operate the equipment and release the equipment to them once they can operate it safely. Most of the equipment in the facility is extremely complex and very sensitive.

9.1 USE OF EQUIPMENT

Instruments may only be used for their intended purpose and in the manner intended.

- Handle all instruments with due care, in accordance with the safety guidelines and for their intended purpose.
- Return all used instruments clean and undamaged to the drawer or storage area where you found them.
- Report lost or damaged instruments to an HNF staff member immediately.

Near each instrument you will find operating instructions that must be followed when using the instruments. Violation of these procedures or lack of care in operation can result in damage to the equipment, downtime, and significant expense. Handling a device in a negligent manner or intentionally damaging it will therefore result in a temporary suspension of user privileges, either for a specific device or for the entire facility.

Before using a device, users must be instructed by a staff member who is specifically authorized to train them on that device. Instruction by other users* or by unauthorized individuals is not permitted.

No device or instrument may be removed from the HNF without management approval.

Standard Operating Procedures (SOP) and documentation for the equipment can be found in our Quality Management System "Consense". You can access this via the computers in the clean room with the user "consenset_HNF-user-F".

9.2 EQUIPMENT PROBLEMS

Report any malfunction through PPMS, PPMS reports it to the equipment managers or they report it directly to the equipment manager for the equipment. Modification of a device without the approval of the equipment manager is not allowed.

9.3 BOOKING EQUIPMENT

The devices in the HNF are booked via PPMS <https://ibn-ppms.ibn.kfa-juelich.de> with your user account and your project.

- It is not possible to use devices without a reservation. If a device is free, you can reserve it online via PPMS, via terminals in the clean room or a terminal in front of the clean room.
- Reservations cannot be cancelled once they have been confirmed and will be charged to your cost center whether you use the equipment or not. In case of illness or serious reasons, the reservation can be cancelled by the HNF management or the equipment manager.
- If they do not show up within 15 minutes of the start of their reserved time slot, the equipment in question can then be claimed by anyone else in the lab during that time. That person will then work on their account.
- Always finish your processes on time so that you do not conflict with time slots reserved by other users.
- **Be careful when booking your equipment time and do not overbook your time.**

10 SAFETY GUIDELINES

When they start work at the HNF and at Forschungszentrum Jülich, your first priority is to receive instruction on accident and health hazards. This is required by the Occupational Health and Safety Act. You must therefore ensure that you receive the information, understand it and implement it carefully. After all, nothing less than your health and that of your new colleagues is at stake.

Hazardous work is dangerous. The following rules apply:

- Hazardous work must always be performed under special protective measures (in a fume hood, behind protective screens, in special rooms, etc.).
- The operating instructions and safety data sheets must be observed. The user must inform himself about all hazards that may occur and about appropriate emergency measures.
- Other persons present must be informed of any hazards that may occur and of emergency measures to be taken.
- Equipment and apparatus that must remain in operation outside laboratory opening hours must be reported to the equipment manager.
- Performing hazardous work during hours other than those specified above requires written permission from HNF management.
- Avoid the use of open flame.

10.1 HANDLING HAZARDOUS MATERIALS

Hazardous Materials or hazardous mixtures are:



toxic



flammable



oxidizing



irritant, toxic



Health hazard, eg.
cancerogene



corrosive



explosive



environmentally
damaging

When handling hazardous substances the following rules have to be followed:

- Before handling hazardous substances the user has to find out the dangerous properties by reading Safety Data Sheets or publications of the manufacturer.
- Hazardous substances and chemicals may only be stored in containers/bottles that cannot be confused with food or beverage containers/bottles.
- All hazardous substance containers have to be marked unambiguously, permanently and unmistakably with substance name, hazard symbols and H and P sets (Hazard and Precautionary statements).
- Waste storage tanks are to be marked according to the guidelines of the central chemicals disposal group.
- Toxic substances or their conversion products are to be kept in a closed place or in a place accessible only to experts.
- Toxic substances or their conversion products are to be stored as far as possible separately from flammable substances.
- Self-flammable substances are to be kept away from flammable material.
- Chemicals releasing hazardous gases or fumes under normal laboratory conditions must be kept under permanent extraction (fume hood).
- When transporting hazardous substances in fragile containers, safe transport containers (eg. plastic buckets or metal boxes) are to be used.
- Hazardous substances may be stored at the workspace only in small quantities.
- Major quantities have to be kept in suitable storage rooms or in safety cabinets.
- General rule: The more dangerous a substance, the less the stored quantity.
- Particularly dangerous substances must be replaced by less dangerous substances whenever possible.
- Flammable liquids that have to be stored in a cool place and easily flammable substances may be stored only in labelled refrigerators or deep-freeze cabinets with no ignition sources inside (explosion protection).
- Adolescents under 16 years of age may not handle hazardous substances, even under supervision.
- Adolescents aged between 16 and 18 may handle hazardous substances only under supervision of an expert. Persons with multi-year laboratory experience with handling hazardous substances are considered experts.

10.2 SAFETY OFFICER

The Safety Officer acts as a consultant on all safety issues.

SECURITY OFFICER: Herr Rainer Benzcek, Tel.-Nr. 96836, Mail: r.benzcek@fz-juelich.de

10.3 EMERGENCY BEHAVIOR

10.3.1 ALARMS

- If the audible alarms sound, it is a fire alarm or an accident involving toxic gases. Immediately leave the HNF and the building by the shortest route. Go to the assembly point in building 04.7 (anteroom of the lecture hall).

10.3.2 INJURIES

- All injuries should be reported immediately to a HNF staff member/superior and ambulance.
- Phone 77 and request guidance. The ambulance will inform you about the further procedure and decide whether an ambulance or examinations at the company medical officer are necessary.
- Every user is expected to stop working to assist an injured worker.
- An incident report must be completed.
- When dangerous situations or injury occurs:
 - STAY CALM
 - Call the emergency number 77 as soon as possible and ask for assistance. The rescue service will inform you how to proceed and decides whether an ambulance or an investigation by the company doctor is required.
 - Inform the HNF Office
 - Pay attention to your safety
 - Protection of people comes before the protection of property.
- Then, act as follows:
 - Warn people of dangers in the surroundings
 - Cancel hazardous experiments if possible
 - If necessary, turn off gas and electricity
 - Keep the cooling water running
 - In case of fire, close doors and windows!
 - Do not leave injured people alone until emergency services arrive.
 - In all laboratories there are "emergency stop switches" that disconnect equipment, wet benches, laboratory, clean room in case of an emergency. The power can be turned on again after unlocking the emergency stop switch.
 - The doors in the corridors are fire doors. They have to be closed at any time. Don't fix them in open position!
 - Every user must interrupt his work immediately if an injured person needs his help.

- Any bodily injury has to be reported to the company doctor. Even small injuries that may not need a doctor have to be registered (in case of unexpected consequential damages) in the Research Center's book of occupational health for insurance reasons.

10.4 FUME HOODS

- The front of fume hoods is closed whenever possible, required interventions are carried out by the sliding window.
- The functionality of the fume hoods has to be permanently controlled.
- Sitting in front of open fume hoods during ongoing chemical reactions is prohibited.
- Fume hoods/wet benches are checked at regular intervals by service technicians. Do not work on defect benches.
- Self-identified defects in fume hoods must be reported immediately, do not work until the defect is eliminated.

10.5 REFRIGERATORS

- Only sealed vessels provided with content and name plate may be stored in refrigerators. Chemicals in the refrigerator have to be regularly checked to their need and stay.
- Flammable liquids which have to be stored in a cool place, may be stored only in explosion-proof refrigerators, where the interior is free of ignition sources. The volume of liquids must be limited to the smallest necessary quantity.
 - Refrigerators in which toxic substances are stored have to be kept closed.
 - Storing food or drinks with chemicals is strictly prohibited.

10.6 PREGNANCY

Working in the HNF while pregnant is restricted. Work according to the checklist and appraisal of occupational health and safety are possible.

Pregnant and breast-feeding women should not be exposed to carcinogenic, mutagenic or teratogenic substances. They are not allowed to work in such laboratories. Inform the HNF Office of pregnancy as soon as possible.

10.7 MATERIAL SAFETY DATA SHEETS (MSDS)

MSDS sheets for chemicals used at the HNF are organized alphabetically in binders, which are located next to the clean room wardrobe area. A sign shows the location of the binders. MSDS sheets for the most common chemicals in use at the HNF have been compiled into a single binder for easier access.

10.8 WET PROCESSING AREAS

Wet etch processes will only occur in designated cleanroom wet bench areas. These are the five wet bench areas Si-CMOS, III/V, Biohybrids which is also used for processing oxides and other materials, pre-cleaning, fume hoods. The mask bench must not be used by users.

- The user who reserved a wet bench defines how many other persons may also work at the bench
- At each wet bench only particular chemicals may be used.
- The transport of chemicals in open containers is strictly prohibited.
- Resists may be bottled and distributed only by HNF staff.
- New etching mixtures are to be registered with the HNF technology group hnf-technologie@fz-juelich.de. The HNF technology group assigns the wet bench where the etching mixture may be used.
- The fume hoods are permitted only for special processes. The fume hoods may only be used for approved processes.

Use of the wet workplaces by persons with a body height of less than 1.6 m alone is not possible for reasons of occupational safety. You need assistance by HNF staff or a second user.

10.9 LABELING CONTAINERS AND ETCH SOLUTIONS

All containers on wet benches MUST be labeled with the user's name, institute and what chemical is in the container, the safety symbols, and date. Otherwise the solution will be disposed of. Initials for your name are NOT sufficient.

You must also remove the label once the beakers have been cleaned and before they are put back on the shelf.

10.10 CLEAN UP AFTER PROCESSING

All users must clean up after they have finished processing in an area. This means wiping and drying the area, removing the containers from the sink, and cleaning anything that is required. It is the responsibility of the user to ensure the area is as clean as or cleaner than how they found it.

10.11 EMPTY CHEMICAL BOTTLES

Put empty chemical bottles in the blue box under the fume hoods (WB 12).

Empty photoresist bottles are not rinsed out. They are placed on the tray for old varnish bottles in the varnish cabinet, even with the contents left over.

10.12 HAZARDOUS CHEMICAL GEAR (HEAVY GLOVES, COATS, AND SAFETY GLASSES)

- When working with chemical agents personal protective equipment is required. This consists of safety glasses, protective apron, safety gloves and closed, slip-resistant shoes.
- Safety glasses are provided.
- Wearing contact lenses is critical. If you wear contact lenses inform the HNF Office.
- For the handling of certain hazardous substances (corrosive, irritant, sensitizing etc.), the use of gloves is mandatory. The glove material has to be selected according to the intended use. Ask the relevant Equipment Manager. Gloves are provided.
- Disposable gloves made of latex or nitrile are suited due to their very thin wall thickness at most as a splash guard. Upon contact with many chemicals, the breakthrough time is in the single digit range of minutes!
- Protective chemical gear is not to be worn outside wet bench work areas. They must be removed before leaving the bench area or handling any equipment outside the deck area. This applies to acid gear as well as gear worn during other types of etching.
-

10.13 CHEMICAL HAZARDS

A variety of chemical hazards exist in the HNF. HNF users are expected to educate themselves about chemicals, take the necessary precautions associated with chemicals, and conduct themselves in a safe manner when handling chemicals.

10.14 CRYOGENIC GASES (LIQUID NITROGEN (LN2))

Cryogenic gases are a source of danger in the HNF. Familiarize yourself with the dangers posed by cryogenic substances. This is the only way they will avoid injury.

LN2 is used throughout the facility. The temperature of LN2 is so low (-196 °C/77 °K) that it can cause cold burns to the skin and cracks in the floor. HNF users should take all necessary precautions when working with or near LN2.

- Only authorized personnel should fill LN2 containers.
- Only special containers for transporting LN2 are allowed.
- When using LN2, wear personal protective equipment (special gloves, safety goggles, body protection, etc.).
- When transporting insulated cans with liquid nitrogen or helium in elevators (preferably only the freight is to be used), the external control must be used. It is forbidden for persons to ride in the elevator!
- Liquid nitrogen in insulated containers must always be covered to prevent oxygen from the air from condensing. However, a tight-fitting lid must never be used, as otherwise a dangerous overpressure can build up.

10.15 IMPORTING CHEMICALS INTO THE HNF

No chemical may be brought on-site without prior HNF approval. If a user is found to be working with an unapproved chemical or any chemical in an unsafe manner, access to the facility may be revoked without the 2 warnings. This would be just cause for immediate expulsion!!

10.16 EMERGENCY TELEPHONE NUMBERS

- Phone 77
- Identify yourself
- Report the type of emergency:
- Report the location: HNF 02.14, Entrance E1

11 CONTACTS

11.1 PROBLEMS WITH PPMS/APPLYING ACCESS

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11.2 TECHNOLOGY QUESTIONS

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11.3 CLEANROOM PROBLEMS IN GENERAL

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11.4 SAFETY OFFICER

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11.5 DANGEROUS GOODS OFFICER

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