

UFNF Physics Safety and Operations Manual

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1.0 Safety

1.1 Safety Introduction

1.1.1 The purpose of this section is to provide specific information about UFNF Labs in the Physics Building. It is to be used as a supplement to the UF EH&S Lab Safety Program. Process Equipment specific Safety Instructions are included at the beginning of each Process Equipment SOP. UFNF Equipment SOP's are located at

<http://www.phys.ufl.edu/nanofab/equipment.html>

1.1.2 See the following links: UF EH&S <http://www.ehs.ufl.edu/>

1.1.3 UF Chemical Hygiene Program

<http://www.ehs.ufl.edu/Lab/CHP/default.asp>

1.1.4 UF Laboratory Safety Manual

<http://www.ehs.ufl.edu/Lab/LabSafe.pdf>

1.2 UFNF Admittance Form

1.2.1 The following actions must be completed prior to admittance to UFNF:

- The UF Nanofab Lab Use Request Form must be completed and turned in to UFNF Staff. The form is located at <http://www.phys.ufl.edu/nanofab/user.html>
- One on one Safety Orientation with a UFNF Staff member regarding safety procedures and a tour of the UFNF Facility and Safety Systems. Fill out the **UFNF User Safety Orientation Checklist**. See Addendum 1.0 below.

1.3 Toxic and Flammable Gas Detection at UFNF

1.3.1 Each Toxic and flammable gas in use at UFNF Physics is monitored by a Zellweger Analytics Lifeline II leak detection system. Monitoring locations are at the gas source bottle and at the point of use near the process equipment. When a gas alarm or fault occurs, UFNF Staff are automatically notified via “Autodial” which is connected to the phone system. Each sensor has an individual controller/transmitter which is mounted on the west wall in room B159. The detectors are powered via Uninterruptible Power Supply and will continue to operate approximately one hour in the event of a building power failure. The gas supply cabinets and all gas isolation valves will automatically shutdown in the event of building power failure.

1.4 Alarm Types and Notification

1.4.1 Gas Alarms: Each LifeLine II gas leak detector has 3 alarm types: Fault, Low Level Detection and High Level Detection.

1.4.2 Water Leak Alarm: UFNF is equipped with water leak detectors that are tied into the Autodial System.

1.4.3 Manually Activated Hallway Alarm: Lab User depresses the Emergency Alarm button outside room B155. This alarm is used by the Lab User in the event of any type of emergency (e.g. chemical spill). UFNF Staff will be immediately notified.

TABLE 1.0 - Summary of UFNF Alarm Types

UPD phone 392-1111

UFNF Physics account # AA-9092. (Use this number identify yourself when contacting UPD)

Alarm Type	Notification	Dispatch Method	Method of notification
Manual Emergency Push Button outside room B155	UFNF Staff	UPD receives alarm from UFNF Autodial Zone 3. UPD message reads " <u>GAS ALARM TROUBLE—LOW LEVEL GAS OR FAULTL</u> ". UPD contacts UFNF Staff via Emergency contact list.	Zone 3 – autodial to UPD
Water Leak Detected	UFNF Staff	UPD receives alarm from UFNF Autodial Zone 3. UPD message reads " <u>GAS ALARM TROUBLE—LOW LEVEL GAS OR FAULTL</u> ". UPD contacts UFNF Staff via Emergency contact list.	Zone 3 – autodial to UPD
Fault (leak detection equipment failure)	UFNF Staff	UPD receives alarm from UFNF Autodial Zone 3. UPD message reads " <u>GAS ALARM TROUBLE—LOW LEVEL GAS OR FAULTL</u> ". UPD contacts UFNF Staff via Emergency contact list.	Zone 3 – autodial to UPD
Low Level Gas Leak Detected	UFNF Staff	UPD receives alarm from UFNF Autodial Zone 3. UPD message reads " <u>GAS ALARM TROUBLE—LOW LEVEL GAS OR FAULTL</u> ". UPD contacts UFNF Staff via Emergency contact list.	Zone 3 – autodial to UPD
High Level Gas Leak Detected by any individual sensor	UFNF Staff	UPD receives alarm from UFNF Autodial Zone 3. UPD message reads " <u>GAS ALARM TROUBLE—LOW LEVEL GAS OR FAULTL</u> ". UPD contacts UFNF Staff via Emergency contact list.	Zone 3 – autodial to UPD
High Level Gas Leak Detected by 2 Chlorine or 2 Ammonia sensors in the same location	Gainesville HAZMAT, Fire System is Activated- Building Evacuates and UFNF Staff are notified	UPD receives 2 alarms. Physics Fire Alarm and UFNF Autodial Zone 2. UPD message reads " <u>***GAS ALARM***CONTACT HAZ-MAT ASAP***</u> ". UPD also contacts UFNF Staff via Emergency contact list.	Building Fire Alarm and Autodial Zone 2 (and 3)

1.5 Automatic Gas Shutdown

1.5.1 The gas supply cylinder isolation valves for all toxic and flammable gases automatically shut off when any of the following events occur:

- a) gas cabinet exhaust is lost or low
- b) gas leak detection equipment "fault"
- c) "low level gas detection" limit occurs for any leak detector
- d) "high level gas detection" limit occurs for any leak detector
- e) Physics Building power is lost
- f) The Manual UFNF Emergency button is depressed
- g) Physics Building fire alarm occurs

1.6 Gas alarm locations and what to do in the event of alarm

1.6.1 Visual and audible alarms are located in each of the following locations: Lab B153, Lab B155, Lab B159 and the service hallway associated with these 3 labs.

1.6.2 WHEN THE EMERGENCY ALARM IS ACTIVATED INSIDE UFNF LAB/ SERVICE HALLWAY, IMMEDIATELY EVACUATE THE AREA. DO NOT STOP TO REMOVE YOUR CLEAN ROOM GARMENT. DO NOT ENTER THE AREA. NOTIFY UFNF STAFF IMMEDIATELY. UFNF STAFF WILL ALSO BE NOTIFIED AUTOMATICALLY VIA THE ALARM AUTOMATIC NOTIFICATION SYSTEM. WHEN THE LAB ALARM IS ACCOMPANIED BY THE BUILDING FIRE ALARM, EVACUATE THE BUILDING.

1.7 Instructions for Occupants of Physics Labs B131, B133, B135, B137, B139

1.7.1 A red light and audible alarm is located near the center of the service hallway associated with your lab. When the alarm can be heard from your lab, do not enter the service hallway i.e. do not open the service hallway door inside your lab. This alarm will actuate for any one of five possible reasons. See Table 2.0 above. UFNF Staff will be notified and respond immediately. If a high level toxic leak is detected, the building fire alarm system will announce and the entire building will be evacuated.

1.8 UFNF Staff and UPD/Hazmat Response to Gas Alarm Events**1.8.1 Gas Detection Equipment Fault and Low Level Gas Alarms-**

UFNF Staff will be notified via a phone call from UPD. Staff will proceed to room B159 to determine cause of alarm. If an actual low level gas detection alarm is present UFNF Staff will enter the area using the "Buddy System". Two UFNF staff members will don full body Tyvex© suit, neoprene gloves and SCBA before entering the UFNF Lab Areas.

1.8.2 High Level Gas Alarm- The building will be evacuated. UFNF Staff will be notified via phone by UPD. Two UFNF staff members will don SCBA and proceed to room B159 to determine actual toxic levels detected. Staff will verify that the source of the leak is isolated and evacuate building.

2.0 UFNF Clean Room Entry SOP

2.1 Items not allowed in the clean room area:

- **regular paper , wood pulp-based paper products**
- Chewing gum or Tobacco products
- Make up
- Tissues, cardboard, books, and magazines.
- Styrofoam products.
- Any powders.
- Erasers, pencils, felt-tipped pens (other than Sharpie markers).
- Anything that can easily shred or aerosolizes; i.e., anything that may serve as a source of particles.

2.2 Acceptable Clean room items:

- Clean room notebooks and clean room paper. Single sheet clean room paper is provided and located in the bookshelf in room B155 behind the gowning enclosure.
- Wafers and tweezers, in labeled boxes.
- Pens (preferably, ball-point).
- Materials with smooth, hard surfaces, which can be cleaned with alcohol wipes.

2.3 Clean Room Entry Procedure

- 2.3.1 Remove hat, coat, and any other unnecessary street garments. Leave them outside the clean room.
- 2.3.2 When entering the clean room, step on the tacky mat several times with each foot.
- 2.3.3 Obtain Tyvex shoe booties (X-Large is best in most cases) and sit down on the chair provided at the room entry. Remove the tie strings from the ankle of bootie and **THROW AWAY**. Note: Only flat or very low-heeled shoes may be worn. For safety reasons, no sandals or open-toed shoes.
- 2.3.4 Put on a hair net if you have longer than shoulder length hair.
- 2.3.5 Put on clean room gloves.
- 2.3.6 **Wipe down all items that you intend to take into the clean room. A squeeze bottle of 2-Propanol and clean room wipes are provided in the lab entry area.**
- 2.3.7 Make a badge for your garment (if you do not already have one). The supplies are located in red bin boxes on the workbench. Print your name, **FIRST AND LAST**.
- 2.3.8 Obtain jumpsuit and hood. Throw the wrapper in the trash can. Enter the small gowning room. Take care to keep the garment completely off of the floor at all times. Inspect your garment each time you wear it for tears or soiling.

2.3.9 Put on jumpsuit (gown). Take care not to let the garment touch the ground at any time. **Tuck your hood into the jumpsuit before zipping it up.**

2.3.10 Put on safety glasses

2.3.11 While in the clean room, keep your hands away from your face. Facial oils and skin can be transferred to the gloves and subsequently to the clean room equipment or your sample.

Addendum 1**UFNF Physics User Safety Orientation Checklist:**

User Name	Principle Investigator	Date	
_____	_____	_____	User Initials
			Point out location of Gas Alarms _____
			Show location of Personal Protective Equipment _____
			Verify all PPE needed for User is present _____
			Provide safety Glasses _____
			Show location of chemical storage areas _____
			Show chemical waste collection points and waste labels _____
			Review the purpose and location of the UFNF Shutdown button. _____
			Show evacuation route and the need to leave immediately. _____
			Do not stop to remove clean room garments. _____
			Review notification procedure in case of emergency. How to contact UFNF Staff _____