

SQI NANOMEDICINE CLEANROOM TRAINING GUIDE AND USERS MANUAL

Introduction

The SQI nanomedicine cleanroom provides an environment that minimizes contaminants, which may adversely affect the processing of a sample. It is a facility in which the concentration of airborne particulates and other contaminants are controlled to remain below specific threshold limits. Once the environment has been thoroughly cleaned to eliminate contaminants, maintenance of the facility to keep it in compliance with the threshold limit of contamination becomes a matter of process control. People, processes, equipment, and the enclosures of the facility continually generate contaminants. These contaminants must be continually removed from the air as well as prevented entry into the facility. The level to which particles must be held to a minimum depends upon the standards required by the facility and the processes undertaken within the facility. The SQI cleanroom employs a HEPA filter to prevent entry of particles into the inner-cleanroom. Maintenance of a low particle count relies largely on preventing the introduction of particles to the cleanroom and by regular cleaning (see *Housekeeping*).

Gowning

1. Select a hair cover and don the hair cover ensuring that all hair remains inside the cover.
2. If needed, put on beard cover.
3. Select a pair of disposable shoe covers and pull these over your shoes being careful to minimize contact between the disposable shoe-cover and the outer parts of the shoe.
4. Unfold garment while preventing it from touching the floor, your clothes or bench. Step into the coverall.
5. Put on boots.
6. Put on gloves.
7. Wear goggles/safety glasses.
8. Check yourself in the mirror to ensure that all cleanroom attire is being properly worn and is adjusted correctly.
9. Take three to four steps on the sticky mat placed in the cleanroom and enter the cleanroom ensuring that the door is completely closed behind you.

Degowning

1. Carefully remove the re-usable cleanroom boots and return them to your storage box.
2. Carefully remove the jumpsuit while not allowing any part of the jumpsuit to contact the floor. Return the jumpsuit to your storage box.
3. Remove the disposable hair cover, the face mask, and gloves, and place those items in the trash.
4. Remove the shoe covers.

Cleanroom Guidelines

1. **No eating or drinking in the cleanroom.** The policy for any laboratory involving the use of chemicals or other potentially hazardous materials is that there shall not be any eating, drinking, or chewing of gum within the laboratory at any time. The policy for the cleanroom is no different and this area should be treated the same as any other laboratory.

2. **Acceptable materials allowed in the cleanroom.** The following is a general list outlining criteria for cleanroom-compatible materials and cleanroom-incompatible materials. The distinction between the two lists is the tendency for material to shed particles or contaminate other surfaces. Anything that sheds particles or emits vapors that could result in contamination of other surfaces through the development of a coating is generally not allowed. If you have any questions regarding whether or not a material is acceptable in the cleanroom please ask Alexandra Kolot (a-kolot@northwestern.edu, 312-503-6708).
 - a. **The following are generally considered incompatible in a cleanroom environment:**
 - i. Wood pulp-based paper products, including regular paper, tissues, Kimwipes®, cardboard, books, magazines, and lab notebooks.
 - ii. Styrofoam products, including packing material, disposable coolers, etc.
 - iii. Any powders, powdered chemical samples, or materials that shed particles including food, gum, drinks, tobacco, cosmetics, foam, or research samples.
 - iv. Erasers, pencils, clickable pens, felt-tipped pens other than Sharpie® markers.
 - v. Anything that can easily tear, shred, or efflux particles or plasticizers.
 - b. **The following are generally considered compatible in a cleanroom environment:**
 - i. Cleanroom notebooks and cleanroom paper
 - ii. Wafers, tweezers, and other material handling equipment as long as they are stored in labeled boxes when not used.
 - iii. Non-clickable ballpoint pens.
 - iv. Materials with smooth, non-soluble surfaces that can be cleaned with isopropanol soaked cleanroom wipes.
3. **Maximum number of personnel.** Because the SQI cleanroom is just 1290 ft², it is a good idea to keep the number of personnel working in the cleanroom to a maximum of five at any given time. Exceeding this number is not practical for efficient work practices and will most likely result in sample contamination.
4. **Material Entry.** All tools, containers, implements, and fixtures should be cleaned to the same degree as the cleanroom surfaces before the item is allowed to enter the cleanroom.

General Practices and Policies

1. In addition to safe general laboratory practices, operations within the SQI cleanroom must adhere to a much more stringent set of guidelines and operating procedures. SQI laboratories mandate that the buddy system be used in order to prevent accidents and injuries from going unnoticed. It is important that at least one other person is in the lab and is aware of your activities and location in the event you need assistance.
2. The log sheet must be used each and every time a user enters or exits the cleanroom. Failure to do so will result in revocation of cleanroom privileges.
3. Keep your hair covered by a hair net at all times. Never touch your skin with your gloves. If your glove comes into contact with any part of your skin, immediately discard the contaminated gloves and replace them with a clean pair.
4. There is to be NO sanding, filing, drilling, cutting, or breaking of materials inside any part of the cleanroom. This includes cleaving glass samples or silicon wafers.

5. Samples, tools, and other materials owned by cleanroom personnel may be stored inside the inner-cleanroom provided that these materials are properly labeled and contained within a labeled storage tote. Excessive personal storage is not permitted.
6. Do not wear torn garments. If any portion of a garment becomes torn while inside the cleanroom, immediately leave the cleanroom and correct the problem.
7. Do not wear cleanroom garments outside the cleanroom.
8. Only ballpoint pens (non-clickable) are allowed inside the inner-cleanroom area and paper or notebooks must be specifically approved for cleanroom use.
9. Open-toed shoes are prohibited.
10. When using the fume hood, make sure it is cleaner at the end of your procedure than when you found it.
11. If you make a mess, immediately clean it up.

Housekeeping

General housekeeping is important to maintain a low particle count and prevent further contaminants from entering the cleanroom. Please remove the trash when you notice a receptacle is full and remove soiled sticky mats to expose a fresh layer. Good housekeeping practices warrant regular trash removal, replacement of sticky mats, and the cleaning of all surfaces in the cleanroom.