Cleanroom Safety Meeting Kit

For sensitive, valuable goods, the cleanroom is at the heart of production. Any contamination by substances such as dust, microorganisms or smoke can disturb the sensitive production processes and negatively impact product quality.

HAZARDS IN CLEAN ROOM ENVIRONMENTS

- Air locks
- Pass-through doors
- Gowning rooms
- Static control
- Sealed environments
- Humidity and temperature controls
- Sticky pads on the floor
- Fire suppression systems
- Workers using powered personal respirators or SCBAs

HAZARD IDENTIFICATION STARTS AT THE DESIGN STAGE

Hazard identification work has to be comprehensive. **It needs to consider the construction of the room itself, the equipment used, and the raw materials brought into it.**

In fact, the process should begin at the design stage for the room itself. And this will require expert help, because establishing such a strict separation between the clean room and the area outside it creates hazards for both spaces.

Consider the filtration system, for example. HEPA filters will be required, which means regular maintenance, testing, scheduled filter changes, monitoring, and record-keeping. You also need to consider where your makeup air (the air that replaced the one exhausted from your clean room facility) is coming from and the potential breathing hazards that can be introduced with it.

Slips, trips, and falls are one of the common causes of worker injury. Sticky mats are a great mechanism for controlling particulate matter, but if you leave one unanchored it can become a tripping hazard.

Limited access and egress are also a factor, especially in a rescue scenario. Panic bars on the doors can make it easier to leave the clean room in an emergency situation. Same with emergency exits. And fire and contaminated environment atmosphere alarms can be life-savers.

The cleanroom can become contaminated by a worker wearing a face mask inside out. This is why it's important that workers are properly trained to tell the difference and be mindful. The same goes for the coveralls: proper training can help workers avoid contamination. The arms and legs of coveralls should never hit the floor of the cleanroom.

MANAGING SAFETY IN A CLEAN ROOM

Once the hazard inventory for the room and the work that takes place in it have been completed, it's time to make sure safety management processes comprehensively address them. This includes:

- A clean room safety policy
- Identified clean room work, entry, and exit procedures
- Workflow or process maps for all aspects of the room and the work
- Clear job descriptions and job documents for work that takes place in the room
- Education and training, including daily safety briefings specific to issues relevant to the clean room
- A task list, reviewed at least once a month and whenever there is a change
- A reporting system for failures and incidents
- An inspection schedule
- A clear chain of command and reporting process for errors, omissions, and instances of non-compliance
- PPE purchasing, use, and disposal (including peripheral

items like sticky mats)
- A system to ensure the correct air filtration system is in place and regularly maintained
- Testing for airborne particulate matter
- A management system for the rate of air changes per hour
- Systems to manage a confined space or a lone worker situation (for jurisdictions where the clean room falls under these categories)

TIPS FOR CLEANROOM SAFETY

Staff should wear full protective coverings such as hoods, specially designed jumpsuits, shoe covers or special boots, and whatever else is necessary to conduct sensitive tasks. Safety goggles or glasses should be used when working with chemicals. Face masks and shields should be used for sensitive processes that could lead to breaking glass or explosions. Always use gloves to handle dangerous chemicals and to prevent shedding skin contamination. Some processes require a respirator, so be sure to have the necessary training and qualification to use those if need be.

Processes in cleanrooms can often involve chemical handling such as possibly hazardous acids, bases, solvents, carcinogens, and cryogenics. Understand the present materials and their use and know the proper procedures of handling and disposing waste. If you come into contact with such a chemical, rinse the area with water for 15 minutes and remove any affected clothing. Hydrofluoric acid can be especially dangerous if eye or skin contact occurs. Such a substance can burn through tissue and even bone which can be very destructive. As stated above, rinse any affected area with water and get medical help.

Chemical processes should be conducted under fume hoods or in wet benches if they pose the risk of spilling. Chemicals should be carefully labeled and stored. All chemicals and mixtures should be properly cleaned and hazardous waste disposed of.

It is useful to know the layout of the cleanroom and to know where

the necessary safety equipment is such as safety showers, fire extinguishers, eye wash stations, and emergency shut off switches. It is good to know what emergency signals and alarms indicate, and where to evacuate if necessary. Maintain familiarity with hazardous gas monitoring equipment and any alarms that might indicate hazardous air conditions.

FINAL WORD

Maintaining the safety and adhering to the high standards of a controlled cleanroom environment requires thorough training and routine inspections. What makes maintaining safety standards such a challenge is the unpredictability of things that can go wrong and ultimately contaminate a cleanroom.