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Ventilation System and Alarms at X6B, X7B and X9

1.0 Description of System

Work at X9 may eventually involve the use of nano-scale particulates and toxic gases. A ventilation system with a HEPA filter is installed to contain any release of the materials into the experiment hall area. The ventilation system draws air from the hutch at X9 and exhausts to the roof of Bldg. 725. The hutch flows are designed to be 300 cubic feet per minute (cfm).

There are low flow alarms installed at each hutch connected to the system, with audible alarms and indicator lights. There is a magnehelic gauge on the outside of the X9 hutch to measure pressure drop across the HEPA filter.

The control switch for the ventilation fan is located on the exterior of the X9 hutch, the walkway side, as seen in Figure 1 below.

Figure 1

The ventilation indicator green light, located to the side of the hutch door, must be on prior to using toxic or flammable gases in any of the hutches (see Figure 2 below).

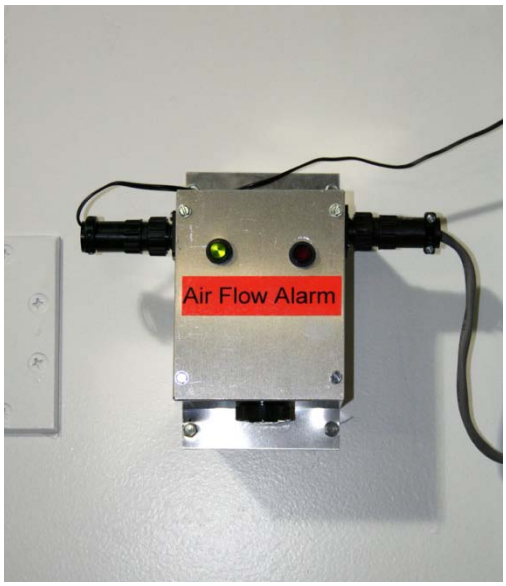

Figure 2

3.0 Alarm Response

3.1 Ventilation Low Flow Alarm Hutch X9

Since there is only one fan for all hutches, if there is a problem with the ventilation fan, the alarms will all sound at once. It is also possible for one hutch to have a blockage of the ventilation ductwork, causing an individual alarm.

Loss of flow for the ventilation system presents no immediate hazard. This alarm indicates that we have diminished air flow in the system with the following result:

- Loss of air flow to one of the six inch ducts within the hutches results in loss of exhaust function and possible release of either toxic gases, or nano-particulates to the hutch and experiment floor area.

The following actions are required for response to a ventilation low flow alarm.

1. Determine which leg of the system is causing the alarm
2. Terminate any work with unbound nanomaterials, and seal or cover the source to prevent any possible contamination.
3. Close any gas cylinder that may be using toxic or flammable gas.

4. Attempt to reset the ventilation fan using the green button located on the fan control unit found at the outside rear of X9's hutch. (See Figure 1)
   - If reset succeeds, continue with operations
   - If reset fails, call the Control Room at extension 2550 for assistance.
     i. The OpCo may make another attempt to reset the ventilation fan.
     ii. If the ventilation system does not re-start, the OpCo must contact the Utilities Group to resolve the problem.

NOTE: Toxic/flammable gas and nano-particulate work cannot be resumed until the ventilation is restored.

NOTE: If any toxic or flammable gases were in use, the BNL Fire/Rescue group will verify that conditions are safe for re-entry to the area.