

Last Update: July 01, 2009

A. Eyewashes and Safety Showers

1. Each lab unit must be equipped with an eyewash.
2. Each lab unit where the use of hazardous chemicals is anticipated must be equipped with a combination eyewash/ safety shower.
2. The eyewash must have a face wash feature and hands-free operation; that is, once activated it should continue to provide water flow until manually shut off.
4. Safety showers shall be located in an immediately accessible area within the laboratory unit or other work areas where the user shall not have to pass through a corridor door to reach the unit.
5. Eyewash and safety showers should be located near the door. If the door location is not practical, an alternate location is at the end of a peninsula bench next to a 3'-0" wide sink unit.
6. For laboratories sharing a common suite or area not separated by closed doors one emergency shower may be sufficient.

B. Eyewashes and Safety Shower Piping

1. All emergency eyewashes and safety showers will be tied into the potable water system.
2. The water supply line in the lab must have a manual shutoff valve below the ceiling within 48" of each eyewash or safety shower.
3. For new construction all emergency eyewashes and safety showers will be supplied with tempered water (75°F) using a mixing valve specifically designed for this use.
4. For remodeling projects, where that is difficult to attain discuss the options with the PM to get written direction as to how to proceed.
5. All new eyewash stations are to be hard-piped to a waste line.
6. All new safety showers are to have a floor drain in the vicinity of the shower discharge area.

C. RO Water:

1. As a general rule, RO water (about 85K ohm) can be found in each existing research building, or it is to be designed into new facilities. It is the responsibility of the researcher to provide water purification equipment if the building RO is not sufficient for their application.

D. Laboratory Water Systems

1. Laboratories shall utilize a segregated laboratory water distribution system, independent of the buildings domestic potable water. The intent of the separated laboratory water distribution approach is to minimize the need for point of use backflow preventers, while still maintaining potable water supplies to required areas and sufficiently clean water for laboratory research and general non-potable demand purposes. The laboratory water system shall not serve any outlets intended for ingestion, bathing, or pharmaceutical applications for humans or animals; however the system shall still be protected to ensure a sufficiently clean water supply. This includes the use of reduced-pressure principal devices or vacuum breakers at equipment outlets of particularly high hazard or probability of cross connection.

E. Fume Hood Plumbing Considerations:

1. Fume hoods should be purchased pre-plumbed and with all pipes pre-insulated.
2. Laboratory water in fume hoods must have a reduced pressure backflow preventer or a vacuum breaker. When vacuum breakers (VB) are used they must be located out of the contaminated air and mounted high on the exterior face of the hood, with frontward extended piping so that the inevitable leakage that occurs under normal operation can't damage equipment below. Do not locate in an inaccessible or concealed space where likely to be neglected.

F. Plumbing for Perchloric and Radio-Isotope Hoods:

1. The exhaust system shall include a backflow protected wash-down system. This system must be carefully designed and will likely involve multiple risers and/or pumps to guarantee the proper flow to each of the spray nozzles. Be aware that simply running a pipe up and putting nozzles at intervals will NOT work and is not acceptable.
2. The system will be designed using the following parameters:
  - a) Spray head nozzles with ¼" diameter IPS pipe connections should be installed below and after each elbow, and every five feet in straight duct runs.
  - b) Nozzles and components should be made of stainless steel and/or fluorocarbon plastic.
  - c) Nozzles and components must be accessible for maintenance.
  - d) Each hood enclosure should be equipped with a minimum of two spray heads.
  - e) Flow from spray heads should be allowed to drain back to hood. Verify acceptance flow for drains in hoods. For flow greater than hood drain acceptance wash down spray heads should be sequenced to prevent overflow.
  - f) A ten minute wash down sequence (time to field adjustable) will occur after each hood usage at a minimum of every 24 hours. Show timer location on the drawings.
  - g) Flow to spray nozzles must have a means of balancing.
  - h) Flow rates for the spray head nozzles will be as outlined in the following table. No nozzle may have a flow rate lower than the lowest listed flow rate.

Water Pressure (PSI)	Flow Rate (GPM)
20	1.9
30	2.3
40	2.7
50	3.0
60	3.3
70	3.5
80	3.8

*Comments:*

*F.1 You need to be very aware of the design of the wash down system. Most designers do not put the effort into the design resulting in nozzles that can't be serviced and with little or no flow out of the top nozzles. Because the system is enclosed, there is no way to know if it really works.*