

2.05 - ARCHITECTURAL CONSIDERATIONS

PART 1 – GENERAL

PART 2 – PRODUCTS

A. The laboratory shall have an aisle clearance of at least 36 inches.

Standard: NFPA 45

Justification: The main emergency egress shall have a minimum clearance of 36 inches to facilitate rapid departure in case of emergency.

B. The laboratory shall be fitted with sealed electrical outlets, using conduit plugs, that can accommodate the current requirements of the equipment used within. Biosafety cabinets shall be provided with 20-ampere, dedicated, top accessible electrical outlets.

Directive: EHS

Justification: The laboratory may have several items of equipment that require large amounts of electrical current. Such items include freezers, biosafety cabinets, centrifuges and incubators. Before occupancy, the room design must take electrical demand into account to avoid a potential power failure. Sealed electrical outlets help prevent transmission of contaminants and maintain air balance. All BSCs must be electrically tested annually and provided with enough electrical capacity to service interior outlets.

C. The room temperature and humidity shall be mechanically controlled via an exterior support ventilation system that produces less than 25 FPM throw velocity five feet from any biological safety cabinet.

Directive: EHS

Justification: The laboratory must be made thermally comfortable (68-72 degrees Fahrenheit dB and 30-50 percent RH) before permanent occupancy. Electrical appliances often exhaust heat into a room (e.g. REVCO freezer, incubator, autoclave), and failure to take this effect into consideration may result in an artificially warm work environment. Windows shall not be opened for a cooling effect since this will alter the room air balance and breach containment. A cool room shall not be heated with a portable heater, which may be a fire hazard. Use of fans for cooling is prohibited.

D. Laboratory benches shall be placed at least 44 inches from an exit.

Directive: EHS

Justification: Laboratory benches must not block emergency access to an egress. This directive also applies to the placement of chairs or stools.

E. Circuit breakers shall be located outside the BL2/3 laboratory space and labeled.

Directive: EHS

Justification: In the event of an emergency, the laboratory may be unsafe to enter. Therefore, labeled circuit breakers for key electrical appliances shall be located outside the laboratory.

F. Shut-off valves for gas and vacuum lines shall be located outside the laboratory, easily accessible and labeled.

Directive: EHS

Justification: In the event of an emergency, the laboratory may be unsafe to enter. Therefore, valves for gas and vacuum lines shall be located outside the laboratory and properly labeled.

G. Flexible connections, unions and gas shut-off shall be used for natural gas connections to the biosafety cabinet.

Directive: EHS

Justification: Tornados, mechanical vibration, seismic activity and routine maintenance may cause gas connections to the biosafety cabinet to leak or entirely break off. Release of natural gas in a laboratory is a definite fire hazard, and a flexible connection minimizes this hazard.

H. Storage of chemicals: only the chemicals needed for one week's activity shall be stored in the BL2/3 laboratory. Chemicals shall be stored in a chemical safety cabinet.

Directive: EHS and Disposal Standard

Justification: Minimum chemical storage reduces the hazard impact of chemicals coming into contact with an accidental fire. This reduces the complexity of a possible fire incident.

PART 3 – EXECUTION

END OF SECTION