PROCEDURES TO SET UP NEW LABORATORY)
JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH)
JAKKUR

Introduction:

Whenever a new faculty is required to set up a laboratory at the Jawaharlal Nehru Centre for Advanced Scientific Research, it is the responsibility of the PI (through Chairman of the Unit and Administrative Officer) to obtain approval from the following:-

(a) Safety Committee.
(b) Estate Office.
(c) President.

Procedures to obtain approval of the above mentioned section/authority is placed below:-

(1) The PI submits the following to AO through Chair of the Unit:-

(a) Floor plan in CAD (not in power point). Floor plan should include position and size of hoods, work benches, instruments, sinks, cabinets, student desks. If gas cylinders are going to be used inside the lab then positioning and number of gas cylinders should be shown. Exit(s) should also be shown.

(b) Electrical wiring plan including the expected load on UPS.

(c) Laser safety plans if the laboratory will have instruments that use laser.

(2) AO forwards the details as mentioned in Para 1 to the safety committee and also to the Estate Office.

(3) Both the sections will evaluates the design in terms of safety aspects and layout and communicate its concern if any to the PI within four days. If there are no concerns, both the committee approves the design and forwards it to AO. If there are concerns, the PI resubmits the plans after addressing the concerns.

(4) Finally the proposal will be forwarded to the President for his perusal and approval. Once approved by the President work for the Lab can commence.

Note: **General Guideline for Designing New Laboratories is placed as Annexure I.**

Annexure I

General Guideline for Designing New Laboratories

1. For laboratories that will be working with flammable materials: Each designated work area that will handle these materials should have at least two exits. This is to ensure that in case of a fire, laboratory personnel can safely leave the lab without being trapped behind a fire.

2. Avoid tripping hazards on the floor. If island benches are part of the design, then all of electrical and gas line connections should be handled through drop-down service boxes. Water outlets from island benches are a tripping hazard. Therefore sinks should be avoided in island benches.

3. Fume hoods should be made from non-flammable materials.

4. Have separate storage space for organic and inorganic chemicals.

5. Large quantities of solvent (25 L cans and above) have to be stored in flame-proof cabinets. Ensure adequate space for these cabinets.

6. Ensure adequate space for chaining gas cylinders. All gas cylinders should be chained and should not be stored near electrical outlets or heat sources (ovens, furnaces, oil pumps, etc.).

7. Ovens and furnaces should be positioned away from cabinets storing flammable material.

8. Ensure adequate spacing between benches and hoods for free movement of laboratory personnel.

9. Exhaust pipes from fume hoods have to be at least 3 meters long in order to comply with Karnataka state laws.

10. Ensure installation of adequate numbers of circuit breakers and ground fault circuit interrupters.

11. Provide a minimum clear working space of 3ft X 3ft to provide easy access to main electrical panels and switch boards

12. Electrical cables to and from instruments and computers should not run across the floor to avoid potential tripping hazards. Power for electrical devices should be drawn either from power sockets on sidewalls or from overhead panels.

13. Electrical wiring typically has a lifetime in excess of 20-30 years only when the power drawn is within safety limits. Plan appropriate electrical wiring and power sockets for current and future loads. Daisy chaining (connecting multiple devices from a single socket using extension boards) is not recommended. In case this is unavoidable, the total power drawn from all devices via the extension board should never exceed the power rating of the socket the board is connected to.

14. Electrical power cables should have sufficient strain-relief to avoid tears. Extra insulation should be provided for electrical cables running across sharp edges.

15. Ensure than electrical panels and cables near wet benches are located at appropriate safe distances to avoid short-circuits

16. In case uninterrupted power supply units (UPS) are to be located within the lab, the units should have proper ventilation and minimum clear space around the unit for servicing the unit/ batteries. UPS units should not be located near exits.

17. Ensure appropriate spacing around instruments to allow free movement of personnel. Safety aisle has to be marked properly and should be kept clear at all times.

18. If instruments emit visible or invisible electromagnetic radiation, plan lab (enclosures, safety interlocks and exits) according to the radiation hazard rating of the instrument.

For further assistance, Please email to jncasr_safety@jncasr.ac.in or contact the Coordinator safety(080-22082710).