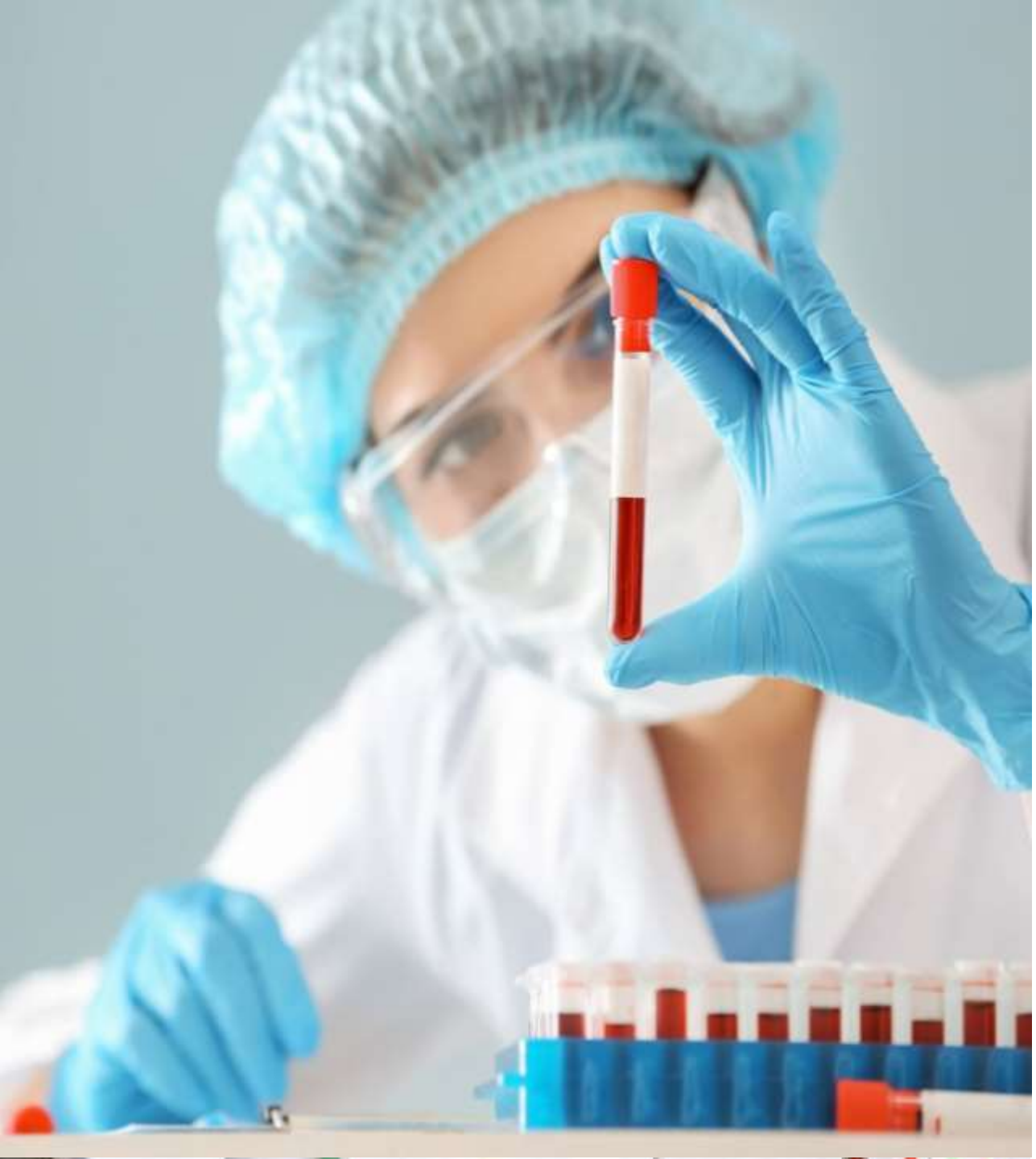


Laboratory design and facilities

Laboratory design and facilities

In designing a laboratory and assigning certain types of work to it, special attention should be paid to conditions that are known to pose safety problems. These include:

1. Formation of aerosols
2. Work with large volumes and/or high concentrations of microorganisms
3. Overcrowding and too much equipment
4. Infestation with rodents and arthropods
5. Unauthorized entrance

Design features

1. Ample space must be provided for the safe conduct of laboratory work and for cleaning and maintenance.

2. Walls, ceilings and floors should be smooth, easy to clean, impermeable to liquids and resistant to the chemicals and disinfectants normally used in the laboratory. Floors should be slip-resistant.

Design features

3. Illumination should be adequate for all activities. Undesirable reflections and glare should be avoided.

4. Laboratory furniture should be sturdy. Open spaces between and under benches, cabinets and equipment should be accessible for cleaning.

Design features

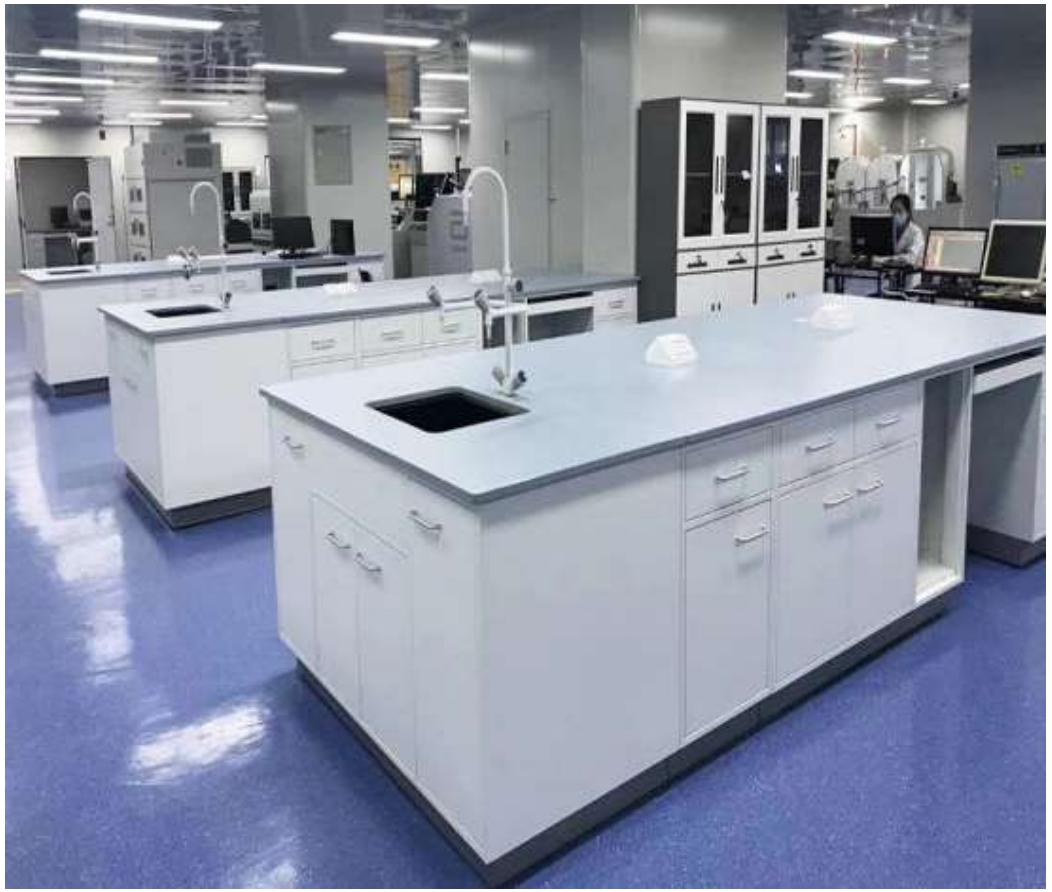
5. Storage space must be adequate to hold supplies for immediate use and thus prevent clutter on bench tops and in aisles.

6. Space and facilities should be provided for the safe handling and storage of solvents, radioactive materials, and compressed and liquefied gases

Design features

7. Facilities for storing outer garments and personal items should be provided outside the laboratory working areas

8. Bench tops should be impervious to water and resistant to disinfectants, acids, alkalis, organic solvents and moderate heat.



Design features

9. Facilities for eating and drinking and for rest should be provided outside the laboratory working areas.

10. Hand-washing basins, with running water if possible, should be provided in each laboratory room, preferably near the exit door

Design features

11. Doors should have vision panels, appropriate fire ratings, and preferably be self closing.

12. At Biosafety Level 2, an autoclave or other means of decontamination should be available in appropriate proximity to the laboratory.

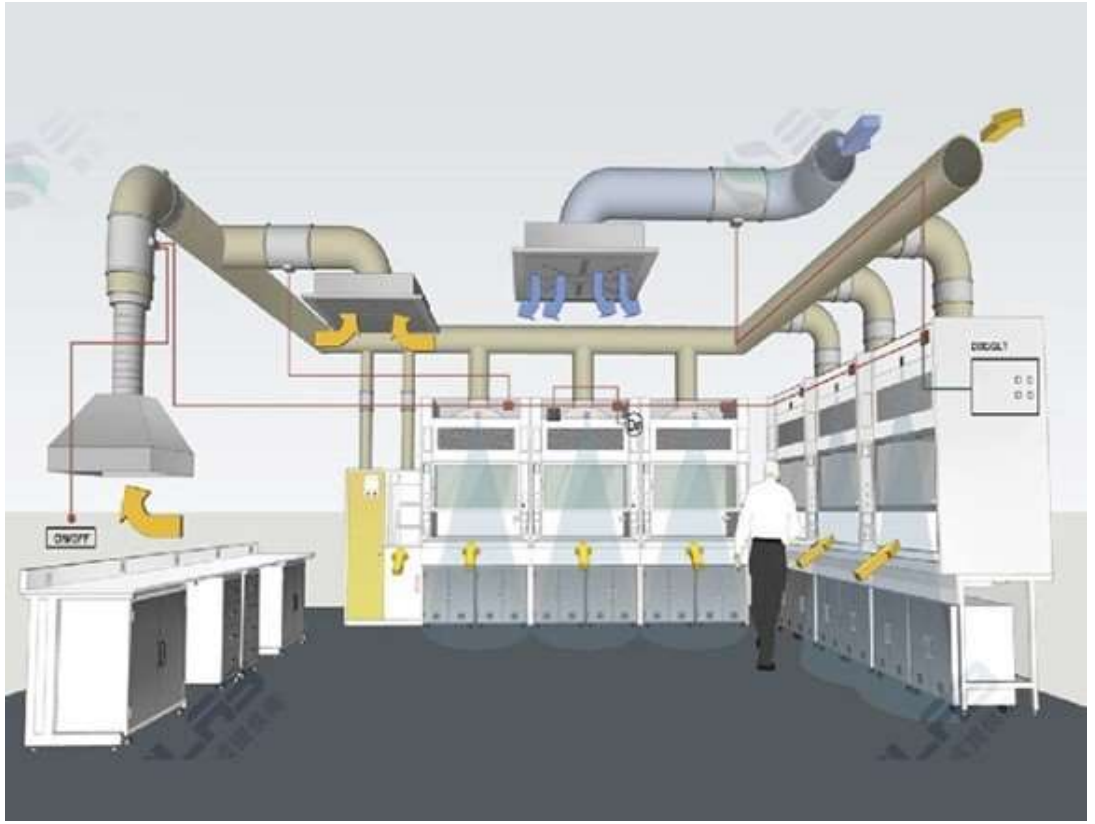
Design features

13. Safety systems should cover fire, electrical emergencies, emergency shower and eyewash facilities.

14. First-aid areas or rooms suitably equipped and readily accessible should be available.

Design features

15. In the planning of new facilities, consideration should be given to the provision of mechanical ventilation systems that provide an inward flow of air without recirculation. If there is no mechanical ventilation, windows should be able to be opened and should be fitted with arthropod-proof screens.



Design features

16. Dependable supply of good quality water is essential. There should be no crossconnections between sources of laboratory and drinking-water supplies. An antibackflow device should be fitted to protect the public water system.

17. There should be supply emergency lighting to permit safe exit. A stand-by generator is desirable for the support of essential equipment, such as incubators, biological safety cabinets, freezers, etc., and for the ventilation of animal cages.

Design features

18. There should be a reliable and adequate supply of gas. Good maintenance of the installation is mandatory.

19. Laboratories are occasionally the targets of vandals. Physical and fire security must be considered. Strong doors, screened windows and restricted issue of keys are compulsory. Other measures should be considered and applied, as appropriate, to augment security


STAY
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