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Hazards in the laboratory

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Working in a research laboratory and performing experiments without any injury or hazard is very rare. A research laboratory is considered a hazard-prone environment due to factors, such as contaminated air, working with concentrated acids and combustible materials. Hazards in the laboratory can be mainly grouped into chemical hazards, biological hazards and physical hazards. Chemical hazards include concentrated acids, cleaning agents and disinfectants which can cause severe burns. Accidental inhaling of fumes from anaesthetic gases, solvents and paints can cause adverse health effects. Poor storage of chemicals may cause the evolution of hazardous gases that cause inflammation of the lungs and other toxic health effects. Next comes the biological hazards that include allergies from microbes, recombinant organisms and viral vectors used in experiments. Most biological hazards are caused due to infectious zoonotic diseases that can be transmitted from animals to humans. Improper disposal of cultured microorganisms can cause allergies and infection. Another common risk incurred in the laboratory is physical hazards which refer to injuries from exposure to hot, heavy or sharp objects. It is also important to clean spills and dispose of waste materials to prevent slipping and falling in the laboratory. Injuries from broken glassware are also a very common hazard.

A few other possible laboratory hazards include electrical hazards where laboratory personnel might sustain an electrical shock injury due to frayed power cords. In a laboratory dealing with radioactive materials, radiation hazards include the potential risk of inhaling radioactive material as well as external irradiation. Exposure to a high level of radiation can lead to DNA damage and an increased risk of cancer. Effective measures and precautions must be taken to prevent these hazards. One should wear all the safety gear, such as a lab coat, hand gloves and safety goggles while working in the lab. A fire extinguisher is a mandatory safety tool that must be kept in the laboratory. In case of electric shock, a wooden stick can be used to remove the source of electricity from the person as it is an insulating material. The laboratory personnel should wear a mask, especially when handling animal specimens. Mixing of chemicals should be performed only after referring to the chemical safety datasheet and with proper safety measures. Handling of glassware should be done with extreme care to prevent any breakage. Therefore, it is essential to follow proper safety procedures to prevent and eliminate hazards in the laboratory as well as successfully perform laboratory experiments.

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