Research Laboratories Meeting Kit



WHAT’S AT STAKE

Research laboratories are the petri dishes of ground-breaking science, but researchers need to stay on the safe side of technology’s cutting edge. Know the hazards, compatibilities, and storage requirements for all of your lab materials. Follow lab protocols and safe work practices. Do not use materials with unknown properties or with which you are unfamiliar. Planned, targeted experiments with predicted results are less hazardous than uncontrolled and unpredictable gambles. Plan and clear your laboratory procedures and experiments with your facility oversight groups.

WHAT´S THE DANGER

THE DANGERS OF WORKING IN A LABORATORY SETTING

- **Chemical hazards:** Handling toxic substances can cause irritation and carcinogenicity.
- **Biological hazards:** Biological hazards include hazards from working with small animals, working with bloodborne pathogens, and working with biological agents, such as viruses and bacteria.
- **Physical hazards:** Physical hazards include exposure to noise, poor posture and the explosibility and flammability of substances.
- **Safety hazards:** Safety hazards include unbalanced centrifuges, danger when handling hot sterilized items and electrical hazards, such as shock, explosions, blasts, and electrocutions.
- **Allergy hazards:** A common allergy hazard in the laboratory setting is a latex allergy.

Dangers in the laboratory setting can also come from unsafe practices, including:

- Working alone in the laboratory
- Neglecting to wear a lab coat.
- Lack of safety training

COMMON LABORATORY ACCIDENTS

1. Chemicals. Treat chemicals with the necessary caution, measure chemicals

carefully, contain potentially irritating or hazardous chemicals and use only approved containers when you're transferring chemicals.
2. Heat. Exercise caution when handling hot items. Hastily or improperly handling hot items without the correct tools can cause serious burns.
3. Cuts And Scrapes. Using sharp tools in the laboratory setting can cause scrapes and cuts. Workers may also use sharp objects, such as needles and razor blades, or need to clean up broken glass.
4. Contamination. Though the advice to wash your hands may seem quite basic, it's an important procedure to avoid contamination. After you interact with any foreign substance, you should wash your hands thoroughly. You can contaminate areas outside of the lab if you carry bacteria or other substances on your clothing or skin, which can cause the spread of illnesses and other dangers.
5. Inhaling Substances. If you inhale chemicals or gases in a space that isn't properly ventilated, you may experience nausea, headaches, or fainting.
6. Fires. Review and practice the proper procedures to ensure you minimize the risk of fire in the laboratory. All flammable materials should be properly stored and sealed. Inspect burners for leaks to avoid sudden flares.
7. Spills And Breaks. In the lab, glass beakers may be dropped and break. Liquids may be spilled. Generally, these accidents are caused by rushing, being negligent and not properly following procedures.

HOW TO PROTECT YOURSELF

BEST PREVENTIVE SAFETY MEASURES IN LABORATORY SETTINGS

- To reduce exposures in the lab, wear the required personal protective equipment (PPE). Consider the chemicals and materials you are using when choosing the correct glove to wear. Depending on the material and the splash potential, choose eye protection such as safety glasses, goggles, or a face shield. Work in a well-ventilated lab and wear a respirator when necessary. Wear non-slip shoes, long sleeves, and long pants. A coverall lab coat adds extra protection.
- Periodically test and maintain your lab equipment for proper function. Autoclaves, centrifuges, fume hoods, radiation detectors, etc. should be kept in good working order and placed out of service when they need repair. Practice good lab hygiene by cleaning and decontaminating all surfaces and equipment between uses. Never use laboratory refrigerators or burners for food storage or cooking.
- Restrict lab access to authorized and trained workers and visitors. Know the emergency procedures for your facility including evacuation routes and exits. Be familiar with spill procedures and the location of spill cleanup kits. Periodically, drill for your response to spills, exposure alarms, fire, and other emergencies. Know CPR and first aid.

SPECIFIC LABORATORY SAFETY PREVENTION

Chemical. Practising proper chemical segregation is essential in all labs, as some substances can react with each other to create chemical reactions, fires and even explosions. Protective clothing and good housekeeping are also important for protecting your team from chemical hazards.

Electrical. Electrical hazards are potentially life threatening, however, so

minimising their risk is vital. All power outlets that could be exposed to wet conditions should be equipped with ground-fault circuit interrupters. Flexible extension cords should also be well maintained and never used as a substitute for permanent wiring.

Electrical. If someone comes into contact with a live electrical source it is important not to touch them, as you could also be electrocuted. Instead turn the source off or push them clear of the source of the shock with a dry implement, such as a wooden broom handle.

Biological. Proper storage and protection is key to preventing a biological emergency in your lab. Wearing appropriate protective clothing and keeping biological agents contained in the correct areas are essential for minimising exposure to risk. Systems and procedures for safe use, handling, storage and transport of biological hazards should all be in place.

Biological. Emergency procedures should be prepared in advance, and the primary objective should be to contain the biological hazard and minimise risk to people and the environment.

Physical. Preventing physical risk to your team in the lab can often be achieved by effective training and good housekeeping. Staff should be trained in the proper procedures for lifting, pulling and pushing, as well as the dangers of repetitive movements, and the handling requirements for different equipment. Proper housekeeping is essential for preventing slips, trips and falls in the lab.

FINAL WORD

Research laboratories present many challenges. In the day-to-day bustle of conducting research experiments, worker health and safety can be easily overlooked. However, with proper guidance, a trained eye, and practice in noticing the mundane, we can find and correct many common mistakes and prevent illness or injury.