CDFD Technology Incubator

LAB SAFETY MANUAL & CODE OF CONDUCT

TABLE OF CONTENTS

PREAMBLE

This laboratory safety manual is compiled to be used as a binding document for all personnel working in laboratories to ensure safe work conduct and practices at CDFD Technology Incubator. This handbook is intended to set up a framework of how startups and their staff incubated at CDFD Technology Incubator should work and use the facilities in a mindful and safe way.

In this regard all users of these facilities are required to familiarise themselves with safe practices for applied laboratory operations. This manual will be amended as various situations might arise and come to our attention.

INTRODUCTION

Centre for DNA Fingerprinting and Diagnostics (CDFD) is an institute under the BRIC-Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India. The centre is equipped with world-class instrumentation and computing infrastructure to facilitate research and development in frontier areas of modern biology.

In India, advancements made in laboratories frequently struggle to transition into the market and reach end users, primarily due to high operational cost, lack of business acumen and long gestation period. CDFD has since embarked on this new endeavour of providing handholding to innovators throughout their journey from lab to market and also after that. CDFD is poised to assume a leadership position in this emerging trend, working alongside both industries and academia to accomplish this objective.

CDFD TECHNOLOGY INCUBATOR

iDeaNA-CDFD Technology Incubator, the business incubator of CDFD has state-of-the-art infrastructure for shared wet research and industry-standard equipment. It is dedicated to nurturing, promoting, and accelerating early-stage innovations and deep-tech startups in life sciences and related disciplines.

Specifically designed to nurture startups, CDFD Technology Incubator spans over 12,000 sq. ft, which includes lab spaces for research, dynamic conference rooms, collaborative sitting areas, and breakout zones.

Our Offerings:

- ✓ Access to co-working space and high-end equipment
- ✓ Mentorship regarding legal, IP, regulatory, marketing, & other technical aspects.
- ✓ IP Facilitation and Technology Transfer
- ✓ Assistance in fundraising in the form of grants and/or angel investments.
- ✓ Networking with investors, customers, non-profit organisations, government agencies, industries, research institutes, hospitals and other stakeholders.

General Conduct on the Use of Laboratory Equipment and Facilities

1. Only authorised persons can work in the laboratory. Unauthorised personnel and pets are not allowed in the laboratory premises. Collaborators of the existing incubatees are strictly forbidden to use any equipment in the incubator, unless a prior permission is taken from the management, Decisions in this regard solely rests with the management.
2. Children under the age of 10 years are not allowed inside the R&D laboratories.
3. Proper laboratory decorum and etiquette is expected of everyone. Excessive noise and unruly behaviour are not allowed in the laboratory premises.
4. Utmost care should be taken to ensure proper use of all laboratory equipment. Incubatees are strictly prohibited from moving the equipment, chairs, tables etc., for their own convenience. Movement of equipment such as gel electrophoresis and the accessories from one place to another is strictly not allowed.
5. Repair of equipment rendered out of order due to carelessness and improper use shall be the responsibility of the users and they are liable to pay the required repair charges.
6. All laboratory equipment should be used only for their intended purpose, unless appropriately modified, upon approval of the laboratory supervisor.
7. Eating in the laboratory is strictly prohibited. Food and drinks should not be stored in the refrigerators/freezer/drawers on the lab floor. Please use the canteen facilities on the ground floor.
8. Persons working between 8 pm and 8 am need to sign the security log at the main gate to use the facility. It is advised that they do not work alone during this time. Also, all the staff working on Saturdays and Sundays need to sign at the Security.

General Safety and Security

1. Be fully aware of the building's safety and evacuation procedures.
2. Make sure you know where your lab's safety equipment—including first aid kit(s), fire extinguishers are located and how to properly use it.
3. Keep emergency phone numbers accessible at all times, as specified at the end of this document.
4. All chemicals, samples and other biohazard materials or lasers should have appropriate warning signs.
5. No open flames in the laboratory unless explicit permission for the same is taken.
6. In case of any untoward incident or drill, be sure to turn off all electrical equipment and close all containers.
7. Ensure laboratory glassware does not have any chips and cracks before using. Dispose any damaged glassware properly.
8. Never leave an ongoing experiment unattended.

UNDERTAKING FOR MATERIALS

1. All personal supplies/equipment brought into the premises should be listed and checked-in with the Security Guard and the Incubator laboratory personnel at CDFD Technology Incubator. Only registered supplies/equipment will be allowed to leave the premises with their rightful owners.
2. Be sure to log-in before and log-out after using the equipment. If anyone is found using the equipment without log-book entry, he/she will be barred from using it for a period of 2 weeks.
3. No consumables or laboratory supplies will be provided by CDFD Technology Incubator.
4. No third-party samples can be tested without written authorisation/permission by the team at CDFD Technology Incubator.

PERSONAL PROTECTION SAFETY RULES

1. Wear proper lab clothes (**avoid skirts, shorts and open shoes**) and safety gear (lab coats, safety goggles, gloves, face masks etc) while working. Loose clothing or dangling jewellery should be secured. Always tie back hair that is chin-length or longer.
2. Never smell or taste chemicals, or pipette by mouth and follow the proper procedures for disposing lab waste.
3. Report all injuries, accidents, and broken equipment or glass right away and get help in case of injuries/accidents.
4. In the event of a chemical splashing into your eye(s) or on your skin, immediately flush the affected area(s) with running water for at least 20 minutes. Always wash your hands before leaving the lab or eating.
5. Keep your hands away from your body, mouth, eyes, and face when using lab equipment and chemicals.
6. Make sure that all fire extinguishers, and exits are always unobstructed and accessible.
7. Only lightweight items should be stored on top of cabinets; heavier items should always be kept at the bottom.

EQUIPMENT HANDLING

1. Do not use any equipment without training and authorisation by the Instrumentation team/Management team of CDFD Technology Incubator.
2. Entry in the logbook provided with the equipment is necessary. Login time and out time must be entered. If any equipment is found to be running without a logbook entry, it will be switched off without any notice to any one and any loss due to this is the responsibility of the Incubatee.
3. Any person found to be misusing the equipment will be given one warning and after that he/she will be barred from using any equipment in the facility for 2 weeks.
4. High voltage equipment should be handled with utmost precaution and always turn off the high voltage power supply after use.

5. Avoid using extension cords and make sure that all the electrical panels are unobstructed and easily accessible.
6. Always wear gloves and spray your gloves with ethanol before opening incubators. Never wear gloves outside of the lab.
7. Please clean the equipment and their accessories after use and close it appropriately. Turn off all the equipment when not in use.
8. When new chemicals are ordered, please inform the lab manager so that the chemical inventories can be updated (and please provide copies of the MSDS for each new chemical).
9. Always close and latch completely freezer doors (both –80^{o}C and –20^{o}C) when not in use.
10. Make sure samples are capped tightly and counterbalanced appropriately when centrifuging. Also, be sure to screw the top on the microcentrifuge during use.
11. If you break something, please report it to the incubation management team by call and email.
12. Please notify the lab manager of any problems ASAP.

BIOSAFETY

General Biological Safety:

Biological agents in this context include microorganisms, toxins, viruses and their particles/components like allergens. Basic working principles include:

- Washing hands thoroughly before and after working.
- Appropriate lab clothing, lab coats, gloves as well as safety goggles where required, while working with biological agents.
- Using only closed tubes for centrifuging the samples and secondary leak-proof container while transporting cultures, samples and petri-dishes.
- Disposal of syringes with the lid in separate sealed plastic bags.
- All solid waste generated in the laboratory (e.g. tips, tubes, tissue paper, blotting sheets, gloves, etc.) should be disposed of in designated biohazard bags and handed over to the Lab Manager for further disposal as per CDFD's biosafety protocols.
- Laboratory waste **should not** be disposed of in general waste bins.

Maintenance of work area and disposal of fluids:

- The work benches should be disinfected with 70% ethanol before and after the experiments.
- Non-hazardous liquid waste (e.g. gel running buffers, transfer solutions, etc.) should be disposed of in designated laboratory wash basins.
- Contaminated samples and cultures should be treated with sodium hypochlorite solutions before disposal and then discarded in the designated laboratory wash basin. The Lab Manager should be consulted about decontamination and disposal procedures.
- Cultures with other hazardous chemicals or heavy metals should be disposed of according to the method provided in the Material Safety Data Sheet (MSDS) in consultation with the Lab Manager.

- During the spill of a culture containing organisms, shut down the air-conditioning, inform the concerned authorities and cover the spill with absorbent materials. After soaking excess liquid, decontaminate the area with 70% ethanol or 1% sodium hypochlorite. The material used to clean the spill should be disposed of as biohazard waste.

General Guidelines for Chemical Safety:

Potentially harmful chemicals are being used in the laboratories every day. Therefore, it is of utmost importance to be informed about the safe handling and disposal of such chemicals. The Material Safety Data Sheet (MSDS) describes the properties, reactivities, potential chemical hazards and contains instructions for the safe handling of the chemicals.

1. Treat every chemical as though it were dangerous.
2. Use carts provided for transporting chemicals such as solvents and concentrated acids.
3. Large quantities of these chemicals should be stored in the designated cabinet for corrosive substances.
4. Label all chemicals properly, clearly stating the name of the substance, its concentration, the date it was received, and company name.
5. Use pipetting bulbs for pipetting any chemical.
6. All chemicals, solvents and samples carried by the incubated companies and their staff must be duly entered in the register at the main gate security before entering.
7. Do not allow any solvent to come in contact with your skin.
8. Take only the required amount of chemicals and store the unused chemicals in a separate container.
9. Chemicals or other materials should never be taken out of the laboratory.
10. Chemicals should never be mixed in sink drains.
11. Flammable and volatile chemicals should only be used in a fume hood, by taking utmost precautions by using laboratory attire along with safety goggles if needed.
12. If a chemical spill occurs, clean it up right away.
13. Ensure that all chemical waste is disposed of properly.
14. Never tap flasks that are under vacuum.

Guidelines for Ethidium Bromide (EtBr):

EtBr is a commonly used chemical for gel electrophoresis and fluorescence upon exposure to ultraviolet (UV) light when bound to the double-stranded DNA and single-stranded RNA. It is a mutagenic and moderately toxic chemical and the powder is considered to be an irritant to the respiratory tract, eyes and skin.

- EtBr waste **should not be** poured down the drain or thrown in trash.
- The agarose gels should be disposed of in a sealed plastic bag and the liquid EtBr, if spilled, should be collected in a sealed reagent bottle.
- Bleach should not be used for cleaning the spill.

Guidelines for Acrylamide, Bis-Acrylamide and Polyacrylamide Gel Disposal:

Acrylamide, used for SDS-PAGE, is considered to be a neurotoxic agent and therefore should be handled with care.

- Use of gloves, lab coats and eye protection are mandatory when handling acrylamide.
- The solution should be polymerized using TEMED and APS before disposal.
- Polyacrylamide gels should be disposed of as biohazardous waste.
- It should not be disposed of in regular garbage or flushed down the drain.

Guidelines for Imaging Stations:

While using UV light for viewing gels stained with EtBr, extra precautions are to be taken. Gloves and eye protection are mandatory while using the imaging stations. Discard the gloves contaminated with EtBr in separate leak-proof bags. **The gloves used for removing the gels should not be used for operating the systems.**

Guidelines for Phenol/Chloroform:

Phenol/Chloroform is used for extraction of biomolecules such as RNA. It is considered to be a moderately toxic solvent which causes respiratory tract and skin irritation. It should be stored in a properly labelled solvent bottle. Use of gloves, eye protection and lab coat are necessary when using this reagent.

Safe Handling of Liquid Nitrogen:

Liquid Nitrogen should be stored properly in the respective liquid nitrogen containers. It should be made sure that the containers are leak proof and sealed tight. Use of cryo- gloves and eye protection is mandatory. The gloves should be impervious to the fluid and loose enough to be tossed off easily. **Liquid nitrogen should not be used for cooling flammable mixtures.**

Compressed Gas Safety:

- Clear labelling of the gases on cylinders and pipelines is mandatory.
- New cylinder should be checked for leakage using soapy solution and not flame.
- Valves of the cylinders should be easily accessible and should be handled with care. Closing should not be over-tight.

Disposal of Chemicals

- Do not dispose of any solids in the sink.
- Dispose all consumables and waste properly.
- Refer to the chemical guidelines section for proper disposal of the chemicals.

COMMON FACILITIES

- All users are expected to use the common facilities with utmost care.
- Make proper log entries while taking Ultra-pure water, nitrogen and other gases provided by the lab.
- It is everyone's responsibility to ensure there is no wastage of resources and other's safety is not compromised.

Wash Area

1. Washing of glassware etc., should be done only inside the Wash Area.
2. Autoclave is available inside the Wash Area. This will be operated by the trained persons of CDFD Technology Incubator at specific timings as decided by the management on all working days and no incubatee is allowed to operate the autoclave on their own.
3. Hot air oven is provided in the lab which can be used by the incubates on all working days during the working hours. Overnight usage of the oven is not allowed unless prior permission is taken from the management team.
4. Ice can be taken from the ice machine. Please make sure that there is no spillage.
5. Smoking is strictly prohibited within the CDFD building, ESPECIALLY IN THE WASH AREA.
6. Fume hoods are provided in the Wash Area for using any pungent and volatile chemicals. Do not open such chemicals in the lab.

Meeting Room

- Incubated companies can use the Meeting/Conference room for a maximum of 4 hours per month beyond without charge. Management will charge for any use beyond this limit.
- Meeting Room/Conference Room must be booked in advance through the online booking form.
- Inform the staff once you have finished using the room.

Canteen

- Incubated companies and their staff are encouraged to avail the canteen on the ground floor and should not consume any food inside the lab premises.
- Canteen is self-service, everyone is expected to clear the table after themselves and put back the chairs.

EMERGENCY CONTACT NUMBERS

INCASE OF ANY EMERGENCY CONTACT SECURITY FIRST

CDFD Security	+ 91 040 2721 6014
CDFD Main Reception	+ 91 040 2721 6000
Incubator Reception	+91 040 2721 6225
Ms. M Kavita Rao, Scientist In-charge	9951990600
Mr. Dibyadarshi Ranasingh, Incubation Manager	9556883224
Fire Department	101
Ambulance	102
EMRI	108
Apollo Emergency	1066
Kamineni Hospital	24022222
Yashoda Hospitals	105910
Police	100