National University of Singapore
Faculty of Science, Department of Physics,

Centre for Ion Beam Applications (CIBA)

Safety Awareness Communication to Members and Visitor: Check List

Comprehensive Safety Management System (CSMS)
Procedure No. CIBA/CSMS/02

Ren Minqin
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Objectives

This brief communication is directed at all users of Research Laboratories shown in Table 1, (from here on, will be designated as *the laboratory*), Department of Physics, National University of Singapore, under supervision of the Principal Investigators.

Research Laboratory	Location	Principle of Investigators
CIBA main lab (3.5 MV dynamitron ion accelerator)	S7-02-01 & 01-01	A/Prof Thomas Osipowicz & A/Prof Jeroen van Kan
CIBA processing lab	S7-01-07	A/Prof Jeroen van Kan
CIBA clean room	S7-01-01A	A/Prof Jeroen van Kan
CIBA/ESP nano fabrication lab	S7-01-08	A/Prof Jeroen van Kan
CIBA Chemistry lab	S7-01-09	A/Prof Thomas Osipowicz & A/Prof Jeroen van Kan
CIBA Thermal Processing lab	S7-01-16	Prof Mark Breese
CIBA Optical Material & Device lab	S11-02-09	A/Prof Andrew Bettiol

Table 1: CIBA research laboratories

The primary purpose of this communication is to raise the awareness and to instill a habitual consideration of safety among every user of *the laboratory*. Every user of *the laboratory* will have to read and endorse the document as an acknowledgement of his/her understanding of the content of this communication before the commencement of any experimental work in *the laboratory*.
Nobody will intentionally wish to hurt or harm others who are involved with the activities in the same laboratory; yet even a moment of forgetfulness or carelessness in the laboratory, by anyone, can lead to accidents and unwanted injuries. Therefore, it is the responsibility of each and every user of *the laboratory* to make a conscious effort to promote 'safety-first' ethics and practices. Such vigilance will help to minimize or eliminate the level of risk and potential accidents on a daily basis.

Steps to be considered seriously to ensure a safe working environment

Safety & Health

We shall make every effort to ensure the utmost health, safety and security procedures in all our group's activities, be it personal, work-related, or out with our laboratories**.** This shall involve our continual efforts to eliminate or minimizing the risk of accidents, and to abide by the laws and regulations of the department, the University, and the Country.

Competency: Safety means being competent in handling risky situations in the laboratory. It is mandatory that all members of *the laboratory* must pass the safety test conducted by the Department/Faculty/OSHE. The safety test provides the workers with the opportunity to study the various safety issues in detail. If in doubt, each worker is highly encouraged to review the risk assessments and MSDS.

Care: Safety begins with the exercise of care. Caring about one's own safety and the safety of others is of primary priority. Each member of *the laboratory* should only work in conditions that are deemed to be safe for oneself and for others. Leave no room for error. Carelessness is inexcusable. Death and serious injury can result out of negligence.

Information: Safety means gathering information on the agents, procedures and equipment needed so that each worker will have knowledge of the potential hazard that may arise from the experiments to be conducted. This means taking time to find the relevant information without cutting corners. MSDS of chemicals can be found online and in *the laboratory (YELLOW/RED files on top/beside chemical cabinets)*. The MSDS website is available on the laboratory computer for easy access and consultation.

Anticipation: Safety means having the ability to anticipate any potential hazard concerning the equipment or/and chemicals that are employed in the experiment. This is therefore essential in the avoidance of accidents. Towards this end, each member of *the laboratory* is strongly advised to consult senior graduate students, research staff or the PI when there is doubt about carrying out an intended procedure. Do NOT carry out any procedure without having been through the training on how to use particular equipment correctly or execute the methodology with some level of confidence.

Planning: Safety means being able to plan an experiment thoroughly, identify the known hazards connected with it, and eliminate or minimize those hazards before the start of the experiment. This requires clear thinking and diligence. If there is any doubt, do not perform the procedure. Seek assistance from your mentor. Risk assessment on the specific methods must be duly completed and checked by the mentor. MSDS and SOPs must be read and fully understood for each agent, solvent, equipment and procedure that will be employed in an experiment.

Discipline: Safety means being totally disciplined in the execution of everyday tasks to prevent careless accidents or unfortunate incidents. Sloppiness and lazy work practice is unacceptable in *the laboratory*. Forgetfulness, irrespective of exhaustion, overwork, bad time management or personal problems will not be tolerated. Absolute discipline will lead to a safer working environment for all.

Protection: Safety means wearing adequate protective clothing in the laboratory.

1. Lab coats must be worn and buttoned up when working in *the laboratory*. They must be removed before entering the public areas. Lab coats must be worn inside the work area when you are carrying out experiments or transferring chemicals and biologicals.
2. Sandals, shorts and short skirts are inadequate and must not be worn in the laboratory.
3. Cotton clothing and leather shoes offer the best protection against chemical spills and fire. Being sensible is better than being sorry.
4. For general safety, long hair must be tied back.
5. Gloves, when worn for an experiment, must be removed before leaving *the laboratory*. Do not touch the telephone, a door handle or a computer keyboard whilst wearing gloves.
6. Safety glasses or goggles must be worn in the laboratory at all times.
7. Contact lenses should be worn with caution in the laboratory as chemical fumes may become trapped between the lens and eye causing permanent damage. Always wear goggles in the lab to prevent such damage.
8. Hands should be washed as a matter of course, before leaving the laboratory and before entering the public areas.

9. Consumption of food and drink are strictly not allowed in *the laboratory* under any circumstances.
10. Undergraduate doing experiment in the lab must be supervised at least by a senior graduate student.

Housekeeping: Safety means being able to work in a clean and systematic laboratory.
It is the responsibility of each individual user of *the laboratory* to ensure there is nothing left blocking the passageways, nothing is left balanced or stacked precariously, and all consideration for others has been taken within the daily routine of *the laboratory*. Good housekeeping is essential. Inspections will be carried out regularly.

Camaraderie: Safety means being able to remind each other about potential risks in the laboratory. A cordial and cohesive environment is highly encouraged in the research group. This will be particularly helpful to new members in the group who will need to familiarize themselves with the *modus operandi* of the laboratory, the department, the university and Singapore.

Check List:

Are you aware of/have you done?

☐ Safety online Multiple Choice Questions *(Passing score: 90%)*

☐ Laboratory Safety Manual (CIBA)

☐ Standard Operation Procedures (SOP) on University/Faculty procedures; Departmental SOPs and Laboratory Specific SOPs such as equipments and experiments

☐ Risk Assessments

☐ Awareness on Regulated Chemicals (e.g. Petroleum & Flammable materials, Chemicals under the NEA Environmental Pollution Control Act (EPCA), SPF Explosive Precursors list, Poisons and Chemical Weapons Convention (CWC)) that allow to store/keep/use in Laboratory [Kindly refer to Appendix 1 for details]

☐ In case of Emergency, call Campus Security at **6874 1616** OR 999 or 995 (if required). Campus security will direct Police/SCDF to incident site.

Upon signing this document, I acknowledge that

- I have read and understood the content of this document.
- I will be vigilant and comply with all safety requirements to ensure a safe working environment.
- I am aware of the locations of the safety equipment that are installed in the laboratory.

Staffs and Students

No	Name	Email address				
1	A/Prof Thomas Osipowicz	phyto@nus.edu.sg				
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26	Miss Tao Ye	a0023725@nus.edu.sg				
27	Mr Xu XinXin	a0112299@nus.edu.sg				

Ad-Hoc Visitors

No	Name	Name of Next-of-Kin	Contact of Next-of-Kin	Signature & Date	Name of PI	Confirmed by PI & Date
1						
2						
3						
4						
5						

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