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LA PRÉVENTION DES RISQUES PROFESSIONNELS C'EST QUOI? C'EST POUR QUI?

WHAT IS OCCUPATIONAL RISK AND SAFETY PREVENTION? WHO IS IT FOR?

ACCUEIL DES NOUVEAUX ENTRANTS / WELCOME OF NEWCOMERS

07 MARS 2024

Marie-Noëlle Navas
Chargée de prévention du Centre de Recherche des Cordeliers – Unité 1138

Université Paris Cité

Inserm
La science pour la santé
From science to health

SORBONNE UNIVERSITÉ

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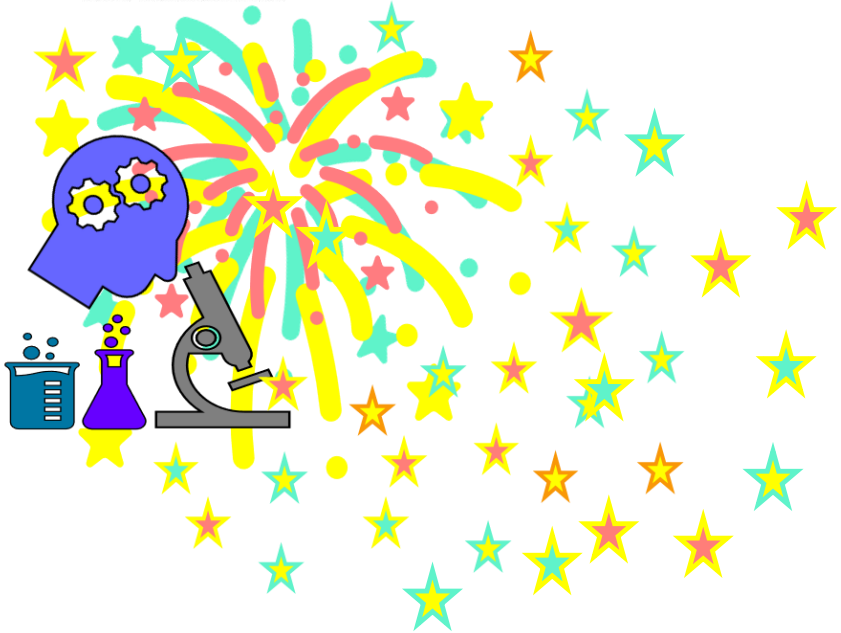

BIOMEDICAL RESEARCH IS EXCITING……

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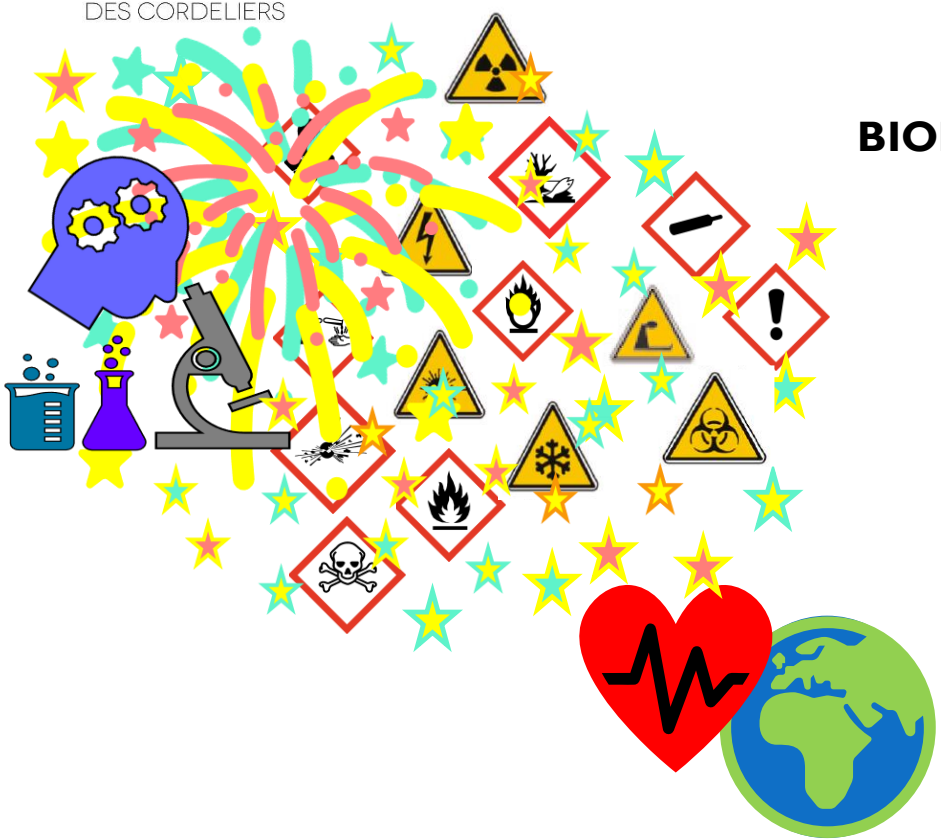

BIOMEDICAL RESEARCH IS EXCITING……

…BUT RISKY TOO FOR HEALTH AND ENVIRONMENT

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AIMS OF OCCUPATIONAL RISK AND SAFETY PREVENTION???

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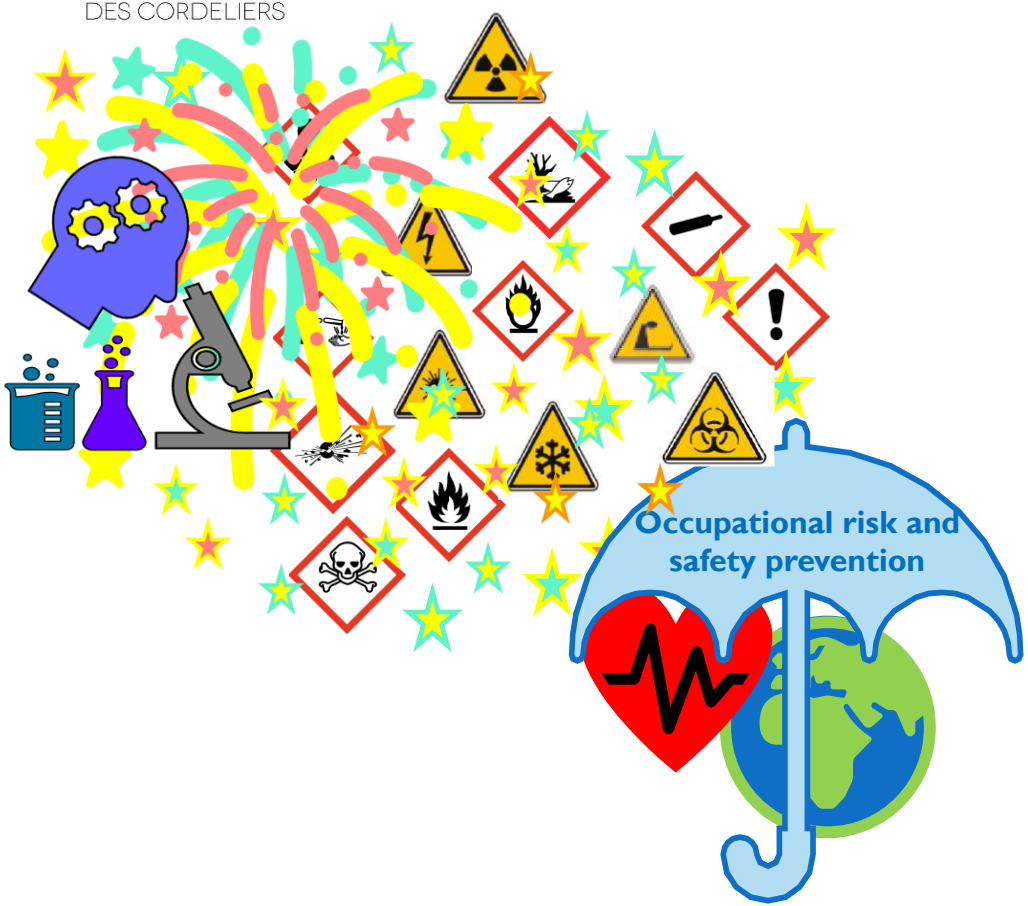
AIMS OF OCCUPATIONAL RISK AND SAFETY PREVENTION:



- To limit and to control risks to prevent incident and accident

- To provide safe working conditions

- To protect workers and the environment

- To inform, train and educate workers

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WHERE DOES OCCUPATIONAL RISK AND SAFETY PREVENTION COME FROM?

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WHERE DOES OCCUPATIONAL RISK AND SAFETY PREVENTION COME FROM?

- Feedback on incidents and accidents

- Medical follow-up of agents

- Analysis of causes of occupational disease

- Product dosage studies to determine the effect on health and the environment

- Since 1947: l'INRS = National Research and Safety Institute for the Prevention of Occupational Accidents and Diseases

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FOR WHO IS OCCUPATIONAL RISK AND SAFETY PREVENTION ??

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FOR WHO IS OCCUPATIONAL RISK AND SAFETY PREVENTION ??

FOR ANYBODY WORKING IN CRC

Whatever the university, the employer whatever the type of contract

Art. L4122-1 French Labor Code:

Everyone is responsible for

- their own safety and health

- the safety and health of the other people concerned

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FOR WHO IS OCCUPATIONAL RISK AND SAFETY PREVENTION ??

FOR ANYBODY WORKING IN CRC

Not convinced?

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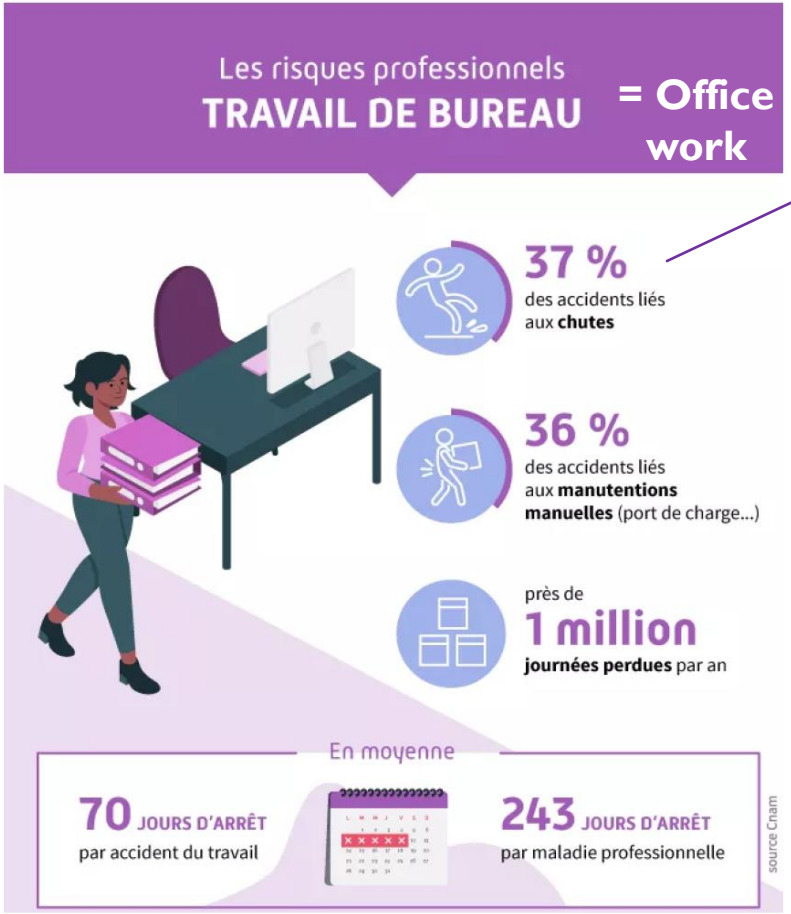
FOR WHO IS OCCUPATIONAL RISK AND SAFETY PREVENTION ??



Source:
https://www.ameli.fr/

Risk factor for falls?
- Falls from height
- Slippery, degraded, uneven ground (including steps) or uneven surfaces
- Cluttered floor (passages cluttered with various objects, electrical cables, etc.)
- - Inadequately lit passageways (walkways, stairs, etc.)

+ fire risks
+ stress and psychosocial risks
+ screen work
+ musculo-skeletal disorders
+ travel-related risks (home-work, work-restaurant, etc.)
Etc..

So, occupational risk and safety prevention is for anybody

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FOR WHO IS OCCUPATIONAL RISK AND SAFETY PREVENTION ??

FOR ANYBODY WORKING IN CRC

Convinced?

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ORGANISATION OF OCCUPATIONAL RISK AND SAFETY PREVENTION IN CRC AND KEY PLAYERS

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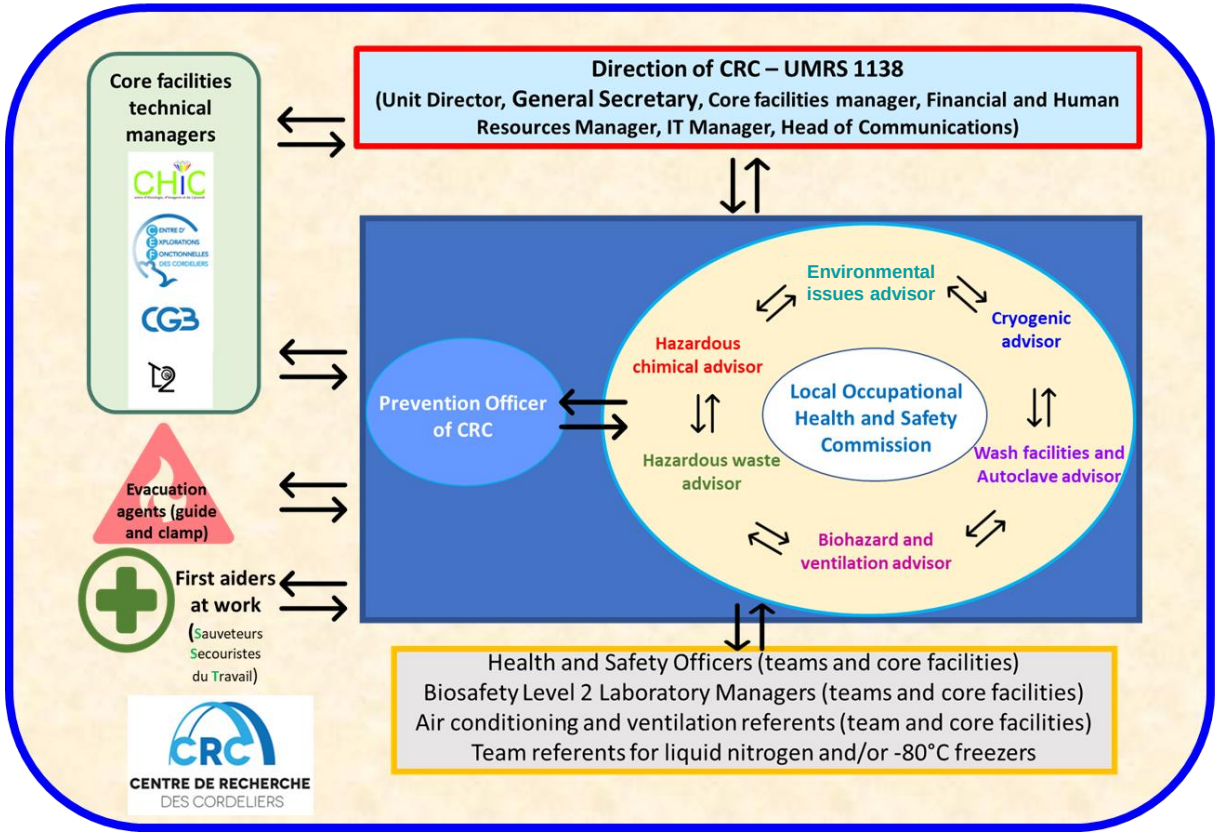
ORGANISATION OF OCCUPATIONAL RISK AND SAFETY PREVENTION



Occupational Health and Safety Departments
+
Occupational health physicians

Inserm

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CRÉATEURS DE FUTURS DEPUIS 1257

Université Paris Cité

cnrs

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FIRST LINE HEALTH AND SAFETY OFFICERS (HSO)

TEAM HSO

LYDIE CHEVAL
Team: 3- Renal physiology and tubulopathies

AUDREY ASSELIN
Team: 5-Molecular OralPathophysiology

SOPHIE TAN
Team: 8-Metabolic Diseases, Diabetes and co-morbidities

SYLVIE LACHKAR
Team: 11- Métabolisme, Cancer et Immunité

JEAN-EMMANUEL HUGONNET
Team: 12-Bacterial structures involved in modulation of antibiotic resistance

NATHALIE JOSSEAUME
Team: 13-Inflammation, Complement and Cancer

MAXIME LECERF
Team: 16-Immunopathology and therapeutic immuno-intervention

ALICIA TORRIGLIA
Team: 17- Physiopathology of ocular diseases: therapeutic innovations

CASILDA HITIER
Team: 19- Drug resistance in hematological malignancies

AKILA IDDIR
Team: 24- Oncogenic functions of β-catenin signaling in the

ISABELLE GALY-FAUROUX
Team: 25-Proliferation, Stress, and Liver Physiopathology

CLAIRE MULOT
Team: 26-Personalized medicine, pharmacogenomics, therapeutic optimization

SAMANTHA SCHAEFFER
Team: 28-Functional Genomics of Solid Tumors

CRC LOGISTIC HSO

FIRAS BOUALLAGUE
CRC LOGISTIC

CRC CORE FACILTIES HSO

GEORGES ZADIGUE
Core facility: CEF

HERMINE KAKANAKOU
Core facility: CGB

FLORIANE ARBARETAZ
Core facility: CHIC

DELPHINE LE CORRE **AUDREY DIDELOT**
Core facility: L2 Containment Laboratory

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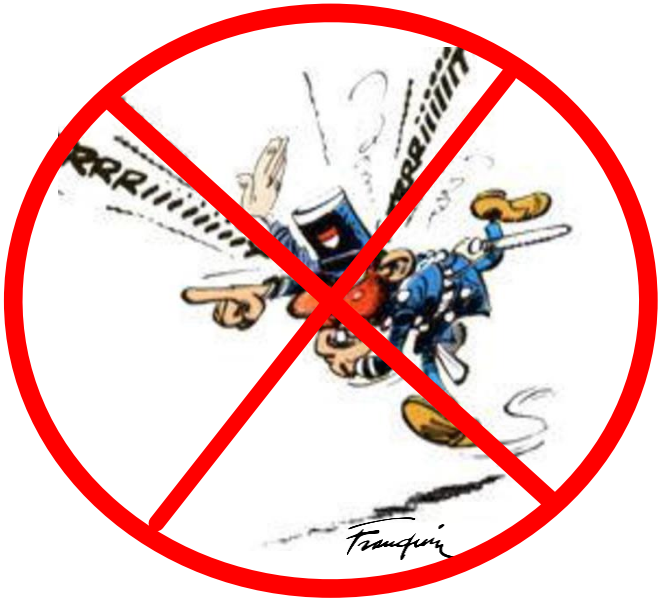
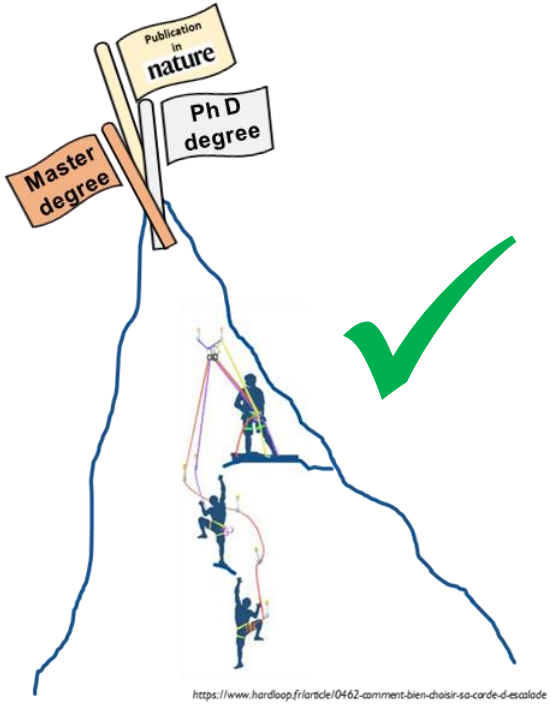
FIRST LINE HEALTH AND SAFETY OFFICERS (HSO)

DO NOT SEE HSO AS POLICEMEN WHO PREVENT YOU PERFORMING EXPERIMENTS



BUT RATHER AS KIND GUIDES WHO HELP YOU REACH YOUR GOALS



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OCCUPATIONAL RISKS AT CRC

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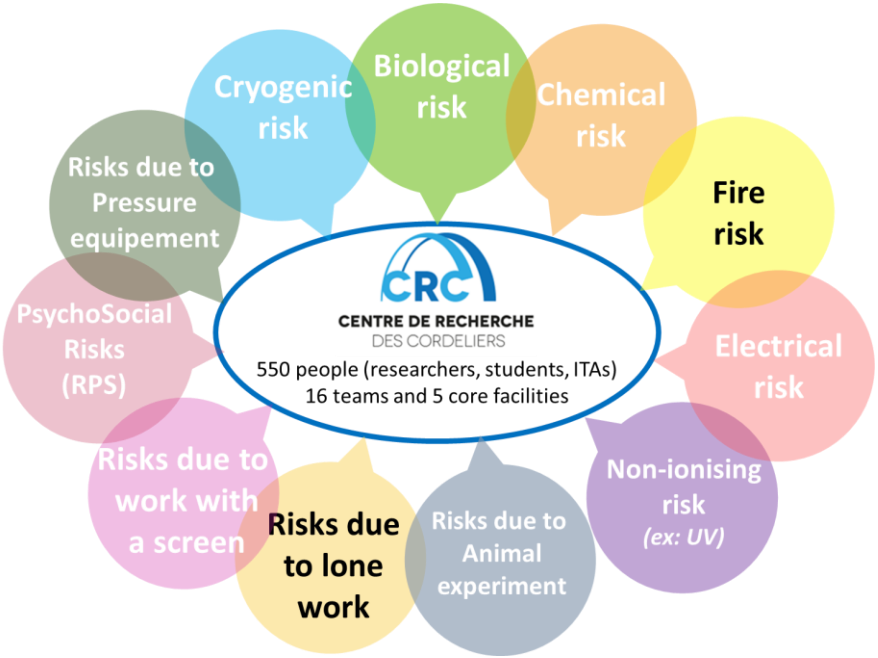
OCCUPATIONAL RISKS AT CRC

Many different risks



To get more information

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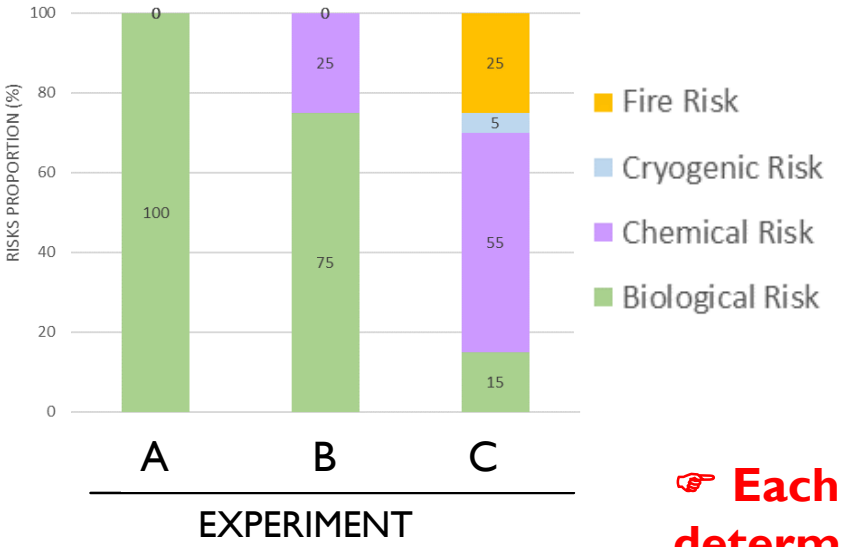
ADAPTING PREVENTION TO EACH EXPERIMENT

Depending on experiments, you may be exposed to a single hazard or a combination of hazards.



Protections required:

A: Adapted to biological hazard

B: Mainly adapted to biological hazard
but also including protection adapted to chemical hasard

C: Mainly adapted to Chemical hazard
but also including protection adapted to Fire hazard > Biological hasard > Cryogenic hazard

☞ **Each experiment requires a risk analysis to determine what measures to apply to protect oneself and to handle waste**

☞ **Ask your HSO for advice**

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PREPARATION OF AN EXPERIMENT

Two mantras to remember:

"Anticipation is a key to a safe and successful experience"

"Stress is a source of error and accident"

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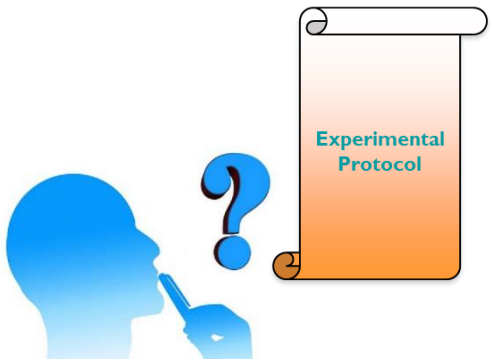
PREPARATION OF AN EXPERIMENT

Reading a protocol should raise many questions about the precautions to be taken to protect oneself, colleagues and the environment:



- **What are the risks associated with each step of my protocol?**
- **What collective or individual protection measures should I put in place?**
- **What collective protective equipment (CPE) should I use?**
- **What personal protective equipment (PPE) should I wear?**
- **Should I work in a containment laboratory? In a core facility laboratory?**
- **Do I need to reserve a containment, an apparatus, etc…?**
- **Do I know how to use the equipment? Do I need to be trained?**
- **Will I encounter an isolated worker situation? If so, what are the procedures to ensure my safety?**
- **Are all the reagents and consumables I need available in the laboratory?**
- **Do I know how to manage the biological and chemical waste I will produce during my protocol?**
- **Etc…**

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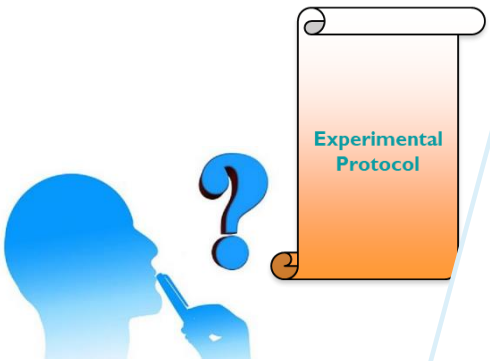
PREPARATION OF AN EXPERIMENT

Reading a protocol should rai… about the precautions to be taken to protect oneself, colleagues ar…



A newcomer:

"Stop! I have already worked in a laboratory elsewhere and I know all about this!"

HSO:

"Of course you know! But each research center is different and has its own specific rules to achieve a prevention goal depending on many criteria (size, buildings, location...)."

- …protocol?
- …place?
- …l?
- …the
- Are … laboratory?
- Do I know how to mana… produce during my protocol?
- …ste I will
- **Etc…**

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MAIN RULES OF OCCUPATIONAL RISK AND SAFETY PREVENTION IN CRC: “HOT POINTS”

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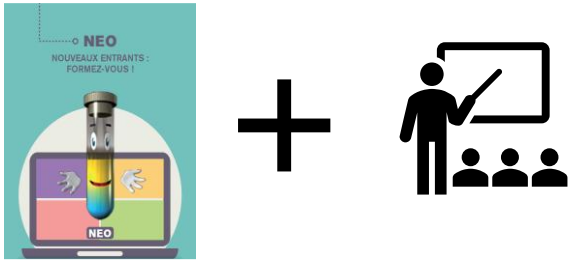
REGLEMENTARY FORMATION AND INFORMATION

- All new entrants must receive job hazard awareness training



- All newcomers should be welcomed by their HSO for a tour of the laboratory, with emphasis on hazards, prevention, and reminders of emergency procedures.
- Others reglementary trainings: animal experiments, use of pressure experiment (autoclave), use of laboratory containment: talk about this with you HSO or write to marie-Noelle.Brunelle-navas@Sorbonne-universite.fr
- Even if not reglementary: trainings to use equipment

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REGLEMENTARY FORMATION AND INFORMATION

For French speaking persons: Laboratory risk awareness training offered by Sorbonne University

Two sessions / year: Next session : 18th to 29th March

Informations Pratiques

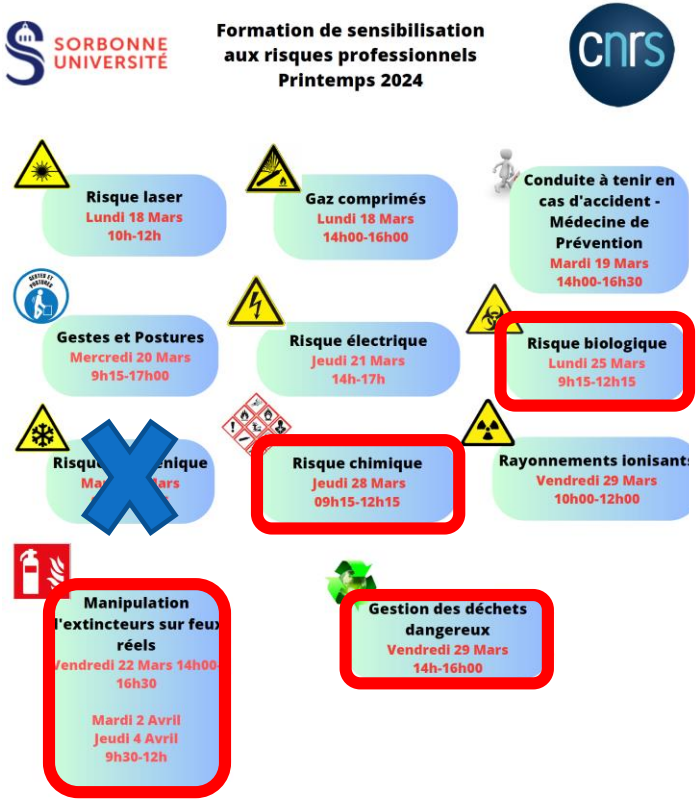
Lieu : Campus Pierre et Marie Curie (4 place Jussieu 75005 PARIS) ***Se reporter au catalogue des formations pour plus de précisions***
Public : tout personnel SU et hébergés à SU

DEMANDE D'INSCRIPTION :
Les inscriptions se font en ligne via le lien suivant :
https://lime3-app3.sorbonne-universite.fr/index.php/178584?lang=fr

Il est indispensable d'utiliser l'adresse mail institutionnelle de Sorbonne Université
A l'issue de l'inscription, veuillez imprimer votre formulaire, le faire signer par votre responsable et le renvoyer à la DPRP par mail :
dprp-formations@sorbonne-universite.fr

Toutes les inscriptions sont prises en compte, vous ne recevrez donc pas de convocation.

MERCI DE TRANSMETTRE VOTRE ATTESTATION A MN NAVAS



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OCCUPATIONAL HEALTH AND SAFETY TRACEABILITY

1. The Health and Safety Register Of Sorbonne Université

https://signalements-rsst.sorbonne-universite.fr/

- Accessible to all at all times
- Only in French currently, so ask to your HSO to fill it with you
- Recording of observations, incidents, accidents and suggestions for improving hygiene and safety[1]
- At CRC, the model used is the dematerialised model of Sorbonne Université :
  * makes it possible to find out about the alert as soon as it is filed,
  * to contact the person if necessary,
  * to inform all supervisory bodies

[1]: With the exception of what may be requested from the technical department (blocked sink, accidental leak, etc.) and on condition that the technical department provides feedback.

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OCCUPATIONAL HEALTH AND SAFETY TRACEABILITY

2. INDIVIDUAL EXPOSURE SHEETS

- **Is authoritative in the case of an occupational disease**
- One sheet per type of exposure: hazardous chemicals, laser,…
- The form varies according to the employer
- Collected once a year
- Signed by the staff member, the unit director and the employer
- Is an accurate record of exposures, their frequency and of the means of protection used

- **WARNING: if you have been accidentally exposed to a hazardous chemical, you must complete the "accidental exposure" section and send it to your employer's accident prevention physician.**

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LABORATORY SAFE PRACTICE

No time to go into everything here, but….

READ ME PLEASE!!

I am on the intranet!

What is the laboratory good practice # 1?

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LABORATORY SAFE PRACTICE

No time to go into everything here, but….

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What is the laboratory good practice # 1?

= USE OF COLLECTIVE PROTECTIVE EQUIPEMENT (CPE OR EPC IN FRENCH)

What is the laboratory good practice # 2 ?

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LABORATORY SAFE PRACTICE

No time to go into everything here, but….

READ ME PLEASE!!

I am on the intranet!

What is the laboratory good practice # 1?

= USING OF COLLECTIVE PROTECTIVE EQUIPEMENT (CPE OR EPC IN FRENCH)

What is the laboratory good practice # 2 ?

= WEARING PERSONAL PROTECTIVE EQUIPMENT (PRE OR EPI IN FRENCH)

WHY CPE (EPC) > PRE (EPI)?

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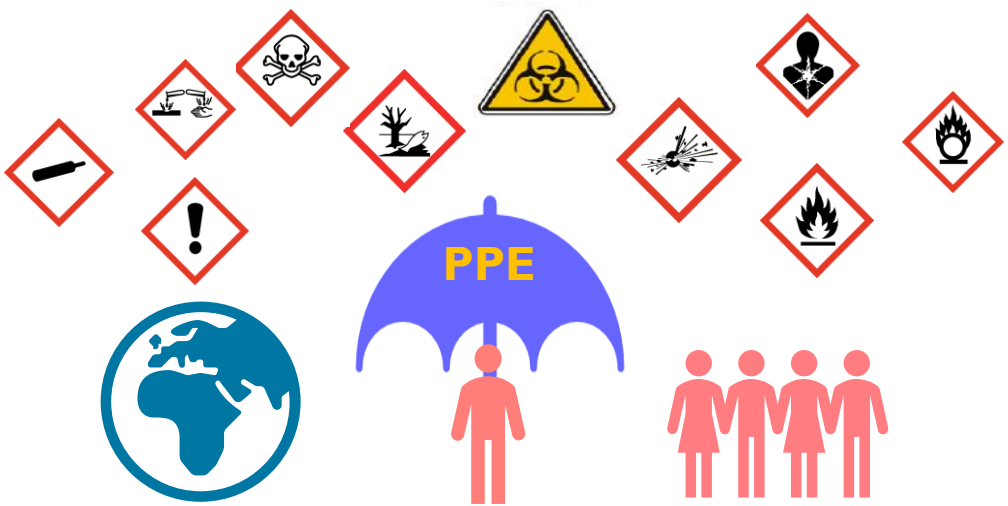
2= PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE: protection of the **handler** from a hazard vectors



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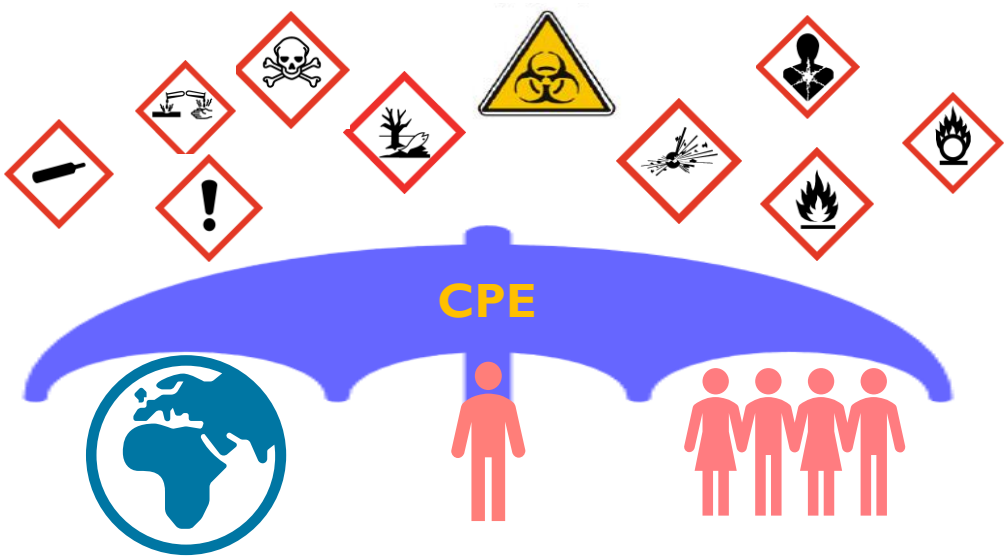
KEY LABORATORY GOOD PRACTICE

1= COLLECTIVE PROTECTIVE EQUIPEMENT (CPE)
2= PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE: protection of the **handler** from a hazard vectors
CPE: protection of the **handler** + **her / his environment** from a hazard vector.



Except in special situations, PPE should be considered as a complement to CPE and not a substitute for it.

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KEY LABORATORY GOOD PRACTICE:

PERSONAL PROTECTIVE EQUIPMENT:THE LABCOAT

Lab coat is mandatory in the lab!

But forbidden
in the office
or in the dining room

Do not wash your lab coat at home.
(maintenance rental agreement with Kalhyge)

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KEY LABORATORY GOOD PRACTICE:

PERSONAL PROTECTIVE EQUIPMENT: FULL BASIC EQUIPMENT

Lab coat is mandatory in the lab!

To complete with:

- Gloves suitable for hazards
- To change regularly, or if soiled

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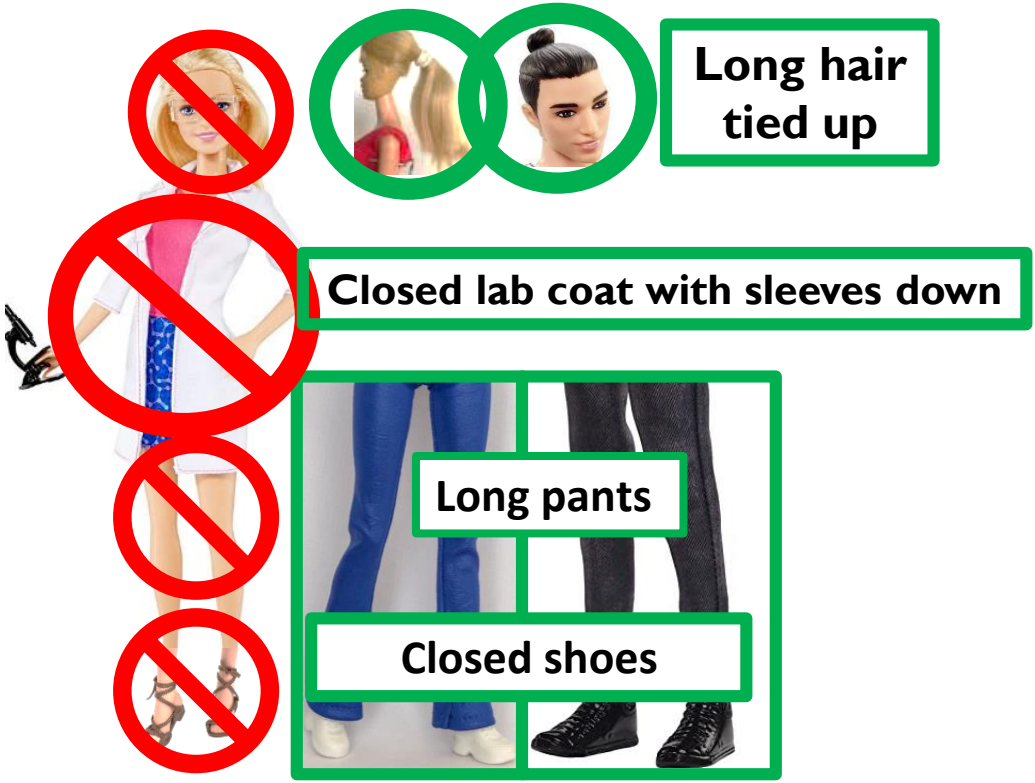
KEY LABORATORY GOOD PRACTICE

PERSONAL PROTECTIVE EQUIPMENT AND SUITABLE CLOTHING



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KEY LABORATORY GOOD PRACTICE

COLLECTIVE PROTECTIVE EQUIPEMENT (CPE): CHEMICAL HAZARDS

Fume hood, Sorbonne

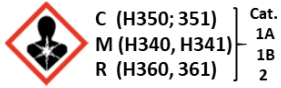
(norme NF EN 14175)

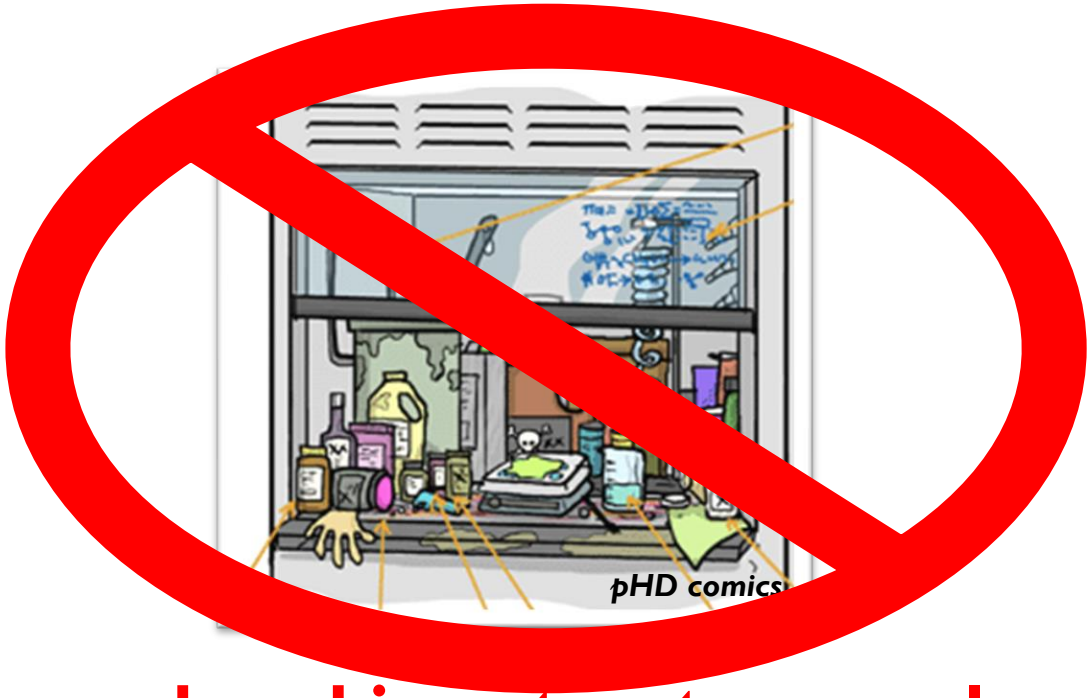
Universal protection against chemicals

Must be used for:

- Products that can release chemical, toxic or annoying vapours (acid, solvent, etc.)

- Carcinogenic, Mutagenic and Reprotoxic products (CMR).





Fume hood is not a storage place

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KEY LABORATORY GOOD PRACTICE

COLLECTIVE PROTECTIVE EQUIPEMENT (CPE): CHEMICAL HAZARDS

Fume hood, Sorbonne
(norme NF EN 14175)

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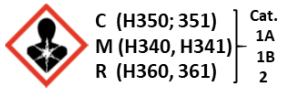
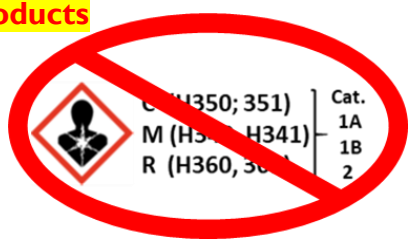


Chemical hood
(norme NF X 15–211)

Only handle products for which the filter is suitable: see the list displayed on the device

Incompatible with handling CMR products



Chemical storage cabinets

Specific according to the risks presented by the stored chemicals

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KEY LABORATORY GOOD PRACTICE

COLLECTIVE PROTECTIVE EQUIPEMENT (CPE): BIOLOGICAL HAZARDS

TYPE II MICROBIOLOGICAL SAFETY CABINETS (MSC II)

(norme norme NF EN 12-469)

Protection of the experimenter and handling

Suitable for handling Category 1 and 2 pathogens.

Vertical or horizontal laminar flow hood

Protection of the handling

but not of the handler or his environment.

Not to be used for handling pathogenic microorganisms. Not to be confused with a MSC.

THESE EQUIPMENTS DOES NOT PROTECT AGAINST CHEMICAL HAZARDS

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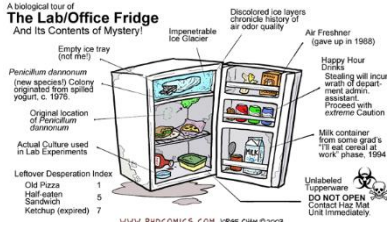
KEY LABORATORY GOOD PRACTICE

FOOD, HYGIENE AND AWARENESS IN THE LAB

In the lab, it is forbidden

To eat, drink, smoke, or make-up



To store food in fridges where chemicals and biologicals are stored

To identify a product by smelling it

To wear headphones

In the lab, it is mandatory

To wash your hands before and after each experiment

To disinfect/clean before and after each handling
Example: Weighing

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KEY LABORATORY GOOD PRACTICE
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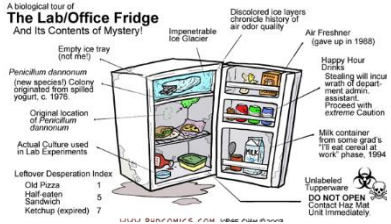

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To wear headphones

In the lab, it is mandatory

To wash your hands before and after each experiment

To disinfect/clean before and after each handling
Example: Weighing

To keep the lab tidy

To warn of the end of a product's stock

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KEY LABORATORY GOOD PRACTICE

SAFETY IN THE LAB

It's forbidden to work on electrical installations even to reset a circuit breaker

No power strips allowed

Do not clutter the corridors, stairs or emergency exits

Know the procedures to be followed in the event of fire or accident and the associated means of rescue and fight.

Fire Shower

Leave safety equipment accessible (fire extinguishers, showers, etc.)

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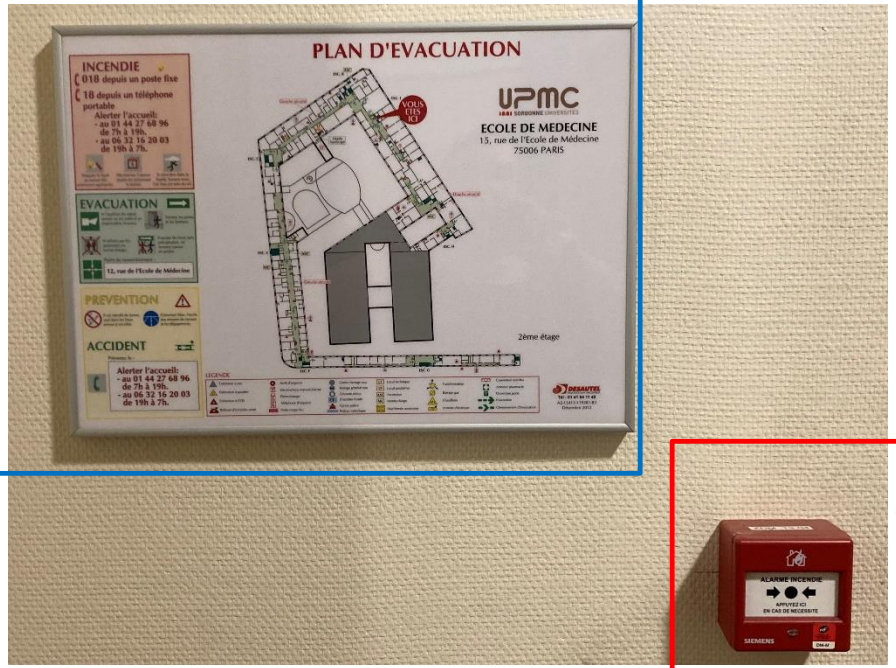
KEY LABORATORY GOOD PRACTICE

SAFETY IN THE LAB: FOCUS: PROCEDURES IN CASE OF FIRE: LOCATION AROUND THE LAB

On the landing or inside the lab close to the doors:
Evacuation plan



ONLY on the landing:
Fire alarm trigger box

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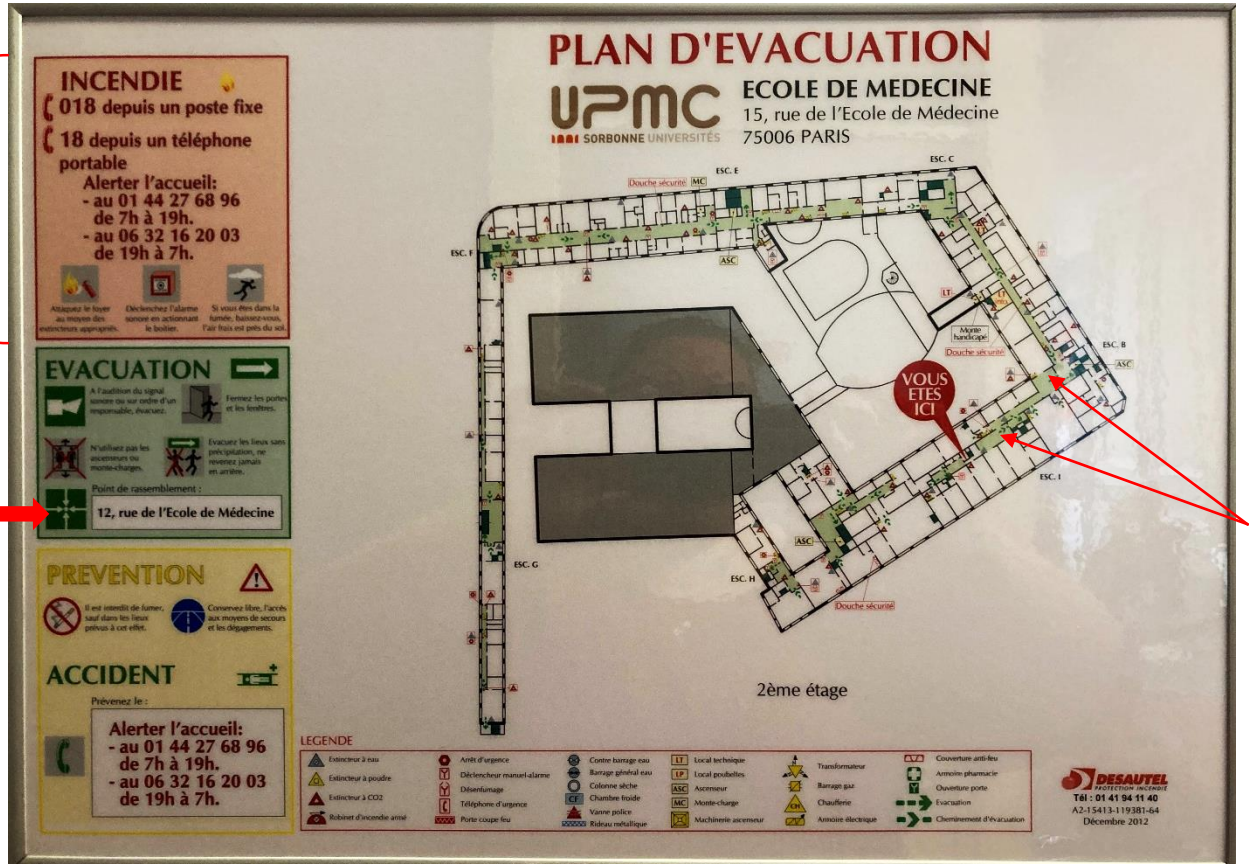
KEY LABORATORY GOOD PRACTICE

SAFETY IN THE LAB: EVACUATION PLAN :TO READ CAREFULLY

Emergency phone numbers

Address of the gathering point



Arrows indicating the escape route to reach the nearest stair to climb down

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KEY LABORATORY GOOD PRACTICE

SAFETY IN THE LAB: YOU WITNESS A FIRE STARTING

1. FIGHT THE FIRE IF IT STARTS: Fire start < 3 minutes

a. If fire is out:
- PRATICATE FIRST AID
- RECEIVE AND GUIDE OUTSIDE ASSISTANCE
- REPORT ON THE SITUATION.

b. If fire is not extinguished after maximum 3 minutes: **Go to 2. ALERT**

https://fr.123rf.com/photo_40147442_ic%C3%B4ne-illustration-montrant-un-homme-en-utilisant-un-extincteur-pour-%C3%A9teindre-un-feu.html

2. ALERT: REQUEST THE INTERVENTION OF AN EMERGENCY AND FIRE-FIGHTING SERVICE:

a. **from a landline: 7 68 96 or from a mobile phone: 01 44 27 68 96** STATING:
- name and phone number
- The unit (UMRS 1138) and location (Stairs and floor)
- The nature of the fire (ex: computer, flammable products, etc.)

b. From fire alarm signals on the landing

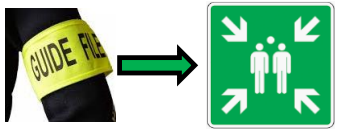
(NB: fire alarms located in laboratories are not functional)

To note: If smoke is reported, there is always a delay between the time the alarm is raised and the time it sounds. This is the time needed for the campus security service to clear up any doubts, i.e. to check whether or not there is a fire.

CENTRE DE RECHERCHE DES CORDELIERS

KEY LABORATORY GOOD PRACTICE

SAFETY IN THE LAB: YOU HEAR THE FIRE ALARM

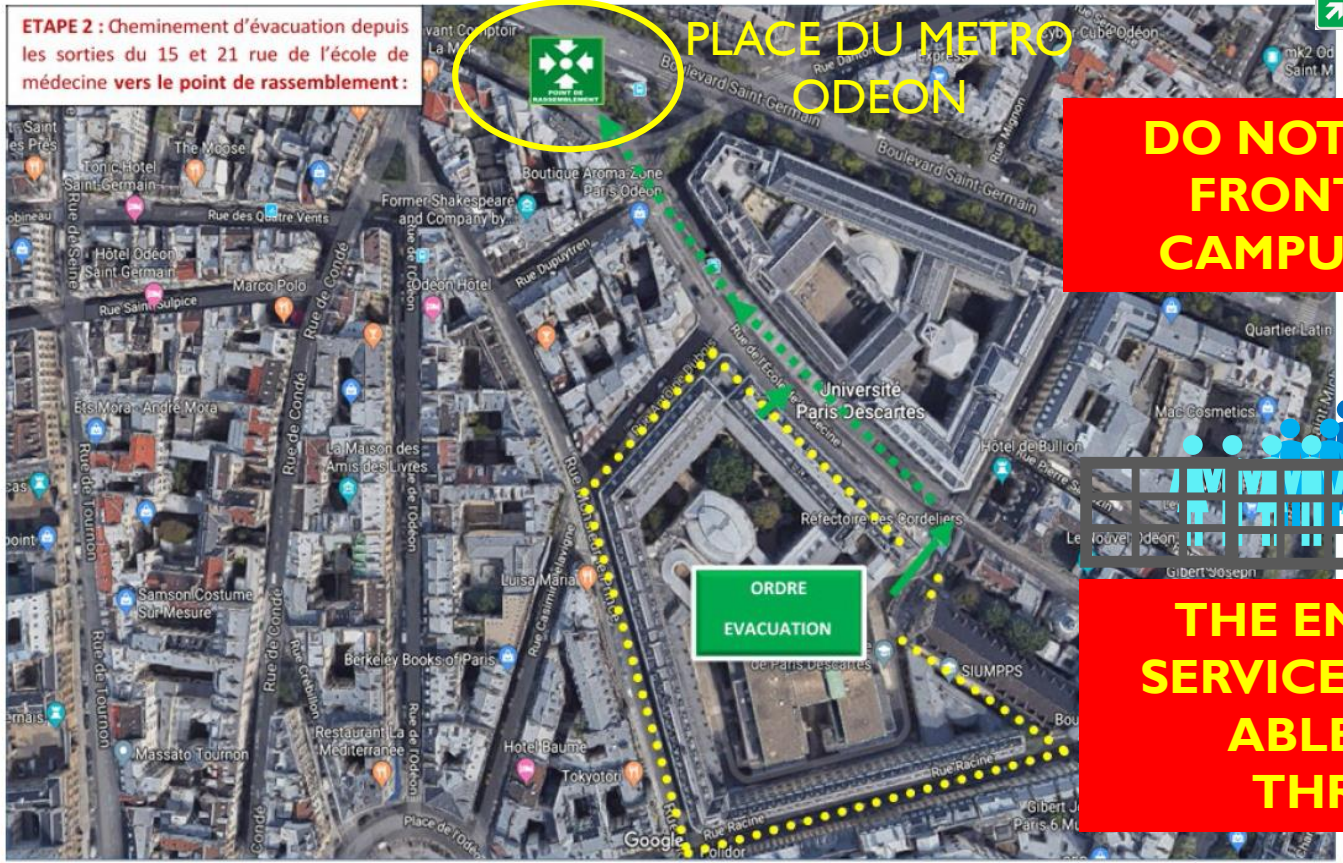
1. **Stop what you are doing immediately and secure your experiments:** for example, close your cell culture boxes under biological safety cabinet, close chemical containers under fume cupboard, etc.
2. **Leave the room following procedures if necessary and if it is possible**
3. **Close the windows of the room, close the door but do not lock it** 
4. **Join the evacuation guide and follow him/ her quietly to the gathering point.** 

5. Follow the evacuation signs 
6. In case of smoke, bend down to move forward 
7. Do not take the lift ; Do not go back; 
8. Wait for authorisation from the fire brigade before re-entering the building
9. Do not go shopping during the evacuation

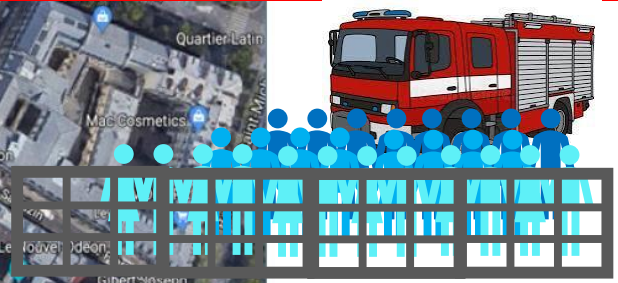
CENTRE DE RECHERCHE
DES CORDELIERS

KEY LABORATORY GOOD PRACTICE

SAFETY IN THE LAB: GATHERING POINT



DO NOT STAND IN FRONT OF THE CAMPUS GATES!!!

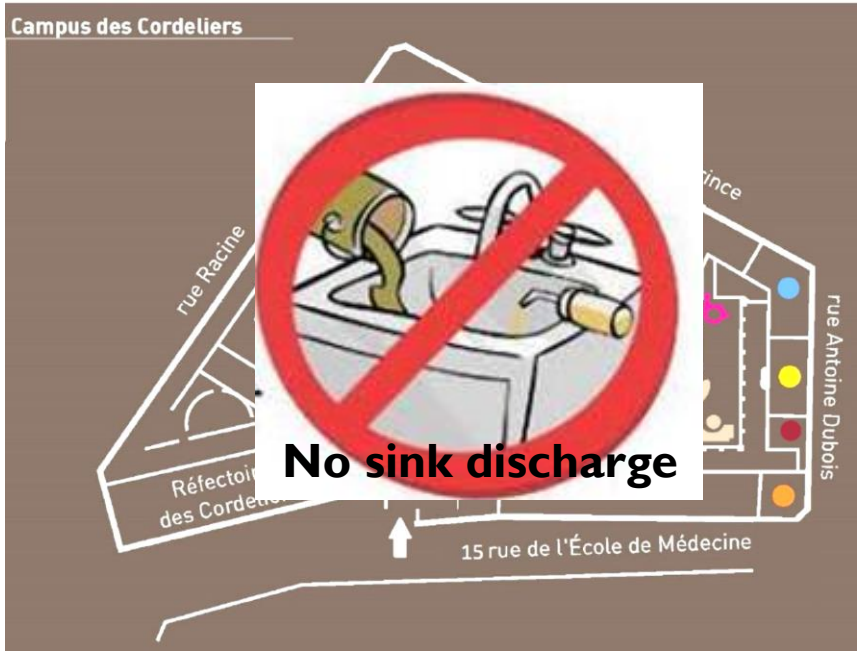


THE EMERGENCY SERVICES WON'T BE ABLE TO GET THROUGH!

CENTRE DE RECHERCHE
DES CORDELIERS

Liquid waste

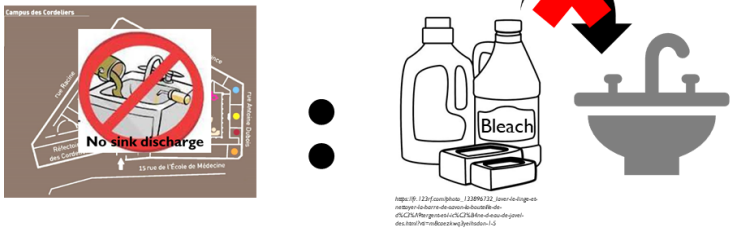
WASTE MANAGEMENT: AN OVERVIEW



CENTRE DE RECHERCHE
DES CORDELIERS

KEY LABORATORY GOOD PRACTICE

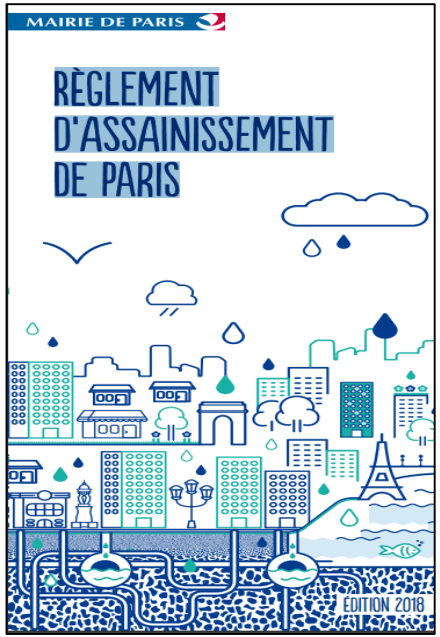
WASTE MANAGEMENT:AN OVERVIEW



CENTRE DE RECHERCHE
DES CORDELIERS

KEY LABORATORY GOOD PRACTICE

WASTE MANAGEMENT: AN OVERVIEW



Sanitation Rules of Paris

☞ **Private individual :**

- small quantities of effluent
- no authorisation required
- no controls

☞ **Liquid waste from laboratories (used chemicals, reagents, etc.) considered as hazardous industrial waste**

- big quantities of effluent
- authorisation required
- monthly checks by a dedicated company
- unannounced checks by Paris City Hall

Poor results = **withdrawal of authorisation + fine**

CENTRE DE RECHERCHE
DES CORDELIERS

KEY LABORATORY GOOD PRACTICE

WASTE MANAGEMENT: AN OVERVIEW

Liquid waste

No sink discharge

Sanitation Rules of Paris

Effluent control

canisters for collection of chemical waste: the colour of the label differs according to chemical families and their risks

canister for collection of non dangerous chemical waste

canister for collection of non chemical inactivated biological waste

CENTRE DE RECHERCHE DES CORDELIERS

KEY LABORATORY GOOD PRACTICE

WASTE MANAGEMENT:AN OVERVIEW

Liquid waste

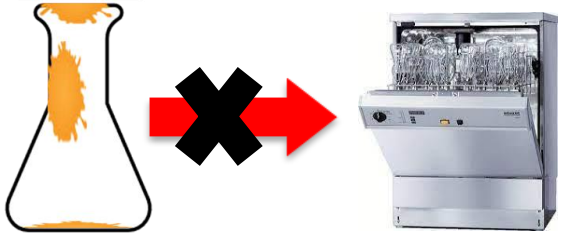
No sink discharge

canisters for collection of chemical waste

canister for collection of non dangerous chemical waste

canister for collection of non chemical inactivated biological waste

And the rinse water?



Soiled glassware is not dishwasher safe

Procedure to apply

1. Rinse glassware and collect the rinse liquid in the appropriate container
2. Rinsed glassware is dishwasher safe

CENTRE DE RECHERCHE DES CORDELIERS

KEY LABORATORY GOOD PRACTICE

WASTE MANAGEMENT: AN OVERVIEW

Liquid waste

no sink discharge




canisters for collection of chemical waste

canister for collection of non dangerous chemical waste

canister for collection of non chemical inactivated biological waste

DIFFERENT WASTE DISPOSAL SYSTEM

YOU MUST KNOW WHAT YOU ARE HANDLING

Solid waste

non-hazardous waste

Chemical waste

Glass +/- chemicals

Biological waste

CENTRE DE RECHERCHE DES CORDELIERS

WASTE MANAGEMENT IN CRC

Depending on the type of waste, Sorbonne Université, which hosts the CRC, has set up various contracts with external companies.

SORBONNE UNIVERSITÉ

- household waste
- waste recycling

le petit plus

- hazardous waste:
  - Triadis (chemical waste) — Triadis services, Séché global solutions
  - Proserve (biological waste) — PROSERVE DASRI

Campus des Cordeliers

SORBONNE UNIVERSITÉ

Cleaning company DERICHEBOURG propreté & services associés

CENTRE DE RECHERCHE
DES CORDELIERS

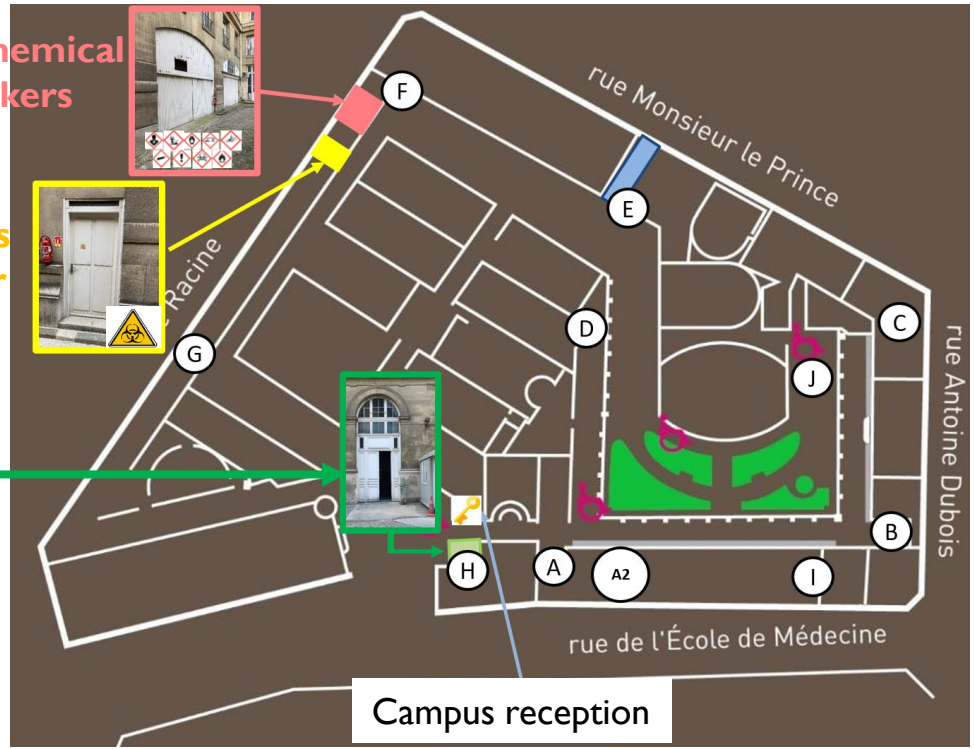
WASTE MANAGEMENT IN CRC

COLLECTION POINTS ON THE CAMPUS DES CORDELIERS

Every Tuesday and Friday from 10 to 11 a.m.

Hazardous chemical waste bunkers

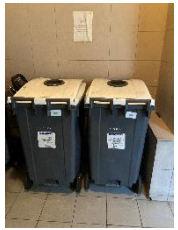
Biohazardous waste bunker



food glass **ONLY**

Every day of the week from 9 a.m. to 1p.m.
Ask for keys at the campus reception

Garbage room



Food glass recycling

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

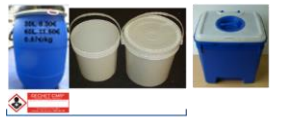
BEFORE THROWING AWAY ANY WASTE, YOU SHOULD ASK YOURSELF:

- Is my waste hazardous (chemical, biological, mixed risks)?

- Can my waste be recycled (paper, packaging, etc...)?

- Does my waste come from a risk area (L1 GMO, L2, laboratory where chemicals are handled, etc...)?

⇒ **IF YES: NO RECYCLING**!! USE CONTAINERS FOR HAZARDOUS WASTE



Chemical waste

Glass +/- chemicals

Biological waste

CENTRE DE RECHERCHE DES CORDELIERS

WASTE MANAGEMENT IN CRC

SOLID NON-HAZARDOUS WASTE

- Household rubbish
- Plastic and paper packaging of consumables
- Absorbent paper not soiled with chemicals or biologicals (not recyclable)
- **THAT'S ALL!!**

- chemical products
- biological products
- sharp / cutting products
- soiled or unsoiled glass
- ink cartridges
- light bulbs
- batteries

ANYTHING THAT IS HAZARDOUS TO PEOPLE OR THE ENVIRONMENT

But also

Even if not soiled with hazardous products

Psychological impact on cleaning staff and garbage collectors

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

SOLID NON-HAZARDOUS WASTE : RECYCLING WASTE : EXAMPLES

empty tip boxes → Collection in the laboratories and then in a dedicated container located in the hazardous chemical waste bunker

food glass → Bin in the garbage room accessible between 9 am and 1 pm (ask for keys at the campus reception)

waste sorting → Dispose of in the yellow bin

non-hazardous waste bulky → Dumpster order twice a year

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

SOLID NON-HAZARDOUS WASTE AND RECYCLING WASTE FROM CONTAMINATED AREAS

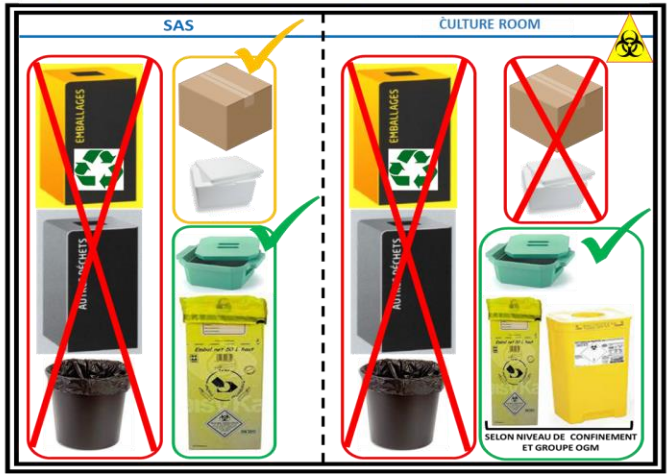
L1 GMO and L2 are considered as contaminated areas.

Waste from an L1 GMO or L2 laboratory, even if it can be recycled, must be placed in a DASRI container and disposed of as contaminated waste.

OUTSIDE

- Store boxes in dedicated rooms
- Deposit large cardboard boxes at the collection points identified with the cleaning company
- Recycle small cardboard packaging by throwing it into the sorting bin

L1 / L2 containment laboratory (bacteria, eukaryote cells...)



- Store plastic packaging that is resistant to decontamination solutions
- Individual packaging of NON-soiled disposable consumables can be collected in a cardboard DASRI container (1) with a plastic bag placed in the containment airlock.
- If necessary, transfer samples transported in triple packaging or products introduced into the airlock in polystyrene boxes to an ice tray before entering the culture room.

- ONLY PLASTIC OR PLASTIC-COATED PACKAGING IS PERMITTED
- CARDBOARD AND POLYSTYRENE PROHIBITED
- RECYCLING PROHIBITED
- OPTIMIZE the use of single-use consumables to reduce the quantity of waste, and avoid clogging up the DASRI (1) containers with packaging.
- ALL WASTE IS DISPOSED OF IN A DASRI CONTAINER (1) APPROPRIATE TO THE LEVEL OF CONTAINMENT AND THE GMO GROUP OF THE SAMPLES HANDLED

(1) : Waste from activities involving risk of infection (DASRI in French)

CENTRE DE RECHERCHE
DES CORDELIERS

CHEMICAL HAZARDOUS WASTE

How to identify them?

- To know the hazard symbols

SGH01

Symbol: Exploding bomb

- Unstable explosives
- Explosives in divisions 1.1, 1.2, 1.3, 1.4
- Self-reactive mixtures, types A, B
- Organic peroxides

SGH02

Symbol: flame

- Flammable gases, cat.* 1
- Flammable aerosols, cat. 1, 2
- Flammable liquids, cat. 1, 2, 3
- Flammable solids, cat. 1, 2
- Self-reactive substances and mixtures, types B, C, D, E, F
- Pyrophoric liquids, cat. 1
- Pyrophoric solids, cat. 1
- Self-heating substances and mixtures, cat. 1, 2
- Substances and mixtures which in contact with water emit flammable gases, cat. 1, 2, 3
- Organic peroxides, types B, C, D, E, F

SGH03

Symbol: flame over a circle

- Oxidising gases, cat. 1
- Oxidising liquids, cat. 1, 2, 3
- Oxidising solids, cat. 1, 2, 3

SGH04

Symbol: gas bottle

- Compressed gases
- Liquefied gases
- Refrigerated liquefied gases
- Dissolved gases

SGH05

Symbol: corrosion

- Corrosive to metals cat. 1
- Skin corrosion, cat. 1A, 1B, 1C
- Serious eye damage, cat. 1

SGH06

Symbol: skull and cross-bones

- Acute toxicity (oral, dermal, inhalation), cat. 1, 2, 3

SGH07

Symbol: exclamation mark

- Acute toxicity (oral, dermal, inhalation), cat. 4
- Skin irritation, cat. 2
- Eye irritation, cat. 2
- Skin sensitisation, cat. 1
- Specific target organ toxicity - Single exposure, cat. 3
- Respiratory tract irritation
- Narcotic effects

SGH08

Symbol: health hazard

- Respiratory sensitisation, cat. 1
- Germ cell mutagenicity, cat. 1A, 1B, 2
- Carcinogenicity, cat. 1A, 1B, 2
- Reproductive toxicity, cat. 1A, 1B, 2
- Specific target organ toxicity - Single exposure, cat. 1, 2
- Specific target organ toxicity - Repeated exposure, cat. 1, 2
- Aspiration hazard, cat. 1

SGH09

Symbol: environment

- Hazardous to the aquatic environment
  - Acute hazard, cat. 1
  - Chronic hazard, cat. 1, 2

*Cat. : Hazard category.

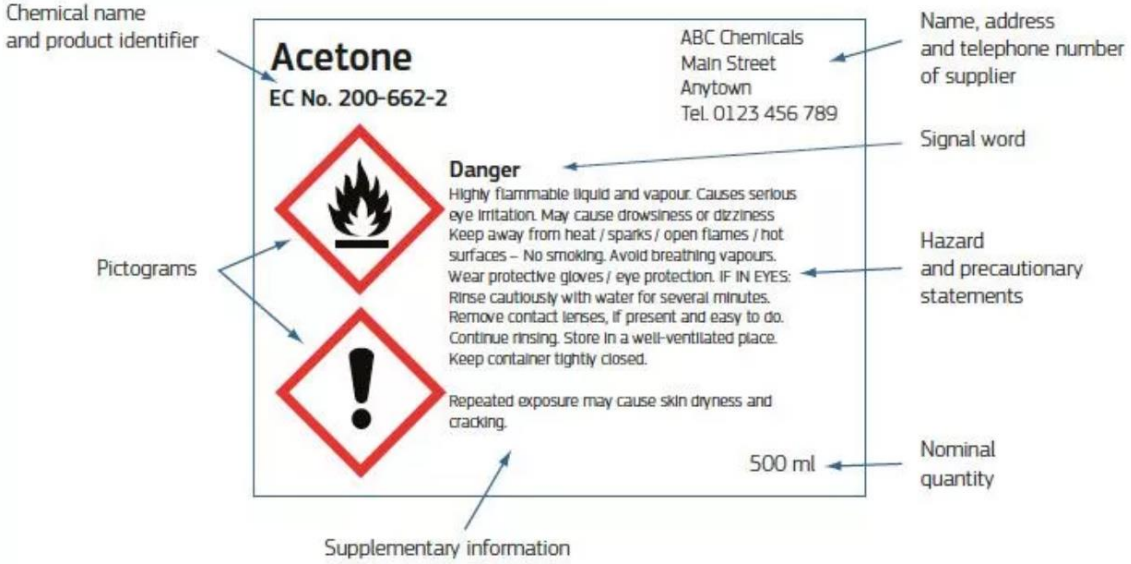
CENTRE DE RECHERCHE
DES CORDELIERS

CHEMICAL HAZARDOUS WASTE

How to identify them?

- To know the hazard symbols
- To know how to read a label

Example of a label according to CLP



Warning: not all hazards are represented by a pictogram

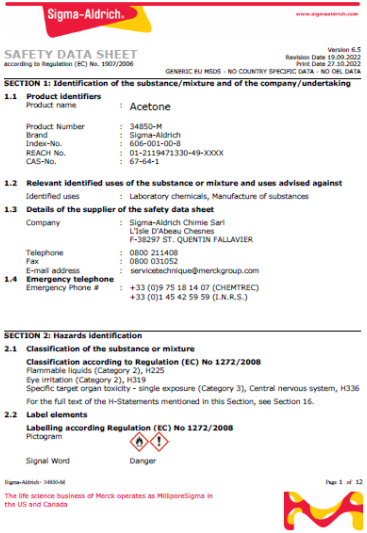
CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

CHEMICAL HAZARDOUS WASTE

How to identify them?

- To know the hazard symbols
- To know how to read a label
- To read the safety data sheet



Sigma-Aldrich.

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Version 6.5
Revision Date 19.09.2022
Print Date 27.10.2022
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers
Product name : Acetone

Product Number : 34850-M
Brand : Sigma-Aldrich
Index-No. : 606-001-00-8
REACH No. : 01-2119471330-49-XXXX
CAS-No. : 67-64-1

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet
Company : Sigma-Aldrich Chimie Sarl
L'Isle D'Abeau Chesnes
F-38297 ST. QUENTIN FALLAVIER

Telephone : 0800 211408
Fax : 0800 031052
E-mail address : servicetechnique@merckgroup.com

1.4 Emergency telephone
Emergency Phone # : +33 (0)9 75 18 14 07 (CHEMTREC)
+33 (0)1 45 42 59 59 (I.N.R.S.)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
Flammable liquids (Category 2), H225
Eye irritation (Category 2), H319
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements
Labelling according Regulation (EC) No 1272/2008
Pictogram
Signal Word Danger

Sigma-Aldrich - 34850-M Page 1 of 12

The life science business of Merck operates as MilliporeSigma in the US and Canada

16 sections

SECTION 13: Disposal considerations

SECTION 14: Transport information

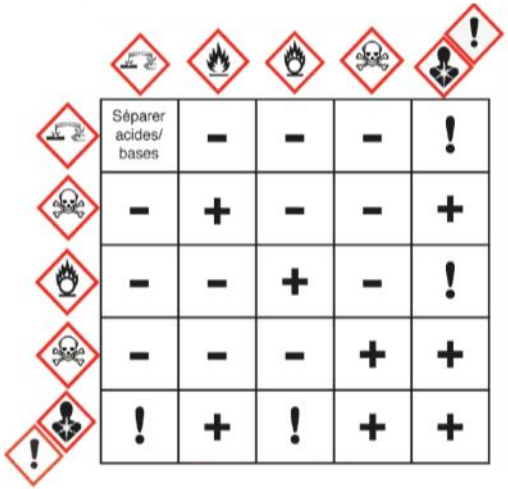
Waste resulting from the use of a hazardous chemical = hazardous chemical because it retains its hazardous characteristics

CENTRE DE RECHERCHE DES CORDELIERS

CHEMICAL HAZARDOUS WASTE

Waste resulting from the use of a hazardous chemical = hazardous chemical because it retains its hazardous characteristics

Acide + Base → incompatible storage



+ compatible storage
- incompatible storage
! compatible under certain conditions

A question? A doubt?

Ask your HSO!!

CENTRE DE RECHERCHE DES CORDELIERS

WASTE MANAGEMENT IN CRC

CHEMICAL HAZARDOUS WASTE: CONTAINERS FOR LIQUID WASTE

Specific effluent

- Toxic organic liquids Liquids (ETB, formamide), CMR ...
- Cyanides in solution
- Toxic inorganic solutions (heavy metal solutions...)

Canister with blue label

if CMR

Carcinogenic, **M**utagenic and toxic to **R**eproduction substances

pH < 5

- Mineral acids (hydrochloric, sulphuric, nitric acid, etc.)
- Organic acids (acetic acid, formic acid, citric acid, organic liquid with an acidic pH, etc.)

Canister with yellow label

Separate nitric and hydrofluoric acid from other acids

pH > 9

- mineral bases (soda, potash, etc.)
- organic bases (developer...)

Canister with green label

Halogenated or non-halogenated organic liquids

- (Trichloroethane, ...)
- Solvents (acetone, heptane, hexane, alcohol...)
- (developers, photographic fixers, oils...)

Canister with red label

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

AND THE CHEMICAL WASTE NON- HAZARDOUS?

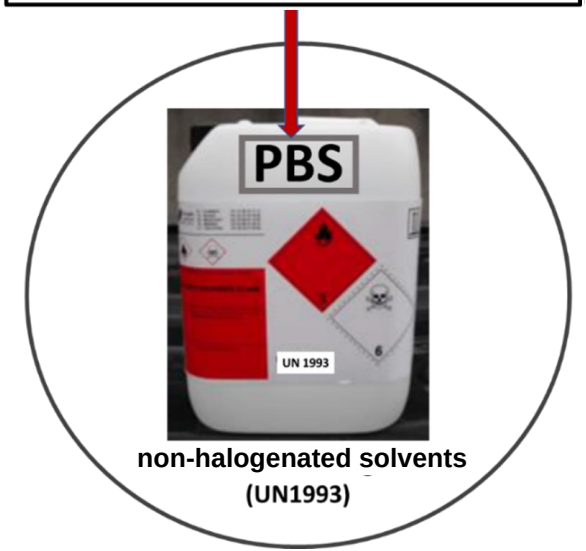
Sanitation Rules of Paris

Non-hazardous chemical solutions
(exemple: PBS, TBS dont 5,5≤ pH ≤ et 8,5)

Same for:

- Tris Glycine SDS,
- PBS Tween
- or other solutions described as non-hazardous in the supplier's SDS

1. Indicate the name of the product on the can
2. Do not mix with flammable products (e.g. ethanol, methanol, acetone, etc.).



non-halogenated solvents
(UN1993)

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

Liquid transfer buffer

= Tris
Glycine
SDS
Ethanol

?

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

Liquid transfer buffer

= Tris
Glycine
SDS
Ethanol

UN 1993
Solvant non halogéné

CENTRE DE RECHERCHE DES CORDELIERS

CHEMICAL HAZARDOUS WASTE:

CONTAINERS FOR LIQUID WASTE: 4 rules to remember

I. The colour of the label differs according to chemical families and their risks

II. One container = one type of risk

III. Indicate the name of the product risk on the container to avoid hazardous mix

IV. For non-hazardous liquid products: can for flammables + note the name of the product (e.g. PBS). DO NOT MIX WITH FLAMMABLE PRODUCTS

CENTRE DE RECHERCHE DES CORDELIERS

WASTE MANAGEMENT IN CRC

CHEMICAL HAZARDOUS WASTE: CONTAINERS FOR SOLID WASTE

Materials soiled with NON-CMR products

Glassware:
Pipettes, broken glass (beakers...), glass bottles

→ 30 l or 60 l blue drum with white lid

Soiled consumables:
(gloves, tips, plastic pipettes, absorbent paper, etc.)

→ 5, 10 or 30 l buckets

Empty plastic or metal Reagent bottles

→ Chemical waste bunker where they will be weighed and stored in pallet boxes pending removal

Materials soiled with CMR products or CMR products

= **C**arcinogenic, **M**utagenic and toxic to **R**eproduction substances

→ 30 or 60 l round blue drum with black lid

→ 5, 10 or 30 l buckets

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

CHEMICAL HAZARDOUS WASTE: CONTAINERS FOR SOLID WASTE

Out-of-date or used products in bottles

Securibac and addition of vermiculite to wedge the products

Ask HSO how to list the products

FOR ANY QUESTION: ASK YOUR HSO

CENTRE DE RECHERCHE DES CORDELIERS

WASTE MANAGEMENT IN CRC

BIOLOGICAL HAZARDOUS WASTE

- Named DASRI (Déchets d'Activités de Soins à Risques Infectieux = waste from Healthcare Activities with Infectious Risks)

- What are they?
  A. Solid, liquid, pungent/sharp.
  B. Putrescibles of human, animal or vegetable plant origin.
  C. Pathogenic for humans (groups 2 to 4)
  D. and/or for the environment (GMO* groups 1 to 4).

  * GMO = genetically modified organism

- In accordance with regulations, DASRI waste must be inactivated to prevent it from being released into the environment.

- There are several methods of inactivation:

  - chemical inactivation with bleach to be used at a specific final concentration (0.43% active chlorine)
  - inactivation by autoclaving (134°C for 20 - 30 min)
  - inactivation by incineration (at the waste centre)

CENTRE DE RECHERCHE DES CORDELIERS

WASTE MANAGEMENT IN CRC

BIOCHEMICAL HAZARDOUS WASTE: CONTAINERS FOR SOLID WASTE

Sharp waste
(scalpel, needle...)

Needle boxes and mini-collectors (0,25, 3 or 5 liters)

Perforating Waste
(plastic pipettes, tips...)
or any waste from BSL 1/ 2 lab where GMO are manipulated

30, 50 or 60 l plastic drums

DASRI OGM NIVEAU 1
+
For waste from BSL1 GMO lab
OR
+
DASRI OGM NIVEAU 2
For waste from BSL2 GMO lab

Non-perforating waste and non GMO contaminated waste
(gloves, absorbent paper, cell culture vessels...)

Cardboard bin with 50 l plastic bag

Waste soiled with CMR products, like trypan blue used to count live cells
NO INACTIVATION

30 or 60 l round blue drum with black lid

5, 10 or 30 l buckets

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

BIOLOGICAL HAZARDOUS WASTE SOLID:

- In accordance with regulations, **solid** **DASRI waste contaminated with GMOs must be disposed of in hermetically sealed rigid plastic containers indicating the class of GMOs handled.**

After transport, waste are incinerated to be inactivated.

Any waste produced in a L2 laboratory, even paper packaging, must be disposed of as level 2 waste.

CENTRE DE RECHERCHE DES CORDELIERS

WASTE MANAGEMENT IN CRC

BIOCHEMICAL HAZARDOUS WASTE: CONTAINERS FOR LIQUID WASTE

Canister for collection of non chemical inactivated biological waste:

- autoclave-inactivated biological waste
- non pathogenic for humans : group 1. Ex:
  - non-GMO murine cell culture medium
  - non-GMO primate cell line downgraded to biosafety level 1

UN 3266

pH > 9

Canister for collection of chemical inactivated biological waste, inactivation with bleach (base):

- all GMO from group 1 to 4
- and / or all pathogenic for humans (group 2 to 4) . Ex:
  - human cell lines with a biosafety level 2
  - murine cells with a pathogenic from group 2

Never put waste decontaminated with bleach in an autoclave: risk of corrosion.
Depending on model 15000 € < cost of an autoclave < 80 000 €.

UN 2810

Canister for collection of biological that has been in contact with CMRs

Carcinogenic, **M**utagenic and toxic to **R**eproduction substances

CENTRE DE RECHERCHE
DES CORDELIERS

WASTE MANAGEMENT IN CRC

OTHER HAZARDOUS WASTE

Batteries → collection points at campus reception or in the main hall on the ground floor of the elevation building

Ink/toner cartridge → waste collection campaign by CRC Environmental Issues Committee

D3E

Déchets d'Equipements Electriques et Electroniques

= **waste electrical and electronic equipment**

Not soiled or contaminated by chemicals or biologicals

→ Dumpster order according to need

CENTRE DE RECHERCHE
DES CORDELIERS

OFF-HOURS WORK AND ISOLATED WORK

Definitions:

OFF-HOURS WORK:

- Work outside normal working hours (7am - 7pm Monday to Friday), at weekends, on public holidays
- must remain exceptional
- always be accompanied by at least one other person

ISOLATED WORK:

- A worker is considered isolated when he or she is working alone, out of sight or sound of any assistance
- Isolated work is forbidden for experiments with hazardous materials (with dangerous chemical products, pathogenic microorganisms for humans...)

BOTH are prohibited for trainees at secondary schools, high schools, BTS, M1, M2.

BOTH are considered to be aggravating factors for incidents or accidents at work

BOTH require a written agreement of the director of the research center.

CENTRE DE RECHERCHE DES CORDELIERS

OFF-HOURS WORK AND ISOLATED WORK

Procedure at the CRC

- It is compulsory to have followed a laboratory risk awareness training course (e.g. Neo)
- Notify the HSO who will apply for permission from the CRC Direction
- Signal your presence by filling the campus Attendance Book in Off-Hours, located next to the reception of the Campus des Cordeliers,
- Indicate your time of departure in the Attendance Book before leaving the Campus,

- Use, whenever possible, an alarm device for isolated workers (DATI or PTI) to be requested from the Campus des Cordeliers reception desk
- Ask the HSO for internal laboratory procedures (whatsapp group...)

CENTRE DE RECHERCHE
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OFF-HOURS WORK AND ISOLATED WORK

Procedures at the CRC

These procedures are not designed to control you, but for your safety

In an emergency:

- to know you are there,
- to allow help to find you,
- to allow to check you are OK

Working alone:

Always tell your colleagues where you are going to work and give regular updates

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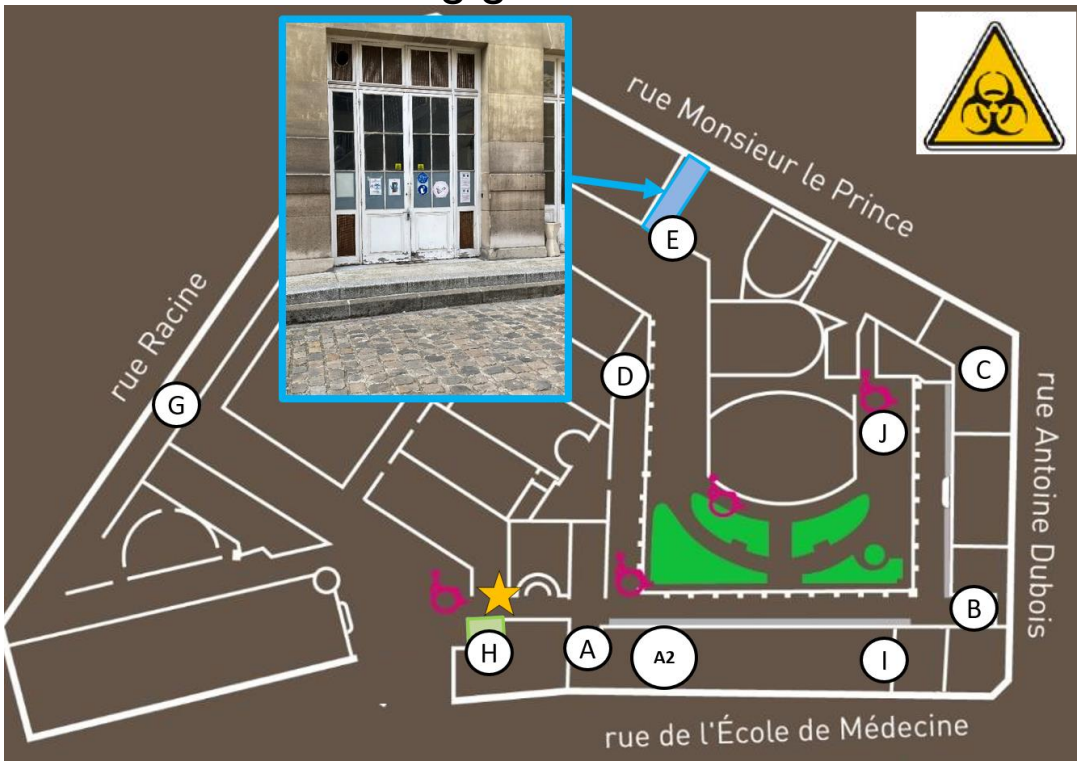
LIQUID NITROGEN ROOM

LOCATION: E Building, ground floor



Its purpose =
Storage in liquid nitrogen of GMO and non-GMO cell lines at biological levels 1 and 2

No experience in the nitrogen room

No waste (cryotubes, paper, gloves...) in the nitrogen room: everything must be brought back to the laboratories

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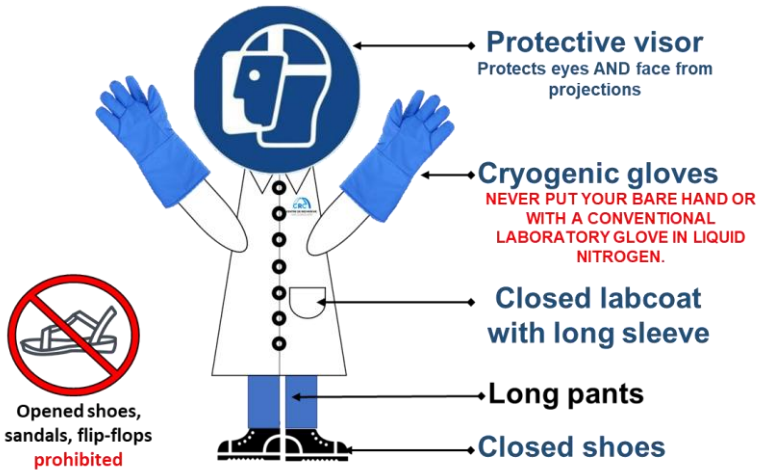
LIQUID NITROGEN ROOM

Hazards of using liquid nitrogen

Personal Protection Equipment



To reduce the risk of thermal burns:
investment in self-feeding, double-walled tanks in which the samples are not immersed in liquid nitrogen:

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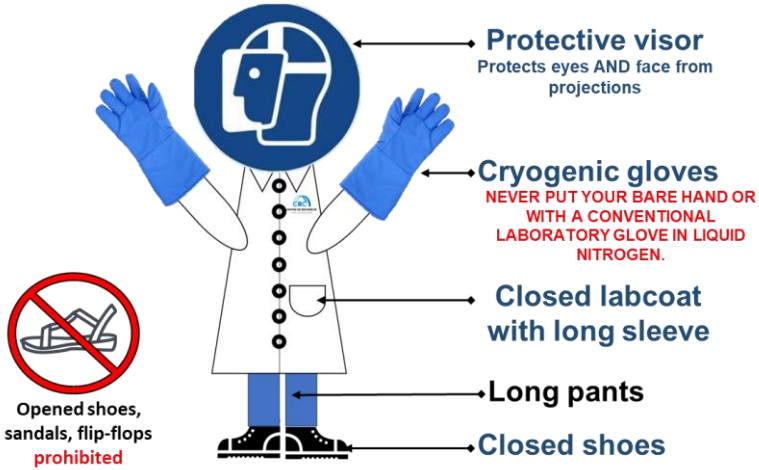
LIQUID NITROGEN ROOM

Hazards of using liquid nitrogen

Personal Protection Equipment



LEAVE THE ROOM DOOR OPEN TO PROMOTE VENTILATION

NEVER STORE LIQUID NITROGEN IN A ISOTHERMAL BOTTLE HERMETICALLY CLOSED

(risk of explosion: at room temperature, 1 L of liquid nitrogen = 680 L of gas)

FOR SAFETY REASONS, IT IS MANDATORY TO ALWAYS COME AT TWO IN THE NITROGEN ROOM

DO NOT TAKE THE LIFT IN THE PRESENCE OF A FILLED LIQUID NITROGEN CONTAINER.

CENTRE DE RECHERCHE DES CORDELIERS

TRANSPORTING BIOLOGICAL PRODUCTS INSIDE THE CAMPUS

The roads on the Cordeliers Campus are considered as public roads.

⇒ The transport of biological products (samples, cell lines, GMOs, rodents) between buildings is subject to the TDG (Transport of Dangerous Goods) regulations.

⇒ Aim: To prevent risks for people, goods and the environment

⇒ **Application of the triple packaging rule**

⇒ **Generalization of the triple packaging rule throughout the site** to avoid any risk of dissemination

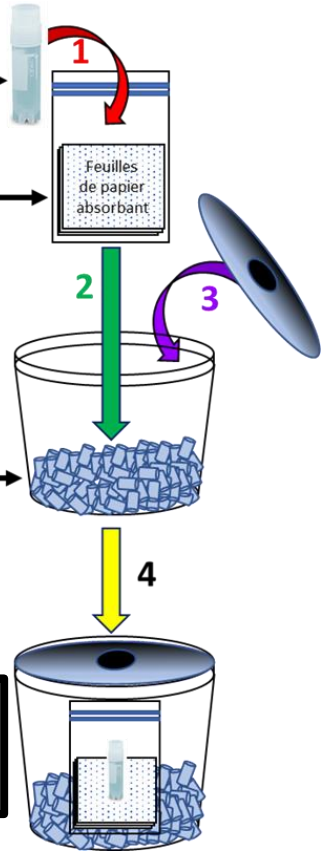
LIQUID NITROGEN ROOM ⇔ LABORATORY

Tight primary packaging containing the biological material = tube…

…inserted in a sample bag containing absorbent paper and closed = secondary packaging

The whole set is placed in an ice bucket with its lid closed = tertiary package

⚠ Always put the ice between the secondary and tertiary packaging



Triple packaging for transporting the sample from the nitrogen liquid room to the laboratory

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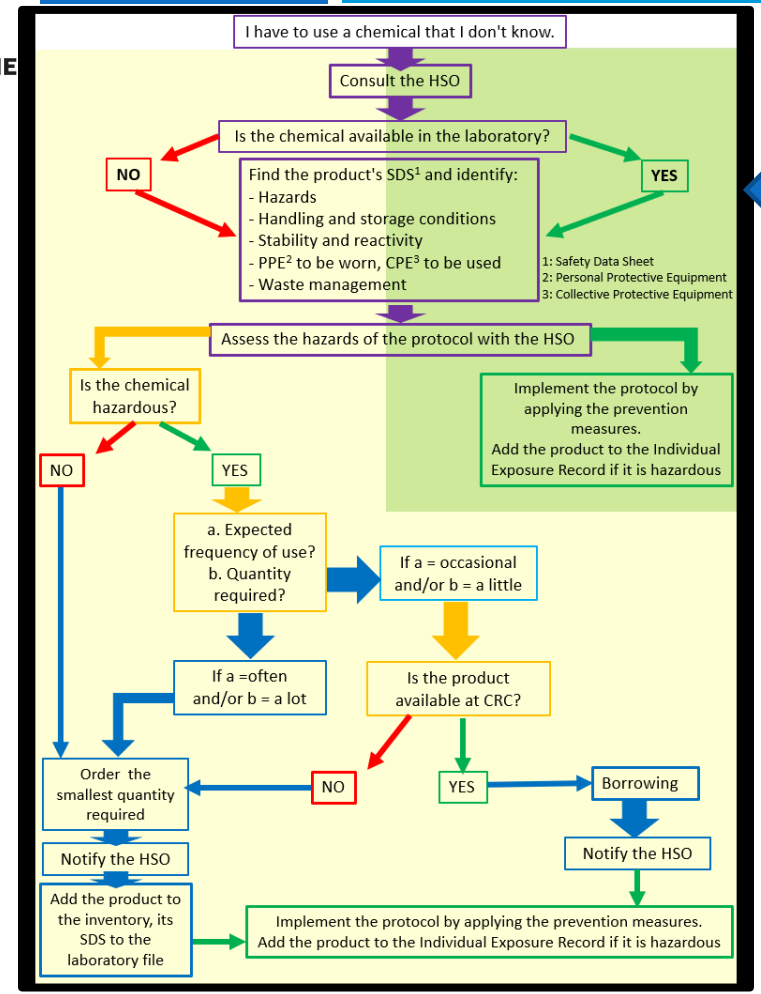

ORDERING A NEW CHEMICAL PRODUCT

Read the procedure and apply it

✓ Always consult the HSO before purchasing

✓ Always check the hazards associated with the products

✓ Identify PPE and CPE needed, and check the waste management

✓ Buy the smallest amount of product needed

✓ Add the product to the laboratory inventory

✓ Include the product in your personal exposure sheet for hazardous chemicals

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PROCEDURE FOR ORDERING A NEW CHEMICAL PRODUCT

…And if you are transferring a chemical (powder or liquid) to another container / bottle, always state on a label:

- the name of the product
- its cas number
- the associated hazard pictogram(s)
- the date of the transfer

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NON-REGULATORY HEALTH AND SAFETY TRAINING

We need occupational first aiders. If you are interested,

or if you need training in handling compressed gas cylinders and liquid nitrogen,

…or training to obtain electrical clearance

…or a "gestures and postures" training course"

….or any other health and safety training, contact me:
marie-noelle.brunelle-navas@Sorbonne-universite.fr

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Thank you for your attention!!

I wish you every success at the CRC and do not hesitate to contact me :

Marie-Noëlle Navas, staircase B 2nd 1/2 floor
marie-noelle.brunelle-navas@sorbonne-universite.fr