

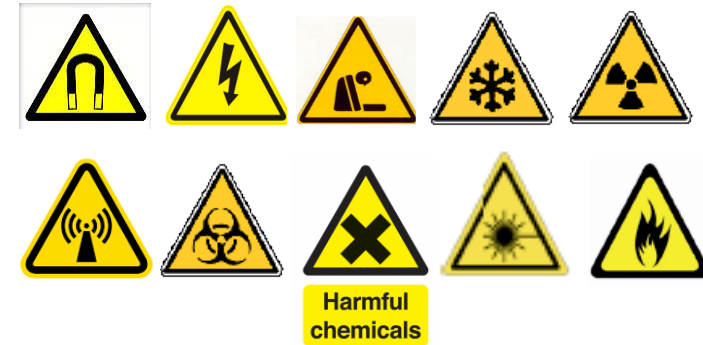
Health & Safety Training

Caroline CLERTÉ

2022

outlook

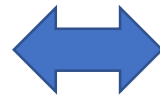
- H&S Introduction.
 - Why? Regulations and Legal duties.
 - Official Documents (Institute Regulations, DUER, Work Health & Safety register)
- Main Hazards:
 - Fire.
 - Chemical.
 - Biological.
 - Physical (Electric, NMR, Gases (N, H, CO₂), Laser)
 - Radioactivity radiations
 - Animals manipulations
 - Working posture (Musculoskeletal disorders)
 - Psycho-social
- Emergency procedures
- Good practices in laser laboratory



Health and Safety introduction

- Labor law: Décret n°82-453 May 28th 1982.
 - ✓ Clean and safe environment.
 - ✓ Employees must assured safety to others and to themself

The good!



Health and Safety introduction

The Ugly!



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FAMOUS LAST WORDS

OOOPS

OH-OH.

HUH?

DON'T WORRY
I'VE DONE
THIS A
MILLION
TIMES!



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"We've decided to name
16 new safety rules after you."



Employer Duties & Responsibilities: Internal regulations



- ✓ **Safe Workplace** – access, egress, circulation
- ✓ **Safe Equipment**, tools, substances
- ✓ **Procedures**
- ✓ **Training** and supervision

❖ Companies or Research Institute must provide an **Internal regulations** that contains **H&S Employer & Employees duties & responsibilities**.



Employees Duties & Responsibilities



- ✓ **Work safely**
- ✓ **Follow instructions & rules**
- ✓ **Don't endanger** and **Respect** others
- ✓ Don't misuse safety equipment
- ✓ **Report problems** /unsafe situations /incidents



DUER

- “Document unique d’évaluation des risques” (DUER).
 - ✓ It contains indications relating to the objectives to be achieved, making it possible to specify the institute regulations.

Année: 2021			
Origine action	Actions	Priorité	Réalisateur(s)
Locaux et issues	Mettre au norme la pièce de stock de produits chimiques (électricité, armoires)	Urgent	Patrimoine / Laboratoire
Incendie	problème de fermeture des portails lors du déclenchement de l'alarme	Urgent	Patrimoine
Chimie	Stockage extérieur à aménager pour le GB8 29	Urgent	Patrimoine / Laboratoire

Health and Safety register

- Document containing reported incidents and/or accidents.



Risk Assessment

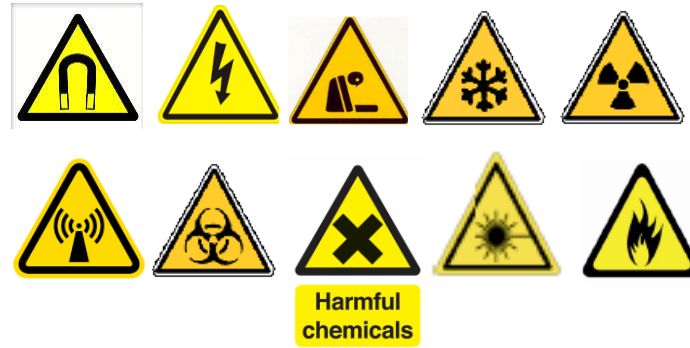
Carried out before work starts:

- Identify hazards
- Look at controls in place
- Evaluate the risk (likelihood)
- **Ask** to Referent/Supervisor if you don't know or aren't sure
- **Report** any misidentified Hazard

“Hi, I’m David and I’m invincible”



Main Hazards in Research environment



- Fire.
- Chemical.
- Biological.
- Physics (Electric, High frequencies, high noise, Gases, Laser)
- Radioactivity radiations
- Animals manipulations (not at CBS)
- Working posture (Musculoskeletal disorders)
- Psycho-social

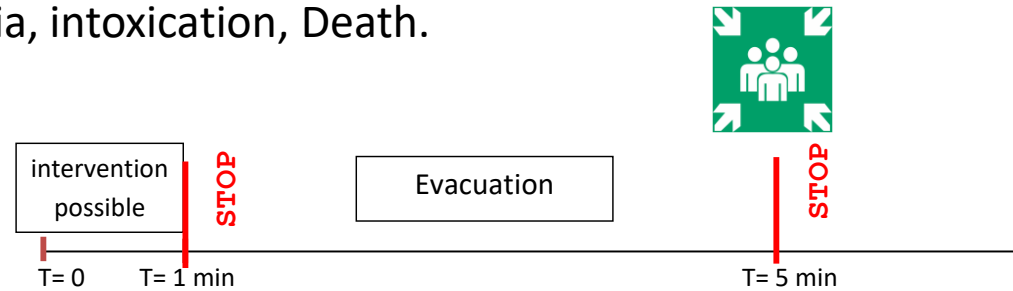




Fire hazard



HAZARD: Burn, Asphyxia, intoxication, Death.



- ✓ Act fast
- ✓ No panic

- Discover fire*:

- Raise the alarm
- Dial 18



* Only use extinguisher if you are trained

- Hear the alarm:

- Close doors and windows behind you
- Leave the building by nearest exit
- Go to the assembly point














Chemical Hazard



HAZARD: Explosions, Fire, Skin & Eyes severe damages and burns, Deadly Intoxication, Cancer, Pollutions, Death.

- **Read & Know** GHS (Global Harmonized System) symbols

	Exploding bomb (for explosion or reactivity hazards)		Flame (for fire hazards)		Flame over circle (for oxidizing hazards)
	Gas cylinder (for gases under pressure)		Corrosion (for corrosive damage to metals, as well as skin, eyes)		Skull and Crossbones (can cause death or toxicity with short exposure to small amounts)
	Health hazard (may cause or suspected of causing serious health effects)		Exclamation mark (may cause less serious health effects or damage the ozone layer*)		Environment* (may cause damage to the aquatic environment)





Route of exposure



The ugly!

- Inhalation
- Ingestion
- Skin Contact/penetration
- Eyes



Highly toxic and Health hazard chemicals.

- Wear Individual safe equipment.



- Work under fume hood to protect you and others.





Chemical Hazards



Classement	Symbole	Exemples
Cancérogène cat. 1A (cat. 1 selon l'ancienne réglementation)		
Cancérogène cat. 1B (cat. 2 selon l'ancienne réglementation)		crystal violet, bleu trypan, Formaldéhyde
Cancérogène cat. 2 (cat. 3 selon l'ancienne réglementation)		acrylamide, chloroforme, formamide
Mutagène cat. 1A (cat. 1 selon l'ancienne réglementation)		
Mutagène cat. 1B (cat. 2 selon l'ancienne réglementation)		Acrylamide, hoechst 33 342,
Mutagène cat. 2 (cat. 3 selon l'ancienne réglementation)		Acridine orange, BET, cycloheximide, chloroforme, Formaldéhyde, iodure de propidium, phénol, MTT
Toxique pour la reproduction cat. 1A (cat. 1 selon l'ancienne réglementation)		
Toxique pour la reproduction cat. 1B (cat. 2 selon l'ancienne réglementation)		Formamide, acrylamide
Toxique pour la reproduction cat. 2 (cat. 3 selon l'ancienne réglementation)		Acide borique, hexane, toluène



Et d'autres....





Biological Hazard



HAZARD: Infection, intoxication, Allergies, cancer.

- In regular Laboratory (L1):



- In Confined laboratory (L2, L3 and L4)

Mandatory Training





Electric Risk



HAZARD: Electrocution - 50V AC can KILL; ignite Fire.

Mandatory training





Cryogenic Liquid (N₂, He)



- **HAZARD:** Severe Skin and eyes burn, Asphyxiation by anoxia, vials explosion



- < 16% : Malaise, nausea, impaired coordination and even loss of consciousness.
- < 10% : Coma and death.

- Every person using liquid Nitrogen and/or Helium (EM, NMR...) need to **be trained** and to follow **safety procedure**.
- Need to wear appropriate protection.





Oxygen sensor triggering procedure



IF THE OXYGEN DETECTOR ALARM GOES OFF

1- If you are in the room:



- Close the bottles (N2, CO2)



- Evacuate the area



- Ventilate



- Notify the person in charge of the facility/Room



DO NOT ENTER the room while the alarm is ON

2- If a person lay down in the room:

- **DO NOT ACT ALONE**

- Notify the person in charge of the facility/room and/or a work rescuer

- Quickly bring the victim into a normal atmosphere, while protecting yourself.



Laser Safety

- **HAZARD:** Sight lost, cataract, Severe Skin and eyes burn, ignite fire.

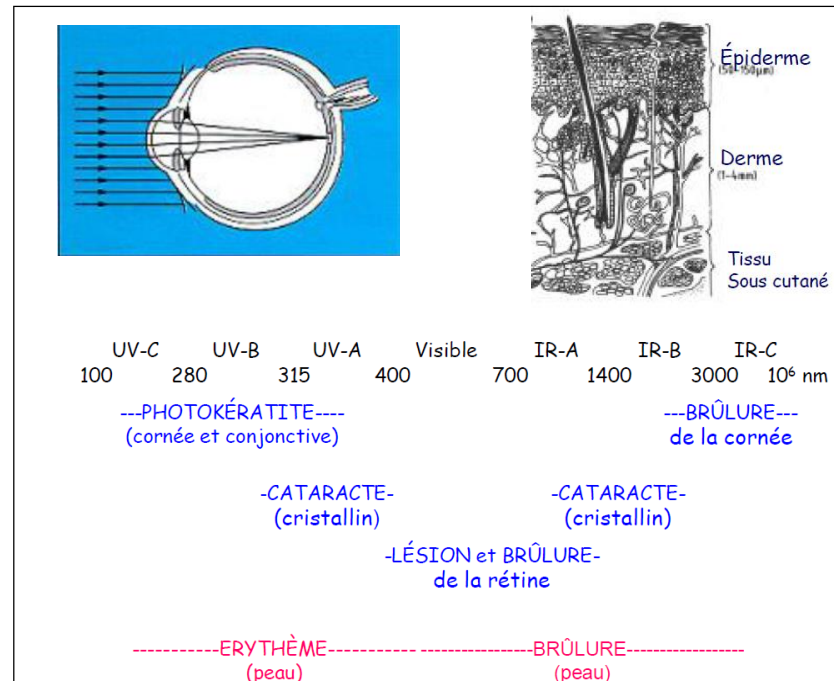
Mandatory training

Lasers Classification

Classes	1	1M	2	2M	3R _(3A)	3B	4
Œil vision faisceau à l'aide d'optique	X	*	X	XX	XX	XX	XX
Œil vision directe du faisceau			*	*	*,X	XX	XX
Œil vision des réflexions diffuses						X	XX
Peau						X	XX
Incendie							•

XX dangereux
 X danger potentiel
 * sans danger si réflexe palpébral et $t < 0,25s$
 X danger si $d < 13cm$ et $t \geq 10s$
 • peut générer un incendie

Eyes & Skin injuries



Laser safety glasses Protections



Control Access

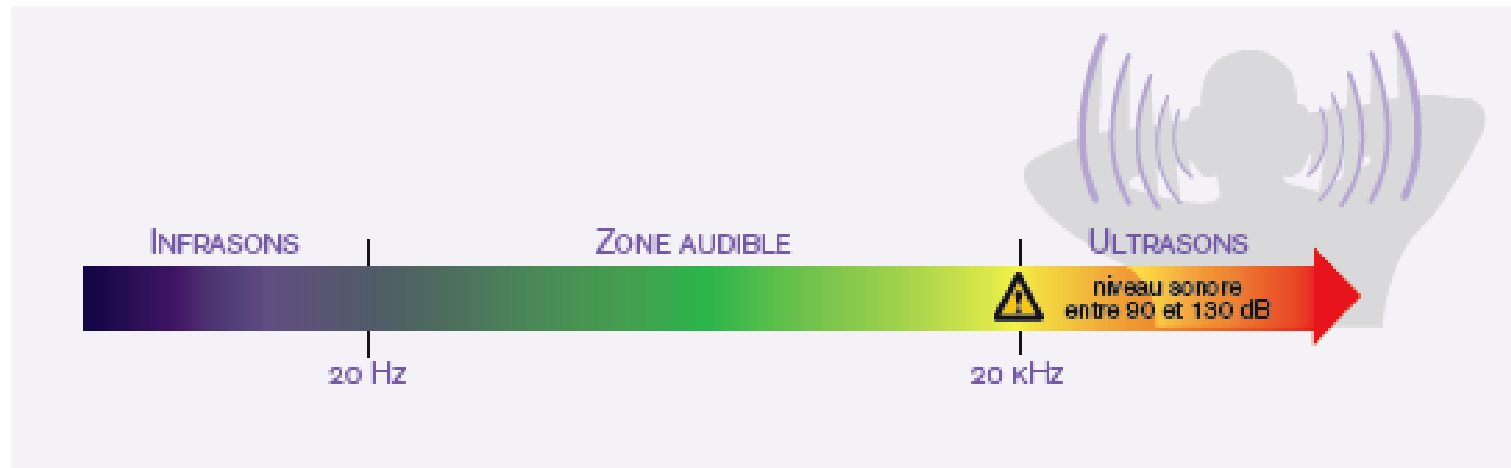




High noise Risk



- **Hazard:** Audition impaired; Headaches.



- Wear Hearing protection.





High frequency and High magnetic field



Warning strong magnetic field

- **Hazard**: medical implant malfunction





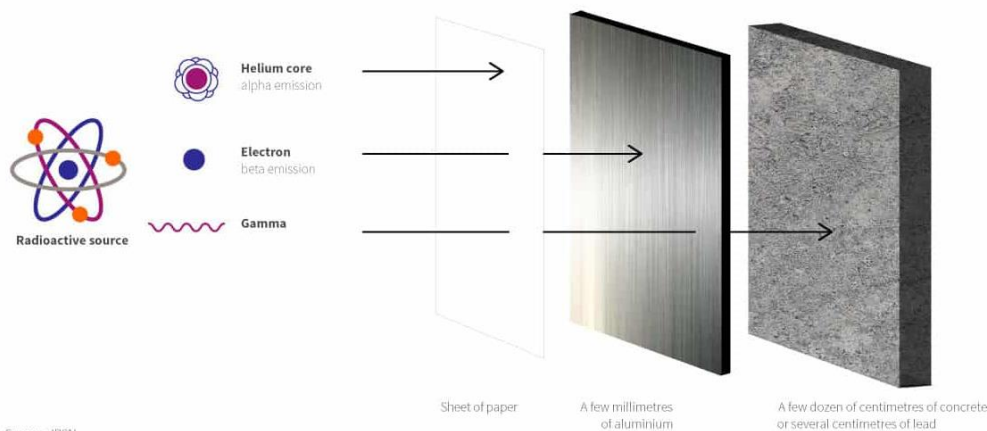
Radioactivity Risk



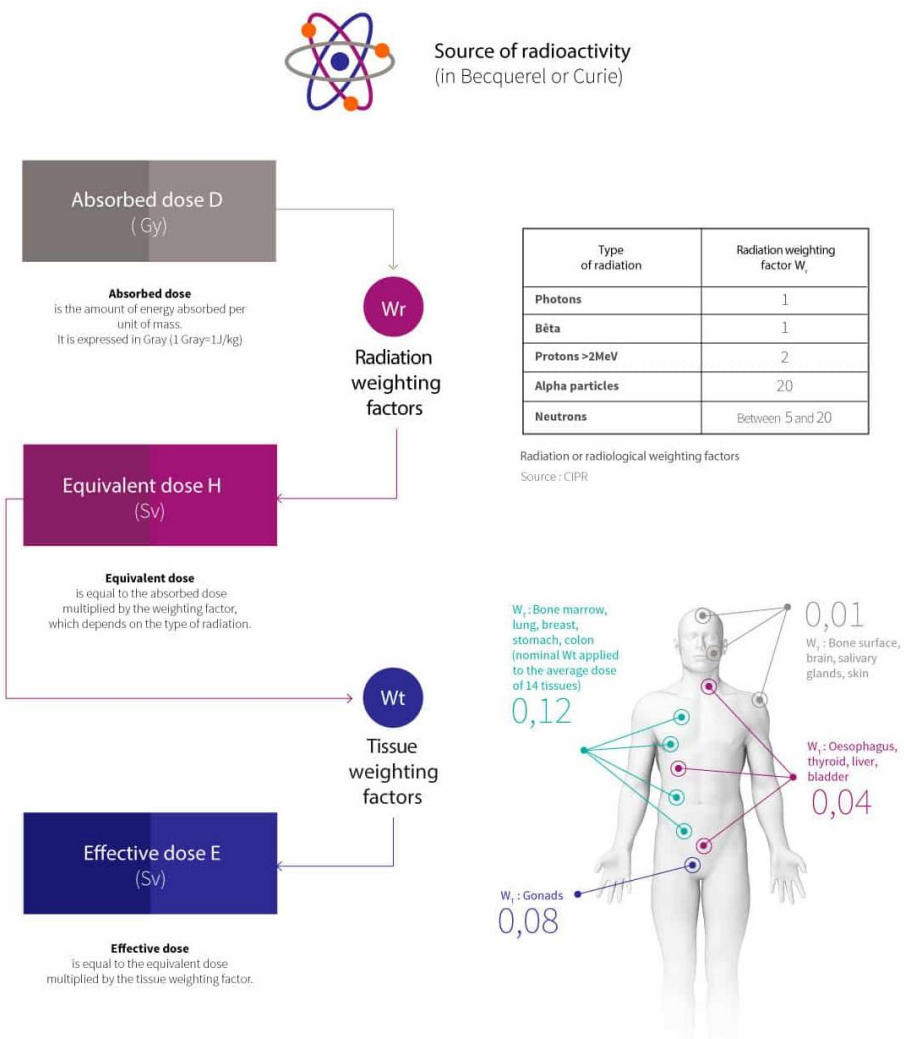
Mandatory training

Hazard: Cancer, Genetic mutations, massive tissue damage, death.

TYPES OF RADIATION AND THEIR PENETRATION POWER



EFFECTIVE DOSE AND EQUIVALENT DOSE



RADIATION MEASUREMENTS AND UNITS



Becquerel (Bq)

The activity of a radioactive source is expressed in Becquerel (here, the number of balls thrown by the dark grey figure).

It designates the number of decays of unstable nuclei per second.

Gray (Gy)

The dose received is expressed in Gray (here, the number of balls hitting the light grey figure).

A Gray designates the dose of ionizing radiation absorbed by the matter.

Sievert (Sv)

Effective dose and equivalent dose are expressed in Sievert (here, the impacts on the body of the light grey figure according to their type and the area hit).

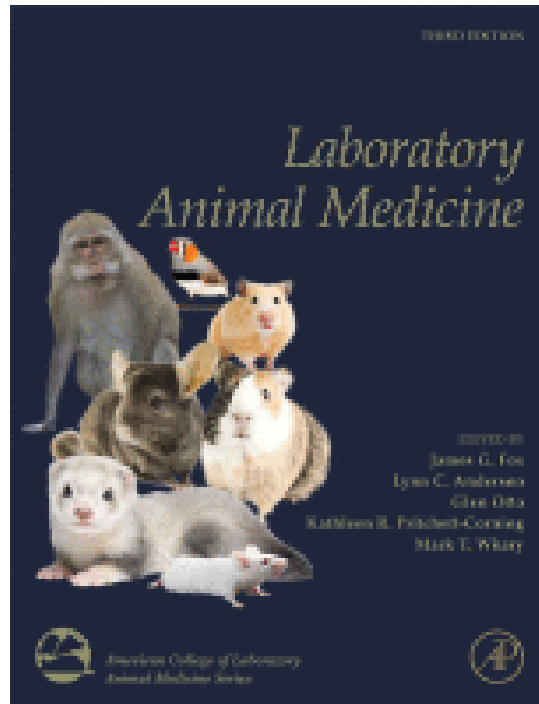
The Sievert designates the biological effects of ionizing radiation on living matter.



Animal manipulation

Mandatory training

- **Hazard**: Bites, scratches, Biological infections...



Ref: <https://www.sciencedirect.com/book/9780124095274/laboratory-animal-medicine>



Muscular skeletal problems

- **Hazard** : Back, neck, shoulders; “Repetitive Strain Injury” – wrists, hands, fingers.



- Workstation setup: Adjust chair to suit, keep keyboard and mouse close.
- Work routine: Plan for regular breaks in computer work.



Psycho-socio Risk



- **Hazard** : Stress, burnout, Conflicts, Ill be, Discrimination

Psycho-social Hazards are Categorized into 6 items:

- Work organization.
- Emotion management
- Autonomy
- Working relationships (Harassment, discrimination)
- Conflict of Values
- Unsafe Working conditions

Qui contacter ?

Questions, témoin ou victime de discrimination, de violences ?

Sexisme, Violences sexuelles, racisme, antisémitisme, haine anti LGBT etc...
Dans le cadre de son engagement pour l'Egalité, l'Inserm souhaite vous informer.

Votre délégation a une correspondante Parité Egalité professionnelle à votre écoute et qui peut vous orienter :
Thécla Lesuffleur Tél 04 67 63 70 80 thecla.lesuffleur@inserm.fr

Salarié (e) Inserm, vous pouvez également contacter :
La Responsable des RH : marie-anne.staub@inserm.fr ; Tél 04 67 63 70 29 / 06 01 37 24 77
L'Assistante sociale : melany.anterieu@service-social-conseil.com ; Tél 04 67 63 70 83
Le Médecin de prévention, Dr Lortal Montel : lortalmontel@ametra.asso.fr

Vous trouverez également ci-dessous les coordonnées des dispositifs externes qui existent et peuvent également vous écouter, aider à mettre des mots, à vous orienter, conseiller :

Pour signaler : Haine sur réseaux sociaux, racisme, harcèlement
Plateforme PHAROS :
<https://www.internet-signalement.gouv.fr/PortailWeb>

Violences familiales appeler le 3919
Pour les jeunes, les enfants, en cas d'urgence : appeler le 119
<https://allo119.gouv.fr/>

Sexisme, violences sexuelles appeler le 3919
<https://stop-violences-femmes.gouv.fr/>
Pour trouver une association proche et adaptée : <http://www.solidaritefemmes.org/nous-trouver>

Violence anti LGBT :
SOS Homophobie Tél 01 48 06 42 41 le soir 18h/22h
<https://www.sos-homophobie.org/>

Racisme, anti sémitisme : LICRA Tél 01 45 08 08 08
<https://www.licra.org/signaler/>
mail : juridique@licra.org

Contre les discriminations au sens large, défenseur des droits : appeler le 3928
Aller sur le site : <https://www.antidiscriminations.fr/>

Training & Competence

- Attending training is one thing, being competent is another.
- You should have evidence of both training & achieving competence.
 - Keep all records
 - External courses
 - University courses
 - Lab-specific training (procedures and/or equipment)
 - Records should show who has trained you and when.

It is only when this table is filled out and signed that the badge of the CBS will be given to the candidate (against a guarantee of 10 €). It will then be authorized to handle in the "Centre de Biochimie Structurale" under the responsibility of its Person in charge.

PLATFORMS	Visas of the persons in charge
BIOCHEMISTRY Person in charge: Vanessa Delfosse (Z2-11)	
CHEMISTRY Person in charge: Jean-François Guichou (B20)	
P2 LABORATORY Person in charge: Christine Bénistant (B19)	
LASER Person in charge: Caroline Clerté (B19)	
ELECTRONIC MICROSCOPY Person in charge: Joséphine Lai Kee Him (Z1-13)	
NMR Person in charge: Karine de Guillen (B16)	
X-Ray Person in charge: François Hoh (Z1-13)	

Hygiène et Sécurité Persons in charge: K. de Guillen / J-F. Guichou	
Secrétariat Person in charge: Florence Lepage (B1)	

« Les informations recueillies font l'objet d'un traitement informatique destiné à la programmation d'un badge d'entrée. Les données sont accessibles par : le Directeur, les assistants de prévention, les responsables informatiques et la personne en charge des badges. Conformément à la loi informatique et Libertés du 6 janvier 1978 modifiée en 2004, vous bénéficiez d'un droit d'accès et de rectification aux informations qui vous concernent, que vous pouvez exercer en vous adressant à : la personne en charge des badges, Centre de Biochimie Structurale, 29 rue de Navacelles, 34090 Montpellier »

The candidat

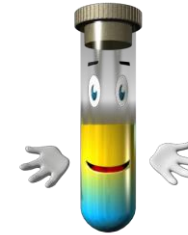
Name:
Signature:



The Person in charge

Name:
Signature:

E-learning H&S Training

<https://neo.inserm.fr>



crée par   **Inserm**
Institut national de la santé et de la recherche médicale

Accueil Mes cours Mon profil Documentation Assistance Langue-

Connecté sous le nom « **prenomALN1 ALN1name** » (Déconnexion)

Ma page > Mes cours


NEO

NEO: Ma page


ADMINISTRATION NÉO

- Modifier mon profil


VUE D'ENSEMBLE DES COURS




LE RISQUE INCENDIE



LA PRÉVENTION



LE RISQUE BIOLOGIQUE



LE RISQUE CHIMIQUE

1.4.8

Connecté sous le nom « **prenomALN1 ALN1name** » (Déconnexion)

Accueil

Emergency Procedures

- Need to know where are:

Emergency exit



Defibrillator



Fire extinguisher



First help kit



Eye wash



Decontamination shower



Emergency call

- Need to know what to do: **DO NOT ACT ALONE**

- ✓ Notify the person in charge or a work rescuer
- ✓ Quickly bring the victim out of danger while protecting yourself.
- ✓ Call emergency 15 or 112 (18 Fire)



Good reflexes

- In case of projection in the eye or eye burn.



- Chemical Skin burn



- Fire Skin burn



- Chemical Ingestion



- Chemical spill



Emergency call



EN CAS D'URGENCE



(faire le 0 avant si l'appel est d'un téléphone fixe)

S.A.M.U.

Pompiers

Police/Gendarmerie

N° d'appel d'urgences européen

N° d'appel d'urgences SMS

(0)15

(0)18

(0)17

(0)112

(0)114



• Urgences de Lapeyronie :

04 67 33 95 00

04 67 33 81 68

• Urgences ophtalmologiques :

04 67 33 67 33

• SOS Main, Montpellier :

04 67 33 95 04

• Urgences tête et cou, Montpellier :

04 67 33 72 59

• Centre antipoison :

04 91 75 25 25 / 04 61 49 33 33



Good Practices in a Lab

LAB SAFETY PROTOCOLS

Use Protective Gear

- Safety Goggles
- Lab Coat
- Gloves
- Long Pants
- Closed Shoes

Proper Supervision

Don't perform lab experiments without instructor supervision.

ID Hazards

Always read labels before using any chemicals.

Safety First

Known location of safety equipment and emergency numbers.

No Food

Don't eat or drink in the lab and never taste chemicals.

Be Attentive

Be attentive while in the lab. Don't leave an experiment in progress.

Clean Up

After completing the lab, carefully clean your workspace and the equipment. Don't forget to wash your hands.

Handle Glassware Carefully

Properly dispose of anything that breaks.



- Use appropriate and safe equipment (collective & personal)
- Sinks \neq Trashes.
- Ask if you don't know.
- Work safely = Protect yourself = Protect others = Respect yourself = Respect others.

