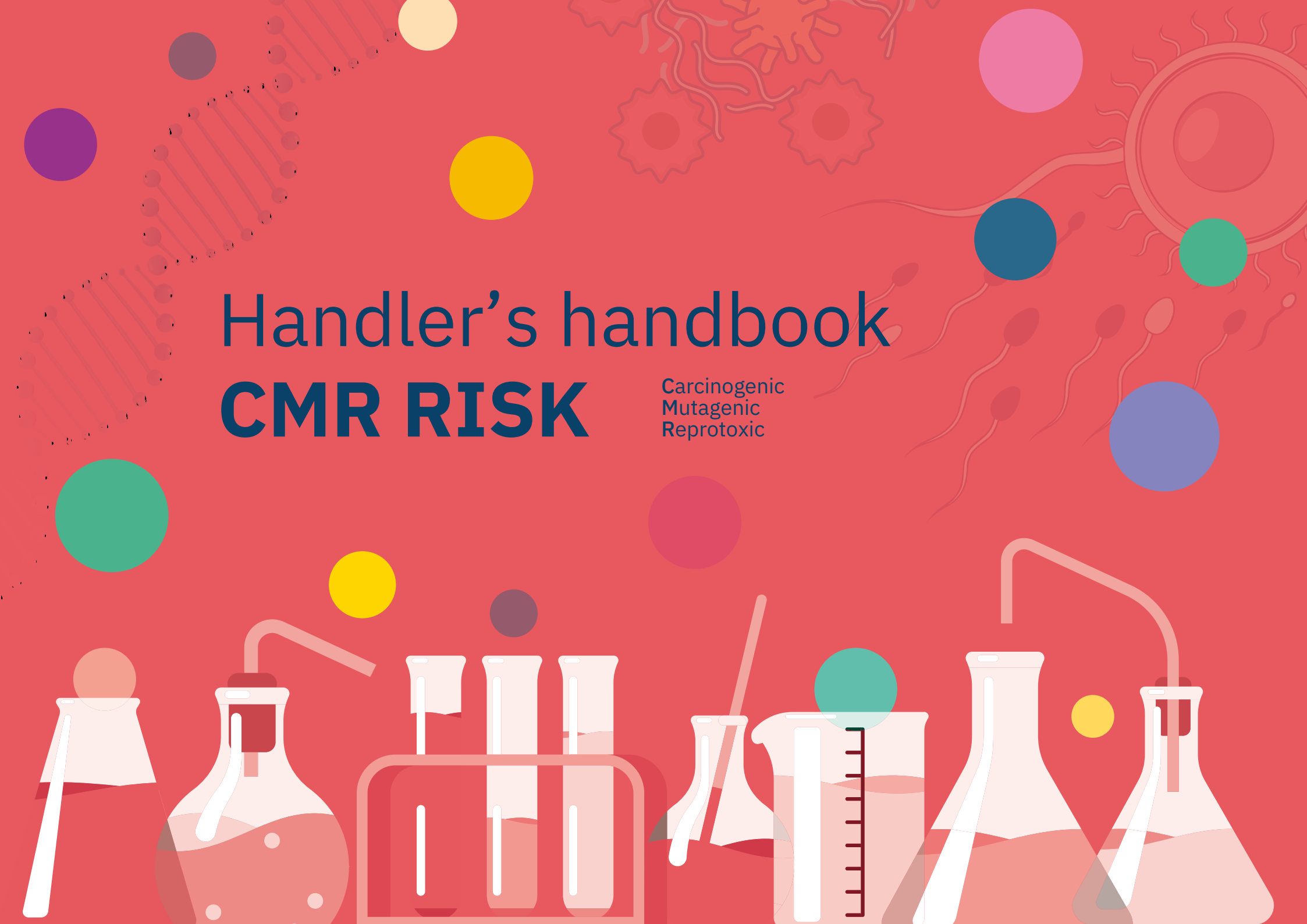




Handler's handbook

CMR RISK

Carcinogenic
Mutagenic
Reprotoxic



In alphabetical order

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Introduction

What is it?

A **carcinogen** is a chemical agent, whether used alone or in a mixture, that may:

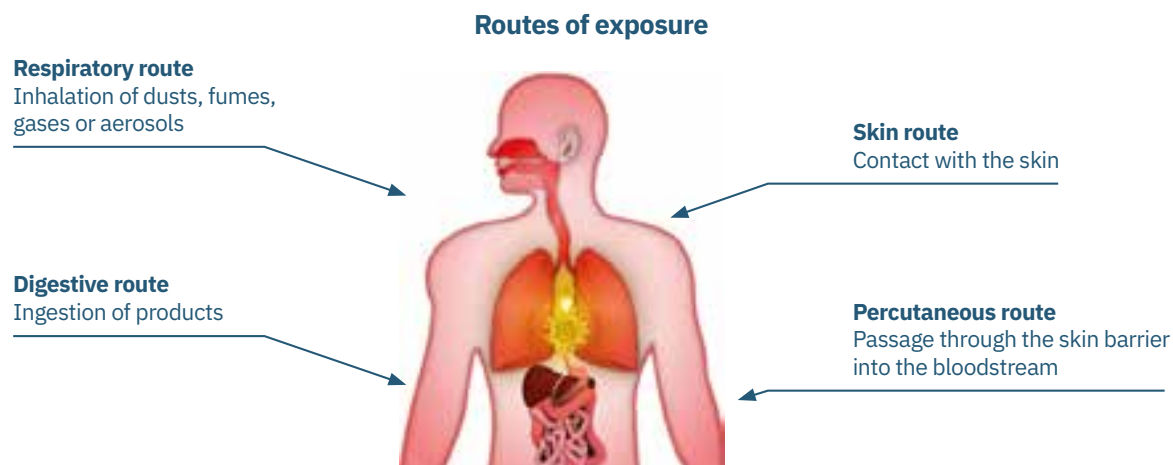
- cause cancer and/or
- increase the incidence of cancer in an exposed population.

Cancer may result from the cumulative effect of several carcinogenic agents in cases of multiple exposure.

A **mutagen** is an agent, substance or mixture, capable of inducing DNA mutations. In humans, the effects may take the form of abnormalities transmitted to offspring, including morphological or functional abnormalities.

A **reprotoxic agent**, or substance toxic to reproduction, is an agent, substance or mixture, that may impair reproductive function or capacity in men or women, including libido, spermatogenesis and oogenesis, and cause non-hereditary adverse effects in offspring that may occur at any stage of fetal development.

CMR agents may have effects with no exposure threshold and may have person-dependent effects due to individual sensitivity. This means that harm to human health may occur even at low doses and does not depend on the intensity or duration of exposure.



This handbook only covers exposure to substances, mixtures and processes considered to be CMR and used in research and teaching activities.

How can they be identified?

CMR agents are classified by hazard category according to the CMR effects observed on human health. The labelling of an agent classified as CMR includes the “**Health hazard** ” pictogram, as well as the hazard statements, or H statements, indicating the nature of the health hazard.

Learning to read a label, identify and properly understand the meaning of pictograms and hazard statements makes it possible to implement appropriate preventive measures and to avoid confusing CMR agents with chemical products presenting Specific Target Organ Toxicity, or STOT, respiratory sensitizers, or aspiration hazards, which are also represented by the same pictogram .

	Category 1A 	Category 1B 	Category 2 
Signal words	DANGER	DANGER	WARNING
Definitions	Chemical agents known to be CMR for human health	Chemical agents presumed to have CMR properties for human health	Chemical agents of concern for human health, but whose CMR effects have not yet been demonstrated
Carcinogenic	H350* : May cause cancer	H350* : May cause cancer	H351 : Suspected of causing cancer
Mutagenic	H340 : May cause genetic defects	H340 : May cause genetic defects	H341 : Suspected of causing genetic defects
Reprotoxic	H360* : May damage fertility or the unborn child	H360* : May damage fertility or the unborn child	H361* : Suspected of damaging fertility or the unborn child

* One or two letters may be added to these hazard statements to provide further differentiation:

- H350i: May cause cancer by inhalation
- H360F: May damage fertility
- H360D: May damage the unborn child
- H361f: Suspected of damaging fertility
- H361d: Suspected of damaging the unborn child
- H360FD: May damage fertility. May damage the unborn child
- H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child
- H360Fd: May damage fertility. Suspected of damaging the unborn child
- H360Df: May damage the unborn child. Suspected of damaging fertility

Chemical agents that affect breastfeeding or may be present in breast milk in sufficient quantities to threaten the health of a breastfed child are identified by hazard statement **H362: May cause harm to breast-fed children.**

The labelling shown opposite  concerns chemical agents labelled under the former regulations, which have been repealed since 2015. Products bearing this labelling should no longer be present in laboratories. If any such products are still present, it is recommended that they be removed for disposal.

		
Carcinogenic	Cat. 1: R45 and R49 Cat. 2: R45 and R49	Cat. 3: R40
Mutagenic	Cat. 1: R46 Cat. 2: R46	Cat. 3: R68
Reprotoxic	Cat. 1: R60 and R61 Cat. 2: R60 and R61	Cat. 3: R62 and R63

The 10 key reflexes for CMR handlers all categories

The essential requirements for appropriate prevention

1 Identify CMR products and processes, eliminate them or, failing that, substitute them

SEE TOOL 1

2 Implement preventive measures adapted to the risk(s) at each stage of the experimental process

SEE TOOL 1

3 Complete the exposure prevention form

SEE TOOL 2

4 Attend training and information sessions on CMR-related risks

SEE TOOL 3

5 Handle CMR agents at clearly marked workstations

SEE TOOL 6

6 Use appropriate collective protective equipment (CPE) and personal protective equipment (PPE), in good condition and checked regularly

SEE TOOLS 4, 5 AND 6

7 Comply with the storage conditions for CMR agents

SEE SECTIONS 7 & 10 OF THE SAFETY DATA SHEET (SDS)

8 Comply with the waste disposal streams

9 Receive medical monitoring by the occupational physician before, during and after the exposure period

CONTACT the occupational physician, for your health and that of your child, as soon as:

- you are planning to conceive a child, whether you are male or female;
- your pregnancy begins;
- you return from maternity leave, as certain products may pass into breast milk.

The workstation may be adapted in consultation with the occupational physician.

10 Report any incident or accident involving CMR products to one of the designated contacts in your laboratory and enter it in the occupational health and safety register • See page 25.

TOOL 1

IDENTIFYING AND LOCATING CMR RISK IN THE EXPERIMENTAL PROCESS

Five successive steps:

- 1 Identify and draw up an inventory of CMR products
- 2 Establish the experimental plan in order to identify the stages involving CMR risk
- 3 Implement appropriate preventive measures and assess the measures taken
- 4 Record the actions taken in a summary table
- 5 Inform the health and safety officer so that the single workplace risk assessment document (DUERP) can be updated

Experimental process analysis

- 1 **INVENTORY OF HAZARDOUS CHEMICAL AGENTS**
Establish the list of CMR products.

- 2 **EXPERIMENTAL PLAN**
Specify the sequence of the experimental stages.

Identify and group together, in chronological order on a linear diagram:

- the main stages of the experiment, broken down into process units
- under each stage, indicate the nature of the risk incurred, where applicable

EXPERIMENT STAGE



NATURE OF THE RISK

CMR risk

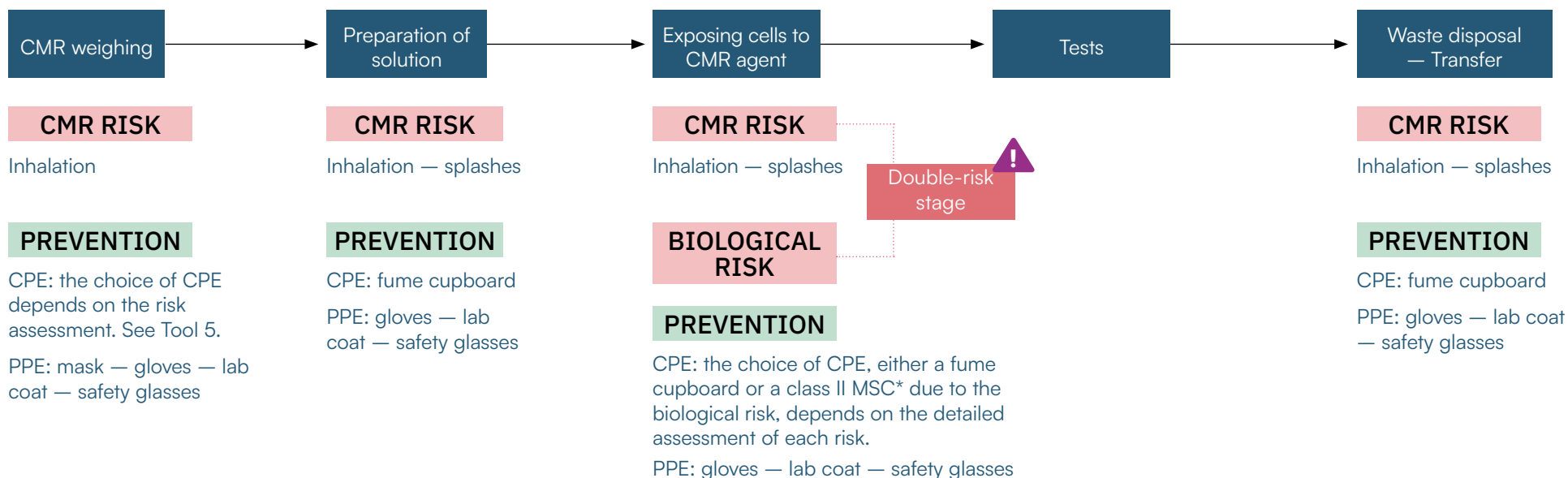
PREVENTION

Priority order: elimination of the CMR risk > substitution > work in a closed system, where technically possible > collective protection > and/or personal protection

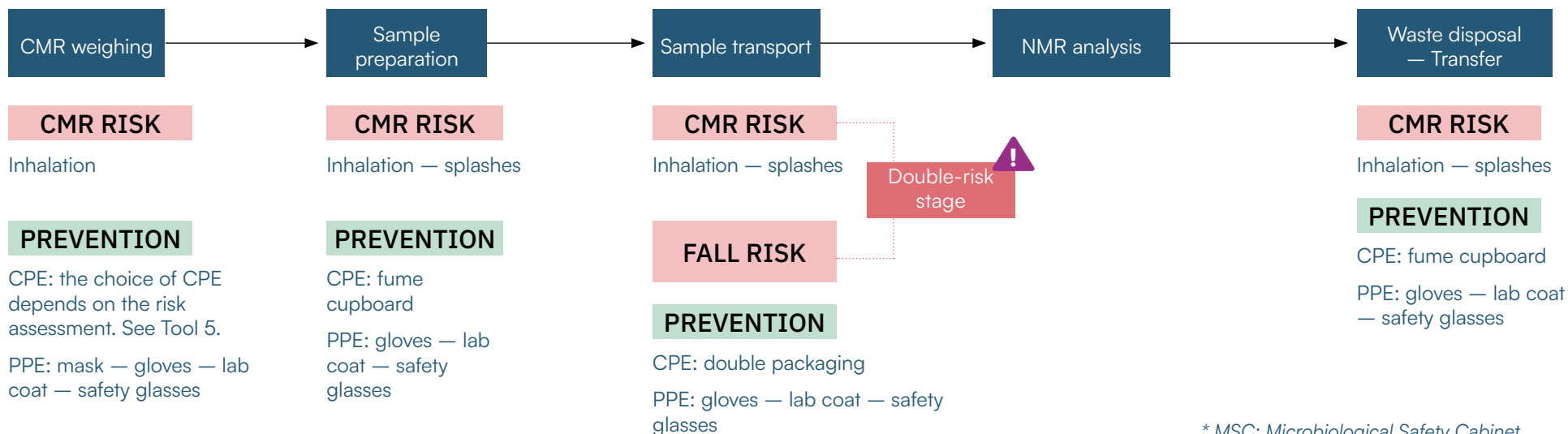
REGULATORY REQUIREMENTS

Information/Training — Equipment checks — Pollutant measurements / occupational exposure limit values (OELVs) — Medical monitoring

EXAMPLE 1 • Exposing cells to CMR agent



EXAMPLE 2 • NMR analysis of a sample

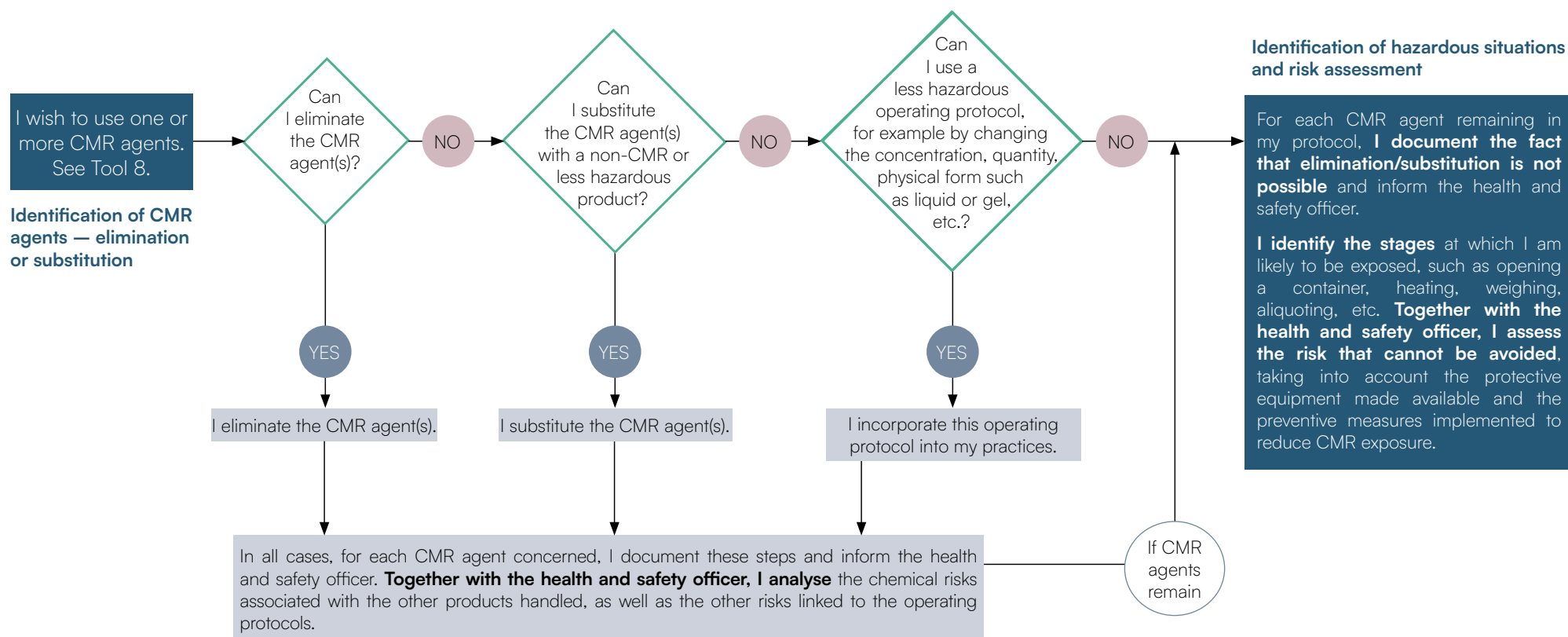


* MSC: Microbiological Safety Cabinet

3 IDENTIFICATION OF PREVENTIVE MEASURES ASSOCIATED WITH CMR-RISK STAGES

Follow the pathway to act on the risk

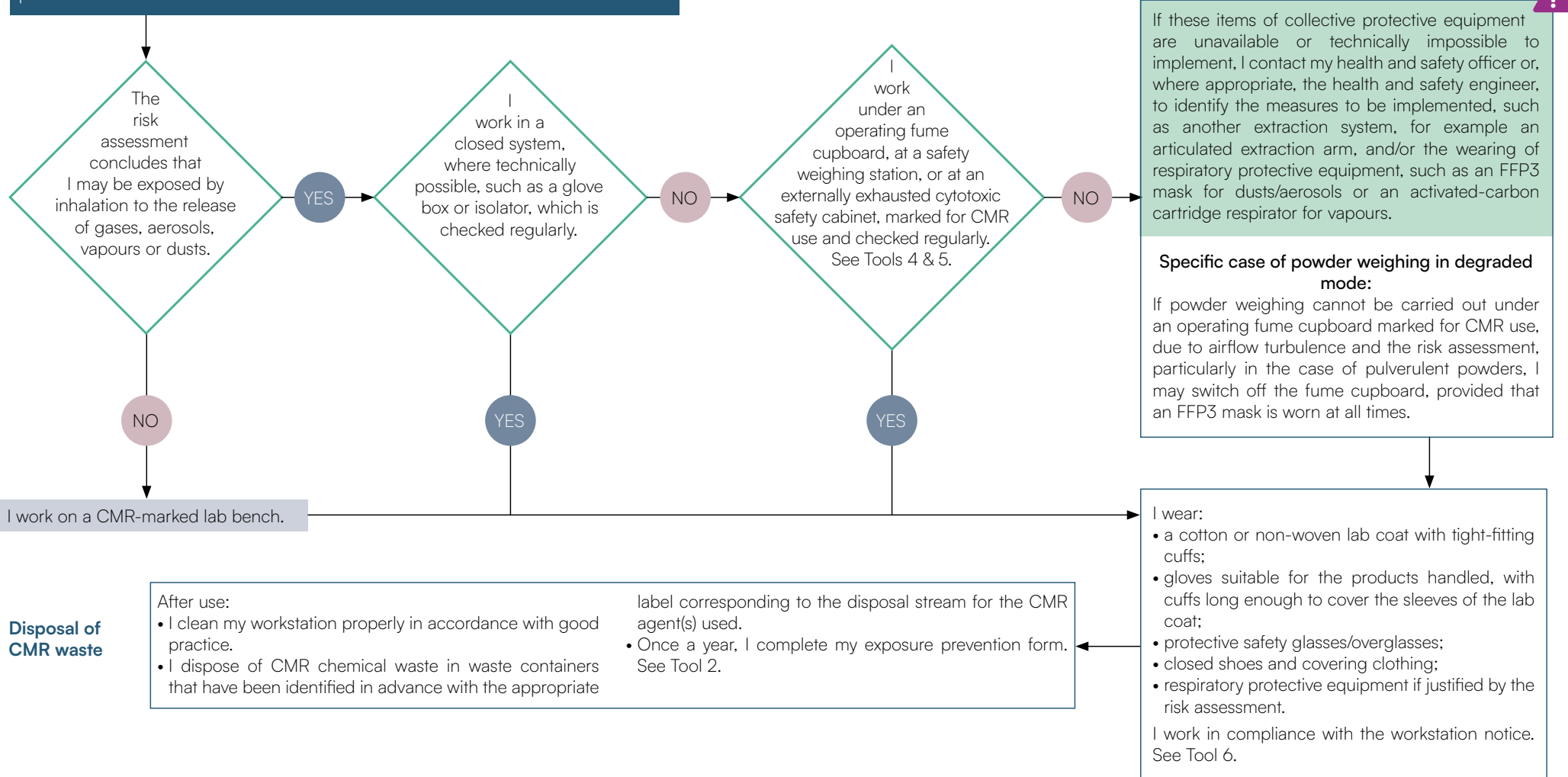
Step 1: assessment of possible substitution of CMR agents



Step 2: risk assessment related to the handling of remaining CMR agents

I use a CMR agent in any form: solid, such as **powder**, pulverulent material or aerosols; **liquid**, such as solvent, solution or aerosols; or **vapour**.
I have been trained in the use of CMR agents and in collective and personal preventive measures. See Tool 3.

Identification of preventive measures and action plan



4 DASHBOARD Establish the findings: summarise all data

Name of the experimental process
.....
.....
.....
Date
CMR agents identified
.....
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.....
.....
.....
.....
.....

Identification of CMR agents

Substitutable CMR agents
.....
.....
.....
.....
.....

Substituted by
.....
.....
.....
.....
.....

The substitution product is CMR	
☐ Yes	☐ No
☐ Yes	☐ No
☐ Yes	☐ No
☐ Yes	☐ No

Substitution of CMR agents

Substitution measures to be recorded in the single workplace risk assessment document (DUERP)

Description of stages	Hazardous situation	Associated risk(s)	Collective protection	Personal protection	Location of the activity
Examples					
CMR powder weighing	Pulverulent product	Inhalation	Safety weighings station	Gloves, safety glasses, lab coat	
Solvent weighing	Volatile product / Spill	Inhalation / Splash	Fume cupboard	Gloves, safety glasses, lab coat	

Identification of stages and prevention

Handler's signature

5 UPDATING THE DUERP Inform the health and safety officer so that the single workplace risk assessment document can be updated.

.....

TOOL 2

Exposure prevention form

WHY?

TO ENSURE THE TRACEABILITY OF EXPOSURE TO CMR AGENTS

This form, which is updated regularly, is intended to:

- identify exposures to hazardous substances, mixtures and processes, including CMR agents;
- ensure the traceability of occupational exposures, for improved occupational and post-occupational medical monitoring;
- meet the employer's regulatory obligations.

WHO IS CONCERNED?

Any person likely to be exposed when handling or preparing hazardous chemical products.

WHO IS IT INTENDED FOR?

This form is kept by the **employer** or their representative and added to the person's file held by the HR department. One copy is sent each year to **the person likely to be exposed**, and another is sent to the **occupational physician**.

WHO COMPLETES IT?

The person likely to be exposed, with the help of the health and safety officer and, where appropriate, the health and safety engineer. The form must be signed by the person concerned. The unit director signs it for approval and forwards it to the employer.

WHEN SHOULD IT BE COMPLETED?

Every year, when the risk assessment is carried out. It must also be updated whenever a change in technique is likely to alter the exposure.



TOOL 3

Information and training for personnel exposed to CMR products

THE LABORATORY ORGANISES, IN CONJUNCTION WITH THE INSTITUTIONS' PREVENTION SERVICES, INFORMATION AND TRAINING FOR STAFF ON CMR RISK

This training must cover the following points:

- the potential health risks, including the additional risks associated with tobacco use;
- the precautions to be taken to prevent exposure;
- occupational health and safety requirements;
- the wearing and use of protective equipment and protective clothing, PPE;
- the measures to be taken by workers, in particular emergency response personnel, to prevent accidents and incidents;
- the potentially harmful effects of exposure to CMR products on fertility, on the embryo, particularly in early pregnancy, on the fetus, and on the child in the event of breastfeeding;
- increased vigilance for women and men wishing to conceive a child, and the need for women to declare their pregnancy as early as possible.

WHO IS CONCERNED?

Any person likely to be exposed to CMR chemical agents.

WHEN IS IT PROVIDED?

Regularly: when taking up a position, when a new product or new process is introduced, after an accident/incident, when labelling changes, etc.

WHO SHOULD BE CONTACTED?

Unit director; Supervisor; Health and safety officer; Chemical products contact; Health and safety engineer; Chemical risk officer; Occupational physician.

See page 25, "Key contacts".

TOOL 4

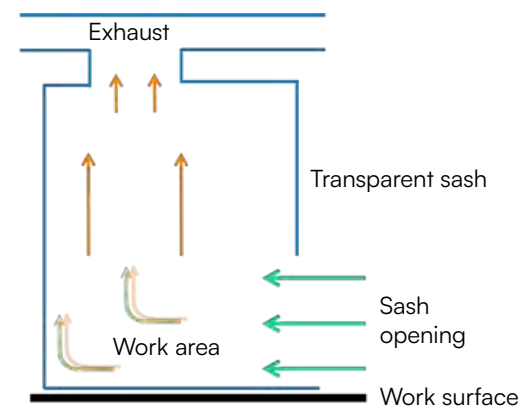
A FUME CUPBOARD IS AN ITEM OF COLLECTIVE PROTECTIVE EQUIPMENT DESIGNED TO PROTECT HANDLER FROM EXPOSURE BY INHALATION TO HAZARDOUS CHEMICAL PRODUCTS, WHATEVER THEIR FORM

Good practice: fume cupboard

Principles of operation of a fume cupboard

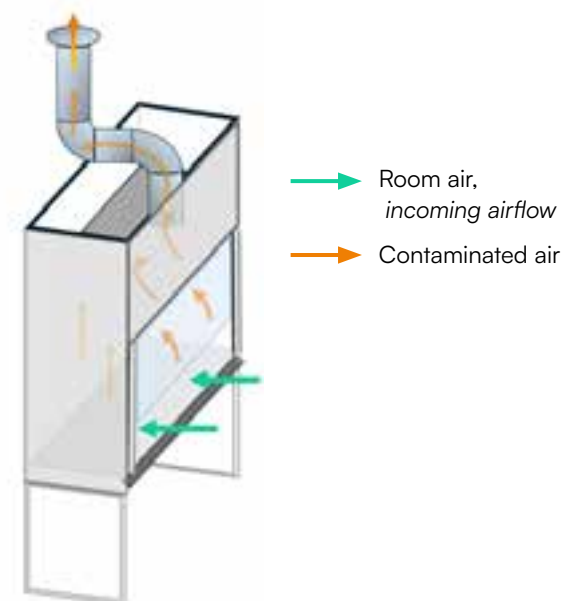
- Containment
- Extraction
- Exhaust of air to the outside of the premises

A fume cupboard contains vapours, fumes and dusts by extracting them and exhausting them to the outside, thereby protecting the worker and the working environment.



Handling restrictions

- Pathogenic biological products must not be handled in a fume cupboard.
- Radioactive products may only be handled in a fume cupboard located in a supervised or controlled area.
- The effectiveness of the fume cupboard is checked annually. The date of the last check and its result, compliant or non-compliant, are displayed on the fume cupboard.
- In some cases, handler must comply with specific measures in order to work safely; these measures are stated in the workstation notice displayed nearby.



MEASURES TO BE OBSERVED

Before handling	During handling	After handling
- Wear personal protective equipment: safety glasses/ overglasses (NF EN ISO 16321-1), a closed cotton or non-woven lab coat, type 6 or 5, with tight-fitting cuffs, gloves suitable for the product(s) handled (NF EN ISO 374-1), with cuffs long enough to cover the sleeves of the lab coat, closed shoes, and clothing covering the legs. - Position the front sash at the stop level set by the manufacturer. - Limit handling to one person. - Avoid unnecessarily cluttering the work volume so as not to disturb the airflow in the fume cupboard. - Only introduce equipment required for the procedure; do not leave equipment in storage. - Limit the quantities of products handled.	- Handle with calm, controlled movements. - Organise the procedure so as to avoid repeatedly moving arms in and out of the fume cupboard. - Handle at a distance, marked on the work surface, of no less than 15 cm from the plane of the opening, in order to optimise the capture of pollutants. - Limit bulky heat sources, such as sand baths, which disturb the airflow in the fume cupboard.	- Lower the front sash as soon as the procedure is completed. - Keep the fume cupboard operating as long as chemical products, especially bottles, remain in the work volume. - Clean and tidy the work surface at the end of the procedure. - If experiments must take place in the fume cupboard when the handler is absent, at lunchtime, overnight, etc., indicate the following minimum information on the fume cupboard: Handling in progress, do not switch off. In the event of malfunction or emergency, contact: Name: Telephone number: Procedure start date:

SPECIFIC RECOMMENDATIONS

- Use forced mode, where the fume cupboard has one, exclusively for incidents: leaks or pollutant spills. - Limit the release of pollutants by keeping containers closed or by installing a gas trap for procedures that require one.	- Place the source of pollutant zone as low as possible in the work volume in order to optimise pollutant capture. - Arrange the workstation so that the operator does not have to put their head inside the enclosure during handling.	Secure fluid supply hoses with suitable clamping devices.
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TOOL 5

PAY PARTICULAR ATTENTION TO CMR WEIGHING

LIMIT POWDER WEIGHING AS MUCH AS POSSIBLE!

Give preference to:

- small quantities that are pre-weighed or ready to use;
- products in solution;
- reconstitution directly in the original packaging, without weighing, followed by aliquoting.



Good practice: powder weighing

RISKS WHEN WEIGHING CMR AGENTS

- dispersion of powder into the air, respiratory route;
- liquid splashes, contamination by contact.

CHOOSING THE WEIGHING LOCATION

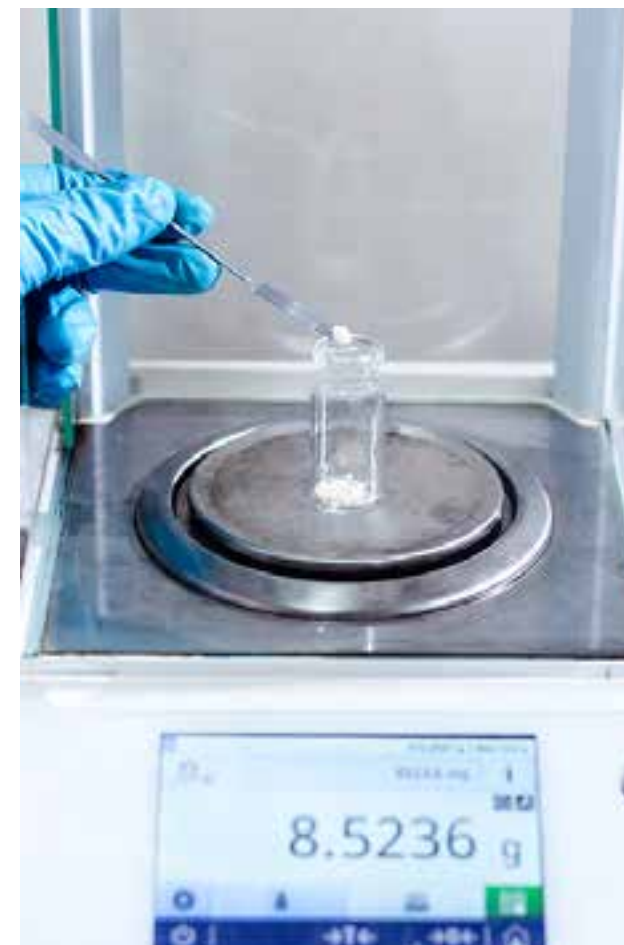
- no air movement, with doors and windows closed;
- away from traffic areas;
- constant, moderate temperature;
- no moisture point;
- product storage area nearby;
- adjustable ventilation.

CHOOSING THE CPE

Recirculating fume cupboards must not be used.

When handling CMR agents, all collective protective **equipment must be externally exhausted.**

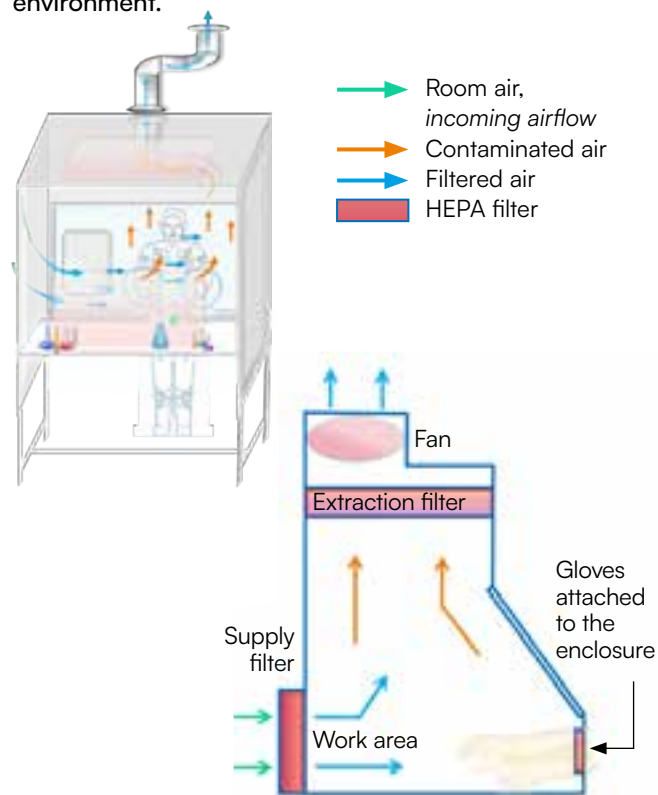
- **Priority should be given to the use of a closed system, such as an isolator or glove box, a safety weighing station, or a cytotoxic weighing station.** A fume cupboard may be used, but this must be supported by a risk assessment.
- Apply the preventive measures implemented following the CMR risk assessment and indicated in the workstation notice, or contact your health and safety officer or, where appropriate, the health and safety engineer.



ISOLATOR OR CLOSED SYSTEM (CLASS III MSC)

- Containment
- Extraction
- **Exhaust of air to the outside of the premises**

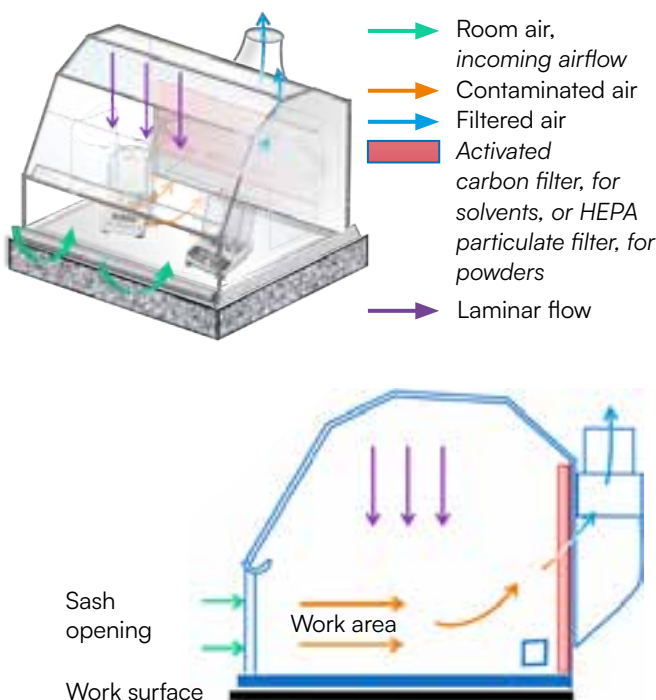
A fully sealed enclosure, an isolator or closed system provides maximum containment of CMR agents and processes, preventing any contact between the inside of the isolator and the outside environment, thereby protecting workers, products and the working environment.



SAFETY WEIGHING STATION (SWS)

- Containment
- Extraction
- **Mandatory exhaust of air to the outside of the premises**

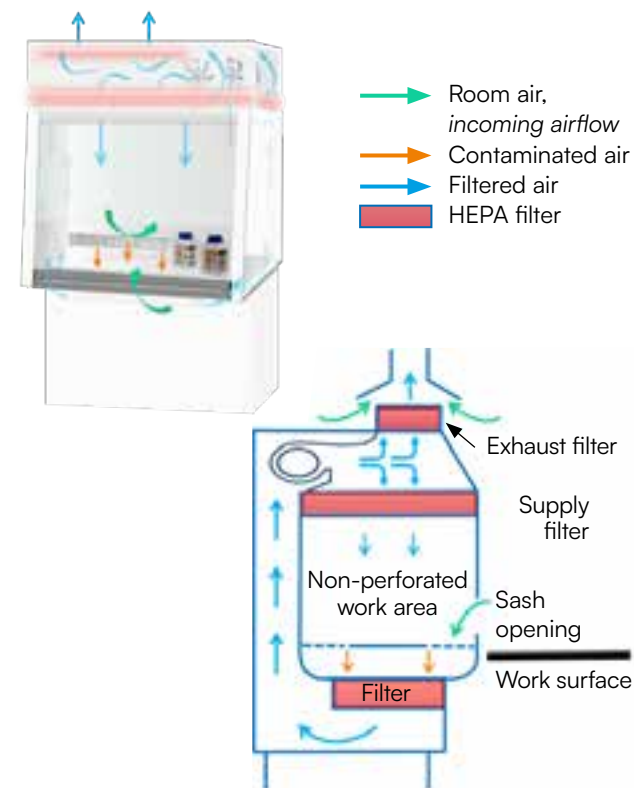
A safety weighing station provides maximum containment of CMR agents during weighing, offering a stable, turbulence-free environment through laminar flow at the opening and around the balance. This creates a barrier between the contaminated air, extracted through a filter, and the working environment, thereby protecting workers, products and the working environment.



CYTOTOXIC SAFETY CABINET (CSC)

- Containment
- Extraction
- **Mandatory exhaust of air to the outside of the premises**

A cytotoxic safety cabinet provides containment of CMR agents by preventing their dispersion, by means of a HEPA filter located in the return air system beneath the work surface, which traps pollutants, thereby protecting workers, products and the working environment.

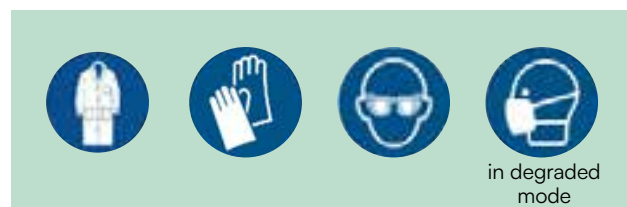


IN THE ABSENCE OF ONE OF THE THREE ITEMS OF EQUIPMENT MENTIONED ABOVE – CASE OF USE OF A FUME CUPBOARD

If powder weighing cannot be carried out under an operating fume cupboard designated for CMR use, due to airflow turbulence and the risk assessment, particularly in the case of pulverulent powders, I may switch off the fume cupboard, provided that an FFP3 mask is worn at all times. This is a degraded operating mode.

MEASURES TO BE OBSERVED WHATEVER THE TYPE OF CPE USED

PPE NOT TO BE FORGOTTEN AT ANY STAGE



Before weighing	weighing	After weighing
- Wear the following: safety glasses/ overglasses (NF EN ISO 16321-1), a closed cotton or non-woven lab coat, type 6 or 5, with tight-fitting cuffs, gloves suitable for the product(s) handled (NF EN ISO 374-1), with cuffs long enough to cover the sleeves of the lab coat, closed shoes, clothing covering the legs and an FFP3 mask when using a switched-off fume cupboard. PPE is stored in locations separate from the product storage area. - Clean the workstation. - Provide a small container for waste* and surplus*.	Apply the double-weighing technique in accordance with good laboratory practice: - Tare a container with a lid, suitable for the desired final volume. - Place an approximate quantity in it, without adding or removing any material. - Weigh the closed, previously tared container. - Prepare the solution by adding the volume of solvent required to obtain the desired final concentration.	- Clean the workstation, including the balance and equipment. - Dampen a cloth with a mixture of water and detergent. Do not use a brush or compressed-air blower! - Wipe the cloth gently to avoid dispersing dust*. - Dispose of the cloth, gloves and mask*.

* Dispose of all these items as CMR waste.

TRACEABILITY OF WEIGHINGS

To quantify individual exposure and manage stock:

- via the laboratory notebook;
- where appropriate, via a weighing logbook, indicating the date, operator's name, product, quantity, etc.;
- via a computerised stock management tool.

TOOL 6

THE WORKSTATION NOTICE: A COMMUNICATION TOOL ON RISKS AT THE WORKSTATION

CMR risk display

Workstation notices enable handlers to follow the correct procedures and know what action to take in the event of an accident. They must be displayed at the workstations.

TOOL 6A

EXAMPLE WORKSTATION NOTICE: FUME CUPBOARD

PREVENTION NOTICE		
Template approved on 07/10/2021 by the Prevention and Safety Services of: University of Lille, CNRS, Inserm, Centrale Lille Institut, ENSAIT, Institut Pasteur de Lille.		
 Université de Lille	DRAFTING DATE AND VERSION	15/12/2025 – Version 1
	TYPE OF EQUIPMENT	FUME CUPBOARD
	EQUIPMENT IDENTIFICATION	Irian Serial No. 96624
 	- Safety operation - Silencing the audible alarm - Switching the light inside the enclosure on or off - Ventilation motor on/off - Front sash height	PREVENTION REFLEXES - Before handling, check that the fume cupboard is operating properly (ventilation) - Position the sash at no more than 50 cm or at the stop level set by the manufacturer during handling phases with chemicals - Work at a marked distance on the work surface, not less than 15 or 20 cm from the opening plane, and use calm movements - Do not use a heating burner inside the fume cupboard - Do not clutter the cupboard, introduce only the equipment required for the handling and do not leave equipment in storage - After each use, clean the work surface, close containers left under the fume cupboard and lower the sash - Do not switch off while containers remain underneath, even if closed - In the event of an incident or accident, complete the occupational health and safety register

RISKS

	Chemical risk use of toxic, CMR, harmful, irritant or corrosive products	During handling, transfer, waste disposal and product storage.
	Fire risk physical hazard	During handling, transfer, waste disposal and product storage.

PROTECTION AND EMERGENCY MEANS

	Chemical protection gloves NF EN ISO 374-1 / AQL max. 1.5. Pass glove cuffs over the lab coat. Change every 20 minutes and in the event of contamination/degradation.	Accident response
	Closed cotton lab coat tightened at the cuffs	 First-aid kit in the photocopier area; first-aiders and emergency numbers displayed in corridors.
	Safety glasses or over-glasses NF EN ISO 16321-1	Fire response
	Gas mask or half-mask Broad-spectrum cartridge A2B2E2K2P3 in the event of tube breakage.	 CO ₂ extinguisher located in the corridor.

Notice prepared by:	Reviewed by:	Approved by:

OUTIL 6B

EXAMPLE WORKSTATION NOTICE: SAFETY WEIGHING STATION

PREVENTION NOTICE
Template approved on 07/10/2021 by the Prevention and Safety Services of: University of Lille, CNRS, Inserm, Centrale Lille Institut, ENSAIT, Institut Pasteur de Lille.

	DRAFTING DATE AND VERSION	15/12/2025 – Version 1
	TYPE OF EQUIPMENT	SAFETY WEIGHING STATION
	EQUIPMENT IDENTIFICATION	ST1 Safe weighing station - Environnements safetech

	Power switch and operating status indicator	PREVENTION REFLEXES - Switch on the station and wait for the « airflow safe » signal - Work alone and limit air drafts - Avoid sudden movements - Do not clutter the work surface - Limit quantities of product handled - Perform double weighing only - Clean the work surface and balances before and after each weighing, without sudden movements, using suitable protection ; do not use sprays but paper moistened with cleaner (water and ethanol) - In the event of an incident or accident, complete the occupational health and safety register
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RISKS

	Toxic /CMR chemical risk Use of toxic / CMR products	When handling the product, cleaning items that have been in contact with the product, and disposing of waste
	Harmful / irritant chemical risk Use of a harmful or irritant product	When handling the product, cleaning items that have been in contact with the product, and disposing of waste
	Corrosive chemical risk Use of acids or bases	When handling the product, cleaning items that have been in contact with the product, and disposing of waste

PROTECTION AND EMERGENCY MEANS

	Nitrile chemical protective gloves NF EN ISO 374-1 / AQL max. 1.5. Wear a double pair. Pass glove cuffs over the lab coat. Change every 20 minutes and in the event of contamination/degradation	Accident response	
	Closed cotton lab coat tightened at the cuffs		First-aid kit in the corridor
			Eye wash next to the sink
	Safety glasses or over-glasses NF EN ISO 16321-1		Absorbent material under the sink
	FFP3 mask NF EN 149 + A1	Fire response	
			CO ₂ extinguisher located in the corridor

Notice prepared by:	Reviewed by:	Approved by:

OUTIL 6C

EXAMPLE WORKSTATION NOTICE: LAB BENCH

PREVENTION NOTICE																			
Template approved on 07/10/2021 by the Prevention and Safety Services of: University of Lille, CNRS, Inserm, Centrale Lille Institut, ENSAIT, Institut Pasteur de Lille.																			
	DRAFTING DATE AND VERSION	15/12/2025 – Version 1																	
	TYPE OF EQUIPMENT	EtBr – SYBR Green bench																	
	EQUIPMENT IDENTIFICATION	Molecular biology laboratory																	
 Designated areas dedicated to handling CMR agents	PREVENTION REFLEXES - Do not use the CMR product outside the designated area - Do not handle products presenting an inhalation-exposure risk at this station - Add the CMR product only when the agarose temperature has fallen to about 45-50°C ; otherwise perform this step and gel casting under a fume cupboard - When pipetting, avoid droplet formation - After use, clean the workstation without sudden movements, with suitable protection ; do not use sprays, but paper moistened with cleaner - Remove the pair of gloves that has been in contact with the CMR product when leaving the marked area - Dispose of waste in appropriate containers - In the event of accidental spillage, use the specific kit - In the event of incident or accident, complete the health and safety register																		
RISK <table border="1"> <tr> <td>   </td> <td> Toxic CMR chemical risk Use of a CMR product, ethidium bromide (EtBr) or SYBR Green </td> <td> During product handling, cleaning of items that have been in contact with the product, and waste disposal. </td> </tr> </table>			 	Toxic CMR chemical risk Use of a CMR product, ethidium bromide (EtBr) or SYBR Green	During product handling, cleaning of items that have been in contact with the product, and waste disposal.														
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PROTECTION AND EMERGENCY MEANS <table border="1"> <tr> <td rowspan="2">  Nitrile chemical protective gloves NF EN ISO 374-1 / AQL max. 1.5. Pass glove cuffs over the lab coat. Change every 20 minutes and in the event of contamination/degradation </td> <td colspan="2"> Accident response </td> </tr> <tr> <td>  Hand-wash basin and first-aid kits in the laboratory </td> <td>  Eye wash in the middle of the corridor </td> </tr> <tr> <td>  Closed cotton lab coat tightened at the cuffs </td> <td>  Safety shower in the laboratory </td> <td></td> </tr> <tr> <td>  Safety glasses or over-glasses NF EN ISO 16321-1 </td> <td>  Specific spill kit, absorbent and suitable protective equipment under the bench next to the sink </td> <td></td> </tr> <tr> <td colspan="2"></td> <td> Fire response </td> </tr> <tr> <td colspan="2"></td> <td>  CO₂ extinguisher located in the corridor </td> </tr> </table>			 Nitrile chemical protective gloves NF EN ISO 374-1 / AQL max. 1.5. Pass glove cuffs over the lab coat. Change every 20 minutes and in the event of contamination/degradation	Accident response		 Hand-wash basin and first-aid kits in the laboratory	 Eye wash in the middle of the corridor	 Closed cotton lab coat tightened at the cuffs	 Safety shower in the laboratory		 Safety glasses or over-glasses NF EN ISO 16321-1	 Specific spill kit, absorbent and suitable protective equipment under the bench next to the sink				Fire response			 CO₂ extinguisher located in the corridor
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		 CO₂ extinguisher located in the corridor																	
Notice prepared by:	Reviewed by:	Approved by:																	

IMPORTANT: A CMR product may be used on a lab bench only if it presents NO inhalation risk. In that case, the workstation notice must clearly show the prevention measures planned case by case through risk assessment.

TOOL 7

PROPER STORAGE PREVENTS MANY ACCIDENTS AND INCIDENTS.

Storage rules

HOW SHOULD A CMR PRODUCT BE STORED?

General rules

- CMR products are stored in a locked cabinet, as are other categories of products such as those labeled fatal (H300, H310 and H330).
- Labels face the handler.
- Large packages are stored as close to the floor as possible and the rest at human height.
- The storage area is mechanically ventilated (indoor room, secure cabinet, etc.) and remains inaccessible to persons from outside the laboratory.
- Powders are stored near the weighing station.

Products stored cold

- CMR products requiring refrigeration must be kept in a closed, leak-tight box in a locked refrigerator or a dedicated lockable compartment, and opened only under a fume cupboard.

Volatile and flammable products

- Volatile and flammable CMR products, which may generate an explosive atmosphere under certain conditions, must be stored in safety refrigerators complying with ATEX regulations (EX II 3G EEX nA II T6 marking).
- Ventilated storage cabinets for volatile and flammable CMR products must comply with standard NF EN 14470-1.

CMR waste storage rules

- Identify waste containers containing CMR products.
- Waste containers currently in use must be closed and stored on containment trays.
- Filled or full waste containers are stored, before collection, under the same conditions as new CMR products.

Compatibilities / incompatibilities

Products are stored by hazard class and placed in containment trays while respecting compatibility rules.

									
 Explosive	!	X	X	X	X	X	✓	X	X
 Flammable	X	✓	X	X	X	X	✓	X	X
 Oxidizing	X	X	✓	!	X	X	X	X	X
 Gas	X	X	!	✓	!	X	X	X	X
 Corrosive	X	X	X	!	!	!	!	!	!
 Toxic	X	X	X	X	!	✓	✓	✓	✓
 Harmful irritant	✓	✓	X	X	!	✓	✓	✓	✓
 Human health hazard	X	X	X	X	!	✓	✓	✓	✓
 Environmental hazard	X	X	X	X	!	✓	✓	✓	✓

IMPORTANT The table below is a rapid initial assessment and does not replace checking incompatibilities mentioned in the SDS in order to guard against specific cases, such as hydrogen peroxide above 50% or potassium permanganate.

✓	Compatible products
!	Compatible under conditions
X	Incompatible products

KNOW THE PRIORITIES

If a product presents several risks, risk priority is determined according to the established order of hazards in the laboratory's storage rules.



USEFUL POINTS TO KNOW

- Section 10 of Safety Data Sheets (SDS) provides information on incompatibilities.
- Store acids and bases separately, and oxidizers and reducers separately.
- Store nitric acid separately from other acids.
- Store explosible products and pressurized gases separately from other chemicals.

TOOL 8

WHERE CAN USEFUL INFORMATION ON CMR RISK BE FOUND?

Finding information

- The regularly updated list of CMR substances whose classification is harmonised at European level under the CLP Regulation can be consulted on the following websites:

- **the CNRS Chemical Risk Prevention Unit website**, UAR2206, bilingual French/English list: Tools > List of CMR substances

<https://www.prc.cnrs.fr/outils/la-liste-des-substances-cmr/>

Free access



- **the INRS website**: Tool 66

<https://www.inrs.fr/media.html?refINRS=outil66>

Free access



- In addition, the International Agency for Research on Cancer (IARC) maintains an indicative list of pure substances, mixtures, processes and exposure circumstances assessed for carcinogenicity in humans and classified into five groups: 1, 2A, 2B, 3 and 4.

This list includes substances that are not classified by the European Union, such as medicinal products, dyes, etc. It can be consulted on the IARC Monographs website: Evaluations > List of classifications.
<https://monographs.iarc.who.int/monographs-available/>

Free access

- More generally, information on products can be obtained via the INRS toxicological fact sheets: Publications and tools > Database > Toxicological fact sheets.

<https://www.inrs.fr/publications/bdd/fichetox.html>

Free access

- **National Inserm tools**

Inserm pro

Free access

Inserm agir

Free access
(subject to account access)

- **Guide for pregnant or breastfeeding women in research laboratories**

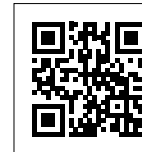
https://pro.inserm.fr/wp-content/uploads/2020/08/Inserm_DrhBCMP_FemmeEnceinteLaboratoire_Guide.pdf



- **National CNRS tools**

<https://www.prc.cnrs.fr/>

Free access



- **CNRS Prevention guide "Chemical Risk"**

Free access

<https://www.dgdr.cnrs.fr/SST/CNPS/guides/Risqueschimiques.htm>



- **150 Practical Safety Sheets for Chemical Products in the Laboratory**

<https://www.dunod.com/sciences-techniques/150-fiches-pratiques-securite-produits-chimiques-au-laboratoire-conforme-au-0>



Paid publication

Key contacts



KEY CONTACTS AND INTERLOCUTORS

WHO CAN ADVISE AND ASSIST YOU IN THIS PROCESS

- **The unit director:**

Responsible for your safety, he/she communicates the guidelines and instructions issued by management board.

- **The supervisor:**

He/she informs you of the specific risks encountered at your workstation and trains you in the safest working methods.

- **The health and safety officer:**

Your local contact, he/she will advise you on all prevention and safety matters.

- **The chemical safety contact:**

Where applicable, you may contact him/her, in coordination with the health and safety officer, for any more specific questions.

- **The health and safety engineer:**

He/she liaises with the health and safety officer at regional office or establishment level. If the health and safety officer is absent, you may contact him/her directly.

- **The chemical risk officer:**

He/she is the expert in this field and acts as the health and safety engineer's contact for more complex and less common questions.

- **The occupational physician:**

You may contact him/her for any question relating to your health and to that of your unborn child.

My list of CMR products handled



Inserm



 **Université
de Lille**

