



**Ciências
ULisboa**

Faculdade
de Ciências
da Universidade
de Lisboa

Approved by the Director

INTERNAL BIOLOGICAL EMERGENCY PLAN OF CIÊNCIAS ULisboa



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	ACTION PLAN - CONFINED USE OF GMM/GMO	<i>Date: Oct 25</i>
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1. ABBREVIATIONS

APA – Agência Portuguesa do Ambiente

BSL – *Biological Safety Level*

LFC – Laminar Flow Cabinet

BSC – Biological Safety Cabinet

CSB.C – Biological Safety Commission of CIÊNCIAS ULisboa

AED – Automatic External Defibrillation

DGS – Direção Geral de Saúde

PPE – Personal Protective Equipment

G3S – Safety, Health and Sustainability Office of CIÊNCIAS ULisboa

GM – Genetically Modified

GMM – Genetically Modified Microorganism

BSH – Biological Safety Handbook

GMO – Genetically Modified Organism

SFAP – Specific First Aid Plan with AED

IBEP – Internal Biological Emergency Plan

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2. GLOSSARY

Accident – Any incident involving a significant and unintentional release of GMM or GMO during their contained use, which may endanger, with immediate or delayed effect, human health or the environment.

Incident – Any situation involving spillage, release or exposure to GMM or GMO during its contained use, without the occurrence of a significant release, which does not endanger, with immediate or delayed effect, human health or the environment.

Microorganism – Any microbiological entity, cellular or non-cellular, capable of replication or transfer of genetic material, including viruses and animal and plant cells in culture.

GMM – Microorganism whose genetic material has been modified by a form of sexual reproduction and/or natural recombination that does not occur in nature.

GMO – Any organism, other than humans, whose genetic material has been modified in a way that does not occur naturally through interbreeding or natural recombination.

Internal Biological Emergency Plan – Document indicating the self-protection measures to be adopted associated with the contained use of GMO/GMM, to deal with a situation of spills, release or exposure to agents that involve biological risk in the CIÊNCIAS facilities, namely the organization, the human and material resources to be involved and the procedures to be followed in this situation.

First intervention – Self-protection measure that consists of intervention in the control of spills, release or exposure to biological agents, triggered immediately after their detection, by the occupants of a laboratory, building or any other indoor or outdoor physical space.

Contained use – any activity resulting in the genetic modification of GMM or GMO or in which they are cultivated, stored, transported, maintained, bred, destroyed, disposed of or otherwise used, using specific containment measures, with the aim of limiting their contact with the general population and the environment, ensuring a high level of safety.

User – Any person, or legal entity, responsible for the contained use of GMM or GMO.

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3. INTRODUCTION

According to the current legal framework and technical regulations for fire safety in buildings, in their current versions, the preparation of an emergency plan is required in the event of a failure of the containment measures, thus avoiding the creation of a serious, immediate or delayed danger to people outside the facilities and/or to the environment.

The **Internal Biological Emergency Plan** of CIÊNCIAS (IBEP), associated with the contained use of Class 1 and Class 2 GMO and GMM, is based on the precautionary principle, and was prepared by CIÊNCIAS to minimize the consequences of potential failures in the containment measures outlined in the [Biological Safety Handbook](#) (BSH). The aim of this document is to define action procedures that ensure the **first intervention** to minimize any possible negative impacts on human health and the environment.

The IBEP prepared is adapted to the specific characteristics of GMO/GMM and to the conditions of the locations where they are handled at CIÊNCIAS, ensuring an adequate level of safety and appropriate for the confined use activities developed in the institution.

The plan complies with local, national and international regulations related to biosafety. In this sense, the IBEP was prepared following the legislation in force (Decree-Law No. 55/2015, of 17 April; Directive 2000/54/EC; Decree-Law No. 84/97, of 16 April, amended by Law No. 113/99, of 3 August) and the obligations and rules stipulated by APA, the national authority on GMM and GMO.

The IBEP of CIÊNCIAS is a transversal reference to all CIÊNCIAS laboratories that operate with GMO/GMM. However, whenever necessary and/or appropriate, those responsible for laboratories, facilities or laboratory infrastructures may prepare a specific control plan for their laboratory/facility that will never contradict the IBEP, but only complement it.

3.1. Activities of contained use of GMOs/GMMs in CIÊNCIAS ULisboa

According to the legislation in place, **genetically modified organisms** and **microorganisms** (GMO/GMM) are entities whose genetic material has been intentionally altered through sexual crossing/reproduction and/or recombination by a way that does not occur in nature. Considering the possibility of risks to human health and the environment, the contained handling of GMO/GMM is subject to strict national and EU regulations, which aim at the careful assessment and management of these potential risks.

The **contained use** of GMOs/GMMs includes any activity involving the genetic modification, cultivation, storage, transport, maintenance, destruction, disposal or any other form of manipulation of those organisms, using specific containment measures. The purpose is to restrict the contact of these

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microorganisms or organisms with the general population and the environment, ensuring a high standard of safety.

Confined use activities are divided into four distinct classes, based on the type of GMO/GMM used and their level of risk to human health and the environment (zero or negligible risk, low risk, moderate risk and high risk); **Erro! A origem da referência não foi encontrada..**

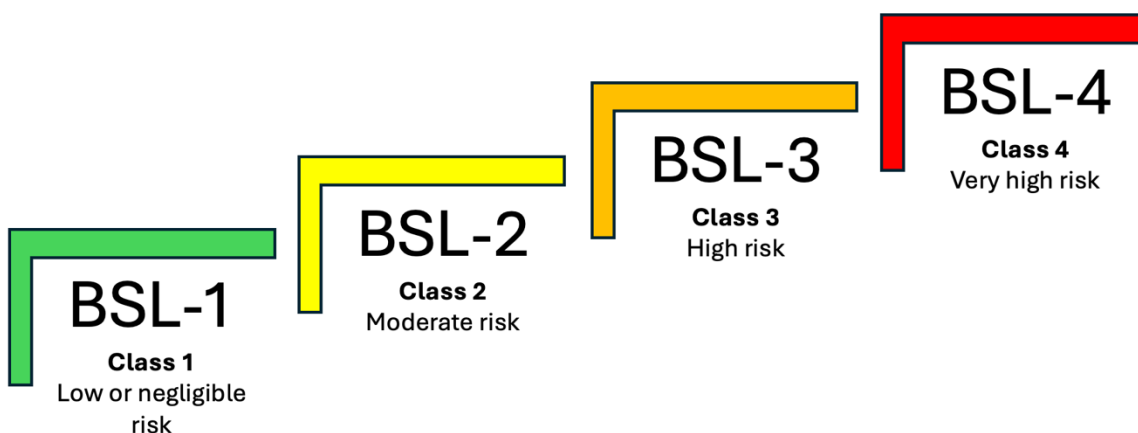


Figure 1- Scheme of risk levels associated with the activity of contained use of GMO/MGM

Each risk category is associated with specific requirements in terms of the requirement for protective measures and the level of confinement required, as described in the [BSH](#).

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4. PARTICIPANTS IN EMERGENCY MANAGEMENT

The IBEP of CIÊNCIAS is a reference and guide for all users exposed to biological risk arising from the activities of contained use of GMO/GMM. This document defines the response procedure of each party involved in responding to a biological emergency **incident** or **accident**, namely, spills, release or exposure to biological agents involving GMO/GMM.

4.1. First intervention in incidents and accidents

All laboratories/facilities where the contained use of GMO/GMM takes place have available biological emergency containment means, as indicated in the BSH, in a duly signposted place, which are mandatory for all **users** and which are, whenever possible, identified in the respective plans of the laboratories/facilities.

In all laboratories/facilities, the emergency contact numbers for CIÊNCIAS, as well as those of the respective laboratory/facility managers and responsible personnel are posted.

In addition to the general CIÊNCIAS emergency structure, provided for in the main CIÊNCIAS Emergency Plan, each laboratory/facility has its own internal organization/structure, which includes a laboratory/facility manager.

In the event of a spill, release or exposure to agents that involve biological risk, the first intervention should be immediate and is the responsibility of each user. It should be noted that, regardless of the situation, the main objectives are to protect people and prevent the spread of GMO/GMM to the surrounding physical space and the environment.

Incidents are considered **to** be all those that can simultaneously be contained:

- within the physical space of the confined use activity without risk of spreading to the surrounding physical space and/or environment;
- using the resources of the user(s) involved, without the need for external support to the laboratory/facility (from G3S or other).

Whenever there is an incident of any dimension or nature that involves biological risk, action must be taken in accordance with what is described in 6. PROCEDURES IN CASE OF INCIDENTS/ACCIDENTS INVOLVING BIOLOGICAL RISK, and to draw up the respective record of the incident. A record template is available in Annex – Annex I. This registration must be part of and kept in the records of the respective laboratory. It is the responsibility of the laboratory/facility managers and/or laboratory infrastructure managers to inform users of this obligation. It is the responsibility of users to complete their registration and report the incident to the laboratory/facility managers.

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In the event of an **accident**, you must:

- ensure your safety moving away from the place and closing all doors;
- Immediately contact the emergency number in CIÊNCIAS (ext. 20000 or tlf. +351 217 500 600), informing about the type and exact place of the occurrence;
- The security post will communicate, via radio, to the emergency manager and the Safety, Health and Sustainability Office (G3S);
- If exposure is suspected under any circumstances, the emergency manager or G3S will inform CSB. C as soon as possible. In such a situation, the actions to be taken in order to immediately minimise the spread or its impact on human health or the environment shall be jointly assessed;
- The CSB.C, in coordination with the G3S, immediately informs the APA and the regulatory entities of the circumstances of the accident, the identification and quantity of GMM or GMO involved, the emergency measures implemented and any information necessary for the assessment of the effects observed on human health and the environment;
- The CSB.C, in coordination with the G3S, informs the organizations and entities likely to be affected;
- The CSB.C, in conjunction with the G3S, prepares an accident report using the "Accident Report Form involving GMO/MGM" made available by the APA (Annex II) as required by the legislation in place (Decree-Law No. 55/2015, of 17 April).

4.2. Participants, responsibilities and summary of action

Table 1: Biological emergency plan: Stakeholders, responsibilities and summary of action

Player	Responsibility/Summary of action
Security checkpoint (central surveillance) ✓ Office C5	✓ Receive the alarm via the internal emergency phone 20000 (or +351 217 500 600) ✓ Inform the emergency manager and G3S ✓ Conduct external means of assistance to the exact place of the emergency (if applicable)
GOME	✓ If necessary and possible, ensure safety conditions
G3S	✓ Support the periodic update and review of the BSH and IBEP ✓ Supporting the planning of continued training

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	<ul style="list-style-type: none">✓ Periodically organize training/simulation exercises✓ In the event of an accident, alert the CSB.C✓ Act together with the emergency manager in the event of an accident✓ Prepare and send occurrence reports in case of accident, in conjunction with the CSB.C;✓ Prepare the mandatory notifications to the competent authorities, in conjunction with the CSB.C
Commission on Biological Safety of CIÊNCIAS (CSB.C)	<ul style="list-style-type: none">✓ Periodically update and review the BSH and IBSP together with the G3S✓ Plan continued training together with the G3S✓ Support G3S in the preparation of occurrence reports✓ Support the G3S in the preparation of mandatory notifications to the competent authorities
Direction	<ul style="list-style-type: none">✓ Provide the human, material and financial resources needed for the implementation of the plan✓ Approve and change the composition of the CSB.C
Emergency manager	<ul style="list-style-type: none">✓ Ensure the applicability of the IBEP✓ Manage the action according to the guidelines defined by the G3S and CSB.C
Laboratory/Facility Managers (and Laboratory Infrastructure Managers, or Facility Management Officers, if any)	<ul style="list-style-type: none">✓ Ensure that IBSP is applied in the laboratory/facility✓ In the event of an accident involving GMO, support the emergency manager✓ Ensure the necessary resources available in the laboratory/facility to act in the event of an incident✓ Ensure quarterly verification of containment kit contents and registration✓ Ensure prompt replenishment of containment kit contents

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Professors / PhD researchers responsible for projects or for the supervision of students and scholarship holders	<ul style="list-style-type: none"> ✓ Apply IBSP in the laboratory/facility ✓ Ensure user awareness of good practices for the contained use of GMO/GMM and compliance with all associated rules, namely compliance with the BSH and the IBSP ✓ In the event of an accident involving GMO/GMM, act if necessary in agreement with the laboratory manager/laboratory infrastructure manager/facility manager ✓ In the event of an incident, ensure the respective record
Users (Faculty, Researchers, Students and Research Fellows)	<ul style="list-style-type: none"> ✓ Be aware and ensure the application of BSH and IBSP ✓ In the event of an incident, act immediately in agreement with the IBSP, register and inform the laboratory manager and/or laboratory infrastructure manager ✓ In the event of an accident, immediately report the occurrence through the emergency number in CIÊNCIAS, then inform the laboratory manager and/or laboratory infrastructure manager
The entire CIÊNCIAS community	<ul style="list-style-type: none"> ✓ Contact the security checkpoint (central surveillance) through the emergency number in CIÊNCIAS: ext. 20000 or tlf. +351 217 500 600 ✓ Contact 112

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5. MEANS OF CONTAINMENT AND ACTION

In general, most incidents can be effectively resolved by users if they know the procedures and the means of response are available in the space where the activities of contained use of GMO/GMM are carried out.

As previously provided for in 4.1, all locations involving the contained use of GMO/GMM have biological emergency containment means available, in a duly marked place, for which all users are aware and which are, whenever possible, identified in the respective laboratory plans.

The identified potential risks associated with Class 1 and Class 2 confined use activities in CIÊNCIAS are:

- Risk of spills
- Risk of perfusion
- Risk of biting or scratching by genetically modified laboratory animals
- Failure to confine genetically modified laboratory animals
- Failure to confine genetically modified plants

For the identified risks, three types of containment/action means were defined:

1. Biohazard spill containment kits from GMO/GMM contained use activities
2. First aid equipment
3. Removable protective barriers and traps to contain potential escape of genetically modified animals

5.1. GMO/MGM Spill Containment Kit

The kits for the containment of biohazard spills resulting from GMO/GMM contained use activities include the minimum content described in the Table 2. Each laboratory or facility may complete the spill containment kit with the material it deems appropriate according to its applications/history or specific needs, being responsible for its maintenance. The materials that make up the kit can be picked up at G3S by the laboratory/installation manager.

In the event of a spill, the laboratory/facility manager must ensure that all the material used is immediately replenished, and that the contents of the containment kits are checked at least quarterly, with a record of this verification (Annex III).

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Table 2. Minimum content of the biological hazard spill containment kit arising from confined use activities

QT.	MATERIAL	TYPE OF USE
1	Plastic Box	Gathers the contents of the spill containment kit
1	Instruction card in Portuguese and English	Easy-to-follow instructions for action in the event of a spill
1	Suitable disinfectant for containment of biohazard spills (see Annex IV), minimum volume 500 mL. NOTE: In the case of bleach, considering the shelf life of commercial solutions, sodium hypochlorite must be available in the commercially supplied concentration.	Decontamination of surfaces/equipment
1	Roll or sheets of absorbent paper or other suitable absorbent	Absorption of spills
2	Disposable lab coats	Body protection of the participants
8	Pairs of disposable gloves (nitrile) of various sizes (4xM and 4xL)	Hand protection for the users, for placement, overlapping and replacement (if necessary)
2	Disposable Face Respirator Mask	Respiratory protection of stakeholders
2	Pair of shoe covers	Team members' foot protection (if you keep your own footwear)
3	White Bag Collector (Biohazard)	Collection of contact material or clean-up material from biohazard spills (Group III) for subsequent disposal
1	Broom and dustpan, tweezers, handle(s) or other mechanical means for handling and collecting spill cleaning material	Collection of spill cleanup material
1	Container with antiseptic solution	Decontamination of team members' hands

5.2. First aid equipment

The means for first aid are described and regulated by the [Specific First Aid Plan with DAE of CIÊNCIAS \(SFAP\)](#). In the event of an accident, the means are activated as provided for by the SFAP.

Being a specific risk place, the vivarium also has a first aid kit available for cases of cuts, scratches and/or animal bites, duly signposted and known to all users of the unit. The contents and maintenance of the available first aid kit is ensured by the person responsible for the management of the vivarium.

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5.3. Removable protective barriers and traps to contain potential escape of genetically modified animals

The possibility of accidental escape of a genetically modified animal with consequent release into the surrounding space of CIÊNCIAS/environment is made impossible by the physical barriers existing in the facilities of the vivarium. There are effectively two spaces physically separated by access doors as described in the BSH.

However, if an escape is detected in one of the physical spaces of the vivarium facilities, all efforts must be made to immediately locate and recover the animal in question, transporting it back to its space. To facilitate the isolation of the animal in the physical space where it is located, removable physical barriers of approximately 50 cm height are available in the vivarium, in a place known by its users, to make it possible for people to enter without the possibility of the animal escaping to the adjacent room. Traps are also available to allow them to be recovered.

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6. PROCEDURES IN CASE OF INCIDENTS/ACCIDENTS INVOLVING BIOLOGICAL RISK

The following procedures seek to specify the immediate response to be triggered in the event of incidents/accidents involving operations associated with the contained use of Class 1 and Class 2 GMO/GMO.

The procedures below describe step by step how users of laboratories/facilities where GMO/GMM contained use activities take place should respond to occurrences of spills, release or exposure to agents involving biological risk.

It is reiterated that, regardless of the situation that occurs, the main objectives are to protect people and prevent the spread of GMO/GMM to the surrounding physical space and the environment.

6.1. Emergency procedures associated with cell line handling

Regarding the manipulation of cell lines, incidents or non-compliance with the measures provided for in the BSH may lead to spills of biohazard material. In such a case, procedures are laid down depending on the situation in question. Any action must be carried out with the appropriate mandatory PPE: lab coat, gloves and mask, depending on the severity of the spill.

Minor biological spills are those that the laboratory user can safely manage and limit without the assistance of G3S. In general, most spills are incidents that can be effectively dealt with by users provided that the means of responding to spills described above are available.

6.1.1. Contamination/Spills on surfaces inside spaces

The general principles to follow in case of contamination/spills on surfaces, located inside laboratories/rooms/corridors or buildings, that occur outside of a containment equipment, are:

- i. Minimize potential exposure by moving away and keeping all other people away from the spill site.
- ii. Remove contaminated PPE and/or any contaminated clothing (check for splashes on shoes, pants, etc.). Leave contaminated clothing and/or PPE in the laboratory/facility, preferably sealed in a white plastic bag (biologically contaminated waste) with a clamp available in the laboratory.

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- iii. If the spill is significant, vacate the contaminated area as soon as possible. Make sure that all other users in the lab/facility or space are informed of the occurrence. Alert to the importance of leaving the area. If available, place an information or prohibiting lab entry sign.

! Important note: Extra care should be taken when handling common surfaces, such as access door handles, to prevent any spread of contamination.

- iv. Wash your hands with soap and water. If personal contamination is suspected, the affected area should be thoroughly washed with soap and running water following the procedure described in 6.1.5.
- v. Cover the spill with absorbent material soaked in available suitable disinfectant agent respecting the recommended contact time depending on the disinfectant used. Annex IV provides a list of disinfectant agents and contact times suitable for the containment of GMO/GMM spills.
- vi. After the proper contact time, remove the absorbent material from the outside to the inside of the spill.
- vii. Dispose of cleaning materials as biohazardous waste (Group III), in accordance with the hazardous waste management system in place at CIÊNCIAS.
- viii. Dry and clean all affected surfaces with 70% v/v ethanol.
- ix. Replace the gloves after decontaminating the affected surface.
- x. Inform the laboratory manager and/or laboratory infrastructure manager.
- xi. Complete the occurrence record of an incident involving GMO/GMM (Annex I).
- xii. Depending on the extent of the spill and the affected area, inform G3S.

6.1.2. Spills/Contamination in the Laminar Flow Cabinet/Biological Safety Cabinet (LFC/BSC)

- i. In the event of a spill inside the LFC/BSC, place or ensure that the biological safety cabinet is at maximum flow.
- ii. Cover the spill with absorbent material soaked in available suitable disinfectant agent, respecting the recommended contact time (see Annex IV).
- iii. After the proper contact time, remove the absorbent material from the outside to the inside of the spill. Dispose of cleaning materials within the LFC/BSC as biohazardous waste (Group III), in accordance with the hazardous waste management system in place at CIÊNCIAS.
- iv. If the spill reaches the area of the ventilation grilles, remove the material from the inside of the LFC/BSC to allow removal and disinfection of the metal base.
- v. Remove the metal base and disinfect it on both sides.
- vi. Clean the entire interior of the LFC/BSC (including the UV lamps if fitted) with appropriate disinfectant followed by cleaning with 70% v/v ethanol solution.
- vii. Replace the gloves after decontaminating the affected surface.
- viii. Reposition the metal base in its usual position.

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- ix. Replace the necessary material inside the LFC/BSC after cleaning with a 70% v/v ethanol solution.
- x. Turn off LFC/BSC.
- xi. Turn on the UV light for 20 min. **WARNING:** Exposure to UV light is dangerous to the eyes and skin, so it is not recommended to stay in the laboratory when the UV light is on.
- xii. Inform the laboratory manager and/or laboratory infrastructure manager.
- xiii. Complete the occurrence record of an incident involving GMO/GMM (Annex I).

6.1.3. Contamination in Incubators

If an accidental spill affects an incubator, the equipment should be cleaned immediately by following the procedure:

- i. Cover the detected spill with absorbent material soaked in an available suitable disinfectant agent (see Annex IV).
- ii. After proper contact time, remove the absorbent material from the outside to the inside of the pour. All cleaning materials must be disposed of as biohazard waste (Group III), according to the hazardous waste management system.
- iii. Dry and clean all affected surfaces with 70% v/v ethanol.
- iv. Replace the gloves after decontaminating the affected surface.
- v. Inform the laboratory manager and/or laboratory infrastructure manager.
- vi. Complete the occurrence record of an incident involving GMO/GMM (Annex I).

6.1.4. Contamination in centrifuges and ultracentrifuges

In the event of a spill in a centrifuge/ultracentrifuge, the cleaning procedure to be followed must comply with the manufacturer's recommendations, which must be posted next to the equipment. Make sure that other users in the laboratory are informed of the incident and prevented from opening the centrifuge.

If atypical vibration or excessive noise is detected during the use of a centrifuge or ultracentrifuge, DO NOT open the lid for at least 30 minutes.

If excessive condensation or other obvious signs of leakage are found when opening the lid (even in the absence of due noise or vibration), close the lid and wait at least 30 minutes. If it is clear that the lid sealing the equipment is not damaged and that the spill has been contained, then the rotor and other removable parts should be transported, where possible, to a LFC/BSC for disinfection.

Should the spill affect other non-removable parts of the equipment, ensure that other users of the laboratory are informed of the accident/incident and are prevented from opening the centrifuge.

The equipment must be unplugged, and the following steps must be followed:

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- i. Immediately switch off the centrifuge or ultracentrifuge and disconnect it from the power source.
- ii. Isolate the area around the centrifuge and prevent other people from approaching.
- iii. Use the appropriate PPE (mask, gloves, disposable lab coat or gown, goggles).
- iv. Open the lid of the centrifuge and apply a surface disinfectant effective against the microorganisms involved directly to the spill and contaminated surfaces, including the inside of the centrifuge (see Annex IV).
- v. Carefully remove the rotor from the centrifuge or ultracentrifuge, following the manufacturer's instructions.

Note: The rotor should be opened in a location that minimizes the risk of aerosol dispersion or contact with infectious material, preferably within a Class II LFC/BSC or in a biosafety area with adequate containment.

- i. Wait the recommended time depending on the disinfectant agent used.
- ii. Clean with absorbent paper to remove all biological waste.
- iii. Dispose of all absorbent material used as biohazardous waste (Group III) in accordance with the hazardous waste management system.
- iv. Replace the gloves after decontaminating the affected surface.
- v. After disinfection, rinse the rotor with sterile distilled water to remove any residue from the disinfectant. Dry completely before reinstalling it.
- vi. Dry and clean all affected surfaces.
- vii. Inform the laboratory manager and/or laboratory infrastructure manager.
- viii. Complete the occurrence record of an incident involving GMO/GMM (Annex I).

6.1.5. Spill involving personal contamination (contact with skin, eyes, etc.)

In the event of contact with biological agents resulting from activities of contained use of GMO/GMM in which direct blood exposure may be involved, the SFAP must be activated (emergency number in CIÊNCIAS ext. 20000 or tlf. +351 217 500 600).

In the event of contact with biological agents without direct blood exposure, the severity of the contact should be assessed and if necessary, or if in doubt, contact G3S immediately.

- i. Remove any contaminated clothing or PPE and leave it in the laboratory, preferably sealed in a plastic bag (seal with a clamp or tape, whatever is available in the laboratory).
- ii. Leave the vicinity of the spill or the laboratory/facility (depending on the risk assessment) and go to the nearest place to wash your hands thoroughly and the entire contaminated area with running water and soap for 10 min. If contamination affects the eyes DO NOT use soap to assist in washing.
- iii. If the occurrence took place within the laboratory/facility, make sure that all other users of the laboratory are aware of the occurrence. Place the no-entry notice in the laboratory.

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- iv. Inform G3S and the laboratory manager and/or laboratory infrastructure manager.
- v. In case the spill occurs inside laboratories/rooms/corridors or buildings, treat the spill cleanup as described in 6.1.1. If it occurs outside, follow the procedure described in 6.1.6.
- vi. Complete the occurrence record of an incident involving GMOs/GMM (Annex I).

6.1.6. Contamination/Spills on surfaces outside buildings

The general principles to be followed in the event of spillage/contamination of surfaces located outside buildings are:

- i. Minimize potential exposure by moving away from and keeping all other people away from the spill site. Isolate the area by establishing a security perimeter around the spill site to prevent unauthorized persons from approaching.
- ii. Remove contaminated PPE and/or any contaminated clothing (check for splashes on shoes, pants, etc.) and leave it in the place, preferably sealed in a plastic bag.
- iii. Contact the G3S/CIÊNCIAS emergency number.

6.2. Emergency procedures associated with the handling of genetically modified laboratory animals

Although the level of pathogenicity is reduced and controlled, only people who are authorized, qualified and vaccinated against infectious agents can have access to the vivarium.

To control the possible accidental release of genetically modified laboratory animals into the environment or into the space surrounding CIÊNCIAS, mechanisms of action are foreseen in the event of:

1. Cutting or perfusion with sharp or pointed material used in the handling of genetically modified laboratory animals
2. Injuries caused by genetically modified laboratory animals (bite/scratches)
3. Escape of a genetically modified laboratory animal

If the manifestation of disease is detected in a genetically modified laboratory animal, the euthanasia procedure is conducted according to the established procedure outlined in the BSH.

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6.2.1. Cutting or perfusion with sharp material

In case of risk associated with the injection/cut/puncture in which direct blood exposure may be involved, the following steps are triggered:

- Immediately wash and scrub the suspicious and/or contact area with plenty of soap and water for at least 15 min. Do not use soap if the contact site is in the eyes, nose or mouth.
- Activate the first aid means provided for in the SFAP.
- Assess whether the person involved has an up-to-date complete vaccination record.
- Evaluate the activation of official rescue means to transfer the involved person to the nearest hospital unit.
- Fill in the occurrence record of an incident involving GMO/GMM (Annex I).

6.2.2. Injuries caused by laboratory animals

In the event of an injury caused by a laboratory animal (bite/scratches/stings) and consequent direct blood exposure, the following steps are triggered:

- Activate the first aid means provided for in the SFAP.
- Assess whether the person involved has an up-to-date complete vaccination record.
- Evaluate the activation of external means of rescue to transfer the involved person to the nearest hospital unit.
- Record the occurrence in the emergency report.

6.2.3. Escape/Loss of a Lab Animal

The possibility of accidental escape of a genetically modified animal with consequent release into the surrounding space of CIÊNCIAS/environment is made impossible by the existence of physical barriers existing in the surrounding space. However, if an escape to one of the physical spaces is detected, all efforts must be made to locate and recover the animal in question, transporting it back to its space.

To facilitate the isolation of the animal, in the physical space where it is located, removable physical barriers of approximately 50 cm height are available to make it possible for people to enter without the possibility of the animal escaping to the adjacent room. After isolation, traps should be placed to allow their recovery, those involved in the recovery should wear appropriate protective PPE. The respective record of occurrence of an incident involving GMO/GMM must be completed (Annex I).

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6.3. Emergency procedures associated with the handling of genetically modified plant material

The genetically modified plant material is kept in growth chambers, duly signposted, installed inside the C2 building, with access restricted to authorized users, with all measures described in the BSH are in place.

Genetically modified plants that reach the reproductive stage of their life cycle, showing pollen production and seed formation, are only kept in chambers that are equipped with HEPA filters to prevent the release of pollen or seeds outside the chamber.

Thus, the release into the environment is extremely unlikely, in addition to the fact that it would happen exclusively in the surrounding space of CIÊNCIAS, without classification as a protected area and without proximity to biological elements considered sensitive.

However, and despite all the safety measures in place, accidents/incidents that may lead to an accidental release during transport within buildings, and during the storage or confined handling of genetically modified material cannot be excluded. These occurrences may be due to:

- 1) Failures in the containment of genetically modified material
- 2) Spills
- 3) Non-compliance with the security measures implemented

6.3.1. Spills on surfaces during handling, storage or transport of plant material

In the event of spillage on surfaces during the handling, storage or transport of plant material, the following steps are triggered:

- i. Notify others in the area not to step on spilled material.
- ii. Use the spill containment kit (Table 2) and ensure chemical safety conditions (e.g. the use of sodium hypochlorite/bleach for spills containing acids, ammonia or formaldehyde may produce toxic vapours).
- iii. Wear a long-sleeved lab coat (preferably disposable), put on gloves and a mask, and in case of soil spillage use shoe covers.
- iv. Remove any sharp, fallen or broken objects from the spill area using tweezers and dispose of them in a sharps container.
- v. Collect any portions of plant material and dispose of them as Group III biological waste or store in a closed container for later use.

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- vi. Collect any contaminated plant pots or laboratory materials and place in a container for further decontamination and reuse.
- vii. Sweep up the spilled soil, seeds, etc. using the dustpan and brush. Dispose of as Group III biological waste.
- viii. Sweep the spill area and the surrounding area again to make sure that small seeds or pieces of soil have been collected. Dispose of as Group III biological waste.
- ix. Clean the brush and dustpan, discarding the waste as Group III biological waste.
- x. Spray the area with appropriate disinfectant, leaving it on for 10 min. Then wipe with absorbent paper and repeat this step. Dispose of the paper towel as Group III biological waste.
- xi. Dispose of single-use material (disposable clothing, lab coat or gown, gloves, face mask and/or shoe cover) as Group III biological waste.
- xii. Wash your hands with soap and water or use hand sanitizer.
- xiii. Fill in the occurrence record of an incident involving GMO/GMM (Annex I) and inform the laboratory manager and/or laboratory infrastructure manager.

6.4. Emergency procedures associated with contained use activity involving microorganisms (prokaryotes and eukaryotes)

In the event of a biological spill, it must be quickly managed by the user by applying the procedures previously established in the laboratory/facility, appropriate to each space/device, and known to all users.

Considering that the materials and equipment used in the handling of GMM are equivalent to those applied in cell lines, it is possible to observe a significant congruence between the emergency procedures applicable to both types of cultures. Therefore, in the event of a spillage of GMM cultures, the procedures described in 6.1.2., 6.1.3., 6.1.4., 6.1.5 and 6.1.6 shall apply.

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8. ANNEXES

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8.1. Annex I- Registration form for the occurrence of incidents involving GMO/GMM in CIÊNCIAS

(available at: <https://cirrus.ciencias.ulisboa.pt/owncloud/s/ZG4TNMYEDnkh7N>)

REGISTRATION OF INCIDENTS / OCCURRENCES ARISING FROM ACTIVITIES OF CONTAINED USE OF GMO/GMM

ROOM / LABORATORY: _____

Laboratory/Facility Manager: _____

Sheet no. _____ / 20 _____

Date	Hour	Occurrence	Name	Signature	Observations	Communication (Cross out what doesn't apply)
<i>Example:</i> 21 / 05 / 2024	10:30	Spill of culture medium with heLa cells inside the biological safety Cabinet	Ana Silva		Complete cleaning of the biological safety Cabinet	Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S
						Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S

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Date	Hour	Occurrence	Name	Signature	Observations	Communication (Cross out what doesn't apply)
						Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S
						Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S
						Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S
						Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S
						Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S
						Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S

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						G3S
						Resp. Lab./Installation Resp. Infrastructure Facilities Manager G3S

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8.2. Annex II- Accident Record Form (APA)

(available at: <https://cirrus.ciencias.ulisboa.pt/owncloud/s/A7rfFGLGcQoHyD7>)



	Comunicação de acidente	
	Data entrada	
(a preencher pela Agência Portuguesa do Ambiente)		

Formulário de comunicação de acidente envolvendo MGM/OGM

Utilização Confinada de MGM/OGM

A apresentar à APA, para efeitos de cumprimento das alíneas b) e d) do artigo 15.º do Decreto-Lei n.º 55/2015, de 17 de abril, em formato conforme com o artigo 16.º do mesmo diploma.

I) Informação geral

Tipo de Comunicação

Comunicação imediata
Alínea b) art. 15.º

☐

Atualização

Alínea d) art. 15.º

☐

(Assinalar a opção correta)

Data do acidente

Início

Hora do acidente

Início

Fim

Fim

MGM/OGM envolvidos no acidente

MGM/OGM

Classe

Quantidade

Tipo de Utilização Confinada autorizada

N.º^{iv} notificação

Classe(s) de utilização confinada

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II) Identificação do notificador

Nome do notificador

Endereço

Telefone

E-mail

III) Informação sobre o acidente

Local do acidente

Descrição das circunstâncias
do acidente

(Descrever a situação que determina a comunicação do acidente, incluindo o tipo de acidente, nomeadamente: emissão, contaminação da água, contaminação do solo, incêndio, explosão, ou outro)

Caracterização dos
MGM/OGM envolvidos no
acidente

(Descrever os possíveis efeitos para a saúde humana e para o ambiente dos MGM/OGM envolvidos, face à respetiva perigosidade)

Causa do acidente*

(Indicar a causa do acidente, incluindo a natureza da falha equipamento/humana/ambiental/outra), e eventuais sequências de acontecimentos)

*se esta informação não for conhecida na altura da comunicação imediata de acidente, deve ser apresentada no mais breve prazo possível, em sede de atualização da comunicação de acidente

IV) Consequências do acidente

Zonas afetadas dentro e fora
da instalação

(Indicar a extensão da exposição)



Pessoas expostas ao
MGM/OGM dentro e fora da
instalação

Mortes

Danos na saúde humana

Danos materiais

(Incluir os danos materiais verificados, especificando eventuais danos ao nível das medidas de contenção)

Danos ecológicos

(Incluir o tipo de compartimento afetado ar/ solo / água, especificando possíveis contaminações de aquíferos/ estações de tratamento de águas residuais, solos agrícolas, áreas protegidas, etc.)

V) Plano de emergência

Nome da pessoa responsável pelo
plano de emergência

Indicar se o plano de emergência
foi ativado

Sim

☐

Não

☐

(Assinalar a opção correta)

VI) Medidas de emergência acionadas

Medidas de emergência
acionadas dentro da
instalação

Medidas de emergência
acionadas no exterior da
instalação

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VII) Lições imediatas

Indicar medidas de prevenção/mitigação a adotar para evitar acidentes futuros*

*se esta informação não for conhecida na altura da comunicação imediata de acidente, deve ser apresentada no mais breve prazo possível, em sede de atualização da comunicação de acidente

VIII) Responsável pelo relatório

Assinatura

Nome

Data

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8.3. Annex III- Quarterly check record of the contents of the spill kit

(available at: <https://cirrus.ciencias.ulisboa.pt/owncloud/s/34Z887xEQTeDiFW>)

QUARTERLY SPILL KIT CONTENT CHECK RECORD

ROOM / LABORATORY: _____

Laboratory/Facility Manager: _____

QT.	MATERIAL	Date: __/__/__	Date: __/__/__	Date: __/__/__	Date: __/__/__
1	Plastic Box				
1	Instruction card in Portuguese and English				
1	Disinfection agent suitable for containment of biohazard spills, minimum volume 500 mL.				
1	Roll or sheets of absorbent paper or other suitable absorbent				
2	Disposable lab coats				
8	Pairs of disposable gloves (nitrile) of various sizes (4xM and 4xL)				
2	Disposable Face Respirator Mask				
2	Pair of shoe covers				
3	White Bag Collector (Biohazard)				
1	Broom and dustpan, tweezers, handle(s) or other mechanical means for handling and collecting spill cleaning material				
1	Container with antiseptic solution				
	Verified by:				
	Signature:				

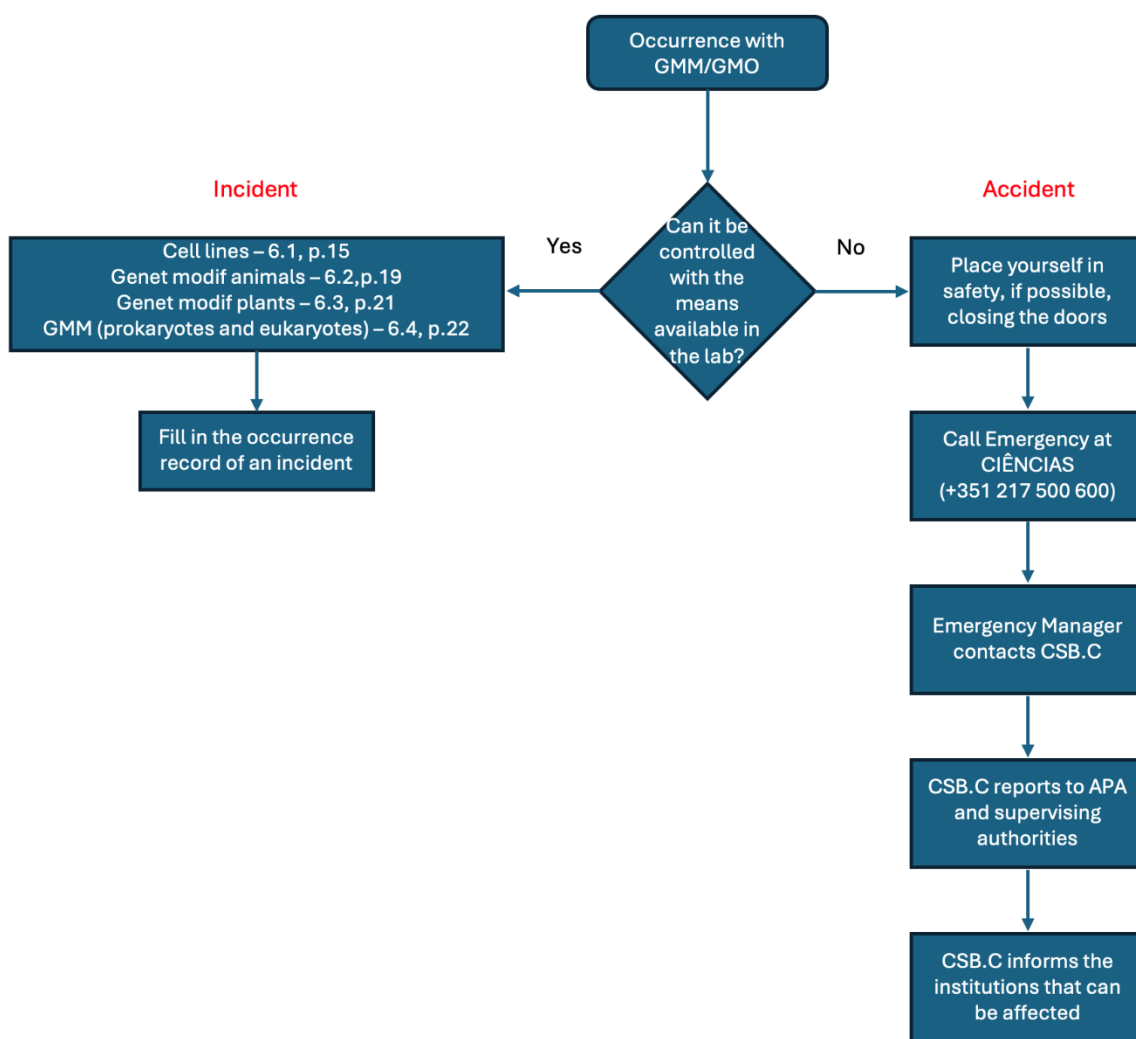
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8.4. Annex IV- List of disinfectants and contact times suitable for the containment of GMO/GMM spills

LIST OF DISINFECTING AGENTS FOR GMO/GMM DISINFECTION AND RECOMMENDED CONTACT TIMES				
PRODUCT	ACTIVE AGENT	CONCENTRATION	CONTACT TIME	OBSERVATIONS
Bleach	Sodium Hypochlorite	Solutions of 5000 ppm, 0.5% corresponding to a dilution of 1:10 v/v of commercial bleach	Surface disinfection - 1 min Disinfection of liquid waste – 20 min	Corrosive to metal surfaces so it should be cleaned with water after its contact time. Irritant. Diluted solutions should be prepared daily and kept in an opaque container. Often used to disinfect surfaces and equipment.
		10,000 ppm, 1% solutions corresponding to a dilution of 1:5 v/v commercial bleach for biological waste containing a high organic load (e.g. blood, proteins or lipids)	Surface disinfection - 1 min Disinfection of liquid waste - 20 min	
Alcohol	Ethanol	70% v/v	10 min	Flammable. Often used to disinfect surfaces and equipment.
Oxidants	Hydrogen peroxide	As per product indication	1 min	It can damage some metals (e.g. iron, copper, brass, zinc, steel). Non-toxic and decomposes into water and oxygen. Used to disinfect surfaces, equipment and waste. Caution should be taken for the use in wounds.
ZF™ Biocidal	Quaternary Ammonium Compounds	As per product indication	10 min or as per product indication	Some are irritating to the skin, eyes, and respiratory tract. Used to disinfect surfaces and equipment. Reduced effectiveness in the presence of organic matter.

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8.5. Annex V- Outline of procedures for action in case of incidents/accidents involving GMO/GMM

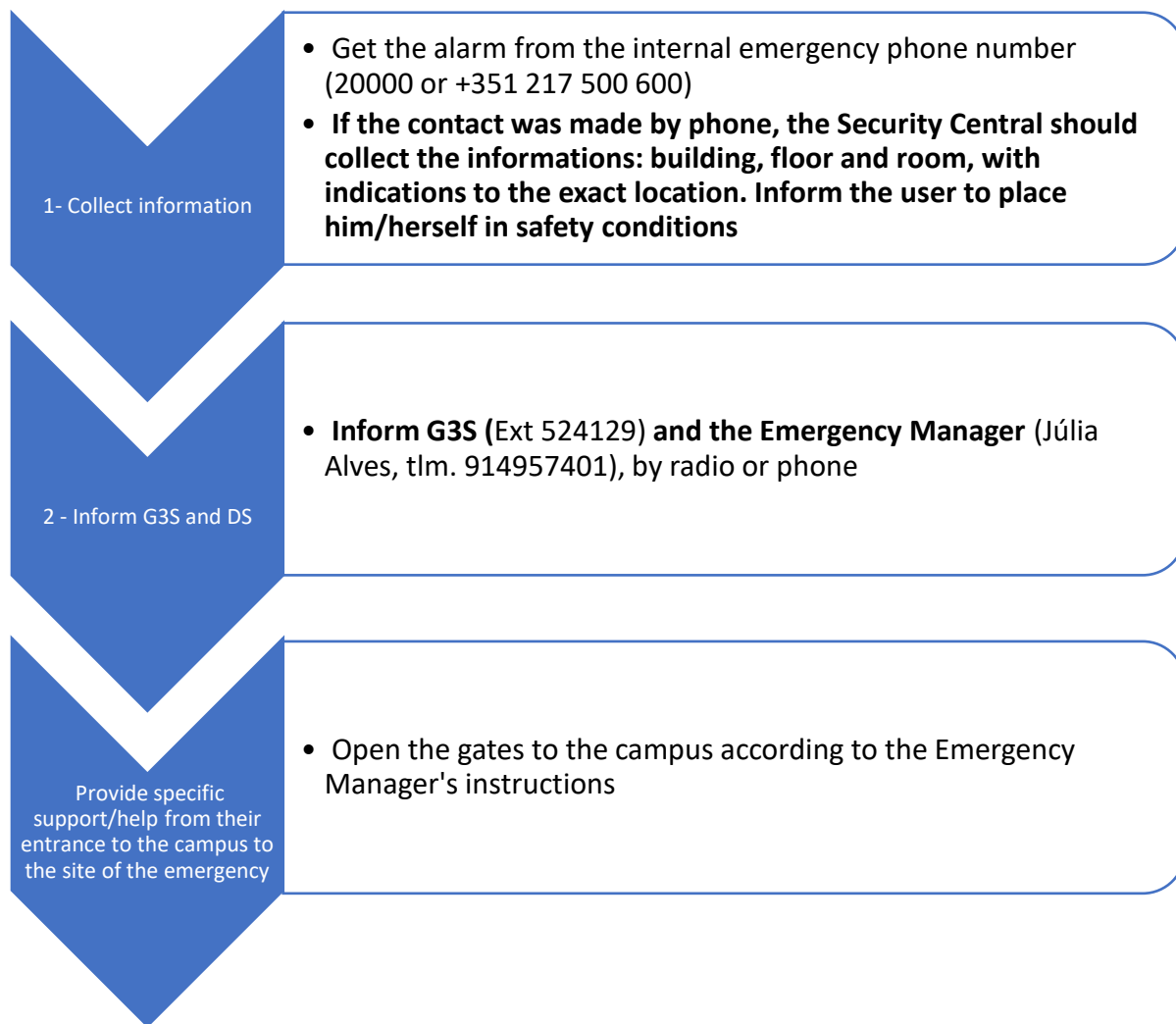


* circumstances of the accident;
 identification and quantity of GMM or GMO concerned;
 emergency measures triggered;
 any information necessary for the assessment of the effects on human health and the environment.

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8.6. Annex VI- Protocol for the operation of the security central (Surveillance Central) in case of incidents/accidents involving GMO/GMM

(Weekdays from 8 am to 7 pm)



Outside the opening hours of this protocol of operation or if, after four attempts, it is not possible to contact any element, the Central must abort this protocol and follow its internal procedures. The emergency situation must be immediately reported to the emergency manager, via telephone and informed to the Safety, Health and Sustainability Office as soon as possible, through the e-mail g3s@ciencias.ulisboa.pt.

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