



pan-European Management of Biological toxin incidents through standaRdisAtion
initiatives for Crisis response Enhancement

D2.5

CONOPS for biotoxin incidents - 1st Iteration



**Funded by
the European Union**

EMBRACE is funded by the European Union's Horizon
Europe Research and Innovation funding programme,
Grant Agreement N° 101168322.

D2.5 CONOPS for biotoxin incidents - 1st Iteration

Lead author(s)	Luise Niebisch, Laura Essl
Lead beneficiary	Disaster Competence Network Austria (DCNA)
Status	First Iteration – Final Version
Version	1.0
Due Date	26/03/2026
Delivery Date	31/03/2026
Dissemination Level	PU
Work Package	WP2 Crisis management of biotoxin incidents
Task	T2.3 Requirements and CONOPs for an effective biotoxin response capacity
Contributors	Austrian Red Cross (ARC); Pompiers de l'Urgence Internationale (PUI)
Reviewers	Pompiers de l'Urgence Internationale (PUI); Saitama Medical University (SMU); Telesto Technologies (TEL)
Language	English
Format	.pdf
Keywords	CONOPS, biotoxin, incident response
Abstract	<p>The CONOPS defines a structured framework for the management of biotoxin incidents. It supports preparedness, coordination, and response at strategic, operational, and, where applicable, tactical levels within the European Union. The framework is designed for continuous refinement through application, exercises, and evolving insights.</p>
Referencing this document	EMBRACE_D2.5_DCNA_Version_1.0
Disclaimer	<p>The information and views set out in this publication are those of the author(s) and do not necessarily reflect the official opinion of the European Communities. Neither the European Union institutions and bodies, nor any person acting on their behalf, may be held responsible for the use which may be made of the information contained herein</p>

D2.5 CONOPS for biotoxin incidents - 1st Iteration

Revision history

Version	Date	Partner	Description / Modification
0.1	05/01/2026	DCNA	Table of contents
0.2	02/03/2026	DCNA	Draft for review
0.3	13/03/2026	SMU, PUI, TEL	Reviewed draft
1.0	26/03/2026	DCNA	First Iteration – Final Version

Abbreviations

CONOPS

Concept of operations

Table of Contents

1	Introduction.....	5
1.1	Background and objective	5
1.2	Understanding a CONOPS.....	5
2	Development approach	7
2.1	Key assumptions underlying the development process.....	7
2.2	Development process.....	7
2.3	Evaluation mechanisms and approach for future adaptations	8
3	Purpose and use of the conops	9
3.1	Purpose and objectives of the CONOPS.....	9
3.2	Intended users and operational levels	9
3.3	Framework of use and limitations.....	10
4	Concept of operations.....	11
4.1	Explanation of the concept.....	11
4.2	Flowcharts of the CONOPS.....	12
5	Conclusion and outlook.....	17

Figures

Figure 1:	Schematic representation of incident response phases.....	8
Figure 2:	Overview of the operational phases, including the assigned objective for each phase and the intended output required to transition to the next phase.....	12
Figure 3:	Detailed representation of Incident Response Phase 1 ("First Indication") and Phase 2 ("Initial Assessment").....	13
Figure 4:	Detailed representation of Incident Response Phase 3 ("Verification") and Phase 4 ("Response").	14
Figure 5:	Detailed representation of Incident Response Phase 5 ("Containment") and Phase 6 ("Recovery").	15
Figure 6:	Detailed representation of Incident Response Phase 7 ("Evaluation").	16

1 INTRODUCTION

1.1 Background and objective

Preparatory work for the development of the present Concept of Operations, or CONOPS, was carried out in Deliverable 2.2 of the EMBRACE project, which remains sensitive and not publicly available. That deliverable included a needs and gaps analysis of existing response mechanisms within European biotoxin management. The findings of this assessment provided the analytical basis for further development.

Building on these results, the project aims to improve the harmonization of procedures through the development of Concepts of Operations for biotoxin incidents, representing a central objective of the project under Result 04. The purpose of these CONOPS is to provide the information and structured guidance required to support an effective response to biotoxin-related incidents.

In its intended final form, the CONOPS will encompass all phases of the incident lifecycle. It will describe processes and procedural schematics, include structured guidance elements such as checklists for first responders, and provide visual representations of the common operating picture in order to support coordinated and efficient response activities.

Rather than producing isolated documents that may lose relevance after project completion or remain limited to EMBRACE-specific solutions, the objective is to develop a methodical framework for crafting CONOPS applicable to biotoxin incidents in a broader context.

The present Deliverable 2.5 contains a preliminary version of the CONOPS, developed during an initial internal workshop. This version will be reviewed, refined, and expanded during the course of the project. The finalized version will be presented as Deliverable 2.6 in month 33 of the EMBRACE project.

Following finalization, dissemination through appropriate professional networks, including the Biotoxin Task Force and the UCPM Knowledge Network, is foreseen in order to make the CONOPS accessible to a broad community of experts involved in preparedness for biotoxin incidents or related fields.

1.2 Understanding a CONOPS

The CONOPS presented in this document are grounded in a shared understanding developed within the project consortium. Given the diverse operational backgrounds and institutional contexts represented in the project task, a common interpretation of the term was established as a basis for further development. This shared understanding serves as the foundation for the following explanation of what a CONOPS represents in the context of this deliverable.

A CONOPS describes how a system or process is intended to function from the user's perspective. It outlines how an approach is to be applied in practice in order to achieve defined objectives, presenting a structured view of operational activities, interactions among actors, and the expected outcomes at different stages. Rather than prescribing detailed technical specifications or procedures, a CONOPS articulates the operational logic through which overarching goals are translated into practical implementation.

D2.5 CONOPS for biotoxin incidents - 1st Iteration

In this way, it serves as a bridge between high-level objectives and their realization in real-world settings. By clarifying how activities are sequenced and coordinated within a given context, it establishes a shared understanding among stakeholders and provides a reference point for aligning expectations and operational needs.

Various forms of CONOPS exist depending on their scope and focus. The present document is situated within the domain of operational CONOPS. It concentrates on describing the structured progression of response activities in biotoxin-related scenarios, defining phase-specific objectives and expected outputs that guide transitions within the response process.

Accordingly, this CONOPS is designed as a user-oriented and practically applicable framework. It supports incident response, coordination, and decision-making, and may be used in exercises and scenario-based planning processes. By offering a coherent operational structure, it contributes to a common understanding of how biotoxin incidents may be approached in a coordinated setting while remaining adaptable to specific organizational contexts.

2 DEVELOPMENT APPROACH

2.1 Key assumptions underlying the development process

Biotoxin incidents may result from accidental release, environmental contamination, or deliberate actions and primarily affect public health. Such events can lead to a high number of affected individuals and require decision-making under conditions of uncertainty. Biotoxins are characterized by high toxicity and, in some cases, rapid onset of symptoms, while early identification may remain difficult. Symptoms can initially appear nonspecific or delayed, and laboratory confirmation may require additional time. As a result, operational decisions often need to be taken before full verification of the underlying cause is available.

Response to biotoxin incidents typically requires coordinated action across multiple authorities and organizations. Emergency medical services, public health authorities, civil protection structures, law enforcement, and other relevant entities may be involved, each operating under distinct mandates, procedures, and institutional priorities. The need to align these actors under time pressure increases the complexity of response management. Delays may arise from coordination processes, differing information channels, or the absence of a shared operational structure.

Operational familiarity with biotoxin-specific scenarios is often limited. Due to the rarity of such incidents, many responders and decision-makers have limited practical experience in recognizing toxin-related symptoms or managing the associated response measures. This can result in uncertainty during the early stages of an incident and may affect the consistency of coordinated action.

The identification and confirmation of a biotoxin event can require time, particularly when laboratory analysis is necessary. Nevertheless, where there is reasonable suspicion, response measures must begin without awaiting full verification. In such situations, the absence of a predefined operational structure may lead to additional delays or inconsistencies in intervention.

For these reasons, clearly structured and operationally applicable CONOPS are essential. They provide a predefined framework that supports decision-making under uncertainty, facilitates coordination among involved actors, and enables timely and targeted response actions while verification processes are ongoing.

2.2 Development process

A workshop for the joint development of the initial version of the Concept of Operations was held on December 10, 2025, at the ARC headquarters in Vienna. DCNA, ARC, and PUI participated in the workshop. Each organization was also represented by personnel with operational field experience and practical knowledge of response processes, including backgrounds in fire services, emergency medical services, and the military. Among them, three are dedicated CBRN specialists.

To support the structured development of the CONOPS, a simplified model of incident response phases was prepared in advance. This model reflected the typical progression of operational response activities and served as the baseline for discussing a biotoxin scenario, as illustrated in Figure 1.

D2.5 CONOPS for biotoxin incidents - 1st Iteration

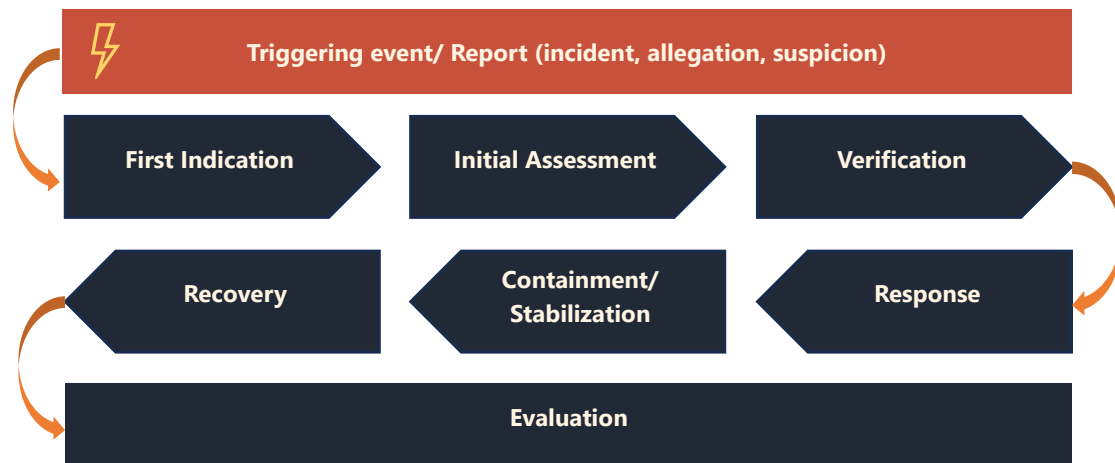


Figure 1: Schematic representation of incident response phases.

For each phase of the response process, specific criteria were defined, including the objective to be achieved, the expected output at the end of the phase, and the key actions required to reach that outcome. This stepwise approach enabled a structured alignment of operational goals and corresponding activities.

An initial list of potentially involved persons, organizations, and stakeholders was also developed for each phase. These considerations were preliminary and did not constitute finalized role allocations.

Certain elements were intentionally left open during this stage of development. It was agreed that these aspects would be revisited at a later stage, once practical insights from exercises conducted within the EMBRACE project allowed for more realistic assessment. Possible future refinements may include specifying required resources for individual phases or introducing indicative timelines.

2.3 Evaluation mechanisms and approach for future adaptations

The steps developed during the workshop were consolidated into a standardized structure (see Figure 2). This structured format constitutes the first version of the CONOPS.

The CONOPS is planned to be applied for the first time during the table-top exercise in Vienna in March 2026. Insights gained from this application will provide practical input for further refinement. Subsequent field exercises in France in 2026 and in Vienna in 2027 will offer additional opportunities to observe and discuss the applicability of the CONOPS in operational contexts. The formal evaluation of the CONOPS will take place within the framework of Task 6.4 of the EMBRACE project. Findings and feedback generated through this evaluation process will be used to inform further revisions. In addition, expert perspectives from individuals with different professional roles who may potentially apply the CONOPS will be considered throughout the development process. Incorporating these practical viewpoints is intended to ensure that the concept remains operationally grounded and applicable in real response settings.

Where appropriate, supporting templates, such as contact lists of responsible authorities, organizations, or relevant personnel, may be developed and annexed.

The outcomes of this iterative development process will be incorporated into a revised second version of the CONOPS, which will be presented as Deliverable 2.6.

3 PURPOSE AND USE OF THE CONOPS

3.1 Purpose and objectives of the CONOPS

The purpose of the developed CONOPS is to provide a clearly structured and practically applicable reference framework for managing biotoxin incidents. It is intended to serve as an orientation tool for response, coordination, and decision-making in the event of a biotoxin-related emergency. By offering a predefined and structured approach, the CONOPS contributes to strengthening preparedness and improving response readiness.

The CONOPS has been designed with due consideration of the diversity of national civil protection mechanisms, governance arrangements, and competency structures across the European Union. It does not interfere with national mandates or decision-making authority. Instead, it provides a common conceptual basis that can be independently adapted at national level and applied in a manner consistent with existing domestic procedures.

With the development of transport networks, large numbers of personnel and goods now move across borders, and biotoxin incidents have the potential to involve and impact multiple nations. In such circumstances, The CONOPS will also serve as a common language and platform necessary for formulating, executing and evaluating coordinated countermeasures among nations possessing differing resources, regulations and cultures.

In addition to its potential application in real incidents, the CONOPS may be used in exercises, training activities, and scenario-based planning processes. It is conceived as a living document that can be reviewed and updated in light of exercise outcomes, emerging insights, and lessons learned. Once the core structure is consolidated, it may be complemented by generic supporting templates to facilitate country-specific adaptation, such as contact lists or resource overviews.

3.2 Intended users and operational levels

Intended users encompass multiple administrative and operational levels. At the authority level, these include national civil protection, disaster management, and crisis management bodies responsible for preparedness and response to biotoxin incidents, as well as public health authorities and other relevant specialized entities such as environmental or security authorities.

Strategic and operational leadership and coordination structures at national and regional levels, including crisis management teams and comparable coordination bodies, also fall within the intended audience. Response organizations and first responders involved in operational implementation may likewise draw on the CONOPS. In addition, institutions and units responsible for planning, preparedness, training, and the further development of national concepts may use it as a reference framework.

Application is possible at different levels of action. At the strategic level, it supports the conceptual classification of biotoxin incidents, objective setting, and overarching coordination. Operationally, it may assist command and coordination structures in implementing strategic decisions and facilitating inter-institutional cooperation. At the tactical level, it provides conceptual orientation for operational units without replacing operational directives, instructions, or standard operating procedures.

3.3 Framework of use and limitations

The CONOPS provides a conceptual reference framework for managing biotoxin incidents. It is not intended to serve as an operational standard operating procedure and does not replace existing national emergency or response plans. Its use is therefore complementary to established national structures and operational frameworks.

It does not introduce legally binding provisions or formal directives. Roles, responsibilities, and decision-making authority remain governed exclusively by national legal and organizational frameworks.

The document does not contain detailed technical, medical, or tactical instructions, nor does it assess national capabilities, resource levels, or preparedness status. Its use is designed to complement existing national structures and procedures without altering established mandates or operational arrangements.

4 CONCEPT OF OPERATIONS

4.1 Explanation of the concept

The following section presents the initial draft of the CONOPS in the form of a flowchart. The first page provides an overview of the assumed operational phases of a biotoxin incident. For each phase, the intended objective and the expected output are indicated. The output defines the condition required to move to the subsequent phase, while the direction of the arrows illustrates the general sequence of actions (Figure 2).

An additional red arrow connects the "Initial Assessment" phase directly to the "Response" phase. This reflects the operational reality that response measures may need to begin before the underlying cause of an incident has been fully verified. In biotoxin-related scenarios, laboratory confirmation can take time, whereas immediate action may already be necessary. The model therefore accounts for situations in which response activities are initiated prior to confirmed identification of the cause.

The sequence concludes with the "Lessons Learned" phase. Although this phase is not part of the immediate operational response chain, it represents an essential element of the overall process. It enables structured post-incident reflection and provides the basis for adjustments to the CONOPS in future applications.

Following the overview, each phase is presented in greater detail (Figure 3-6). For every phase, the respective objective, the key actions required to achieve the intended output, and a set of guiding questions are specified. These guiding questions are intended to support orientation and structured decision-making during the respective phase and are not necessarily exhaustive.

As noted, this represents an initial version of the CONOPS and an effort to provide a logically structured and visually accessible format that can be followed during an incident. The current version is not considered final and may be further refined.

4.2 Flowcharts of the CONOPS

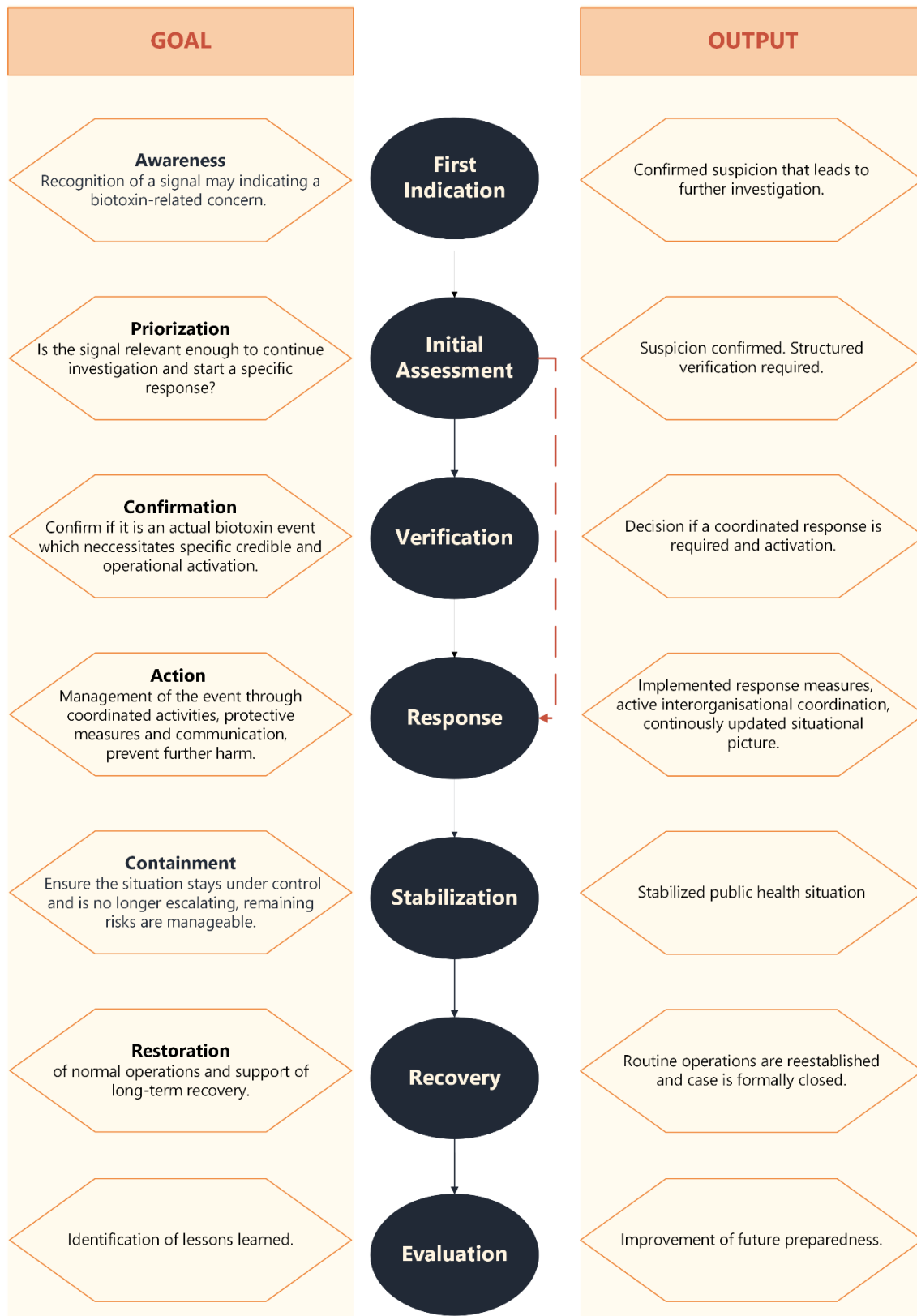


Figure 2: Overview of the operational phases, including the assigned objective for each phase and the intended output required to transition to the next phase. Arrows indicate the sequence and directional flow of actions.

D2.5 CONOPS for biotoxin incidents - 1st Iteration

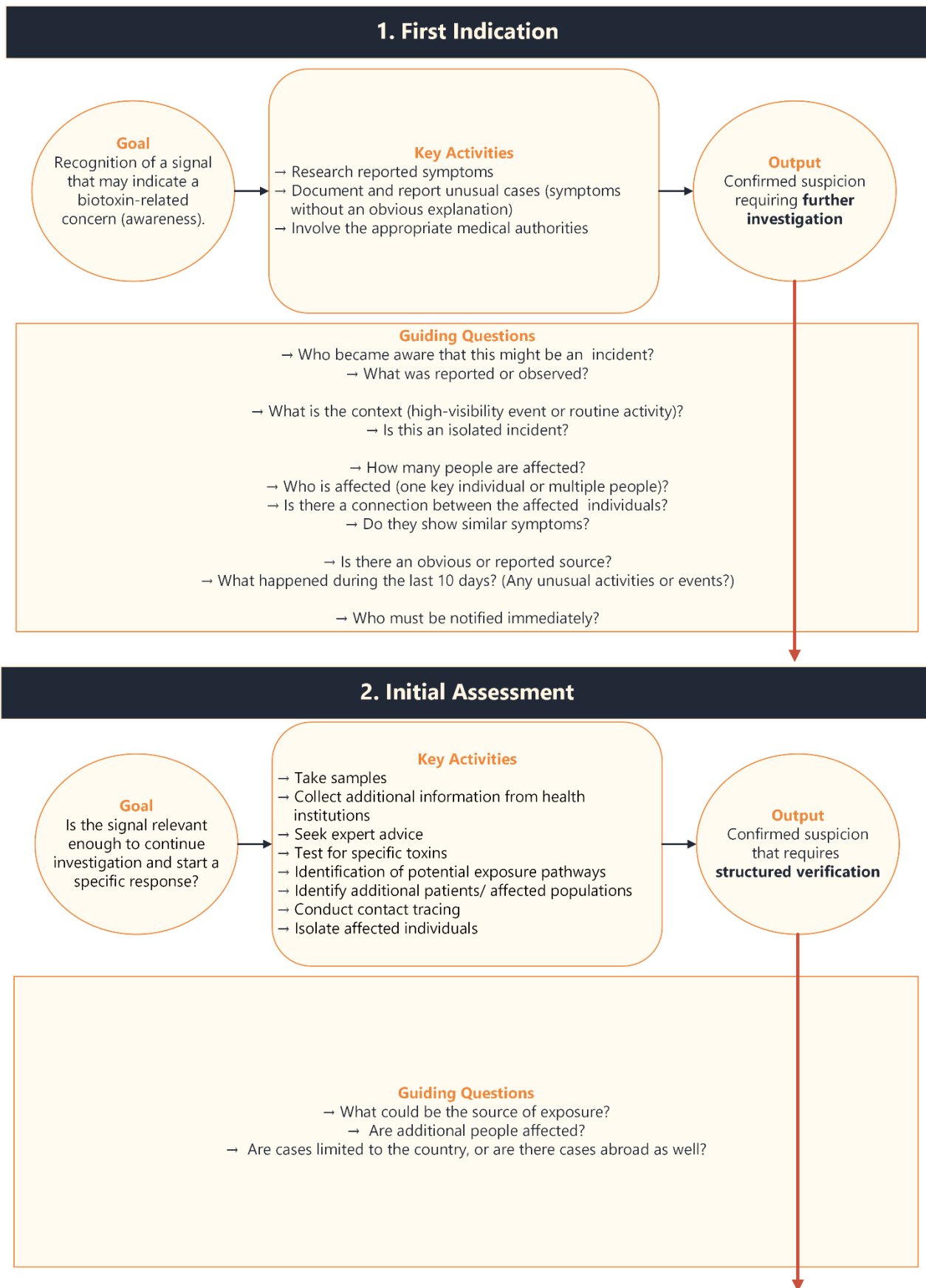


Figure 3: Detailed representation of Incident Response Phase 1 (“First Indication”) and Phase 2 (“Initial Assessment”).

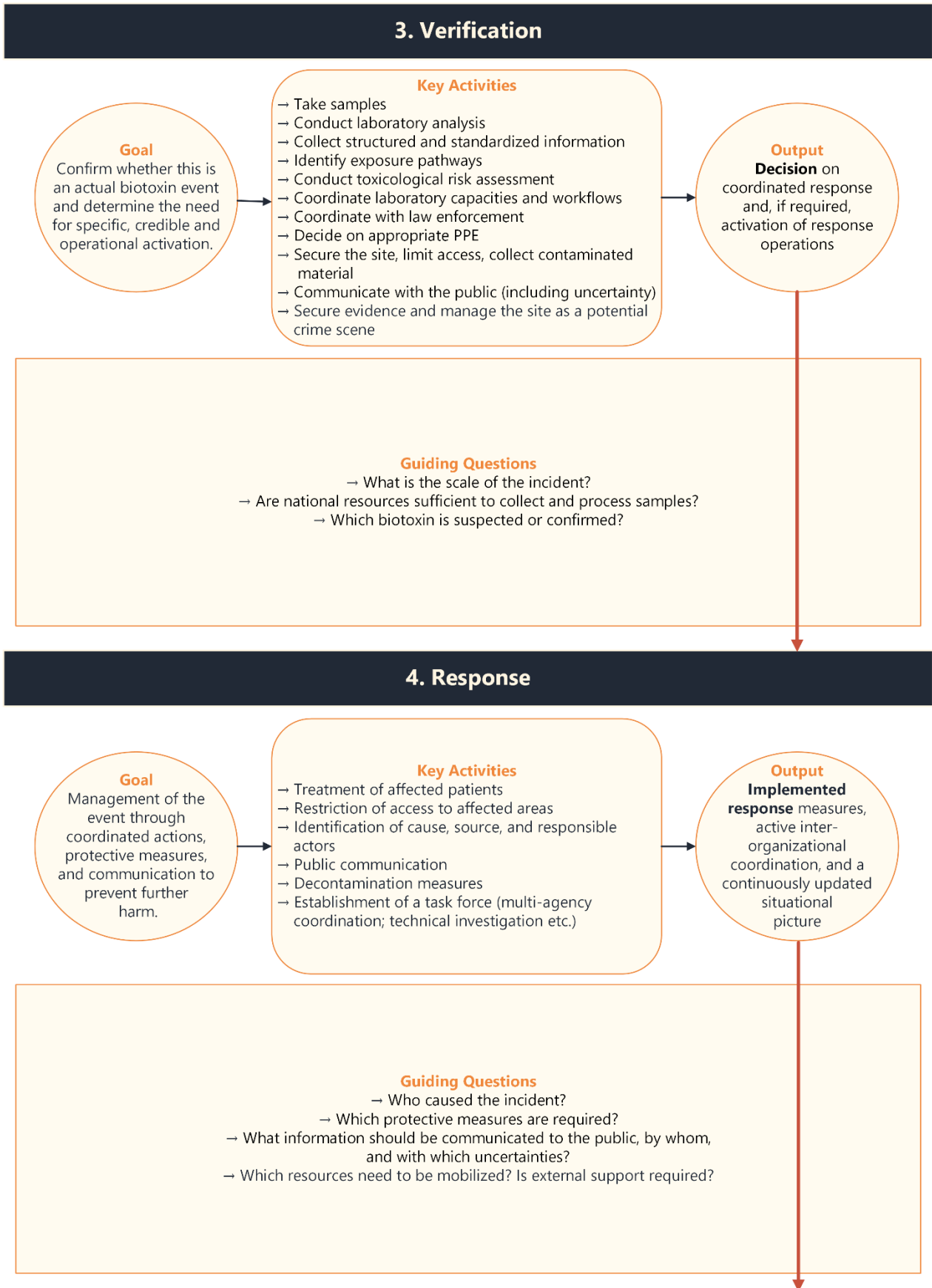


Figure 4: Detailed representation of Incident Response Phase 3 (“Verification”) and Phase 4 (“Response”).

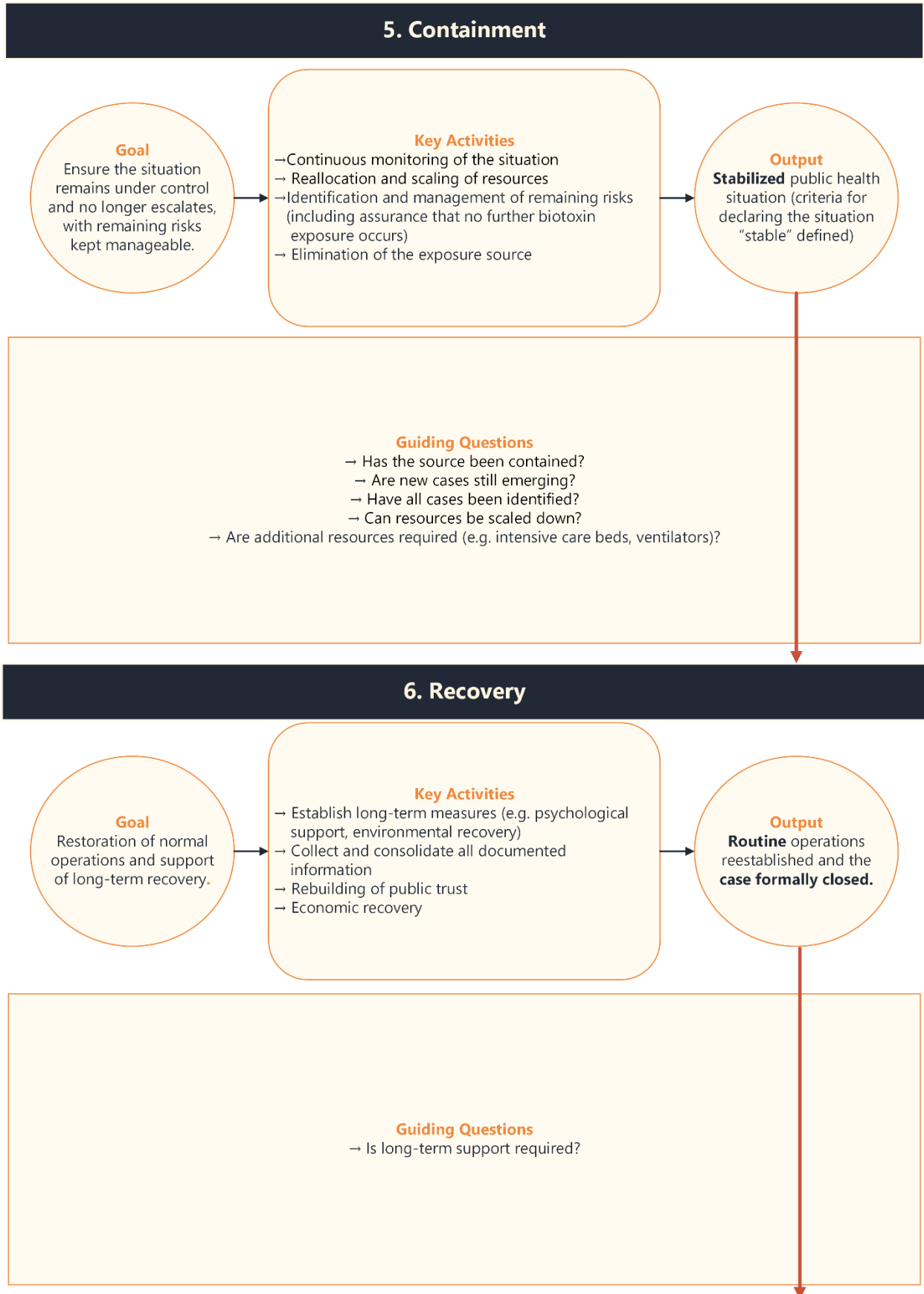


Figure 5: Detailed representation of Incident Response Phase 5 ("Containment") and Phase 6 ("Recovery").

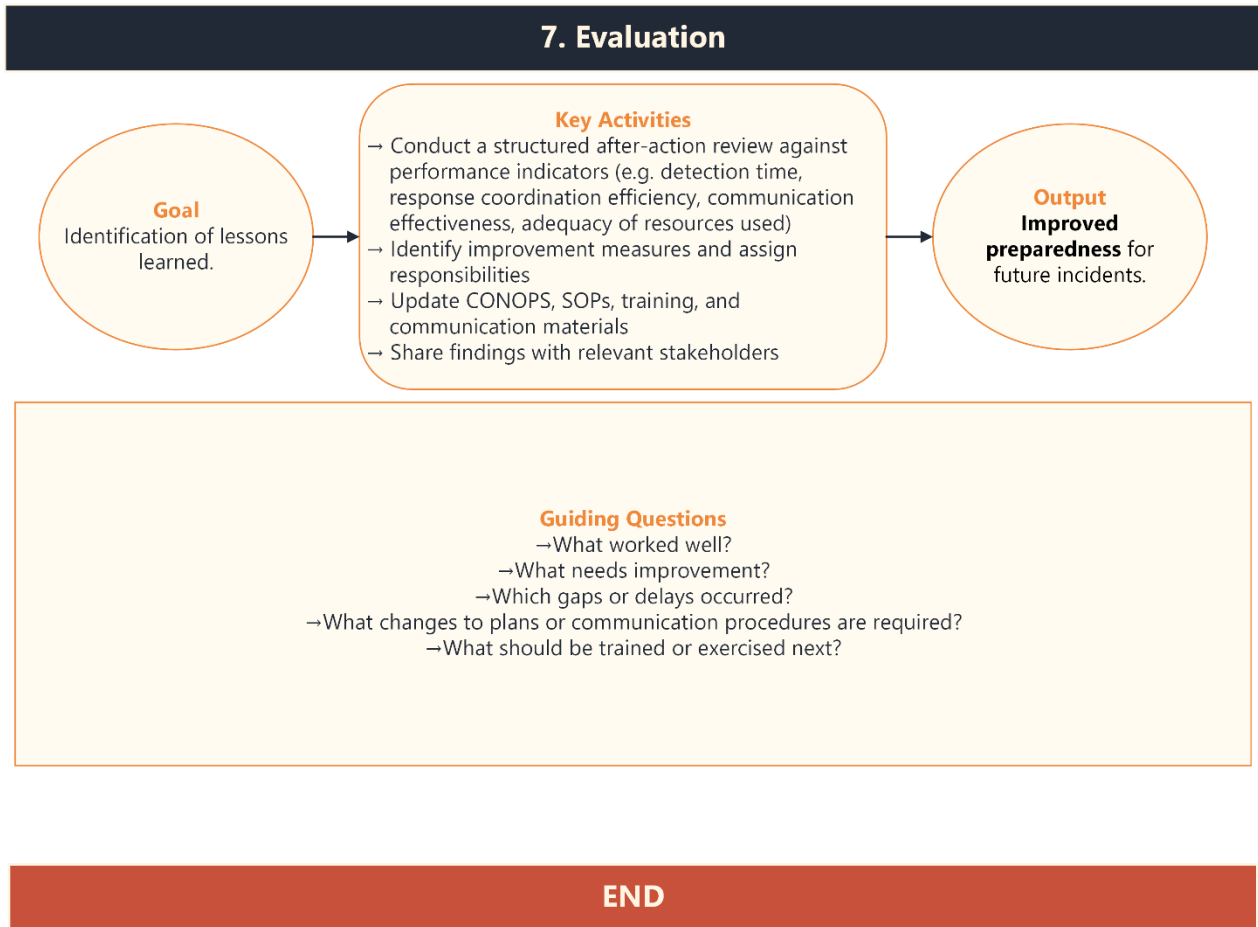


Figure 6: Detailed representation of Incident Response Phase 7 (“Evaluation”).

5 CONCLUSION AND OUTLOOK

This deliverable provides a structured and operationally oriented CONOPS for biotoxin incidents. It translates previously identified structural and coordination challenges into a coherent phase-based framework intended to support timely and coordinated response under conditions of uncertainty.

The CONOPS represents a first consolidated version and establishes a common operational reference for further development. It offers a structured foundation for aligning decision-making, coordination, and response activities in biotoxin-related scenarios without prescribing detailed implementation measures. Further refinement will take place through practical application and expert feedback. Insights gained during subsequent project activities will inform targeted adjustments, with the aim of strengthening clarity, usability, and operational coherence.

In its finalized form, the CONOPS is intended to serve as a broadly applicable reference framework and to be disseminated through relevant professional networks to support preparedness and response efforts in the field of biotoxin management.

Through this progressive development process, the project contributes to a more structured and coordinated approach to managing biotoxin incidents while maintaining flexibility for adaptation within diverse national contexts.