



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

D6.1

TTX Evaluation Report



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D6.1 Evaluation Report TTX

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Abbreviations

| | |
|--------|---|
| ARC | <i>Austrian Red Cross</i> |
| BRSH | <i>Biotoxin Reference and Stakeholder Hub</i> |
| BTF | <i>Biotoxin Task Force</i> |
| CONOPS | <i>Concept of Operations</i> |
| EMS | <i>Emergency Medical Service</i> |
| FTX | <i>Field exercise</i> |
| TTX | <i>Tabletop exercise</i> |

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1 INTRODUCTION

WP6 of the EMBRACE project implements a structured program of trials and exercises, including a Tabletop Exercise (TTX) and Field Training Exercises (FTX1 and FTX2), to provide controlled evaluation environments for validating project outputs developed in WP2–WP5 and WP8.

All WP6 trials are conducted in accordance with the Grant Agreement as evaluation and learning activities, designed to assess decision-making, interoperability, and usability of EMBRACE solutions in complex biotoxin-related incident contexts. The trials are not intended to simulate real-world operations in full detail, nor to assess real-world threat likelihoods or toxicological realism.

The trials are based on scenario-driven representations of biotoxin-related incidents, selected to introduce operational complexity, inter-agency coordination challenges, and information uncertainty. Scenarios serve exclusively as evaluation vehicles, enabling systematic observation of how decisions are taken, coordinated, and adapted under evolving conditions.

Together, the TTX and FTXs form a coherent WP6 validation sequence, in which learning and evaluation outputs are progressively generated and consolidated. Findings from the trials feed directly into WP6 deliverables, in particular in this report (D6.1) and the subsequent deliverable reporting on evaluations during the field exercises (D6.3).

The WP6 trials are guided by a common set of research questions that support qualitative and analytical evaluation across different trial formats. The exercises have a variety of focuses, ranging from gaining a better understanding of how and which decisions are made to testing new technologies in the field of biotoxins.

Table 1 gives an overview of the different research questions were assessed during the TTX. In FTX1 and FTX 2 additional questions on detection, sampling, sample tracking and chain of custody will be addressed.

Table 1: Research questions in the EMBRACE trials (A - main focus of the exercise, B - side topic of the exercise)

| RESEARCH QUESTIONS | TTX | FTX1 | FTX2 |
|---|-----|------|------|
| Decision-making under uncertainty | | | |
| How do participants frame, manage, and communicate uncertainty during the early and evolving stages of a biotoxin-related incident? | A | | |
| How are assumptions identified, documented, and revised as new information becomes available? | A | | |
| Interoperability and coordination | | | |
| How do different actors and organisations coordinate decisions across operational, technical, medical, and public health domains? | A | A | A |
| What interoperability challenges emerge, and how are they addressed during the trials? | A | A | A |

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|---|---|---|---|
| Are roles, responsibilities and escalation pathways clearly defined? | A | A | A |
| Use of information and decision-support tools | | | |
| How do participants integrate information from multiple sources, including EMBRACE solutions, into their decision-making processes? | B | A | A |
| Is the framework of the CONOPS applicable during a biotoxin incident? | B | A | A |
| Adaptability across trial conditions | | | |
| How do decision-making processes and coordination adapt across trials with different execution levels and scenario characteristics? | B | B | B |
| Which decision elements remain stable across trials, and which are most sensitive to changing conditions? | B | B | B |
| PPE decision logic | | | |
| How are PPE-related decisions framed and justified under varying levels of uncertainty and operational constraints? | B | A | A |

2 DESCRIPTION OF TABLETOP EXERCISE (TTX)

2.1 Goal of exercise

The first tabletop exercise (TTX) in the EMBRACE project was carried out as a discussion-based simulation of one of the scenarios that are being tested. The focus was on the understanding of decisions taken by the involved of key user groups such as public health authorities, infrastructure operators, first responder organisations and government authorities.

The aim was to obtain a **clear understanding of the decision-making process, the information necessary to take decisions, identification of knowledge gaps and a discussion of possible use of EMBRACE solutions** as basis for the field exercises.

The TTX modelled a biotoxin incident on a train in Styria, Austria. Participants mainly used the roles of their professional life and decided on measures to be taken, which were triggered via so-called "injects" (e.g. updated information from emergency services, phone calls, etc.). The exercise was conducted under pre-defined rules, a systematic evaluation and technical support from the project partners. The following sections outline the objectives, the methodology of evaluation and the evaluation results.

2.2 Tested solutions and processes

In the field of crisis management, three solutions and results of Work Package 2 are particularly relevant: the Concept of Operation (CONOPS), the Biotoxin Task Force (BTF) and the gaps identified during the screening in Task 2.2. In addition, the decision-making process during the exercise was carefully documented and evaluated to identify the basis for decisions relating to biotoxin incidents and to determine which organisations are involved in the decision-making process.

The Concept of Operation (see Deliverable 2.5) provides a general framework for action in the event of biotoxin incidents and was validated during the TTX.

The Vienna TTX also served as a critical stress-test for national CBRN readiness in a rail-transport setting, a context for which Austria currently has no specific biothreat response plan. This exercise therefore provided both a national and EU-level opportunity to evaluate how emerging expert coordination mechanisms, including the BTF, could interface with local, regional, and federal response bodies under conditions of uncertainty. During the exercise, the BTF was simulated by a panel of experts comprising three representatives from the BTF, who were available to be consulted whenever there were uncertainties or questions regarding biotoxins.

The gaps identified during Task 2.2 could not be discussed directly with the TTX participants due to the status of the deliverable, which had been classified as "sensitive". As an alternative solution, work was carried out using "requirements" derived from these gaps (see D2.3), which were prioritised by the participants.

In addition, the TTX supported WP6 goals by revealing structural, operational, and knowledge-based requirements for more effective EU coordination during biotoxin incidents.

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In addition to the crisis-management findings, the TTX provided an initial opportunity to present and discuss selected EMBRACE outputs with practitioners and stakeholders. Depending on their maturity level, these were demonstrated through practical walkthroughs, prototype presentations or mock-ups. This allowed participants to assess the relevance, usability and potential integration of the solutions in a biotoxin incident-response context and provided feedback to inform further development before the field trials.

Following the presentations, participants discussed open questions and explored the potential role of the EMBRACE solutions in biotoxin incident management. The TTX provided an initial user-facing assessment of the relevance, usability and possible integration of the solutions, while their practical and operational validation will take place during the two FTXs in France and Austria.

The Biotoxin Alerting Mechanism was addressed in more depth. Based on an adaptation of the original scenario, its use was demonstrated through a mock-up, followed by a guided discussion led by the developers on how such a capability could influence escalation, information flow and decision-making during a biotoxin incident.

2.3 Trial description

The EMBRACE TTX, held in Vienna, Austria, 18-19 March 2026 provided a structured environment to answer the identified research questions. It provided a simulation of a biotoxin incident on a railway (short name "Railtox"):

"Railtox" Scenario

The incident took place during a journey on an international express train from Vienna to Venice. The train is fully booked and there are 480 passengers on board. During transit, a covert release of a surrogate biotoxin with saxitoxin-like (STX-like) neurological characteristics occurs inside the train. There is no explosion, fire, or mechanical failure. At 10.52 am emergency calls are coming into the Styrian emergency dispatch centre (144) and Police (112) from train passengers. Passengers of the Railjet to Venice are complaining of increasing symptoms such as coughing, chest pain, shortness of breath and muscle paralysis, dizziness and confusion. The emergency brake is pulled in a carriage in the middle of the train. The driver receives an alarm and decides to initiate an emergency brake manoeuvre, as he cannot determine the reason for the activation. Train stops on open track.

The scenario is used exclusively as an evaluation vehicle for decision-making, coordination, and use of EMBRACE tools, not as a real-world threat assessment.

To support a shared understanding of the physical context of the incident, participants were provided with an illustrative spatial overview of the scenario environment.

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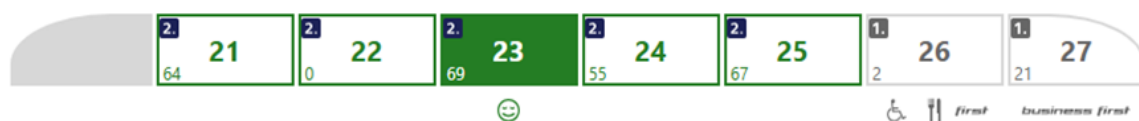


Figure 1: Layout of the train

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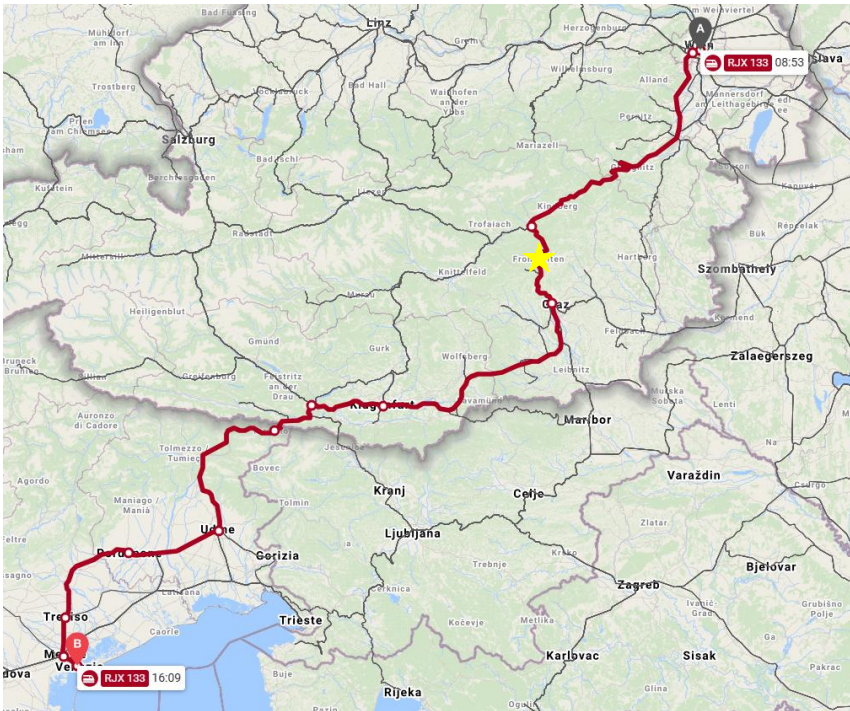


Figure 2: Vienna–Venice railway line with the incident location (yellow star)

The scenario highlighted key biotoxin-specific implications, including:

- Difficulty of early identification based primarily on clinical symptoms rather than immediate sensor alerts.
- Reliance on medical expertise, poison hotlines and control centres, and reference laboratories for agent confirmation.
- Emphasis on victim isolation, medical treatment, and targeted decontamination, rather than mass evacuation.
- High demand for clear public health communication to prevent misinformation and panic.

During the TTX, participants represented their organisation enabling a realistic scenario to be played out. To ensure a structured and effective implementation, a clear framework with fixed rules was defined by the moderators. The participating organisations are listed in the Annex (6.2 Participating organisations (TTX)).

3 EVALUATION METHODOLOGY

In the evaluation, we considered the three dimensions also mentioned in the Trial Guidance Manual of the Driver+ project: crisis management dimension, solution dimension, trial dimension. The focus in the TTX was on the crisis management dimension, whereas the FTXs will focus more on the solution and trial dimension. However, all aspects were considered during the TTX.

A combination of quantitative and qualitative methods was used depending on the goals of the evaluation of the specific solution:

Five persons (all consortium members from different organisations) observed the trial and took notes on observation protocols (see 6.1 in Annex). They were encouraged to add additional comments and highlight discussion points and unclarities that became evident during the TTX.

After the official end of the exercise, participants were asked to fill out a questionnaire with questions mainly related to the decision-making process during the exercise, but also with some feedback on EMBRACE solutions and the trial itself. In total, 29 persons filled the questionnaire. Participants from government agencies (6), first responder representatives (4), public health authorities (2), railway (1), Biotoxin Task Force (3), Technology providers (5) and observers from the consortium (7) answered the survey.

During the exercise, the ARC prepared an operations log with details on timing, actions and involved stakeholders. This was used to compare it with the activities mentioned in the Concept of Operations (CONOPS).

At the end of day 1, there was a short hotwash, where participants could highlight the main challenges of the day. At the end of the exercise, there was an open feedback round, where the main learnings were summarized by participants. Within the exercise, there were also presentations of the EMBRACE solutions, followed by Q&A sessions.

Table 2: Overview of solutions and evaluation methodologies

| Solution / Technology | Observations | Questionnaire | Operations log | Discussion |
|------------------------------|---------------------|----------------------|-----------------------|-------------------|
| CONOPS | X | X | X | |
| BTF | X | X | | |
| Gaps / Requirements | | X | | |
| Decision making | X | X | | |
| Biotoxin Escalation Pathways | | | | X |
| Technical solutions | | | | X |
| Trial | X | X | | X |

3.1 Description of evaluation methodology for the different solutions

This section describes the evaluation methodology for the different solutions with outlining the dimension, the evaluation criteria, indicators and the data sources that were used to measure whether the criteria have been met.

3.1.1 Concept of Operations (CONOPS)

Related Work package and task: WP2 Crisis management of biotoxin incidents, Task 2.3 Requirements and CONOPs for an effective biotoxin response capacity

Goal: To assess the actual decisions that were taken during the EMBRACE Vienna Table-Top Exercise and their alignment with the CONOPs (WP2.3) to improve crisis management

Table 3: Evaluation criteria CONOPS

| Dimension | Evaluation Criteria | Indicators / Measures | Data Source |
|---------------------------------------|---|--|------------------------------|
| Relevance of CONOPS | Alignment of phases in CONOPS with TTX | Key decisions (trigger of one phase to the next) appeared in TTX and CONOPS | Observations, operations log |
| Identification of key decision points | Trigger points for next phase (from CONOPS) were identified by participants | % of phases where >50% participants rated the need for the decision as clear or very clear | Questionnaire |

3.1.2 Biotoxin Task Force (BTF)

Related Work package and task: WP2 Crisis management of biotoxin incidents, Task 2.1 Establish a Biotoxin Task Force

Goal: To assess the BTF’s operational and strategic performance, identify capability gaps, and define requirements for the future development of WP6 outputs including the BRSH.

Table 4: Evaluation criteria BTF

| Dimension | Evaluation Criteria | Indicators / Measures | Data Source |
|--------------------------|--|--|--------------------------------------|
| Clarity of Role | Understanding of BTF mandate, purpose, and activation conditions | % of participants reporting “clear/very clear” understanding Qualitative comments on role clarity | Evaluation Form, structured feedback |
| Timeliness of Activation | Appropriateness of when BTF was engaged during the scenario | % indicating activation was “timely” % indicating “too early/too late” | Evaluation Form, structured feedback |

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|----------------------------|--|--|--------------------------------------|
| Operational Value | Contribution to decision-making, sense-making, and situational understanding | Ratings of "high/very high" value Evidence of improved cross-sector understanding | Evaluation Form, structured feedback |
| Strategic Value | Contribution to preparedness, capability development, and CONOPs refinement | % identifying strategic insights Number of systemic gaps identified | Evaluation Form, structured feedback |
| Independence & Credibility | Perceived neutrality, scientific credibility, and trustworthiness | % rating "high/very high" credibility Qualitative comments on independence | Evaluation Form, structured feedback |
| Cross-Sector Integration | Ability to integrate health, security, forensic, policy, and operational perspectives | % indicating "yes/partially" integration Examples of integrated insights | Evaluation Form, structured feedback |
| Communication Impact | Support to coherent messaging, narrative alignment, and information clarity | % indicating improved communication Qualitative examples of messaging alignment | Evaluation Form, structured feedback |
| Interface Quality | Clarity and effectiveness of links with authorities, crisis structures, and networks | % indicating "clear/partially clear" interfaces Identified interface gaps | Evaluation Form, structured feedback |
| BRSB Contribution | Identification of knowledge gaps and content needs for the Bioterror Reference & Stakeholder Hub | Number of gaps identified Priority areas for BRSB content | Evaluation Form, structured feedback |
| Risks & Limitations | Identification of structural, procedural, or operational risks | Frequency of selected risks (e.g., overload, duplication) Qualitative risk descriptions | Evaluation Form, structured feedback |
| Overall Added Value | Perceived benefit of BTF mechanism in the TTX | % rating "high/very high" added value Summary of key strengths | Evaluation Form, structured feedback |

3.1.3 Gaps and requirements

Related Work package and task: WP2 Crisis management of biotoxin incidents, T2.2 Identify gaps and needs in current civil protection mechanisms for dealing with biotoxin incidents and T2.3 Requirements and CONOPs for an effective biotoxin response capacity

Purpose: To assess and prioritise the identified gaps and corresponding requirements. This will serve as input for D2.4 (A UCPM biotoxin response capacity - Final iteration)

Table 5: Evaluation criteria Gaps and requirements

| Dimension | Evaluation Criteria | Indicators / Measures | Data Source |
|---|-----------------------|--|---------------|
| Prioritisation of requirements for European biotoxin management | Ranking of importance | % rating "important" or "very important" | Questionnaire |

Based on the rating of the participants, the requirements were ranked according to their perceived importance.

Additional points: Requirements that became obvious during the observation of the TTX and were noted by observers are reported as well and will feed to D2.4 (A UCPM biotoxin response capacity - Final iteration).

3.1.4 Decision making /interagency cooperation

Related Work package and task: WP6 Validation trials and intersectoral inter-operability, T6.5: Design and develop a reproducible biotoxin TX Toolbox

Purpose: To assess how decisions were taken, what were the main influencing factors and how important interagency cooperation was considered.

Table 6: Evaluation criteria CONOPS decision-making and interagency cooperation

| Dimension | Evaluation Criteria | Indicators / Measures | Data Source |
|--------------------------|--|--|-----------------------------|
| Responsibility | Active contribution to decision-making | %in the core group (on the table) that took decisions | Questionnaire |
| Informed decision making | Decisions are taken based on defined information | % indicating that decisions adapted as new information was available % stating that uncertainties were identified and discussed % stating that available information was a main factor influencing decisions | Questionnaire, Observations |

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|-------------------------|---|--|-----------------------------|
| Interagency cooperation | Importance of interagency cooperation | % stating that interagency cooperation was a main factor influencing decisions | Questionnaire, Observations |
| Available information | Availability of information for decision-making | % stating that information was available ("yes" or "rather yes") | Questionnaire |

3.1.5 Technological solutions

Related Work package and task: WP3 Detection, sampling, and identification of biotoxins and WP4 Solutions to reduce risk and harm, different tasks

Purpose: To assess the potential of the EMBRACE solutions that were presented during the TTX

Table 7: Evaluation criteria technological solutions

| Dimension | Evaluation Criteria | Indicators / Measures | Data Source |
|------------------------------------|---|------------------------------------|---------------------------|
| Biotox Alerting System | Potential use during biotoxin incidents | Qualitative assessment | Scenario-based discussion |
| BioRA | Potential use during biotoxin incidents | % rating "very useful" or "useful" | Questionnaire |
| BRSH | Potential use during biotoxin incidents | % rating "very useful" or "useful" | Questionnaire |
| DMA field detector | Potential use during biotoxin incidents | % rating "very useful" or "useful" | Questionnaire |
| pBDi (portable detection platform) | Potential use during biotoxin incidents | % rating "very useful" or "useful" | Questionnaire |
| BreathDraw | Potential use during biotoxin incidents | % rating "very useful" or "useful" | Questionnaire |

3.1.6 Assessment of trial

Related Work package and task: WP6 Validation trials and intersectoral inter-operability, Task T6.2 Table-top based Trial

Purpose: To assess the potential of the TTX to serve as training environment in the context of the EMBRACE project

Table 8: Evaluation criteria trial

| Dimension | Evaluation Criteria | Indicators / Measures | Data Source |
|-----------|---------------------|-----------------------|-------------|
|-----------|---------------------|-----------------------|-------------|

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| | | | |
|--------------------------|---------------------------|---|-------------------------|
| Clear setting | Well transported scenario | % stating that scenario was explicitly communicated (yes or rather yes) | Questionnaire |
| Responsibility | Clear roles | % stating that roles were clearly defined (yes or rather yes) | Questionnaire |
| Goals of EMBRACE | Project understanding | % stating that they understand the goals of EMBRACE | Questionnaire |
| Benefit for participants | Expressed key takeaways | No quantitative indicators, but qualitative summary of results | Questionnaire, hot wash |

4 RESULTS

4.1 Concept of Operations (CONOPS)

4.1.1 Relevance of CONOPS

The CONOPS was not directly used by the participants in order to avoid influencing their decision-making process. Therefore, five observers noted the decisions and activities that were taken during the exercise on observation protocols (see 6.1) In the analysis, the noted actions were compared with the proposed activities, the goal and output of every phase in the CONOPS.

The CONOPS has one more phase (7 - Evaluation) which could not be tested during the exercise as it ended with Phase 6 (Recovery).

The relevance was determined by comparing the decisions made during the observation period (as recorded in the observation logs and the decision log) with the CONOPS. This involved assessing whether the objective and the desired outcome had been achieved. The key activities listed in the CONOPS were also reviewed and supplemented where necessary.

4.1.1.1 Phase 1 – First Indication

| Phase | Goal | TTX | Output | TTX | |
|---|---|-----|---|------------|--|
| 1 – First Indication | Recognition of a signal that may indicate a biotoxin-related concern (awareness). | ✓ | Confirmed suspicion requiring further investigation | ✓ | |
| Activities mentioned in CONOPS | | | | TTX | Comments |
| Research reported symptoms | | | | ✓ | Already in scenario outline |
| Document and report unusual cases (symptoms without an obvious explanation) | | | | ✓ | Activation of mass casualty case as many emergency calls from people with different symptoms |
| Involve the appropriate medical authorities | | | | ✓ | Hospital, emergency services and regional warning center alarmed |
| Activities not mentioned in CONOPS | | | | | |
| There were some more activities going on, but they were specific to the type of incident on a train and cannot be generalised for the CONOPS. | | | | | |

Additional discussion points specific to the scenario:

At this stage no biological incident was suspected, but the situation was very unclear and many questions not related to a biological incident, but to a general dangerous emergency situation were considered:

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- Shall the doors of the train be kept closed?
- Who shall be informed as the incident happened on the border of two regions?
- Where are safe spaces? Shall the train station be closed?
- How many people are on the train? Who are the persons? This information is not available as reservations are not required. Only an estimation from the train attendant was available.
- How many people will be transported to the hospital?

It has to be clear whether it was an intentional or unintentional scenario to define responsibilities. There was some unclarity on who should inform the military (and if should be informed) about the CBRN incident.

4.1.1.2 Phase 2 – Initial Assessment

| Phase | Goal | TTX | Output | TTX |
|---|--|-----|---|------------|
| 2 – Initial assessment | Is the signal relevant enough to continue investigation and start a specific response? | ✓ | Confirmed suspicion that requires structured verification | ✓ |
| Activities mentioned in CONOPS | | | | TTX |
| Take samples | | | | ✗ |
| Collect additional information from health institutions | | | | ✓ |
| Seek expert advice | | | | ✓ |
| Test for specific toxins | | | | ✗ |
| Identification of potential exposure pathways | | | | ✓ |
| Identify additional patients/affected populations | | | | ✓ |
| Conduct contact tracing | | | | ✗ |
| Isolate affected individuals | | | | ✓ |
| Activities not mentioned in CONOPS | | | | |
| Incident scene is closed by the police | | | | |
| Notification to people in the area to stay at home. | | | | |

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Additional discussion points specific to the scenario:

- Should people living in the area be alarmed to stay at home or would that cause panic? There was the decision to notify them to stay at home as the situation was “unclear, but under control”.
- Should PPE be worn by persons at the scene? Decision was no due to lack of evidence.
- In the hospitals there is an internal alarm and no personal is allowed without protective equipment anymore.

Comment to CONOPS:

The activities “Collect additional information from health institutions” and “Seek expert advice” are overlapping. The situation seemed in this specific scenario to unclear to already start taking samples and do testing.

It was difficult to realise the change from Phase 2 to Phase 3 as many things happen at the same time and

4.1.1.3 Phase 3 – Verification

| Phase | Goal | TTX | Output | TTX | |
|--|--|-----|---|------------|---|
| 3 – Verification | Confirm whether this is an actual biotoxin event and determine the need for specific, credible and operational activation. | ✓ | Implemented response measures, active inter-organisational coordination, and a continuously updated situational picture | ✓ | |
| Activities mentioned in CONOPS | | | | TTX | Comments |
| Take samples | | | | ✓ | CBRN experts take samples |
| Conduct laboratory analysis | | | | ✗ | Not discussed |
| Collect structured and standardized information | | | | ✓ | |
| Identify exposure pathways | | | | ✓ | Already known |
| Conduct toxicological risk assessment | | | | ✗ | Not discussed |
| Coordinate laboratory capacities and workflows | | | | ✗ | Not discussed |
| Coordinate with law enforcement | | | | ✓ | Police is anyway at place |
| Decide on appropriate PPE | | | | ✗ | Suggestion by BTF, but no final decision taken |
| Secure the site, limit access, collect contaminated material | | | | ✓ | Already done in Phase 2 for security reasons |
| Communicate with the public (including uncertainty) | | | | ✓ | Already done in Phase 2 (see discussion points) |
| Secure evidence and manage the site as a potential crime scene | | | | ✓ | |
| Activities not mentioned in CONOPS | | | | | |
| Seek expert advice: BTF was consulted | | | | | |

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Additional discussion points specific to the scenario:

The BTF was consulted to find out more about the possible toxin and necessary measures. It was proposed that first responders should wear full respiratory protection, but there was no final decision by the participants.

Can not affected people leave the scene? As it is clear that it is a biotoxin which cannot be transmitted they are free to go home. Transport is organised for them.

Comment to CONOPS:

The part involving the laboratory analysis was not very much followed during the TTX. There was a strong focus on first responders and handling of the scene.

4.1.1.4 Phase 4 – Response

| Phase | Goal | TTX | Output | TTX |
|---|--|-----|---|---|
| 4 Response | – Management of the event through coordinated actions, protective measures, and communication to prevent further harm. | ✓ | Implemented response measures, active inter-organisational coordination, and a continuously updated situational picture | ✓ |
| Activities mentioned in CONOPS | | | TTX | Comments |
| Treatment of affected patients | | | ✓ | Firebrigade takes patient out of train |
| Restriction of access to affected areas | | | ✓ | This already happened in Phase 2 due to the specifics of the scenario |
| Identification of cause, source, and responsible actors | | | ✓ | |
| Public communication | | | ✓ | Started in Phase 2, now establishment of hotline |
| Decontamination measures | | | ✓ | Provision of spare clothes discussed, |
| Establishment of a task force (multi-agency coordination; technical investigation etc.) | | | ✗ | Information has been distributed to many stakeholders (ministries, hospitals, etc.), but not in a structured form |

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| Activities not mentioned in CONOPS |
|--|
| Collect evidence for later analysis. |
| Provide instructions on what to do to passengers depending on their situation. |
| Expert consultation on specifics of the toxin. |

Additional discussion points specific to the scenario:

Observation of weather forecast – rain could distribute the toxin and the water could intoxicate the sewer system.

What happens with the luggage and the personal belongings of people? How long will it take to decontaminate the luggage?

It is not clear whether DG HERA shall be activated to receive respirators.

Can people be forced to stay at home? Get legal advice on that topic.

Comment to CONOPS:

The name of the phase is misleading as response started in this scenario right at the beginning. Maybe rename in "biotoxin specific response".

In this scenario, testing started right now, whereas in the CONOPS it is already envisaged in Phase 3.

PPE provision was discussed at this stage. Full respiratory PPE should be used if the fire brigade is trained to use the equipment.

4.1.1.5 Phase 5 – Containment

| Phase | Goal | TTX | Output | TTX |
|---|--|-----|--|------------------------------------|
| 5 – Containment | Management of the event through coordinated actions, protective measures, and communication to prevent further harm. | ✘ | Stabilised public health situation (criteria for declaring the situation "stable" defined) | ✘ |
| Activities mentioned in CONOPS | | | TTX | Comments |
| Continuous monitoring of the situation | | | ✓ | |
| Reallocation and scaling of resources | | | ✓ | |
| Identification and management of remaining risks (including assurance that no further biotoxin exposure occurs) | | | ✓ | Environmental risks were discussed |
| Elimination of the exposure source | | | ✘ | Not discussed |
| Activities not mentioned in CONOPS | | | | |

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Medical debriefing of affected patients

Additional discussion points specific to the scenario:

The risk of water and wastewater contamination was discussed. For this topic, BTF was consulted. They advised to put chlorine to the wastewater treatment plant.

What can be told to people with symptoms? It is not easy to say how long recovery will take, depends very much on the dosage.

Everyone with any type of symptoms will think of poisoning -> this could be an impact for the health system. What is a critical symptom? Headache is not enough.

How can contact tracing of people who left early be established?

Decontamination of train / train station: It will socially not be acceptable to use the affected wagon ever again, therefore it is probably the best to destroy it.

Comment to CONOPS:

Feedback from observers: This stage was difficult to be distinguished from Phase 4. Also, the definition of "stable" did not happen during the discussion.

4.1.1.6 Phase 6 – Recovery

| Phase | Goal | TTX | Output | TTX |
|---|---|-----|--|-------------------------------|
| 6 – Recovery | Restoration of normal operations and support of long-term recovery. | ✓ | Routine operations reestablished and the case formally closed. | ✓ |
| Activities mentioned in CONOPS | | | TTX | Comments |
| Establish long-term measures (e.g. psychological support, environmental recovery) | | | ✓ | Psychological support hotline |
| Collect and consolidate all documented information | | | ✗ | Not discussed |
| Rebuilding of public trust | | | ✓ | |
| Economic recovery | | | ✗ | |

Additional discussion points specific to the scenario:

- How can it be assured that the train station is safe to use? How can public trust be rebuilt?

Comment to the CONOPS:

The discussion on what "stable" and "safe" mean where led at this stage and not in Phase 5.

4.1.1.7 Summary of results

The exercise showed that the CONOPS provides a relevant and comprehensive conceptual framework for managing biotoxin incidents, covering the key phases from first indication to recovery. Many of the activities foreseen in the CONOPS were reflected in the TTX discussions, confirming its overall relevance for structuring response planning and decision-making.

At the same time, the exercise demonstrated that the response process is not strictly linear in practice. Several activities foreseen for later phases, such as communication, access restrictions and response actions, were initiated early, while other activities, such as sampling and laboratory analysis, were discussed later or remained at procedural level within the limits of the tabletop format. Phase transitions were therefore often blurred, with activities occurring in parallel or being adapted to the evolving situation.

This finding suggests that the CONOPS should maintain its phase-based structure as a useful reference framework but should also more explicitly reflect the iterative and overlapping nature of real incident management. The train scenario also highlighted operational and logistical issues, including evacuation, infrastructure responsibilities and cross-regional coordination, which should be considered in future refinements. Overall, the TTX confirmed the conceptual value of the CONOPS while identifying practical improvements to make it more adaptable to operational reality

4.1.2 Assessment of key decision points

Figure 3 shows the relationship between how often specific decisions were taken (percentage of “yes” responses) and how clearly the need for those decisions was perceived (clarity score, where lower values indicate higher clarity). Decisions taken at the beginning of the incident are marked red, whereas those of a later stage (after confirmation of a biotoxin event) are coloured in orange.

Overall, the results indicate a consistently moderate-to-high level of implementation, with most decisions being taken by 60–70% of the participants. At the same time, the perceived clarity of need is relatively high across all items (mostly between 1.7 and 2.3), suggesting that respondents generally felt confident about when actions were required.

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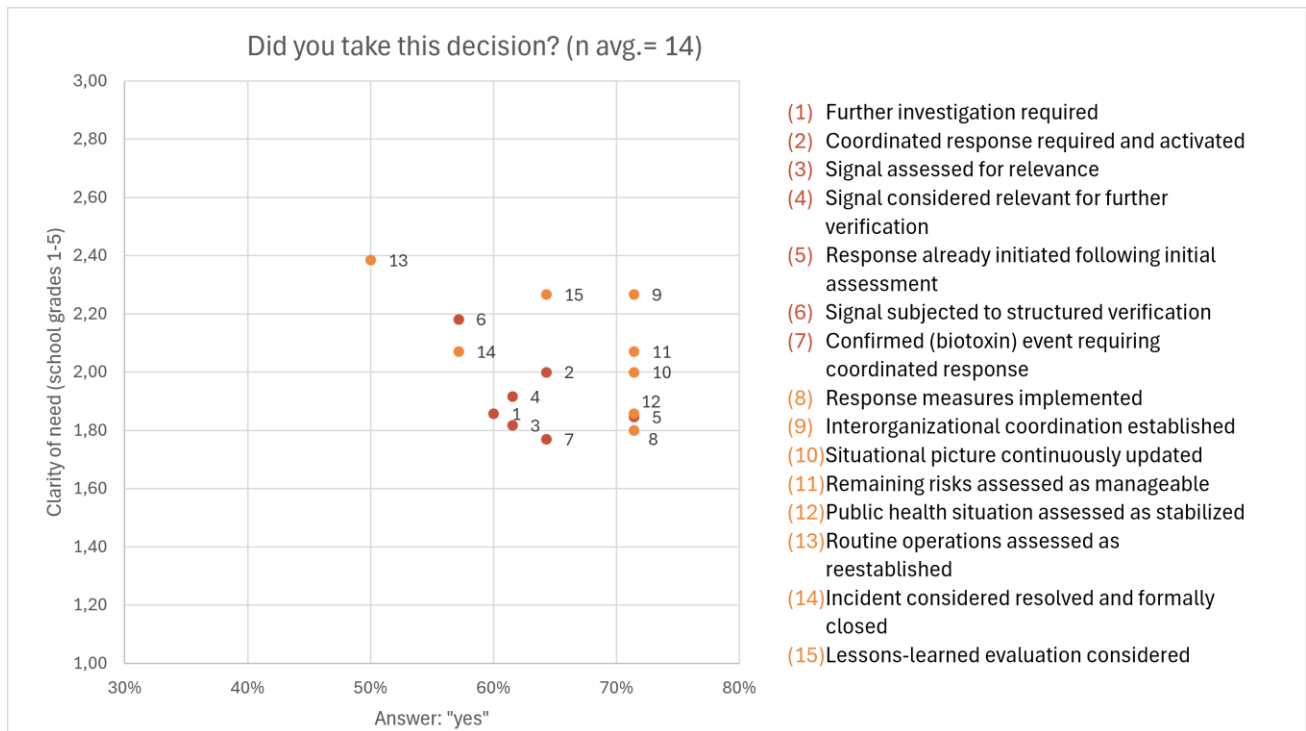


Figure 3: Assessment of decisions taken during the TTX based on the CONOPS

All decisions are rated by more than 50% as clear or very clear. However, most points are tightly clustered, which suggests that decisions are made at similar rates regardless of their type or phase. This could indicate a stable system but also hints at a lack of prioritization or differentiation between decisions of varying importance or urgency.

Decisions related to later stages, particularly "Routine operations reestablished" (13), stand out. This item shows the lowest implementation rate (~50%) and relatively low clarity, indicating uncertainty about when normal operations can be resumed. Similar patterns, though less pronounced, appear for closure and evaluation steps (e.g., 14 and 15).

The system appears robust in the acute response phase, where decisions are both clear and consistently implemented. However, there is less clarity and consistency in later stages, particularly regarding transition, recovery, and closure. This suggests that while immediate response mechanisms are well established, criteria for concluding incidents and returning to normal operations are less clearly defined.

4.2 Bioterror Task Force

Evaluation data were gathered via structured forms completed by BTF participants and aligned with the WP6 Evaluation Matrix. Dimensions assessed include operational performance, strategic value, communication, interfaces, risks, and contribution to the BRSB. Data sources were participant forms and matrix documentation.

The analysis is based on:

- Completed evaluation forms from three BTF participants and feedback notes taken during course of the TTX

- Qualitative insights from TTX observations and participant commentary (e.g., operational issues, system gaps).

Operational observations of the BTF feed into the chapter 5.2 “Specific observations from the BTF”.

4.2.1 Clarity of Role

Participants consistently reported their understanding of the BTF role as mostly clear, not “very clear.” The overall purpose was understood; however:

- Activation conditions were insufficiently defined.
- Responsibilities across phases of response were not explicit.

4.2.2 Timeliness of Activation

All participants indicated activation should occur after initial health signals, not earlier. This reflects:

- A preference for evidence-based rather than speculative activation.
- A need for an alert stage preceding full activation.

4.2.3 Operational Value

Operational value was rated moderate.

Strengths included:

- Improved distinction between confirmed and assumed information.
- Support for uncertainty management and sense-making.

Limitations:

- No acceleration of decision-making.
- Cross-sector integration insufficient to drive operational convergence.

4.2.4 Strategic Value

Strategic value ranged from partial to strong.

Examples of systemic gaps identified:

- Austria lacked rail-based biothreat response plans.
- Effluent capture and wastewater treatment protocols missing.
- Need for European-level expert integration mechanisms.

These observations highlight implications not only for Austrian national preparedness but also for EU-wide biotoxin response capability. The lack of harmonised CONOPS for rail-based biothreat events, alongside gaps in decontamination wastewater protocols, underscores the need for EU institutions to develop consistent standards, guidelines, and training resources. The BTF, supported by the BRSH, has a clear strategic role in bridging this gap by providing expert-driven guidance materials, scenario

templates, and decision-support tools that member states can adapt to their national systems. This exercise demonstrates that without such coordinated structures, member states will face recurring inconsistencies in hazard assessment, resource mobilisation, and interagency coordination during biotoxin events.

4.2.5 Independence & Credibility

BTF credibility rated as moderate. Issues included:

- Insufficiently formalised status.
- Limited recognition by national or EU bodies.

4.2.6 Cross-Sector Integration

Integration rated as partial, particularly in combining health, operational, forensic, and security perspectives.

4.2.7 Communication Impact

Communication impact was rated partial or low, with no coherent cross-sector messaging achieved.

4.2.8 Interface Quality

Interfaces were rated partially clear, including:

- Unclear relationships with ARC and national structures.
- Poison centre reach back occurred without defined protocols.

These interface issues were clearly reflected in how the scenario unfolded. Poison centre engagement occurred spontaneously rather than via a predefined or doctrinal pathway. Information-sharing between police, medical services, rail operators, and ARC remained unstructured for much of Day 1, which restricted the coherence of situational understanding. Similarly, queries related to potential international assistance were directed informally to individual BTF members instead of activating the BTF through an established mechanism. This demonstrated the absence of an operational architecture linking national authorities with EU-level expert networks, an essential requirement for the BTF's intended function.

4.2.9 BRSB Contribution

All participants identified multiple knowledge gaps requiring BRSB support, including:

- Links with poison centres.
- Biotoxin hazard management guidance.
- Practical decontamination guidance for certain agents

Although ARC stated that they would not use the BRSB in an operational setting, they recognised its potential strategic importance for preparedness activities. Users emphasised that BRSB could serve as a central knowledge base for developing national CONOPS, designing training modules, enhancing organisational readiness, and providing authoritative scientific background on biotoxins. This

reinforces that the BRSH should be positioned as a capability development platform rather than as a real-time operational tool, with content tailored to support planning, exercises, education, and expert decision-making preparation.

4.2.10 Risks & Limitations

Shared risks identified included:

- Unclear mandate
- Duplication with existing structures
- Overreliance on expert judgement

4.2.11 Overall Added Value

Added value assessed as moderate across all forms.

4.3 Gaps and needs validation

As part of the EMBRACE project, several gaps in European biotoxin management were identified and outlined in deliverable D2.2. Based on these findings, a set of requirements was developed to address key challenges across the biotoxin management cycle. Participants were asked to assess the importance of these measures by considering the exercise they had just completed, indicating how relevant they consider each action for improving European biotoxin management.

The requirements are grouped into seven thematic areas, which also structure the presentation of the results in the following sections. The assessment is based on a structured rating approach, allowing for a comparative analysis of perceived importance across different types of measures and domains.

4.3.1 Planning and procedures

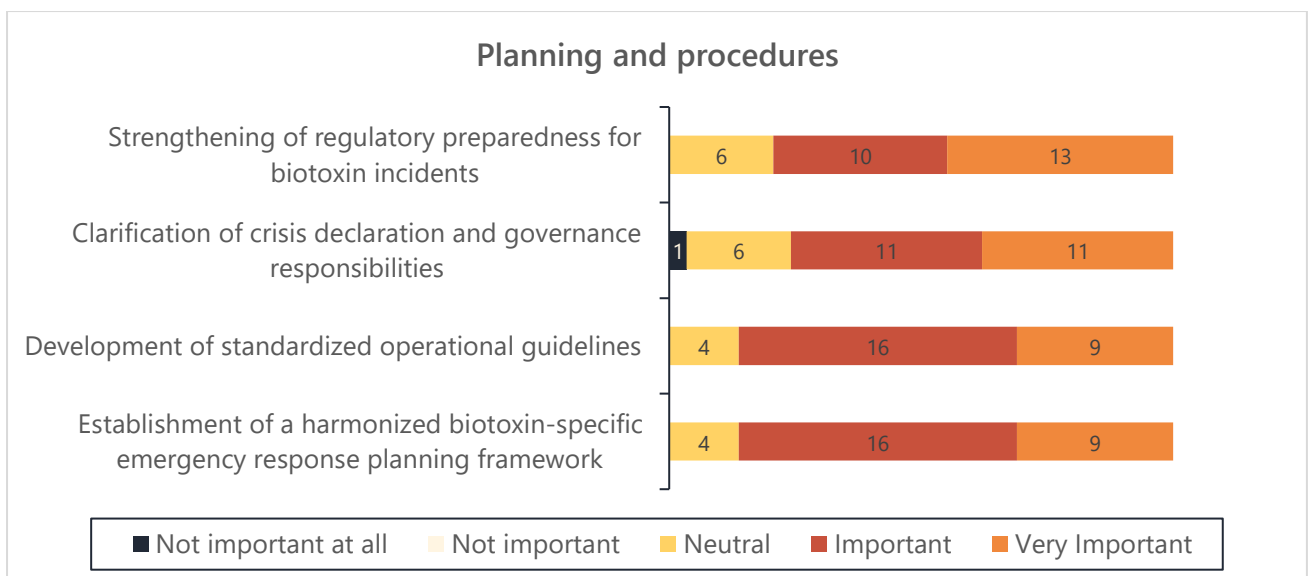


Figure 4: Requirements concerning planning and procedures

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The results indicate a very high level of agreement across all four measures, with almost no opposition, underlining their overall relevance (see Figure 4).

Ratings are strongly concentrated on higher levels of importance, reflecting a high degree of consensus among the experts. Operational and procedural measures, in particular the establishment of a harmonized biotoxin-specific emergency response planning framework and the development of standardized operational guidelines, receive especially consistent support.

In comparison, governance and regulatory aspects, namely the clarification of crisis declaration and governance responsibilities and the strengthening of regulatory preparedness for biotoxin incidents, show slightly greater variation in the assessments, although they are still predominantly rated as highly important. No substantial differences are observed between respondent groups, except for government agencies, which consistently rate regulatory preparedness as "Very important".

Overall, the findings suggest a particularly strong and uniform prioritization of operational measures, while governance-related aspects are assessed with slightly more variation, possibly reflecting differing perspectives or levels of familiarity.

4.3.2 Laboratory, detection and risk assessment

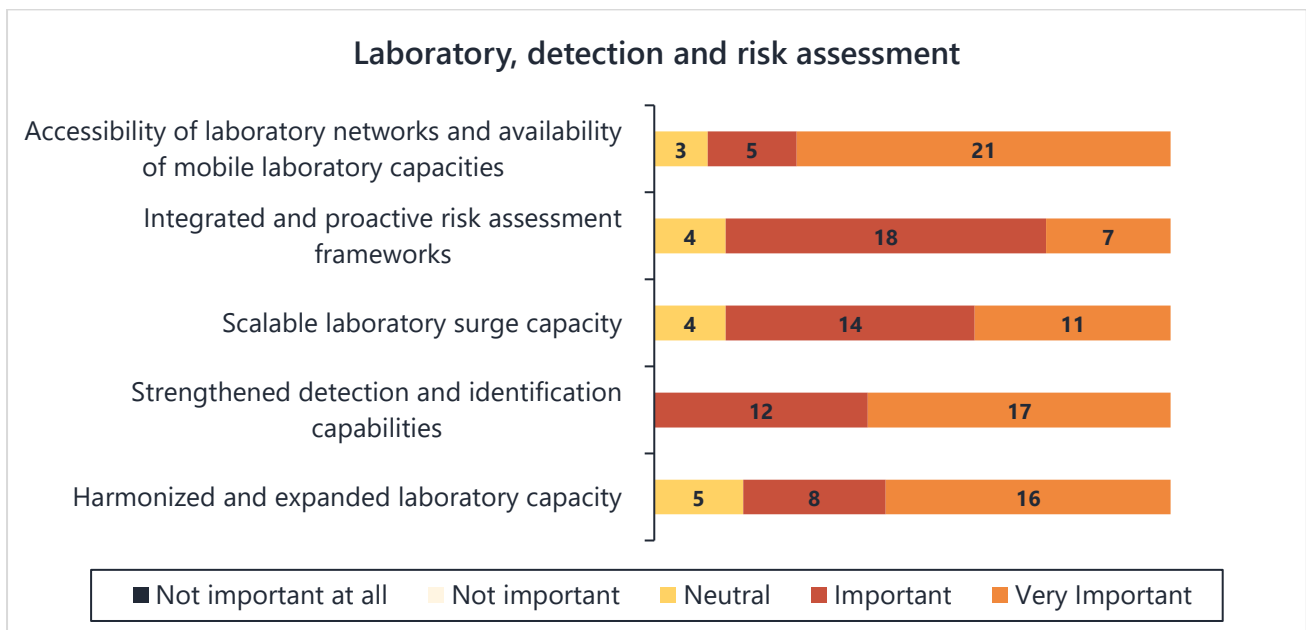


Figure 5: Requirements concerning laboratory, detection and risk assessment

The responses depicted in Figure 5 reflect consistently strong support for all assessed measures, with no negative ratings recorded.

Particularly noteworthy is *Accessibility of laboratory networks and availability of mobile laboratory capacities*, which receives the highest number of "Very important" ratings (21), highlighting its perceived priority. A similarly strong level of agreement is observed for *Strengthened detection and identification capabilities*, with 12 "Important" and 17 "Very important" ratings and no neutral responses, indicating a clear and consistent recognition of its importance. The remaining measures also receive solid support, although with slightly more varied assessments. For *Integrated and proactive risk assessment frameworks*, "Important" (18) clearly outweighs "Very important" (7),

suggesting that the measure is considered relevant but less critical in comparison to more operational capacities.

Overall, the results point to a clear prioritization of operational and immediately deployable capabilities, particularly in relation to laboratory capacity and detection. More conceptual or systemic approaches, such as risk assessment frameworks, are likewise regarded as important, but are assessed with slightly less intensity and greater variation.

4.3.3 Coordination and management

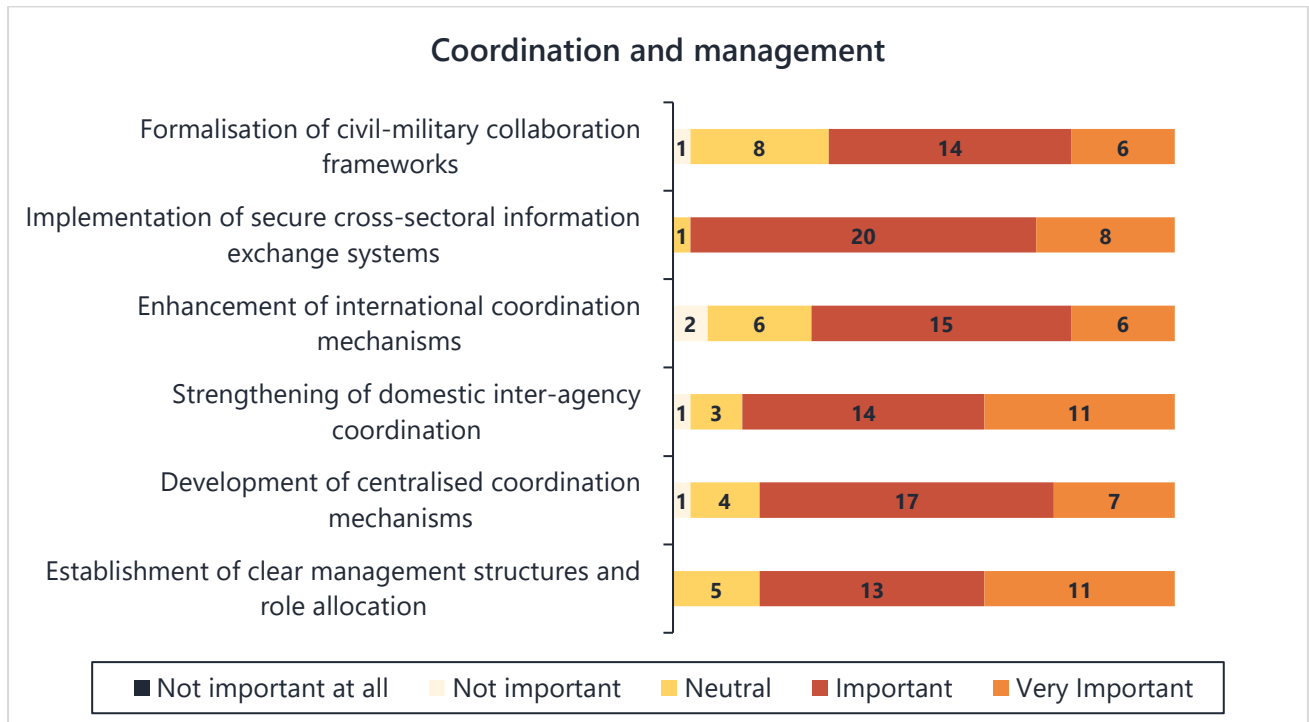


Figure 6: Requirements concerning coordination and management

The responses show a consistently high level of support across all assessed measures, with only isolated negative ratings that do not materially affect the overall pattern (see Figure 6).

Assessments are largely concentrated at higher importance levels. Secure cross-sectoral coordination mechanisms receive strong and balanced support (20 “Important”, 8 “Very important”), indicating a clear prioritization of such approaches. A similarly high level of agreement is observed for domestic inter-agency cooperation and the development of centralized coordination structures, reinforcing the importance of well-structured coordination at the national level. The establishment of clear management structures is also assessed positively, albeit with a moderate share of neutral responses.

Measures related to civil-military collaboration and international coordination show somewhat more varied responses, including higher shares of neutral ratings (8 and 6 respectively). The limited number of negative responses is confined to these areas.

Overall, the findings suggest that measures with a direct operational and national coordination focus are prioritized more consistently, while those involving international or civil-military dimensions are assessed with slightly greater variation, though still positively overall.

4.3.4 Resources and equipment

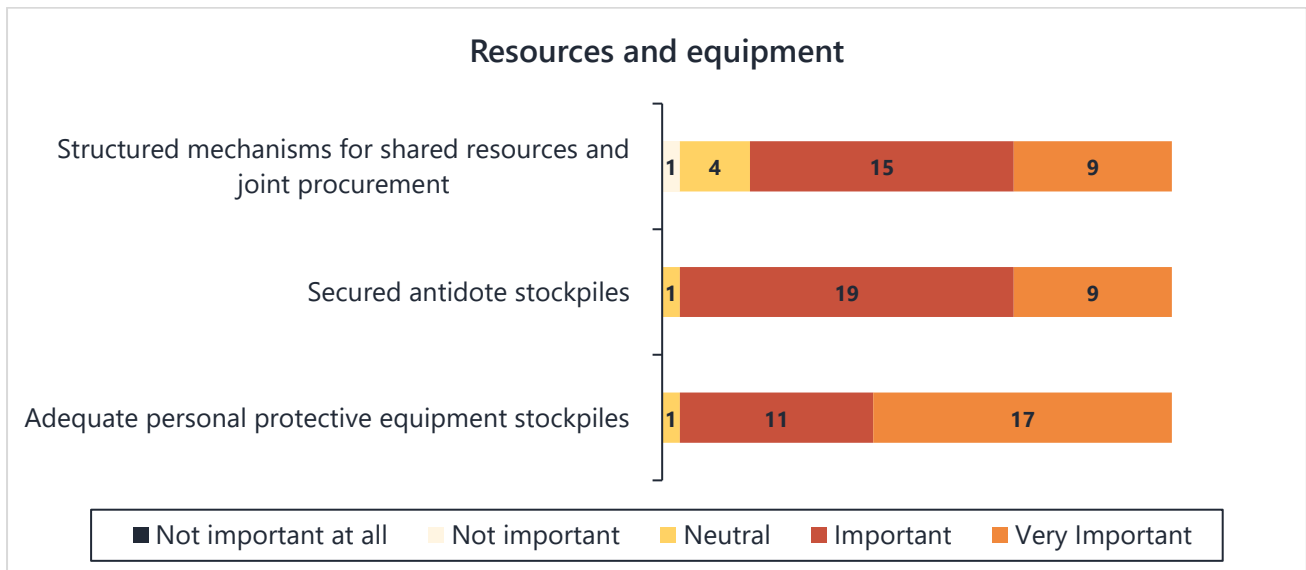


Figure 7-Requirements concerning resources and equipment

As depicted in Figure 7, clear emphasis is placed on measures related to the availability of critical resources, reflected in consistently strong assessments across all items. In particular, *Secured antidote stockpiles* (19 "Important", 9 "Very important") and *Adequate personal protective equipment stockpiles* (11 "Important", 17 "Very important") receive especially high levels of support, with the latter showing the highest share of "Very important" ratings and thus standing out as a key priority. *Structured mechanisms for shared resources and joint procurement* is also assessed positively, although accompanied by a slightly higher proportion of neutral responses (4).

Overall, the findings point to a clear prioritisation of measures that ensure the availability and reliability of essential resources. More structural or organisational approaches, such as joint procurement mechanisms, are likewise considered important, but are assessed with slightly greater reservation. The few neutral and negative ratings are limited to these aspects and remain of minor significance.

4.3.5 Funding and sustainability

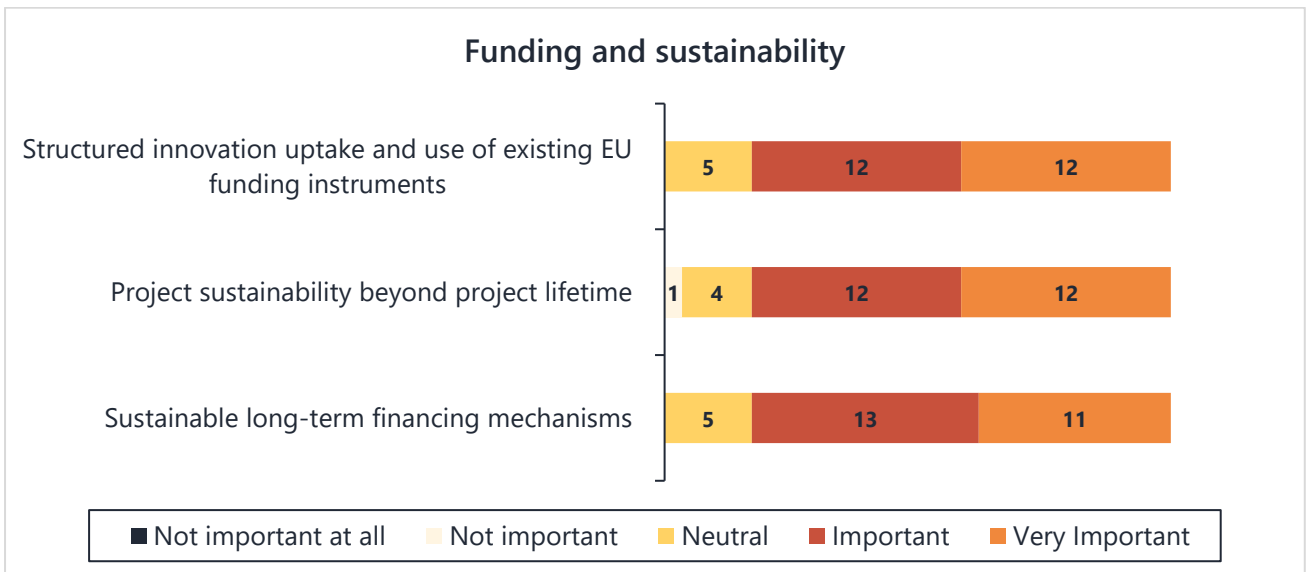


Figure 8: Requirements concerning funding and sustainability

A broadly consistent level of support is observed across all measures, with a relatively even distribution of responses and no clear dominance of a single rating category, as shown in Figure 8. On average, measures receive around 12 ratings each in both “Important” and “Very important”, indicating a balanced assessment. At the same time, the proportion of neutral responses (typically 4 to 5 per measure) is slightly higher compared to other thematic areas.

This suggests that all requirements are generally considered relevant and necessary. However, compared to more operational or capacity-related fields, the responses reflect a more cautious assessment, with priorities appearing less clearly differentiated and less strongly concentrated around individual measures.

4.3.6 Training and awareness

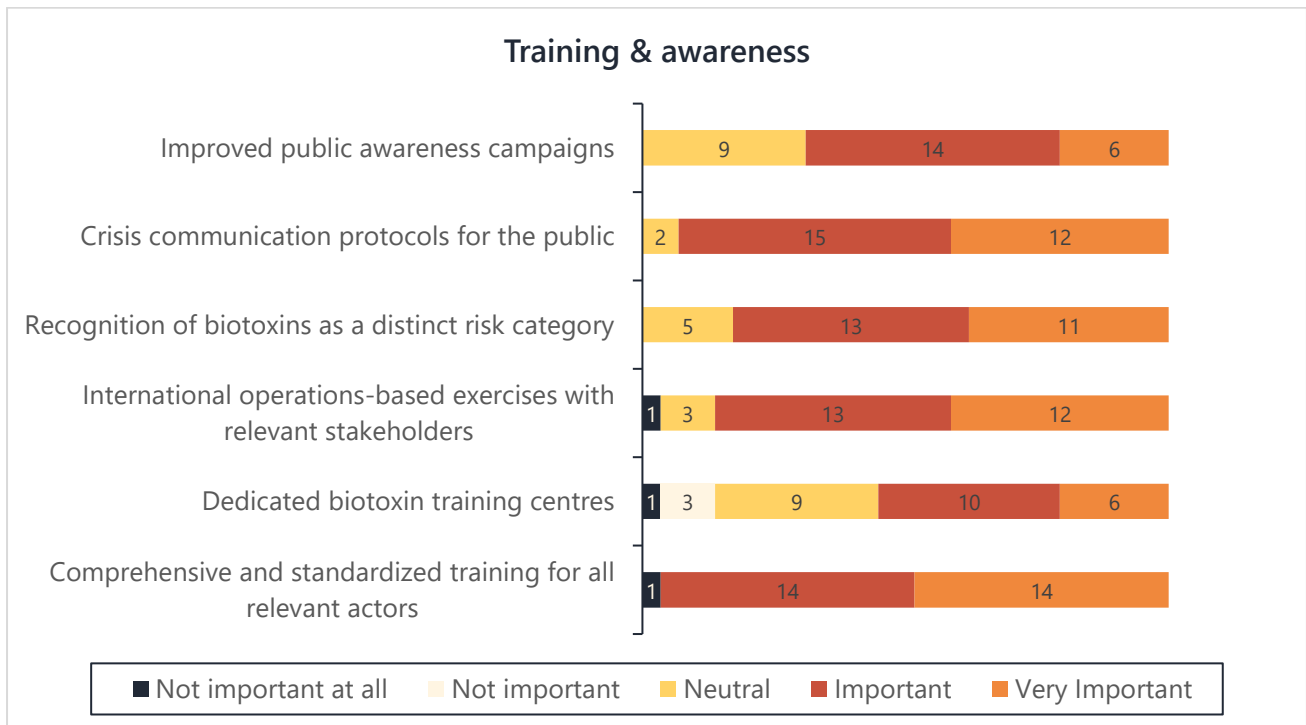


Figure 9: Requirements concerning training and awareness

Responses indicate strong overall support for the assessed measures, with consistently high importance attributed across the set, albeit with greater differentiation than in more operationally focused areas (see Figure 9).

Particularly high and consistent ratings are observed for *Comprehensive and standardized training for all relevant actors* (14 "Important", 14 "Very important") and *Crisis communication protocols for the public* (15 "Important", 12 "Very important"), underlining their perceived centrality for effective preparedness and response. Similarly positive assessments are found for *Recognition of biotoxins as a distinct risk category* (13 "Important", 11 "Very important") and *International operations-based exercises with relevant stakeholders* (13 "Important", 12 "Very important"), highlighting the importance of both conceptual framing and practical, cross-border exercise formats.

In contrast, *Improved public awareness campaigns* (9 "Neutral", 14 "Important", 6 "Very important") and *Dedicated biotoxin training centres* (9 "Neutral", 10 "Important", 6 "Very important") show higher shares of neutral ratings, indicating a less uniform prioritisation.

Overall, the findings point to a distinction between measures with immediate operational relevance, such as standardized training and communication, which are prioritised more consistently, and those with a more structural or long-term focus, which are assessed in a more differentiated manner. Measures with direct and broadly applicable impact appear to be considered more critical, whereas longer-term or indirect approaches exhibit greater variation in their evaluation.

4.3.7 Knowledge, networking and policy

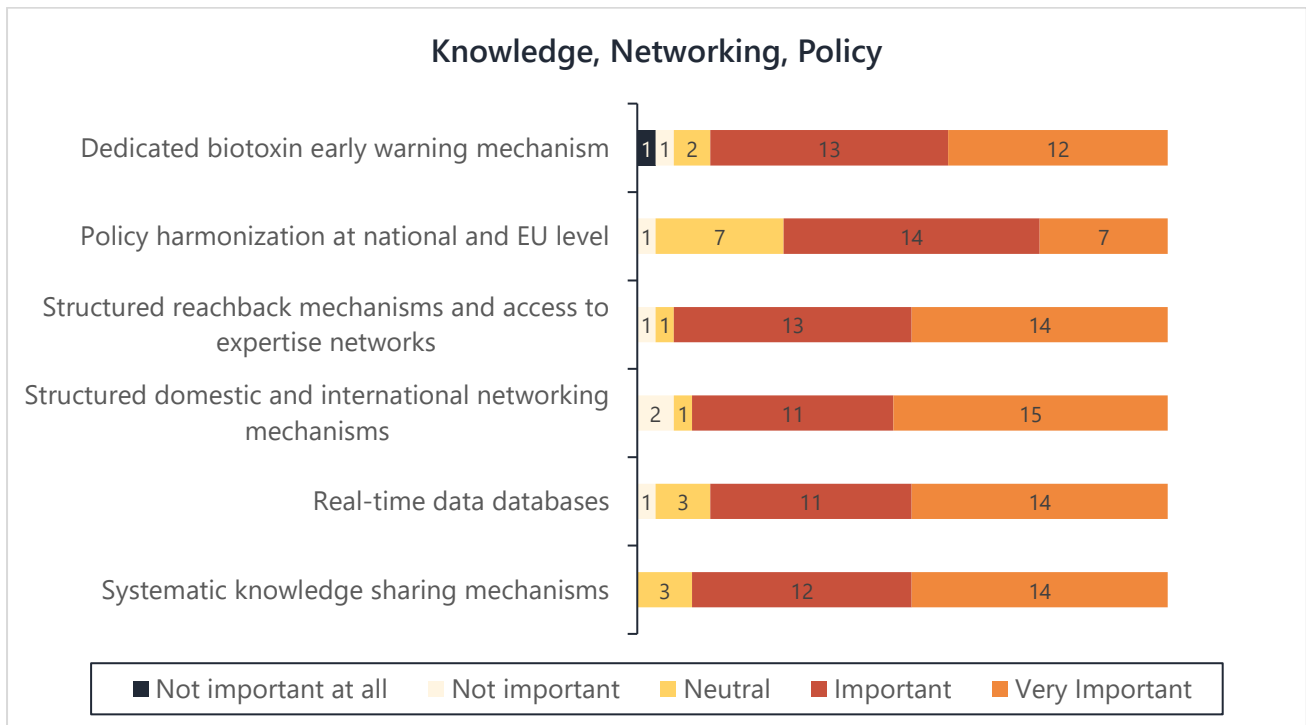


Figure 10: Requirements concerning knowledge, networking and policy

Assessments across the measures are consistently positive, with only minimal negative responses observed, as shown in Figure 10.

Strong and uniform support is evident for actions related to networking, data availability, and knowledge exchange, typically combining around 11 to 13 “Important” and 14 to 15 “Very important” ratings. A similar pattern is observed for the *Dedicated biotoxin early warning mechanism* (13 “Important”, 12 “Very important”), indicating its clear relevance.

In contrast, *Policy harmonization at national and EU level* is rated 14 times as “Important” and 7 times as “Very important”, alongside 7 neutral responses, pointing to a more moderate and less clearly prioritized assessment.

Overall, the findings highlight a distinction between functional, operationally oriented approaches, which are evaluated with a high degree of consistency, and more policy-driven actions, which are assessed with greater variation and a more cautious prioritization.

4.3.8 Conclusion

Overall, the results indicate a high level of agreement across all thematic areas, with nearly all measures considered relevant and only negligible levels of opposition. A consistent pattern emerges in the prioritisation of measures: those with a direct operational focus and immediate applicability, particularly in areas such as response planning, laboratory capacity, detection, coordination, and resource availability, are assessed most strongly and with a high degree of consistency. Measures that enhance functionality, interoperability, and practical response capabilities, including standardised procedures, coordination mechanisms, and data sharing structures, are likewise prioritised.

In contrast, measures of a more strategic, structural, or policy-oriented nature, including governance, regulatory frameworks, harmonisation, and long-term capacity-building initiatives, are also recognised as important but tend to be assessed with greater variation and less clearly defined prioritisation. This pattern is similarly reflected in measures related to international coordination and civil-military collaboration, which show a somewhat more differentiated evaluation compared to nationally oriented and operational measures.

Taken together, the findings suggest a clear emphasis on actionable and immediately deployable capacities, while longer-term, systemic, and policy-related approaches are supported but assigned a comparatively lower and more variable priority.

4.3.9 Limitations

While the results provide a clear indication of perceived priorities, several limitations should be considered when interpreting the findings. No consistent or systematic differences emerge between respondent groups, which limits the scope for subgroup-specific conclusions. In addition, the overall high level of agreement across measures reduces the ability to clearly distinguish between relative priorities. Neutral responses should be interpreted with caution, as the survey design did not include an option to skip questions, consequently, such responses may in some cases reflect uncertainty or limited familiarity rather than a balanced assessment. The relatively large number of measures assessed may also have contributed to respondent fatigue, potentially affecting the consistency of responses, although this risk was mitigated through randomization of question order. Finally, the results capture perceived importance only and do not account for aspects such as feasibility, implementation complexity, or resource requirements, which may influence the practical prioritization of measures.

4.4 Decision making process

4.4.1 Responsibility

A total of 13 individuals took on observer roles, meaning they did not actively intervene in the process but followed the discussion and outcomes. In contrast, 17 participants were seated at the table, representing the core group involved in the exercise setting. Figure 11 highlights the level of active participation in decision-making. Although 17 participants were present at the table, not all of them contributed to decisions. Some participants remained passive despite being part of the main group, while observers (13 individuals) were not involved in decision-making at all.

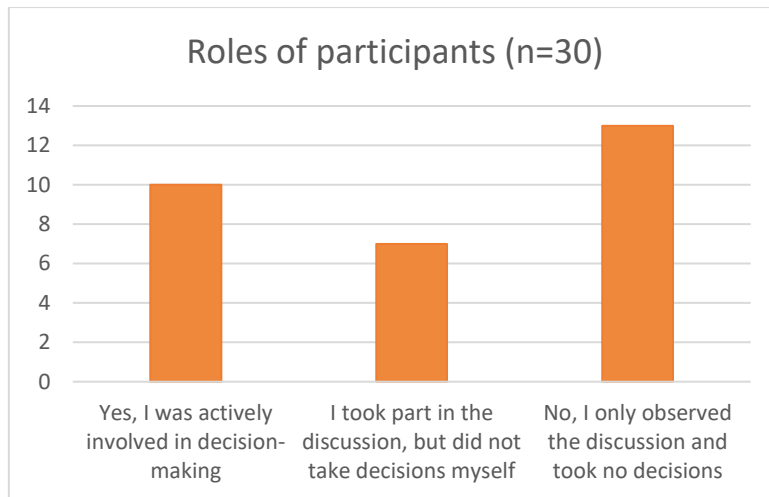


Figure 11: Participant Roles Overview

4.4.2 Informed decision making

Participants were generally positive about how well decision-making adapted as new information emerged. A summary of the answers can be found in Figure 12. The largest portion selected "Rather yes," with a substantial "Yes" segment as well. A few people were neutral or no opinion, but this is not a prominent part of the total answers. This indicates that the exercise demonstrated reasonable flexibility and responsiveness to evolving information.

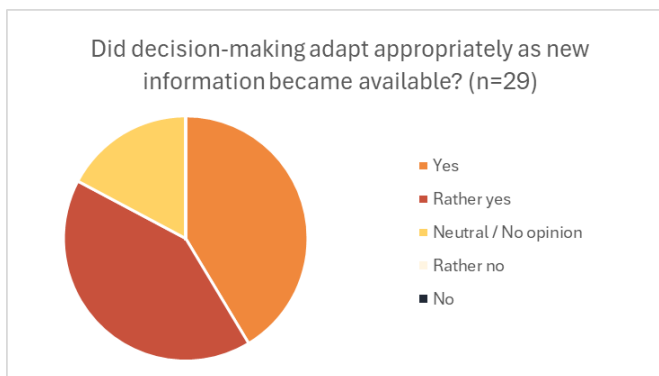


Figure 12: Informed decision making

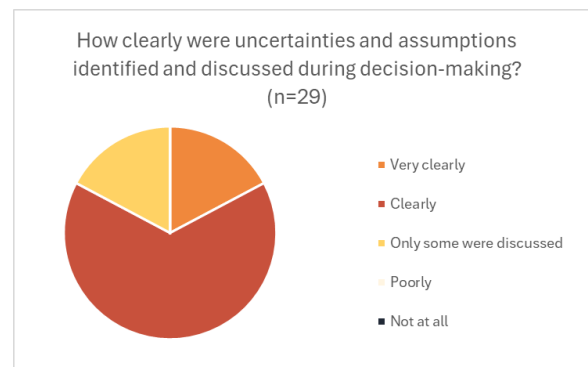


Figure 13: Clarity of Uncertainties and Assumptions

Another question (Figure 13) focused on how clearly uncertainties and assumptions were identified and discussed during the decision-making process. Most participants felt that these aspects were handled clearly, indicating a generally strong level of communication and reflection within the group. Only a few people stated that uncertainties were partially addressed or poorly discussed, pointing to a clear understanding of the situation and the respective assumptions behind. It has to be stated that this question was answered by both active participants and observers, which indicated a well communicated overall picture of available information and uncertainties.

Participants were generally positive about how well decision-making adapted as new information emerged. This indicates that the exercise demonstrated reasonable flexibility and responsiveness to evolving information.

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Across all questions, the results suggest that while a majority of participants felt reasonably well-informed and perceived the decision-making process as clear, a few persons felt not well informed or lacked a discussion of uncertainties. This aligns with the structure of the exercise, where not all participants were equally involved in decision-making, and some acted as observers or remained passive despite being present at the table.

However, available information was the key factor influencing decisions as highlighted in Figure 14. Available information stands out as the factor most frequently cited as influential, with approximately 25 out of ~31 respondents answering "Yes."

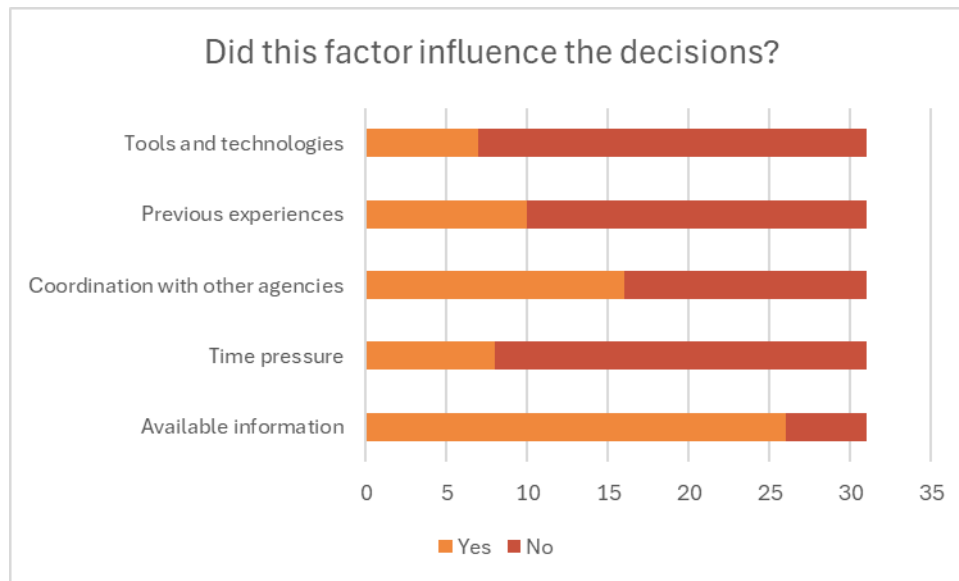


Figure 14: Factors influencing decision-making

The high rating suggests that information availability was a real and felt constraint or enabler during the exercise — participants were actively aware of what they knew and didn't know, and this shaped how they acted. It was not a background condition they took for granted, but a dynamic factor they had to actively work with.

This is consistent with Figure 15, where most participants said they felt reasonably well-informed at the start. The data together suggest that while the initial briefing was adequate, the flow, quality, or timeliness of information during the exercise remained a decisive variable throughout.

4.4.3 Interagency cooperation

The question regarding the importance of cooperation between organisations was asked as part of the question on factors influencing decision-making. In addition to "coordination with other agencies", the options included "available information", "time pressure", "previous experiences" and "tools and technologies" (see Figure 14).

Previous experiences and time pressure show relatively low "Yes" counts (around 8–10), suggesting participants did not feel these were dominant drivers of their decisions in this exercise.

Tools and technologies received the fewest "Yes" responses (~6–7), indicating it played the smallest role in shaping decisions. This can be explained by the type of exercise which was only discussion based and did not involve the use of any technologies.

With approximately half of all respondents identifying inter-agency coordination as an influencing factor, this is a significant result. It suggests that a substantial portion of participants were meaningfully affected (either positively or negatively) by how well coordination functioned across organisational boundaries during the exercise.

Available information and inter-agency coordination were the two factors participants most often identified as shaping their decisions. The prominent role of coordination underscores the importance of investing in joint procedures, clear communication channels, and shared decision frameworks, both in training design and in operational planning.

4.4.4 Available information

Figure 15 shows how active participants on the discussion table (n=16) perceived the availability of information at the start of the incident. The majority reported that they had either sufficient or rather sufficient information to make initial decisions. However, a few people indicated uncertainty or felt they lacked adequate information, suggesting that the initial situation awareness was uneven across participants.

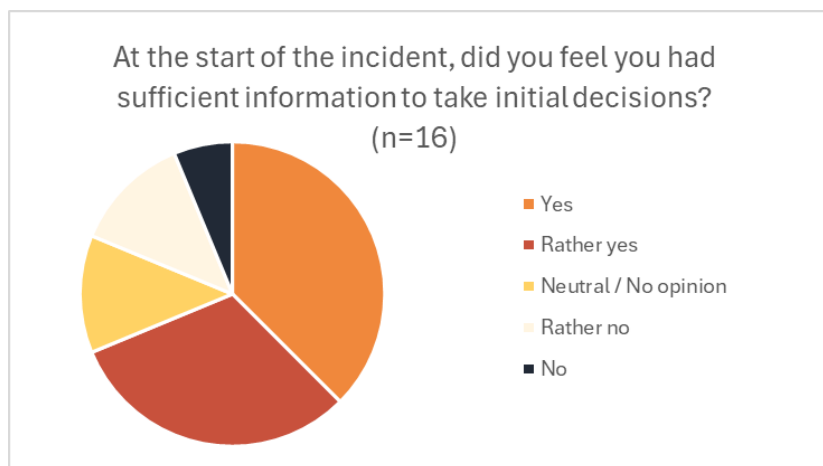


Figure 15: Initial Information Sufficiency

4.5 Biotox Alerting Mechanism

To evaluate the practical implications and potential of the Biotox Alerting Mechanism, a structured scenario-based discussion was employed. Participants were presented with a slight change of the initial scenario of day 1, in which the technology was assumed to be operational and in active use. This approach allowed stakeholders to engage concretely with the system's outputs and proposed workflows, without requiring a live deployment.

The discussion was documented in detail throughout, capturing contributions from all participants, including questions raised, concerns voiced, and suggestions put forward. Following the session, the notes were systematically reviewed and analysed, and the key findings were consolidated into a set of main results.

The discussion took place on the second day of the trial in the afternoon after the initial scenario was finished and is based on the following assumption: the scenario is the same as in the tabletop exercise, with the difference that a different agent with a longer incubation period has been used. The Biotox

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Alerting Mechanism, which is fed with data from hospitals and doctors, detects that some patients are exhibiting similar symptoms and sends an automated email (see Figure 16) to the State Health Directorate few days after the incident happened.

[EXERCISE] HOCHPRIORITÄRE BIOLOGISCHE WARNUNG / HIGH PRIORITY BIOLOGICAL ALERT [EXERCISE]

Region: Wien / Vienna
Substanz / Agent:
Alarm-ID / Alert ID: BTX-F0A2E7CC
Erstellt / Generated: 2026-03-13 15:02:39 (UTC)

Ämtliche Mitteilung
 Das BioTox-Alarmierungssystem hat mehrere Patientinnen und Patienten in der Region Wien mit hoher Wahrscheinlichkeit einer Exposition identifiziert. Die Bewertung basiert auf aggregierten Gesundheitsdaten und automatisierten Analyseverfahren.

| Patienten-ID | Krankenhaus | Substanz | Wahrscheinlichkeit | Zugeordnete Orte |
|--------------------------------------|--------------------|----------|--------------------|-------------------|
| 2b0fd8d3-2aa8-0d89-445c-4d84fe94a992 | Klinik Floridsdorf | | 77.7% | Vienna hbf, Train |
| 67273d5f-40f8-6411-4d88-f9dab7d11080 | Klinik Hietzing | | 97.5% | Vienna hbf, Train |
| a1a62058-1723-fbbb-a14f-10b4a8dcd8a2 | Klinik Ottakring | | 97.5% | Vienna hbf, Train |
| 6dca9387-f241-a395-c2f6-0f5ae5184685 | Klinik Donaustadt | | 64.1% | Vienna hbf, Train |
| 87385934-88e6-7e4a-805c-4fb41b686deb | Klinik Floridsdorf | | 77.7% | Vienna hbf, Train |
| 20c8c490-7032-99fe-1745-0aeca0919e85 | Klinik Ottakring | | 97.5% | Vienna hbf, Train |
| 5ec523e0-f1a6-7c61-ee48-e835c9ed288d | Klinik Favoriten | | 77.7% | Vienna hbf, Train |
| 50a3a656-0d00-c66a-47a3-a561f6b74668 | Klinik Favoriten | | 96.2% | Vienna hbf, Train |
| f1e7f344-ae56-aa94-0ff2-28ee14415ab0 | Klinik Favoriten | | 97.5% | Vienna hbf, Train |

Official Notification
 The BioTox Alerting Mechanism has identified multiple patients in the Vienna region with a high probability of exposure. This assessment is based on aggregated healthcare data and automated detection models.

| Patient ID | Hospital | Agent | Confidence | Associated Locations |
|--------------------------------------|--------------------|-------|------------|----------------------|
| 2b0fd8d3-2aa8-0d89-445c-4d84fe94a992 | Klinik Floridsdorf | | 77.7% | Vienna hbf, Train |
| 67273d5f-40f8-6411-4d88-f9dab7d11080 | Klinik Hietzing | | 97.5% | Vienna hbf, Train |
| a1a62058-1723-fbbb-a14f-10b4a8dcd8a2 | Klinik Ottakring | | 97.5% | Vienna hbf, Train |
| 6dca9387-f241-a395-c2f6-0f5ae5184685 | Klinik Donaustadt | | 64.1% | Vienna hbf, Train |
| 87385934-88e6-7e4a-805c-4fb41b686deb | Klinik Floridsdorf | | 77.7% | Vienna hbf, Train |
| 20c8c490-7032-99fe-1745-0aeca0919e85 | Klinik Ottakring | | 97.5% | Vienna hbf, Train |
| 5ec523e0-f1a6-7c61-ee48-e835c9ed288d | Klinik Favoriten | | 77.7% | Vienna hbf, Train |
| 50a3a656-0d00-c66a-47a3-a561f6b74668 | Klinik Favoriten | | 96.2% | Vienna hbf, Train |
| f1e7f344-ae56-aa94-0ff2-28ee14415ab0 | Klinik Favoriten | | 97.5% | Vienna hbf, Train |

Diese Nachricht wurde automatisiert durch das BioTox-Alarmierungssystem generiert. Bei Rückfragen kontaktieren Sie bitte: biotox-response@agency.gov

This message was automatically generated by the BioTox Alerting Mechanism. For inquiries or escalation, please contact: biotox-response@agency.gov

Figure 16: Screenshot of the Biotox Alerting Mechanism (basis of discussion)

4.5.1 Results of the discussion

The discussion outlined two potential responses to the email:

- 1) Test whether the suspected case can be confirmed with a single individual (“delay and confirm”) OR
- 2) Inform all hospitals that a Ricin intoxication may have occurred, providing details on symptoms and treatment without further specifics at that stage. (“take immediate action”)

A concern was raised about the risk of information leaking and causing public panic. An additional point was made regarding diagnostic difficulty: if someone travels from, for example, Venice and feels unwell, how easily could a diagnosis of the intoxication be reached? The system's AI mechanism was described as being able to identify such cases automatically though this was noted to depend on whether resources are available or otherwise engaged.

A question was directed at partner Prometech, who are developing the tool, regarding the source and reliability of the information contained in the system-generated email. It was indicated that the goal is to identify the key relevant facts, rather than provide exhaustive detail. It was emphasised that timing, not just symptoms, should be included in the notification.

A representative from the Ministry of Defence expressed that the information as presented would barely support decision-making, suggesting that a more structured format such as noting that a patient presents 4 out of 5 typical symptoms would be more actionable. Patterns of symptoms and prognoses could serve as a useful analytical tool.

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The hospital representative noted a practical constraint: laboratory analysis requires 9 samples, introducing an inherent delay. The analysis takes approximately 48 hours, and in that time a patient's condition would likely deteriorate faster than results could be obtained.

The BTF raised the scenario of patients presenting to general practitioners rather than hospitals, potentially at different stages of intoxication. It was noted that identifying patterns across such a series of patients with similar symptoms could increase awareness, particularly given that few general doctors have direct experience with this type of intoxications.

In Austria such a systematic correlation does not take place yet. It would only be noticed if many patients approached a single clinic, or if a fatality occurred. The hospital representative confirmed that unusual cases are investigated (e.g., a 25-year-old male dying of diarrhoea).

The BTF drew a parallel to the COVID-19 pandemic, where early identification was only possible because cases had already been identified in other countries underlining the value of international data sharing.

It was suggested to have a service layer showing whether other jurisdictions had also received similar alerts, to better understand the geographical scope of an event whether it is confined to Vienna or extends to other federal states. Geographical distribution could also provide clues about transmission routes, such as a railway line.

In terms of visualisation and data provision it was proposed to present the information in a manner like a weather forecast, which needs to be intuitive and easy to interpret (e.g., a rain probability above 50% prompts people to take an umbrella). The goal would be clear, actionable communication.

It was emphasised that a key piece of information to include in any alert is that symptoms can deteriorate very rapidly.

4.6 Other solutions

During the two days of the TTX, some of the technical solutions that are currently developed in the EMBRACE project were presented to the audience in a short presentation followed by a Q&A session. Questions were mainly about technical functionalities, reliability and market readiness. In the evaluation questionnaire that followed the TTX, there was one question related to the presented solution. The result is presented in Figure 17.

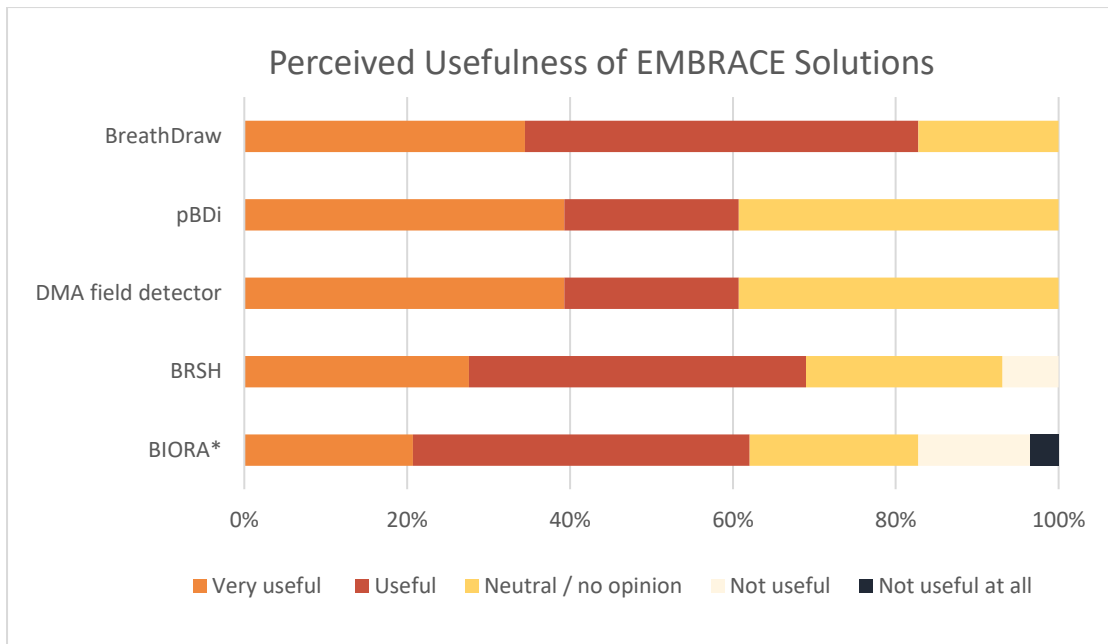


Figure 17: Perceived usefulness of the EMBRACE solutions (n=28), **Due to the timing of the session, the results of the BIORA tool were presented after the questionnaire was filled out, so participants had no full picture of the functionalities of the tool*

The results indicate that the EMBRACE solutions were generally perceived positively, with most responses falling into the “useful” or “very useful” categories. This provides encouraging initial feedback on the perceived relevance and potential applicability of the solutions for biotoxin incident management. However, as the TTX did not involve practical or operational testing of the technologies, these results should be interpreted as an assessment of perceived usefulness rather than a formal evaluation or validation of system performance. The findings will be used to inform refinement and preparation for the upcoming FTXs, where practical usability and operational added value will be assessed more directly

4.7 Trial evaluation

For the trial evaluation, three specific questions in the questionnaire asked about some aspects of the trial. They are summarized in the following sections. In addition, participants were asked about their key takeaways and main challenges. The results of their impressions are outlined in section 5, *Key Learnings for the participants*.

4.7.1 Clear setting

A clear majority of respondents felt the scenario and working hypothesis were communicated explicitly. Figure 18 shows the results of the respective questions in the post-exercise questionnaire. Overall, the results suggest strong agreement that the communication was clear and effective.

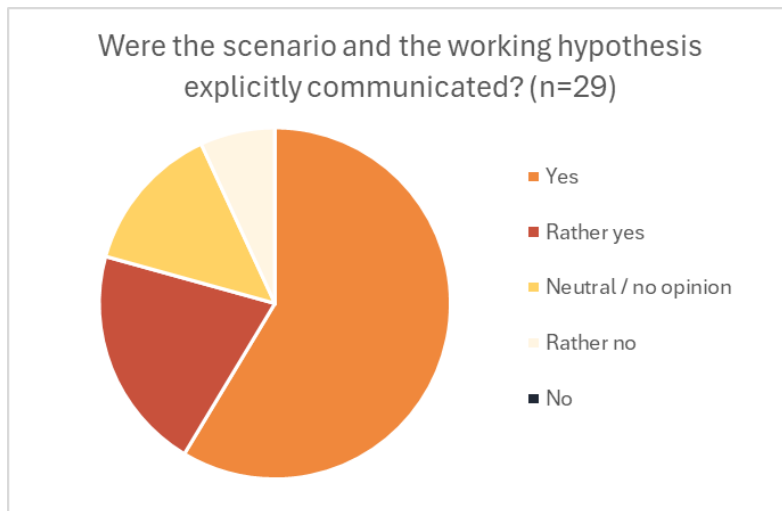


Figure 18: Communication of the scenario

4.7.2 Responsibility

The results indicate that a huge majority of the respondents felt roles were clearly defined and roles were well assigned to the participants.

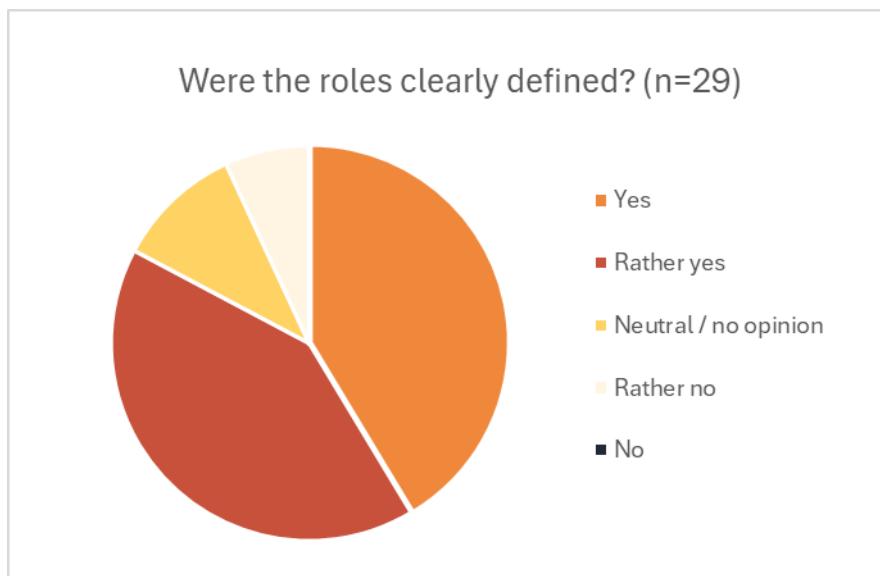


Figure 19: Definition of roles (n=29)

4.7.3 Goals of EMBRACE

The project EMBRACE was introduced at the beginning of the exercise, but the presentation did not go into detail in order not to influence participants with respect to any aspects of biotoxin management. The different solutions that are being developed within the project were presented in short demonstrations. However, even though only small parts of EMBRACE were shown to participants, they felt informed about the project. Figure 20 shows that most participants stated that they got a clear understanding of the project, and only 3 persons (10%) answered the question with "No".

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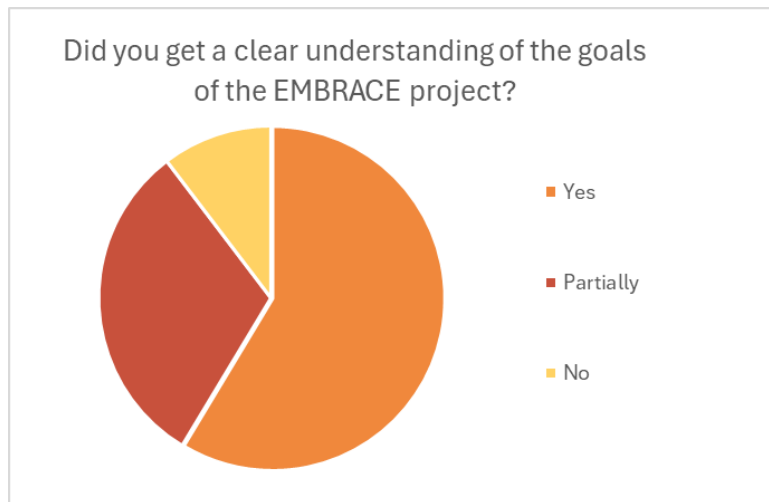


Figure 20: Goals of EMBRACE (n=29)

4.7.4 Key takeaways of participants

For this section, the results of the hotwash and the questionnaire were summarized to highlight main learning gaps in current procedures and some feedback on the exercise itself. The results can be found below in section 5.1 Participating organisations (TTX) *Key Learnings for the participants*.

5 KEY TAKEAWAYS AND RECOMMENDATIONS FOR THE FTX

The section on key takeaways and strategic insights is composed of four different sections highlighting the key learnings and the feedback of 1) participants of the exercise, 2) the BTF and 3) the observers of the exercise. In the last section, the findings are summarised as recommendations for the upcoming FTX.

5.1 Key Learnings for the participants

A key takeaway is the **critical role of communication and coordination**. Effective response depends heavily on clear, continuous, and structured communication between all stakeholders, including cross-border and multi-level cooperation (e.g. regional and national authorities). The exercise also reinforced that each agency's clearly defined responsibilities are essential for enabling timely rescue and treatment. Communication lines emerged as one of the central challenges. It remains unclear what would happen if, for example, a social media team were the first to identify a relevant incident. Establishing and formalising internal communication pathways between teams should be addressed.

Face-to-face networks are considered particularly important in the national context. The question was raised as to what networking and coordination structures are currently in place for higher security levels.

Another major learning concerns the **importance of sampling and technical capabilities**. Early sampling and analysis are crucial to identify the threat and guide response measures, while on-site equipment and operational readiness are necessary to act quickly. At the same time, practical aspects such as decontamination were underestimated, taking significantly longer than expected.

The exercise further showed that **biotoxins are not yet sufficiently embedded in operational thinking**. Many practitioners are unfamiliar with such scenarios, and existing procedures (e.g. train emergency protocols) often do not account for biothreats, highlighting a gap in preparedness.

The exercise served as a valuable opportunity to broaden perspectives and critically review existing protocols raising the question of whether current procedures are still fit for purpose. A key takeaway is the importance of proactive preparation: once an incident occurs, there is no time to search for contacts or emergency numbers. Raising awareness on this topic should be a priority going forward.

Several areas for improvement were identified. First, there is a clear **need to adapt and update SOPs** and response protocols to better reflect biotoxin scenarios. This includes integrating biothreats into existing sector-specific plans (e.g. railway response systems). While many generic protocols exist, there is a notable absence of procedures for specific, exotic threats for instance, regarding the handling and forwarding of samples.

Second, communication structures must be strengthened. This includes: establishing robust communication channels, developing checklists and pre-defined messages, and ensuring a structured flow of information for decision-makers. In addition, participants stressed the **importance of building and maintaining networks**, including regularly updated contact lists and stronger inter-agency cooperation frameworks. Some participating organisations noted that biotoxin scenarios fall outside

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their primary area of focus, making the subject matter particularly demanding and underlining the need for cross-institutional knowledge sharing.

Another key improvement area is **capacity building**. This involves more training, exercises, and practical experience, as well as increasing the visibility and awareness of biotoxin threats among practitioners. The need to “talk about it” and integrate the topic more actively into professional practice was repeatedly emphasized.

Several participants expressed concern that **current preparedness levels are insufficient**. The exercise highlighted gaps in awareness, coordination, and operational readiness, leading to the perception that systems are not as prepared as they should be for biotoxin incidents.

At the same time, these concerns were paired with a strong positive message: the **exercise and the broader project were seen as highly relevant and important for the future**. Participants emphasized that such initiatives are essential to close existing gaps, build experience, and strengthen overall preparedness.

Finally, there is a need **to improve how solutions and tools are shared with stakeholders**. It was expressed that outputs from the EMBRACE project should have received a more prominent role in the exercise and be introduced earlier and in a more practical, user-oriented way, allowing stakeholders to test and implement them. This is definitely a learning for the upcoming FTX. The afternoon session on the second day (where the Biotoxin Escalation Pathway tool was presented) was perceived by some participants as too abstract, suggesting that future exercises should maintain a stronger connection to concrete, practical situations throughout.

5.2 Specific observations from the BTF

In addition to evaluation form responses of the BTF, several operational constraints and system gaps emerged during the incident timeline:

- **Delayed Hazard Identification:** No sampling or agent detection discussions took place until 1 hour 48 minutes into the scenario, reflecting a reliance on symptomatic presentation rather than early analytical confirmation.
- **Restricted Access to Scene:** Police jurisdictional constraints prevented medical responders from accessing the train to treat casualties, slowing the overall pace of assessment and contributing to uncertainties about the threat environment.
- **Symptom-Driven Escalation:** As multiple casualties presented with respiratory symptoms, neurological impairment, dizziness, and confusion, Austrian medical personnel engaged their poison centre for threat identification. The poison centre’s initial assessment suggested a possible organophosphorus exposure based on observed symptoms.
- **Unclear Command and Control:** The arrival of multiple first responder organisations (rail staff, fire, police, medical teams) without a clear lead agency resulted in fragmented situational coordination and inconsistent information-sharing pathways.

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- **Insufficient PPE for Rail Responders:** Rail personnel had no personal protective equipment beyond basic respiratory protection, limiting their ability to safely conduct initial hazard mitigation or casualty management.
- **Absence of Rail-Specific CBRN Doctrine:** Regional authorities lacked dedicated protocols for managing CBRN incidents on rail infrastructure, creating ambiguity around decision-making responsibilities and escalation flows.
- **Lack of Effluent and Wastewater Decontamination Planning:** Austrian mass-casualty decontamination plans did not include effluent capture or wastewater treatment measures, creating environmental, legal, and operational vulnerabilities.
- **Delayed International Support Engagement:** At around 3 hours 15 minutes, ARC senior leaders began exploring international support. However, instead of activating the BTF formally, they sought ad-hoc guidance from individual BTF members, indicating a lack of clarity about how and when to engage EU-level expert mechanisms.
- **Enhanced Engagement Under New CONOPS (Day 2):** With the introduction of a revised CONOPS, engagement between ARC and the BTF improved, particularly in areas relating to casualty prioritisation, quarantine decisions, and biotoxin-specific decontamination guidance.

These operational insights complement the evaluation matrix data by illustrating how system-level gaps manifest in real-time decision environments.

5.3 Specific observations from the observers

Also, observers noted some weaknesses and the strengths of the processes related to the incident management that became evident during the exercise.

The exercise revealed several important strengths and weaknesses in how participants approached the situation. On the positive side, participants were **able to identify key signals at an early stage**, including symptoms, the number of casualties, and the potential involvement of a toxic agent. There was also a **clear awareness of uncertainty**, particularly regarding the nature of the substance, the appropriate use of PPE, and the possible source of contamination.

However, several weaknesses became evident. Although uncertainty was recognized, it was not explicitly framed or clearly communicated, which limited shared understanding. Participants did **not consistently develop or articulate clear working hypotheses**, such as the type of toxin or the likely exposure pathway, and there was little exploration of alternative scenarios. As a result, **some decisions** such as escalation measures or PPE use **were made without transparent justification**. In addition, the **response tended to shift too quickly toward action**, for example informing policy stakeholders, before a sufficiently robust situational picture had been established. Overall, this approach runs counter to the objective of the TTX, which emphasizes transparent reasoning and hypothesis-driven decision-making.

The exercise demonstrated **active engagement and Austrian multi-agency participation**, but revealed **gaps in structured decision-making**, coordination clarity, and escalation discipline. Decision-making was often reactive rather than structured, with limited explicit justification and inconsistent handling of uncertainty.

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No structured data collection took place during the exercise. Decisions regarding the measures were mostly taken by a small number of participants without a clearly defined basis for decision-making.

The exercise made participants aware that multi-agency incidents are the norm rather than the exception. If coordination is already perceived as influential in an exercise setting, it is likely to be even more critical in an actual incident. Unlike factors such as time pressure (which is inherent to incidents) or previous experience (which accumulates slowly), **coordination practices can be directly trained, structured, and improved through exercises making this an important design focus for future iterations.**

A wide range of actors was involved, including EMS, police, public health authorities, and specialized units, demonstrating a broad and relevant multi-agency response. There was also some degree of information sharing between these stakeholders, indicating an initial level of cooperation.

However, significant **coordination challenges** became apparent. The overall coordination structure remained unclear. Early in the response, leadership and decision-making authority were not clearly defined, which contributed to inconsistencies in the flow of information. As a result, not all agencies shared the same level of situational awareness, and roles and responsibilities were not clearly assigned. Altogether, this points to a weak alignment with the objective of maintaining a common operational picture across all involved agencies.

5.4 Recommendations for FTX

The main recommendation by all stakeholders is:

- **Use of EMBRACE solutions:** Several stakeholders mentioned that the demonstration of solutions developed during the project would have been very interesting for them. In this TTX, mainly organisational aspects and guidelines developed within the first year of the project (BTF, CONOPS, Gaps and needs) were assessed. The EMBRACE solutions were presented to the participants but not actively considered within the scenario and the exercise.

Therefore, the other recommendations relate to the decision-making process and crisis management, less to practical implications for the field exercise:

- **Preparedness is critical:** Key contacts and procedures must be clearly defined and readily available in advance, as there is no time to search for information during an incident. At the same time, existing protocols should be regularly reviewed to ensure they remain fit for purpose.
- **Internal communication needs to be formalised:** This becomes especially problematic when different units identify or respond to the same incident in parallel. Clear and established communication structures are therefore essential.
- **Lack of specific procedures:** Especially unusual or rare threats, such as biotoxin-related scenarios or sample handling processes lack specific procedures. This indicates a need for the targeted development of more specialised protocols.
- **Use of tangible solutions:** A strong practical focus is essential for effective learning. Content and scenarios (as the deviation of the original scenario on day 2 to assess the Biotox Alerting Mechanism) were too abstract and were perceived as less useful, suggesting that future exercises should remain closely aligned with realistic and practical scenarios.

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Overall, the exercise showed that coordination is a trainable capability with a decisive impact on operational effectiveness. It should therefore be a central focus of future exercises.

6 ANNEX

6.1 Observation protocol

| PHASE X | | | TIME |
|---|-----------------------------------|--------------------------------------|--|
| Key decisions in this phase: | Decision | Who was involved in decision making? | Basis for decision |
| | | | |
| | | | |
| | | | |
| | | | |
| Discussion points (overall): | Involved roles (overall): | | Interaction between agencies (communication, information sharing, etc.): |
| Unclarities, problems, issues observed: | COMMENTS / REMARKS / NOTES | | |
| | | | |

6.2 Participating organisations (TTX)

- Red Cross EMS (Incident Command, triage, patient flow, transport coordination)
- Fire Brigades (HAZMAT support: scene safety, zoning/cordons support, decon capability coordination – high level)
- Police CBRN experts (hazard assessment advice, evidence interface, scene security)
- Ministry of Interior (Mol) (situational awareness, inter-agency coordination, strategic comms alignment)
- Ministry of Health (public health decisions, risk communication oversight)
- AGES (technical public health advice, case definition support, lab pathway interface – high level)
- WIGEV (hospital network – capacity, ED protection, reporting)
- KAGES/KRAGES (hospital networks – capacity, ED protection, reporting)
- ÖBB (rail operator – operations, door control, passenger management, rail safety)

6.3 Questionnaire

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Thank you for participating in the EMBRACE TTX in Vienna! We highly appreciate your support of the project. If you would like to know more about EMBRACE, please visit <https://embracebiotoxhub.eu/>.

To capture your impressions on the exercise, we would like to ask you to fill out this post-exercise questionnaire for participants. It is divided into four sections:

1. Questions about the decision making process during the exercise
2. Questions about requirements in European biotoxin management
3. Final remarks on the exercise
4. Only for BTF: Role of the BTF

There are 38 questions in this survey.

1) Decision-making process

We would like to know more about the decision-making process during the EMBRACE TTX in Vienna.

1.1. What was your role during the TTX?*

Choose one of the following answers

Please choose **only one** of the following:

- Public health authority
- Government agency
- General advisor
- Biotoxin Task Force (BTF)
- First responder representative
- Technology provider
- Observer
- Other

1.2. Did you take any decisions during the exercise? *

Choose one of the following answers

Please choose **only one** of the following:

- Yes, I was actively involved in decision-making
- I took part in the discussion, but did not take decisions myself
- No, I only observed the discussion and took no decisions

1.3. At the start of the incident, did you feel you had sufficient information to take initial decisions?

Only answer this question if the following conditions are met:

Answer was 'I took part in the discussion, but did not take decisions myself' or 'Yes, I was actively involved in decision-making' at question '[G00Q03]' (Did you take any decisions during the exercise?)

Choose one of the following answers

Please choose **only one** of the following:

- Yes

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- Rather yes
- Neutral / No opinion
- Rather no
- No

1.4. How clearly were uncertainties and assumptions identified and discussed during decision-making?

Choose one of the following answers

Please choose **only one** of the following:

- Very clearly
- Clearly
- Only some were discussed
- Poorly
- Not at all

1.5. Did decision-making adapt appropriately as new information became available?*

Choose one of the following answers

Please choose **only one** of the following:

- Yes
- Rather yes
- Neutral / no opinion
- Rather no
- No

1.6. Please choose the appropriate response for each item:

| | Did you take this decision? | | How clear was the need for this decision? | | | | |
|--|-----------------------------|----|---|-------|---------|-----------|------------------|
| | Yes | No | Very clear | Clear | Neutral | Not clear | Not clear at all |
| Further investigation required | | | | | | | |
| Coordinated response required and activated | | | | | | | |
| Signal assessed for relevance | | | | | | | |
| Signal considered relevant for further verification | | | | | | | |
| Response already initiated following initial assessment | | | | | | | |
| Signal subjected to structured verification | | | | | | | |
| Confirmed (biotoxin) event requiring | | | | | | | |

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| | | | | | | | | |
|---|--|--|--|--|--|--|--|--|
| coordinated response | | | | | | | | |
| Response measures implemented | | | | | | | | |
| Interorganisational coordination established | | | | | | | | |
| Situational picture continuously updated | | | | | | | | |
| Remaining risks assessed as manageable | | | | | | | | |
| Public health situation assessed as stabilized | | | | | | | | |
| Routine operations assessed as reestablished | | | | | | | | |
| Incident considered resolved and formally closed | | | | | | | | |
| Lessons-learned evaluation considered necessary | | | | | | | | |

1.7. What factors most influenced the decisions? *

Select all that apply

Please choose **all** that apply:

- Available information
- Time pressure
- Coordination with other agencies
- Previous experiences
- Tools and technologies
- Other:

1.8. Were you able to access relevant information when needed to support decisions?*

Only answer this question if the following conditions are met:

(([G00Q03.NAOK](#) == "AO01" or [G00Q03.NAOK](#) == "AO02"))

Choose one of the following answers

Please choose **only one** of the following:

- Yes
- Rather yes
- Neutral / no opinion
- Rather no
- No

1.9. Overall, did the TTX help you reflect on decision-making and coordination in a biotoxin scenario?*

Choose one of the following answers

Please choose **only one** of the following:

- Yes
- Rather yes
- Neutral / no opinion
- Rather no
- No

1.10. What was the most challenging decision during the exercise, and why?

Please write your answer here:

2) Requirements for biotoxin management in Europe

As part of the EMBRACE project, we identified several gaps in European biotoxin management. To address these gaps, we formulated a set of requirements covering various biotoxin-related topics. Please assess these actions, taking into account the exercise you have just participated in.

2.1 How important do you consider these actions to improve European biotoxin management?*

Please choose the appropriate response for each item:

| | Very important | Important | Neutral | Not important | Not important at all |
|--|----------------|-----------|---------|---------------|----------------------|
| Establishment of a harmonized biotoxin-specific emergency response planning framework | | | | | |
| Development of standardized operational guidelines | | | | | |
| Clarification of crisis declaration and governance responsibilities | | | | | |
| Strengthening of regulatory preparedness for biotoxin incidents | | | | | |
| Establishment of clear management structures and role allocation | | | | | |
| Development of centralised coordination mechanisms | | | | | |
| Strengthening of domestic inter-agency coordination | | | | | |
| Enhancement of international coordination mechanisms | | | | | |
| Implementation of secure cross-sectoral information exchange systems | | | | | |
| Formalisation of civil-military collaboration frameworks | | | | | |

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| | | | | | |
|--|--|--|--|--|--|
| Harmonized and expanded laboratory capacity | | | | | |
| Strengthened detection and identification capabilities | | | | | |
| Scalable laboratory surge capacity | | | | | |
| Integrated and proactive risk assessment frameworks | | | | | |
| Accessibility of laboratory networks and availability of mobile laboratory capacities | | | | | |
| Comprehensive and standardized training for all relevant actors | | | | | |
| Dedicated biotoxin training centres | | | | | |
| International operations-based exercises with relevant stakeholders | | | | | |
| Recognition of biotoxins as a distinct risk category | | | | | |
| Crisis communication protocols for the public | | | | | |
| Adequate personal protective equipment stockpiles | | | | | |
| Secured antidote stockpiles | | | | | |
| Structured mechanisms for shared resources and joint procurement | | | | | |
| Sustainable long-term financing mechanisms | | | | | |
| Project sustainability beyond project lifetime | | | | | |
| Structured innovation uptake and use of existing EU funding instruments | | | | | |
| Systematic knowledge sharing mechanisms | | | | | |
| Real-time data databases | | | | | |
| Structured domestic and international networking mechanisms | | | | | |
| Structured reachback mechanisms and access to expertise networks | | | | | |
| Policy harmonization at national and EU level | | | | | |
| Improved public awareness campaigns | | | | | |
| Dedicated biotoxin early warning mechanism | | | | | |

3) Biotoxin Task Force - Specific evaluation form (Only for BTF members)

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As you stated to be part of the BTF, we would like to ask you some special questions to capture expert reflections on the role, value and limitations of structured expert coordination mechanism during a biotoxin incident.

This form focuses on conceptual and coordination aspects of the BTF as described in the EMBRACE Description of Actions. It does not assess operational performance or individual decision-making.

3.1 During the exercise, how clear was your understanding of the intended role of the BTF? *

Choose one of the following answers

Please choose **only one** of the following:

- Very clear
- Mostly clear
- Neutral / No opinion
- Partially clear
- Unclear

3.2 How well did the scenario reflect the BTF's three-fold purpose?

1) Rapid scientific support during emergency crises, 2) Strategic preparedness guidance, 3) Professional advice to the EMBRACE Biotox Hub Team*

Choose one of the following answers

Please choose **only one** of the following:

- Very well
- Well
- Neutral / no opinion
- Partially
- Poorly

3.3 At which phases of the exercise did you consider BTF-type expert coordination to be most relevant? (select all that apply)

Please choose **all** that apply:

- Phase 1 – Initial uncertainty
- Phase 2 – Emerging health signals
- Phase 3 – Escalation and cross-border coordination
- Phase 4 – Strategic management and communication
- Phase 5 – Sustained consequence management
- Phase 6 – Transition and recovery
- Not relevant in any phase

3.4 To what extent did BTF input support shared situational understanding? *

Please choose **only one** of the following:

- Very high

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- High
- Moderate
- Low
- None

3.5 Did BTF coordination help decision-makers to:

Please choose the appropriate response for each item:

| | Yes | Partially | No |
|---|-----|-----------|----|
| distinguish confirmed information from assumptions? | | | |
| manage uncertainty explicitly? | | | |
| integrate health, security, technical, and operational perspectives? | | | |

3.6 Did the BTF accelerate or delay decision-making? *

Please choose **only one** of the following:

- Accelerated
- Neutral
- Delayed

3.7 Did the BTF's independence support decision making?*

Please choose **only one** of the following:

- Yes
- Partially
- No
- Other

3.8 Were interfaces between the BTF and other actors sufficiently clear? Please elaborate if needed

Please choose **only one** of the following:

- Yes
- Partially
- No

Make a comment on your choice here:

3.9 When should a BTF-type mechanism be activated?*

Please choose **only one** of the following:

- Early, under high uncertainty
- After initial health signals
- Only after confirmation
- Only at strategic level
- Case-dependent

- Other

3.10 What information types were most critical for BTF functioning? (select up to three)*

Please choose **all** that apply:

- Health / clinical data
- Laboratory / analytical information
- Exposure & pathway assessments
- Intelligence / attribution-related information
- Cross-border situational updates
- Policy / strategic constraints
- Other:

3.11 What risks exist in activating too early or too late?

Please write your answer here:

3.12 Did the BTF help identify systemic gaps or capability needs? *

Please choose **only one** of the following:

- Yes
- Partially
- No

3.13 Did the BTF contribute to strategic foresight or preparedness planning? *

Please choose **only one** of the following:

- Yes
- Partially
- No

3.14 Did the BTF provide value beyond existing national/EU structures? *

Please choose **only one** of the following:

- Yes
- Partially
- No

3.15 Did the exercise highlight knowledge gaps the BRSH (Biotoxin Reference Stakeholder Hub) should address?

Please choose **only one** of the following:

- Yes
- Partially
- No

Make a comment on your choice here:

3.16 What resources or content should the BRSH (Biotoxin Reference Stakeholder Hub) prioritise?

Please write your answer here:

3.17 Did the BTF support coherent cross-sector communication? *

Please choose **only one** of the following:

- Yes
- Partially
- No

3.18 Did the BTF help align strategic messaging?*

Please choose **only one** of the following:

- Yes
- Partially
- No

3.19 What limitations or risks were highlighted?

(select all that apply)

Please choose **all** that apply:

- Information overload
- Unclear mandate
- Duplication with existing structures
- Delays in decision-making
- Over-reliance on expert judgement
- None
- Other:

3.20 What safeguards are needed to ensure expert coordination supports decision-making?*

Please write your answer here:

3.21 Overall added value of BTF-type coordination:

Choose one of the following answers

Please choose **only one** of the following:

- Very high
- High
- Moderate
- Low
- None

3.22 What key lessons for the future development of the BTF: *

Please write your answer here:

4) Final remarks

This group of questions serves to collect final remarks and opinions on the TTX in Vienna

4.1 Were the scenario and the working hypothesis explicitly communicated?

Please choose **only one** of the following:

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- Yes
- Rather yes
- Neutral / no opinion
- Rather no
- No

4.2 Were the roles clearly defined?

Please choose **only one** of the following:

- Yes
- Rather yes
- Neutral / no opinion
- Rather no
- No

4.3 Did you get a clear understanding of the goals of the EMBRACE project? *

Please choose **only one** of the following:

- Yes
- Partially
- No

4.4 How do you rate the usefulness of the presented EMBRACE solutions in case of a biotoxin event?

Please choose the appropriate response for each item:

| | Very useful | Useful | Neutral / no opinion | Not useful | Not useful at all |
|--|-------------|--------|----------------------|------------|-------------------|
| BioRA - Biotoxin risk assessment | | | | | |
| BRSH - Biotoxin Reference Stakeholder Hub | | | | | |
| DMA field detector | | | | | |
| pBDi - portable ELISA instrument | | | | | |
| BreathDraw | | | | | |
| Concept of Operations (CONOPS) | | | | | |

4.5 What is one lesson that you learned from this exercise that you consider relevant? *

Please write your answer here:

END OF QUESTIONNAIRE