CEN

WORKSHOP

AGREEMENT

CWA 17974

March 2023

ICS 03.100.30; 11.020.99

English version

Basic CBRN training curriculum for first responders and medical staff including first receivers

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties, the constitution of which is indicated in the foreword of this Workshop Agreement.

The formal process followed by the Workshop in the development of this Workshop Agreement has been endorsed by the National Members of CEN but neither the National Members of CEN nor the CEN-CENELEC Management Centre can be held accountable for the technical content of this CEN Workshop Agreement or possible conflicts with standards or legislation.

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Ref. No.:CWA 17974:2023 E

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European foreword

This CEN Workshop Agreement (CWA 17974:2023) has been developed in accordance with the CEN-CENELEC Guide 29 "CEN/CENELEC Workshop Agreements – A rapid prototyping to standardization" and with the relevant provisions of CEN/CENELEC Internal Regulations - Part 2. It was approved by a Workshop of representatives of interested parties on 2022-10-25, the constitution of which was supported by CEN following the public call for participation made on 2022-03-02. However, this CEN Workshop Agreement does not necessarily include all relevant stakeholders.

The final text of this CEN Workshop Agreement was provided to CEN for publication on 2023-02-02.

Results incorporated in this CWA received funding from the European Commission via the DG Migration and Home Affairs through the Internal Security Fund under: ISFP-2017-AG- PROTECT Grant N°: 814803.

The following organizations and individuals developed and approved this CEN Workshop Agreement:

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Introduction

Chemical, biological, radiological and nuclear (CBRN) agents may be released as a result of an accident or intentional act. For example, a rail or road accident with a truck carrying chemicals might be considered accidental whereas a release with intent to cause harm for example, by terrorist actors might be considered intentional.

"…there are credible indications suggesting that terrorist groups might have the intention of acquiring CBRN materials or weapons and are developing the knowledge and capacity to use them."[1]

First responders shall be prepared, and their needs for training must be addressed so that they might perform their tasks in a safe and efficient manner.

This Agreement contributes to the improved awareness of potential CBRN threats in the connection with accidental and/or antagonistic incidents for professionals.

This CWA has been developed in the context of the MELODY project, where an overview was created of existing CBRN-related training in European countries and the training needs of emergency response organisations in Europe was analysed. Based on this gaps & needs analysis, a harmonized curriculum was drafted and iteratively developed. Pilot courses were run for first responders and their trainers. CBRN experts from across Europe tested, evaluated and finally validated the proposed curriculum, which served as the basis for this CEN Workshop Agreement.

This CWA aims to capitalize the main results of the project and share with the CBRN community a reference programme to train practitioners for CBRN risks. This CWA is therefore intended to be used by training centers offering in their catalogue trainings and provides a basis to elaborate a training programme to be customized to the audience of the training.

The training audience includes but is not limited to: Dispatch Officer, Fire Brigade, Police – Police officer, Ambulance Services, Emergency Medical Services and general practitioner. It represents a diversity of profiles and occupations in the field of CBRN with different educational curriculum. Depending on the pre-existing knowledge of the trainees and their background, the learning objectives proposed in this CWA will may be adapted to the different target groups. The crosses mentioned in Table A.1 (Annex A) are indicative and shall be adapted to the needs and the national / regional context.

[1] https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52017DC0610

1 Scope

This Agreement describes the minimum requirements for training to constitute basic chemical, biological, radiological and nuclear (CBRN) awareness for professionals. Typically (but not exclusively), professionals means those involved in emergency response, first responders and first receivers. Examples of these are dispatch officers, ambulance, police and fire & rescue personnel, emergency medical staff at hospitals or healthcare centres and general practitioners.

The basic concept of this agreement was developed by members of the EU-funded project MELODY (2018-2022, Internal Security Fund Police, contract 814803) aimed at developing a harmonised curriculum for such training; this CEN Workshop Agreement builds on that concept with input from other industry professionals.

The Agreement provides a base-line for training content, learning objectives as well as describing potential training methods and the minimum competences considered appropriate to deliver the training.

This Agreement is addressed towards those entities who on national, regional or local level are responsible for vocational training of staff working in emergency response capacities and are likely to need basic knowledge of CBRN incidents.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in "EN 17173:2020 European CBRNE glossary" apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp/

— IEC Electropedia: available at http://www.electropedia.org/

3.1
active decontamination
employment of chemical, biological or mechanical processes to remove or neutralize chemical, biological or radioactive materials

Note 1 to entry: Source: EN 17173:2020 European CBRNE glossary

3.2
CBRN substances
chemical, biological, radiological agents and nuclear material

Note 1 to entry: Source: EN 17173:2020 European CBRNE glossary

3.3
dispersion
spread of radioactive particles, chemical substances or biological agents

Note 1 to entry: Source: EN 17173:2020 European CBRNE glossary

3.4
hazard assessment
determination of whether hazards for health, equipment, infrastructure or environment are present or are likely to be present

Note 1 to entry: Source: EN 17173:2020 European CBRNE glossary

3.5
hazard avoidance
development and adjustment of plans, especially in regard to the deployment and movement of units, calculated to avoid or minimize risks of exposure to chemical, biological or radiological hazards by area marking, movement control, route planning and relocating measures

Note 1 to entry: Source: EN 17173:2020 European CBRNE glossary

3.1 Symbols and abbreviations

CBRN: Chemical, biological, radiological and nuclear

DIM: Detection, Identification and Monitoring

PPE: Personal protective equipment

4 Essential Modules & Learning Objectives

The Basic CBRN training curriculum consists of seven training modules over three functional levels: (basic) CBRN knowledge (modules 1-3), the operational level (module 4-6), and tactical level (module 7).

For each module of the CBRN training curriculum several learning objectives have been formulated, following Bloom's Revised Taxonomy[2] , and these are listed in Table A.1 (Annexe A).

The first two modules of the curriculum cover the basics and therefore contain learning objectives corresponding with the first two levels of Bloom's taxonomy: remember and understand. It is important that after these modules trainees can recognize and recall the information. This also applies to module 3 (CBRN extras).

Further in the curriculum higher cognitive levels of Bloom's taxonomy such as 'recognize how to carry out' and 'recognize how to apply' are adopted in the learning objectives and are trained by means of practical training, scenarios and table top exercises (modules 4-7), especially in module 5 (Risk assessment and hazard avoidance (3.5)) and module 6 (Task specific response). Because module 7 (Response awareness at the incident scene, improve interagency collaboration) aims to improve interagency collaboration between the different first responder services present at the incident scene, trainees will need to become familiar on how the response to CBRN incidents is organized and which organizations will become involved. A table top exercise will be the training method that is suitable for this.

4.1 Module 1 - CBRN terminology

This module explains what CBRN is. It contains definitions, the difference between accidents and attacks, and what the letters of CBRN stand for. The aim of this module is for all first responders to use the same terminology for effective communication.

[2] https://www.bloomstaxonomy.net/

4.1.1 Learning Objectives

— To recognize CBRN terminology (to be able to speak a common language)

4.2 Module 2 - CBRN Basics

Module 2 introduces the trainees to the general principles of CBRN, aiming for the trainees to be able to recognize a potential CBRN threat and recall how to stay safe. The 'CBRN basics' does not contain any practical training.

4.2.1 Learning Objectives

— To recognize the different groups of agents, their features and effects and list some relevant examples of incidents

— To recognize a possible release and to summarize the different routes of dispersion

— To recognize potential sources of CBRN agents, signs of dangerous goods, and improvised production facilities.

— To recall safe arrival procedures and basic safety in the field

4.3 Module 3 - CBRN Extras

More in-depth theoretical knowledge will be gained when studying the optional module 3 'CBRN extras'. This module explains advanced information on C, B, R and N agents and provides an overview of historical use of CBRN agents and actual incidents. Furthermore, it addresses social, psychological & ethical issues.

4.3.1 Learning Objectives

— To describe historical, ethical, sociological and scientific aspects of CBRN

4.4 Module 4 - First alert

Module 4 goes into more depth and focuses on first alert. The trainees learn how to identify possible CBRN releases by asking the right questions to the person who makes the call. It includes issues such as meteorology, symptoms, and knowing which information to share with the chain of command.

4.4.1 Learning Objectives

— To recognize signs of a potential CBRN release and (initiate first) respond(ers)

4.5 Module 5 - On site risk assessment, hazard avoidance and medical care

In module 5 the topics become more specific for different professions. First responders active at the incident scene should be able to perform a risk assessment on scene, having in mind the information possibly provided to them by the dispatch services prior to or during moving to the incident scene. Emergency medical personnel and general practitioners will not move towards the scene but might be confronted with casualties of the incident that either self-refer to the medical facilities or are brought there by ambulances. Medical personnel should be able to estimate the risks involved in receiving and treating such potentially contaminated patients; be capable of developing a safe course of action. This module addresses all the before mentioned topics.

4.5.1 Learning Objectives

— To recognize how to carry out an on-site risk assessment, zoning of the area, and isolation and registration of victims

— To recognize how to carry out your work without forensic disruption of the scene

— To recall some different DIM techniques

— To recognize some different types of PPE and recognize how to carry out some basic techniques

— To recognize how to carry out basic decontamination procedures for people and domestic animals.

— To recognize how to apply appropriate medical care towards patients involved in a CBRN incident

4.6 Module 6 - Task specific response

In module 6 the trainees learn about task specific responses. The topics are specified for the dedicated target group. These topics go into more depth and contain practical training elements, where theoretical knowledge is applied.

4.6.1 Learning Objectives

— To differentiate a possible CBRN incident (from normal incident) and to carry out appropriate procedures & protocols

— To identify possible CBRN threats and to mitigate the effects

— To familiarize with and carry out triage and provide medical care in relation to CBRN scenario's

4.7 Module 7 - Improve interagency collaboration

The last module aims to improve interagency collaboration between the various emergency response services and to create response awareness at the incident scene. This module familiarizes trainees with the structure and organisation of CBRN incident management, i.e. which organizations will become involved and how they will work together. This also includes insight into the dependencies between the response organizations and therefore acts at a tactical level.

4.7.1 Learning Objectives

To reflect on the tasks, responsibilities and capabilities of other agencies and initiate interagency collaboration

5 Delivery suggestions

Depending on the cognitive level of the learning objective in the basic CBRN training curriculum a range of training methods applies, from theoretical (e-learning, classroom presentations, test questions) to practical training (scenario discussions, table top exercises, hands-on training); all chosen to create opportunities for learning.

Classroom training is suggested to be part of the curriculum for all learning objectives of the seven modules. It is important that after delivering the classroom presentation, trainees can recognize and recall the information. Classroom presentations generally consist of a series of PowerPoint presentations that will be required to cover the learning objectives. All classroom lectures should be adapted to the national context, indicating that national procedures and examples are included, ensuring recognition by trainees.

In the first two modules, trainees will be trained in the very basic knowledge on the general principles of CBRN, aiming the trainees to recognize a potential CBRN threat and recall how to act. In case of limited time available for on-site training, e-learning might replace the classroom lectures. In this way trainees can perform a self-study prior to on-site training, ensuring a basic level of CBRN knowledge with all

trainees when performing the on-site training. An additional advantage of e-learning is that a much broader audience can be reached as compared to classroom training. If resources are available, a training organization can choose to integrate the e-learning in an online learning platform, which will allow the trainer to interact with the trainees and to supervise their progress.

For all learning objectives with 'recognize how to apply' and 'recognize how to carry out' the curriculum foresees some form of practical training (scenario discussions, hands-on training or table top exercise) in addition to one or several classroom lectures.

The aim of the scenario discussions is that trainees bring the theory they just have learned into practice. Trainees may get familiar with signs and signals and should practice in recognizing potentially useful information from the presented scenarios. Trainees will be trained to extract CBRN-related information when inquiring about an incident, thus, to be aware of potential CBRN risks. The trainer can decide, which scenarios to discuss and which information and questions to include for each scenario. Note also that these discussions can be performed in various settings, either simply in a classroom, with or without additional prop, or in a physical mock-up environment that provides more realism to the discussion.

The aim of table top exercises is similar to that of scenario discussions with a special focus on interagency collaboration. This generally indicates that the scenario of a table top exercise is more complex and will evolve throughout the exercise by introducing injects with new information on the incident. More material such as a map of the area to explain the situation will be required. Table top exercises are part of module 7, to practice interagency collaboration.

By hands-on training trainees learn to apply their knowledge. Two such elements are included in Module 5 of the basic CBRN training curriculum. After a short introduction by the trainer, the trainees will perform actions themselves. It is important to plan hands-on training well in advance, as certain props such as disposable gloves are needed to conduct a practical training in e.g. doffing of PPE.

6 Trainers competences

Good training skills are key for successfully transferring knowledge. For the basic CBRN training curriculum CBRN knowledge is required just as much as pedagogical skill. The trainer needs to be able to create opportunities for learning and to engage the trainees throughout the entire training. The trainer should interact with the trainees and encourage the trainees to interact with each other. As this curriculum will be trained to first responders, it is key to have a trainer who is competent, confident and experienced in delivering interactive training to meet the first responders' and first receivers' training needs. It's the trainers responsibility to plan and deliver the training so that it is tailored to the needs of the trainees.

Minimum qualifications for a trainer

— Experience in training. This can be either by having a formal training qualification and role, or experience in working with and supporting or mentoring junior staff

— Background in C, B and/or RN

— Professionally connected to (one of) the first responder services

Complementary beneficial qualifications

— Experienced in working in an emergency setting either as a first responder or a hospital emergency department or

— Experienced in collaborating with first responders or a hospital emergency department

7 Guidance for trainer

Depending on the cognitive level of the learning objective the CBRN training should apply a range of training methods, from theoretical (e-learning, classroom lectures, test questions) to practical training (scenario discussions, table top exercises, hands-on training); all chosen to create opportunities for learning.

For theoretical training, classroom lectures of e-learning can be applied to train the very basic knowledge on the general principles of CBRN, aiming the trainees to recognize a potential CBRN threat and recall how to act. For all learning objectives with 'recognize how to apply' and 'recognize how to carry out' the curriculum foresees some form of practical training in addition to one or several classroom lectures, such as scenario discussions, table top exercises or hands-on training.

The aim of including scenario discussions in a training is to bring the theory that trainees just have learned into practice. Trainees should get familiar with signs and signals and should practice in recognizing potentially useful information from the presented scenarios. Practice by means of scenario discussion will enable trainees be trained to extract CBRN-related information when inquiring about an incident, thus, to be aware of potential CBRN risks. The trainer can decide, which scenarios to discuss and – depending on the chosen learning objectives – which information and questions to include for each scenario. Note also that these discussions can be performed in various settings, either simply in a classroom, with or without additional prop, or in a physical mock-up environment that provides more realism to the discussion.

By including table top exercises in a training a similar aim is reached as was described for scenario discussions but with a special focus on interagency collaboration. This generally indicates that the scenario of a table top exercise is more complex and will evolve throughout the exercise by introducing injects with new information on the incident. More material such as a map of the area to explain the situation will be required. Table top exercises can be applied in module 7 to practice interagency collaboration.

Annex A

Table A.1 —Melody curriculum

Number	Learning objective		Presentations	DO	FB	P	AS	EMS	GP#	Time (min)	
1	**CBRN Terminology**										
1.1	To recognize CBRN terminology (to be able to speak a common language)	1.1	What is CBRN (definitions; accidents v. attacks; C v. B v. RN)	X*	X	X	X	X	X	15	
2	**CBRN Basics**										
2.1	To recognize the different groups of agents, their features and effects and list some relevant examples of incidents	2.1.1	Classification, properties, dispersion (including explosives), signs and triggers, etc.	X	X	X	X	X	X	25	Available as e-learning
		2.1.2	Some relevant examples of incidents	X	X	X	X	X	X	10	
		2.1 Test	Test Questions	X	X	X	X	X	X	10	
2.2	To recognize a possible release and to summarize the different routes of dispersion	2.2.1	Routes of exposure, symptoms, etc.	X	X	X	X	X	X	25	
		2.2.2	Dispersion of CBRN agents	X	X	X	X	X	X	20	
		2.2 Test	Test Questions	X	X	X	X	X	X	10	
2.3	To recognize potential sources of CBRN agents, signs of dangerous goods, and improvised production facilities	2.3.1	Where can you find CBRN materials? (industry, health care, research facilities, etc.)	X	X	X	X			25	
		2.3.2	Dangerous goods and UN codes	X	X	X	X			25	
		2.3.3	How can you recognize illegal production or use of CBRN materials?	X	X	X	X			35	
		2.3 Test	Test Questions	X	X	X	X			10	
2.4	To recall safe arrival procedures and basic safety in the field	2.4.1	Arriving safe at the scene (access routes, hot zone, wind direction, etc.)	X	X	X	X			25	
		2.4.2	Basic safety in the field (rules of thumb, zoning, etc.)	X	X	X	X			10	
		2.4.3	Own safety in the field (personal protection)	X	X	X	X			25	
		2.4 Test	Test Questions	X	X	X	X			15	
3	**CBRN Extras**										
3.1	To describe historical, ethical, sociological and scientific aspects of CBRN	3.1.1	Elaborated history: development of agents, actual incidents in the past & context	X	X	X	X	X	X	45	
		3.1.2	Social, psychological & ethical issues (e.g. moral issues, rescue victims versus own risks, isolation/separation of possible contaminated people, child-parent separation, aftercare)	X	X	X	X	X	X	25	
		3.1.3	Advanced information on C, B, R and N agents	X	X	X	X	X	X	50	
		3.1 Test	Test questions	X	X	X	X	X	X	20	

Number	Learning objective		Presentations	DO	FB	P	AS	EMS	GP#	Time (min)
4	**First Alert**									
4.1	To recognize signs of a potential CBRN release and (initiate first) respond(ers)	4.1	Identify possible CBRN releases by asking the right questions to the person who makes the call, including issues such as meteorology, symptoms, and knowing which information to share with chain of command (escalation protocol).	X*	X	X	X			40
		4.1 P	Scenario discussions: Identify possible CBRN releases by asking the right questions	X	X	X	X			15/scenario
5	**Risk assessment and hazard avoidance**									
5.1	To recognize how to carry out an on-site risk assessment, zoning of the area, and isolation and registration of victims	5.1.1	Preparations for on-site arrival, en-route (upwind) approach, incident analysis. On-site risk/threat assessment.		X	X	X			35
		5.1.2	Security of the area, upwind approach (including traffic control), hot zone, warm zone, cold zone		X	X	X			40
		5.1.3	Isolate people and domestic animals on scene		X	X	X			15
		5.1.4	Registration of victims		X	X	X			25
		5.1 Test	Test questions		X	X	X			15
		5.1.P	Scenario discussions: Arrival on-site: security, isolation and registration of victims and		X	X	X			15/Scenario
5.2	To recognize how to carry out your work without forensic disruption of the scene	5.2	Forensic awareness		X	X	X	X	X	40
		5.2 Test	Test questions		X	X	X	X	X	10
		5.2.P	Scenario discussions: Forensic awareness		X	X	X	X	X	15/Scenario
5.3	To recall some different DIM techniques	5.3	Detection, Identification and Monitoring (DIM)		X	X	X	X		15
		5.3 Test	Test questions		X	X	X	X		10
5.4	To recognize some different types of PPE and recognize how to carry out some basic techniques	5.4	Personal protective equipment (PPE)		X	X	X	X		20
		5.4 Test	Test questions		X	X	X	X		10
		5.4.P	Hands on training: Personal protective equipment (PPE)		X	X	X	X		45
5.5	To recognize how to carry out basic decontamination procedures for people and domestic animals	5.5	Decontamination (of people and domestic animals)		X	X	X	X		20
		5.5 Test	Test questions		X	X	X	X		10
		5.5.P	Hands on training: Decontamination (of people and domestic animals)		X	X	X	X		*90*
5.6	To recognize how to apply appropriate medical care towards patients involved in a CBRN incident	5.6	Treatment methods of patients involved in a CBRN incident		X	X	X	X	X	30
		5.6 Test	Test questions		X	X	X	X	X	10
		5.6.P	Scenario discussions: Treatment methods of patients involved in a CBRN incident		X	X	X	X	X	15/Scenario

Number	Learning objective		Presentations	DO	FB	P	AS	EMS	GP#	Time (min)
6	**Task specific response**									
6.1	To differentiate a possible CBRN incident (from normal incident) and to carry out appropriate procedures & protocols	6.1	How to recognize possible CBRN release and initiate alarm protocol [COUNTRY BASED]	X*						30
		6.1 Test	Test questions	X						5
		6.1.P	Scenario discussions: How to recognize possible CBRN release and initiate alarm protocol [COUNTRY BASED]	X						15/scenario
6.2	To identify possible CBRN threats and to mitigate the effects	6.2	Mitigation methods to limit dispersion, including decontamination		X					75
		6.2.Test	Test questions		X					5
6.3	To familiarize with and carry out triage and provide medical care in relation to CBRN scenario's	6.3.1	Triage related to CBRN				X	X	X	40
		6.3.2	Medical treatments, countermeasures and protection (see also 5.6)					X	X	60
		6.3 Test	Test questions				X	X	X	30
		6.3.P	Scenario discussions: Triage and medical treatment related to CBRN				X	X	X	15/scenario
7	**Improve interagency collaboration**									
7.1	To reflect on the tasks, responsibilities and capabilities of other agencies and initiate interagency collaboration	7.1	Elaborate on tasks of other responders at CBRN scene, and their value	X	X	X	X	X	X	60
		7.1.P	Table top exercise on interagency collaboration	X	X	X	X	X	X	150

DO Dispatch Officer
FB Fire Brigade
P Police officer
AS Ambulance Services
EMS Emergency Medical Services
GP General practitioner
X Marks the target groups concerned by training materials. An example of training materials is available on the website of the project Melody[3], works funded by the European Commission under grant nr 81480 within the ISFP-2017-AG-PROTECT programme.

[3] www.melodytraining.eu