



Deliverable Report D.1.1

## **Glossary to define common language and delimitations for testing, evaluation and certification of CBRNE detection equipment**

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## Summary

The aim of this report is to compile information on definitions related to the detection, identification and measurement, as well as certification of detection equipment in the field of CBRNE.

Several sources were used to collect the most suitable definitions for relevant terms; major contributions were taken from the following documents:

- Winkler, T. (2006): IMPACT glossary (Deliverable 900.1 of the PASR Project: Innovative Measures for Protection against CBRN Terrorism.).
- European Defence Agency - EDA (2006): Concept for the Detection, Identification and Monitoring (DIM) of Chemical, Biological, Radiological and Nuclear (CBRN) and Toxic Industrial Hazards (TIH). Report of the Project Team on CBRN Detection Identification and Monitoring.
- U.S. Army Center for Health Promotion and Preventive Medicine (2001): Glossary of Terms for nuclear, biological and chemical agents and defence equipment (available online: <http://chppm-www.apgea.army.mil/documents/TG/TECHGUID/TG204a.pdf>)
- STANAG (2008): NATO Glossary of Terms and Definitions (English and French) AAP6 (available online: <http://www.nato.int/docu/stanag/aap006/aap-6-2008.pdf>)
- ISO/IEC GUIDE 2 (2004): Standardization and related activities -- General vocabulary.

This report is the first revision of Creatif Deliverable D.1.1

## **Content**

Summary .....	1
Content.....	2
1 Introduction .....	3
2 Alphabetical list of terms and definitions .....	4

# 1 Introduction

As a basis for discussion it is necessary to define the meaning of relevant terms. During the last years quite some work has been performed to generate accepted definitions of CBRNE relevant terms. Among others two documents seem very relevant as a reference for the topic of CBRNE, namely:

- Winkler, T. (2006): IMPACT glossary (Deliverable 900.1 of the PASR Project: Innovative Measures for Protection against CBRN Terrorism.). **(++)**
- EDA (2006): Concept for the Detection, Identification and Monitoring (DIM) of Chemical, Biological, Radiological and Nuclear (CBRN) and Toxic Industrial Hazards (TIH). Report of the Project Team on CBRN Detection Identification and Monitoring. **(+)**

Other sources used for the compilation of the glossary were:

- U.S. Army Center for Health Promotion and Preventive Medicine (2001): Glossary of Terms for nuclear, biological and chemical agents and defence equipment (available online: <http://chppm-www.apgea.army.mil/documents/TG/TECHGUID/TG204a.pdf>) **(\*)**
- STANAG (2008): NATO Glossary of Terms and Definitions (English and French) AAP6 (available online: <http://www.nato.int/docu/stanag/aap006/aap-6-2008.pdf>) **(\*\*)**
- ISO/IEC GUIDE 2 (2004): Standardization and related activities -- General vocabulary.

Due to the fact that these compilations are very large documents, which cover a quite broad range of terms far beyond the scope of CREATIF, only the relevant terms were extracted.

Finally, for a number of terms a definition most suitable for the context of the CREATIF project has been developed and discussed within the project consortium.

By using the bold symbols (at the end of the cited sources above), the origin of term definitions is indicated in the following alphabetical list.

## 2 Alphabetical list of terms and definitions

- Literature sources:
- (+) DIM concept
  - (++) IMPACT Glossary
  - (\*) USACHPPM TG 204.
  - (\*\*) NATO Glossary of Terms and Definitions

Term	Definition
Acceptance test	A contractual test to prove to the customer that the device meets certain conditions of its specification.
Accidental CBRN incident (++)	Refers to an event caused by human error or natural or technological incident reasons. This could include spills, accidental releases or leakages. These are generally referred to as DG (Dangerous Goods) or HAZMAT (Hazardous Materials) accidents.
Accredited testing laboratory	Testing laboratory that has been accredited by an authoritative body with respect to its qualification to perform verification tests on the type of instruments covered by applicable standards or specific protocols.
Accuracy	The degree of agreement between the observed value and the conventionally true value of the quantity being measured.
Activation (++)	<p>The system function which describes the first activation of the system after the beginning of a CBRN event.</p> <p>Sub-functions are:</p> <p>Detection of "activation", which is not only for bio or chemical sensors but also detection of any information possibly indicating a CBRN event.</p> <p>Warning: from all the alarms given by different sources listed in the detection sub-function, the aim of this sub-function is to declare if a CBRN event has occurred or not, including centralizing all input from sensors and others warnings and assessing the risks.</p> <p>Initiation includes the starting of CBRN specific rescue actions, FR coordination, informing authorities.</p> <p>De-activation: post-CBRN-event management.</p>

Term	Definition
Active material / matière fissile (**)	Material, such as plutonium and certain isotopes of uranium, which is capable of supporting a fission chain reaction.
Adjust	To alter the reading of an instrument by means of a built-in variable (hardware or software) control.
Aerosol(*)	A suspension of finely divided liquid or solid particles suspended in a gaseous form. They are solid or liquid substances classified as dusts, fumes, smokes, mists, and fogs according to their physical nature, particle size, and method of generation. Particle size may vary from 100 micrometers (µm) to 0.01 in diameter.
Agent's description (++)	Includes:  <u>Identity</u> , e.g. name, synonym, type, category or other classification, certain code number, etc.  <u>Radiological, chemical or biological properties</u> , respectively. e.g. different toxicity values and properties important for the dissemination vector like volatility etc.  <u>Production and use</u> , e.g. raw material/precursors, production procedures and difficulty, possible use and consequences, efficiency  <u>Detection and identification</u> , e.g. sampling matrix, indications (smell, etc.), detection equipment, technologies for analysis  <u>Protection and response</u> , e.g. acute, delayed and chronic symptoms and environmental effects, protective and response measures, decontamination.
Alarm (Detector)	An audible, visual, or other physical signal activated when the instrument reading exceeds a preset value or falls outside of a preset range.
Alert / alarm (++)	Any kind of physical fact that launches the intervention of FRs.
Analytical strategy (++)	Lab-focused strategy to analyze CBRN samples. Contains not only analytical procedures but also handling procedures. see also: • Mixture of unknowns, • SOP
Antidote*	Any substance or other agent that inhibits or counteracts the effects of a poison.
APR	Acronym for: Air Purifying Respirator.

Term	Definition
Assessment / appréciation (**)	The process of estimating the capabilities and performance of organizations, individuals, materiel or systems.  Note: In the context of military forces, the hierarchical relationship in logical sequence is: assessment, analysis, evaluation, validation and certification.
B-detection (++)	Aim is to determine the presence of any biological danger for people living and breathing in a given place. Bio-detectors can rely on physical measurements or on biological assays.
B-incident (++)	An incident where pathogenic micro organisms constitute a danger regardless if the origin is: - An accident emitting pathogenic substances - A natural dispersion of pathogenic substances - A deliberate dissemination through terrorism or other criminal activity - An attack with biological weapons.
Bio-agent, B agent, Biological agent (++)	A bio-threat may arise from live biological agents (bacteria, viruses, rickettsia, and other microorganisms) or from bio-toxins.  The live biological agents can be characterized by their DNA, RNA or other more or less specific bio-chemical markers (chemical and fluorescent signatures). Bio-toxins are non living molecules but differ from chemical agents by their biological origin that implies biodiversity. Some of these toxins can be synthesized in the laboratory.
Bio-surveillance (++)	Bio-surveillance has to integrate health and environmental monitoring data with intelligence data.
Breakthrough detection time (++)	The elapsed time measured from the start of the test to the sampling time that immediately proceeds the sampling time at which the test chemical is first detected.
BT	Acronym for: Breakthrough detection time;  Acronym for: Bacillus thurgeniensis
Bulk detection	Detection technologies able to detect explosive particles in bulk (mode).
Calibrate	To adjust and/or determine the response or reading of a device relative to a series of conventionally true values.
Calibration	A set of operations under specified conditions that establishes the relationship between values indicated by a measuring instrument or measuring system, and the conventionally true values of the quantity or variable being measured.

Term	Definition
CBRN alarm (+)	An indication from any source that a chemical, biological, radiological or nuclear or toxic industrial hazard is present.
CBRN defence (+)	Plans and activities intended to mitigate or neutralise adverse effects on operations and personnel resulting from: the use or threatened use of chemical, biological, radiological or nuclear weapons and devices; the emergence of secondary hazards arising from counter-force targeting; or the release, or risk of release, of toxic industrial materials into the environment.
CBRN devices (+)	An improvised assembly or process intended to cause the release of a chemical or biological agent or substance or radiological material into the environment or to result in a nuclear explosion.
CBRN environment (+)	<p>Conditions found in an area resulting from immediate or persisting effects of CBRN hazards also resulting from the release of toxic industrial materials (TIM). The term CBRN environment (as used in the DIM concept) refers to an environment in which:</p> <ul style="list-style-type: none"> <li>a. At least one of the adversaries possesses the capability to use CBRN weapons and/or devices and has threatened to employ them;</li> <li>b. The risk or threat of the deliberate or accidental release of TIM has been assessed and/or identified;</li> <li>c. CBRN weapons and/or devices have been used and the possibility exists that these weapons and/or devices could be employed again;</li> <li>d. The effects from CBRN or TIM hazards persist in the area of operation to a level requiring forces to take CBRN defence measures.</li> </ul>
CBRN field analysis (+)	CBRN field analysis is defined as mobile chemical, biological, radiological and nuclear identification systems operating in or near hazard areas, have the capability to provide within hours, to any level or command, updated qualitative information on the situation in a hazard area. Using adequately equipped mobile systems staffed with well-trained technical teams, they can provide not only on-site analysis to determine the presence of a known CBRN substance but may also provide information about the presence of unidentified CBRN substances. Additionally, such on-site analysis can pre-screen samples, and thus reduce the workloads at international reference

Term	Definition
	laboratories, where capabilities exist to unambiguously identify the CBRN substance (CBRN forensic analysis).
CBRN forensic analysis (+)	The definitive scientific analysis of a material or substance used to determine constitution origin and possible manufacturing method. The results must be sufficiently definitive to be used in litigation and may be used for criminal prosecution or for driving counter measure capability programmes. This may be conducted in forensic science laboratories.
CBRN hazards (+)	<p>CBRN hazards result from the employment by any means of CBRN weapons or devices or the release of toxic industrial materials resulting in the contamination or irradiation of personnel or the environment, area or any particular object. CBRN hazards result from:</p> <ul style="list-style-type: none"> <li>a) The employment of chemical agents</li> <li>b) The employment of biological agents</li> <li>c) The employment of nuclear weapons or radiological devices resulting in nuclear radiation caused by fallout, artificial dispersion of radioactive material, or irradiation</li> <li>d) The release of toxic industrial materials.</li> </ul> <p>For the purpose of this document the word “substance” is used as an overarching term.</p>
CBRN incident (+)	Any occurrence involving the emergence of chemical, biological, radiological or nuclear and toxic industrial hazards or effects, irrespective of source, cause or intent.
CBRN materials (++)	Weaponized or non-weaponized chemical, biological, radiological or nuclear materials that can cause significant harm to human beings.
CBRN reconnaissance (+)	CBRN reconnaissance is defined as a mission undertaken to obtain information by visual observation or other methods, to confirm or deny the presence of CBRN attacks and/or hazards or TIM release and/or hazard. It may include gathering information on enemy use of CBRN weapons and devices, associated hazards, research, production or storage sites or meteorological data for CBRN hazard prediction. CBRN reconnaissance capabilities support intelligence gathering and will need to be developed in advance of main elements to facilitate the CBRN threat assessment. CBRN reconnaissance is either conducted as CBRN field reconnaissance or as CBRN

Term	Definition
	<p>sensitive reconnaissance (SSR).</p> <ol style="list-style-type: none"> <li>1. CBRN field reconnaissance comprises CBRN route reconnaissance, CBRN zone reconnaissance, CBRN area reconnaissance. CBRN field reconnaissance needs to be supported by combat and service support surveillance, reconnaissance and monitoring assets, for example sensors or unmanned aerial vehicles (UAVs) and airborne locating and detection sensors. This may include surveying a hazard, monitoring the degree of radiation or the presence of a biological or chemical hazard, and the sampling of items suspected of CBRN or TIM contamination. Battlespace CBRN reconnaissance includes:               <ol style="list-style-type: none"> <li>a. the observation and reporting of local weather and terrain conditions</li> <li>b. monitoring of potential TIH</li> <li>c. Detection and monitoring of CBRN hazards and contamination.</li> </ol> </li> <li>2. CBRN SSR (sensitive site exploitation) is defined as the hazard assessment of CBRN and/or Toxic Industrial Material related sites, located in an operational area. It requires specialized expertise that may include “reach-back” technical expertise in national organizations.</li> </ol>
<p>CBRN surveillance (+)</p>	<p>CBRN surveillance is defined as ground and aerial surveillance, in order to be able to systematically observe aerospace, surface, and subsurface areas, persons, places, and things by visual, aural, electronic, and other means. The surveillance process can also include disease surveillance, which is the ongoing systematic collection of health data essential to the evaluation, planning and implementation of public health practises.</p>
<p>CBRN survey (+)</p>	<p>CBRN survey is defined as the directed effort to determine the nature and degree of CBRN or TIM hazards in an area of confirmed or suspected contamination, and to delineate the boundaries of the hazard area. CBRN surveys can be conducted as ground or aerial surveys.</p>
<p>CBRN weapons (+)</p>	<p>A fully engineered assembly designed for employment by the armed forces of a nation state to cause the release of a chemical or biological agent or radiological material onto a chosen target or to generate a nuclear explosion.</p>

Term	Definition
CBRN, CBRNE	Acronym for: Chemical, biological, radiological/nuclear, explosives
Certification / certification (**)	The process of officially recognizing that organizations, individuals, material or systems meet defined standards or criteria.  Note: In the context of military forces, the hierarchical relationship in logical sequence is: assessment, analysis, evaluation, validation and certification.
Check source	A not-necessarily calibrated source that is used to confirm the continuing functionality of an instrument.
Chemical agent, C-agent (++)	Either a Chemical Warfare Agent (CWA) or a TIC or any other threat agent.
C-incident (++)	An incident where the effects of toxic chemicals are a hazard, regardless of the origin: - An accident during transport, storage or production of chemicals. - Deliberate dissemination through terrorism or other criminal activity. - An attack with CWA.
Classification of agents (++)	To classify agents according to their characteristics, for example the hazard they present or how contaminating they are.
Clean-up operation (++)	An operation where hazardous CBRN substances are removed, contained, incinerated, neutralized, stabilized, cleared-up, or in any other manner processed or handled with the ultimate goal of making the CBRN affected site safer for people or the environment.
Cold zone (++)	Uncontaminated area.
Competence of the actor (++)	Basic parameter of a CBRN scenario.  Knowledge needed for acquisition, production, preparation and dispersion/dissemination of CBRN materials.
Confidence level (+)	A measure of the credibility of output from a detector or combination of detectors, determined in the context of all other possible indications of attack. Normally expressed as one of four levels:  a. Indicative. The output is judged to warrant consideration but is insufficient to justify the immediate implementation of defensive countermeasures in isolation from any supporting indications.

Term	Definition
	<p>b. Presumptive. The output is judged to warrant the immediate implementation of defensive countermeasures, subject to consideration of any substantial contrary indications</p> <p>c. Definitive. The output is judged to warrant the immediate implementation of defensive countermeasures, regardless of any contrary indications</p> <p>d. Evidential. The output is of a quality that will warrant presentation to an international tribunal. Scientific methods will be rigorous and consistent with best practise; associated forensic evidence will have been collected.</p>
Contaminated area (++)	The space and places where physical contamination by agents is present in the atmosphere or in physical supports.
Conventionally true value (CTV)	The commonly accepted best estimate of the value of that quantity.
Cost	<p>Development cost (D)</p> <p>Investment cost (I)</p> <p>Maintenance cost (M)</p> <p>Life-Cycle Cost: (LCC): D + I + M</p> <p>Operational cost.</p>
CWA (++)	Chemical warfare agent
Decontamination (++)	<p>The process of making any person, object, or area safe by absorbing, destroying, neutralising, making harmless or removing chemical, biological or radioactive agents. See also:</p> <ul style="list-style-type: none"> <li>• On-site decontamination,</li> <li>• Mass decontamination,</li> <li>• Placebo mass decontamination,</li> <li>• Hospital-based decontamination,</li> <li>• FR decontamination,</li> <li>• Enclosed space decontamination.</li> </ul>
Demining / dépollution à des fins civiles (**)	The removal of all unexploded mines, explosive ordnance, improvised explosive devices and booby traps from a defined area to make the area safe for civilians. Note: Demining is not normally conducted by military units.
Deployment of detectors	Where the critical infrastructure must be identified and monitored for the presence of CBRNE agents.

Term	Definition
Detect – to – protect	The detectors should aim to detect the threat in time to prevent an attack.
Detect – to – treat	The detectors should allow for early warning once the threat is real.
Detection	Detection aims at establishing the release or discovering the presence of a CBRNE agent in a given area/location. Detection is usually associated with prevention. In reality, detection mechanisms are needed at the three stages of a CBRNE incident, i.e. before, during and after an event.
Detection limits	The extremes of detection or quantification for the radiation of interest.
Detector (+)	A device employed to discover the emergence, presence or absence of chemical, biological, radiological/nuclear hazards. Detector types are: <ol style="list-style-type: none"> <li>Point detector. A detector that reacts automatically to hazards at the point of interception</li> <li>Stand-off detector. A detector that reacts to distant incidents or hazards</li> <li>Remote detector. A point or stand-off detector employed at a distance from protected force element.</li> </ol>
Discrimination	A detector's ability to distinguish between different agents and also distinguish from background noise.
Dissemination (++)	Basic parameter of a CBRN scenario description. Includes <ul style="list-style-type: none"> <li>Amount of agent distributed (measured by weight)</li> <li>Vector – Means and medium for dispersion (air, ventilation system, water distribution, contaminated ground material or equipment or material such as door handles, banisters, instruments etc.)</li> <li>Equipment used for dissemination (Green house sprayer, explosive device, crushed bottle etc.)</li> <li>(Immediate progress) Fate – Describes secondary vector or contamination in the immediate phase (e.g. spill that evaporates, infected people moving and spreading disease etc.)</li> <li>Particle size distribution – Percentage of the dispersed agent that is expected to be respirable particles.</li> </ul>
Dynamics (Detector)	The detector is rapidly changing its results according to changes in samples.

Term	Definition
Early warning system (++)	Warns a target of the imminent arrival of a CBRN agent.
Effects (++)	<p>Basic parameter of a CBRN scenario. Effects may be divided into first, second and third order of effect.</p> <ul style="list-style-type: none"> <li>• A first order effect is the immediate consequence of a terrorist attack, which could inflict disease or physical damage on humans, animals and plants. The first stage also includes FRs such as police, health care, and fire brigades.</li> <li>• The second order effects are the immediate impact on societal function which are the consequences of first order effects spreading to sectors other than those immediately involved.</li> <li>• The third order effects include all sectors of society and have impact on economic viability and political stability. For instance, dissemination of radioactive material over a farming area would initially result in psychological effects but no direct medical symptoms. The secondary effect could be shortage of seasonal crops and in increased impact on the health care system and the third order of effect could be of economical nature.</li> </ul>
E-incident	<p>An incident where the effects of explosive chemicals are a hazard, regardless of the origin.</p> <ul style="list-style-type: none"> <li>• An accident during transport, storage or production of chemicals.</li> <li>• Deliberate dissemination through terrorism or other criminal activity.</li> <li>• An attack with explosives.</li> </ul>
Emergency(*)	A rare and unexpected situation with potential for significant loss of life, property, or mission accomplishment.
EMI / EMC (++)	Acronym for: Electromagnetic interference / electromagnetic compatibility.
Enclosed Area(*)	Any operating building, shed, magazine, railroad car, truck, or trailer that sufficiently restricts natural ventilation to allow possible accumulation of agent vapours.
Enclosed space decontamination (++)	A process to clean hazardous contaminants from exposed surfaces and indoor air in a building or other enclosed area using physical or chemical means. The purposes of the process are to prevent further spread of the contaminants and to restore the facilities to a safe condition.

Term	Definition
Energy dependence	Variation in instrument response as a function of radiation energy for a constant radiation type and exposure rate referenced to air.
Environmental monitoring	Environmental monitoring refers to the continuous automatic monitoring of the environment in fixed locations.
EOD	Acronym for: Explosive Ordnance Disposal
Event (CBRNE event)	See Incident
Evolution of a scenario (++)	Basic parameter of a CBRN scenario, its chronology. This includes not only the description of the scenario events but also the primary as well as secondary effects. The total time-frame of scenarios may vary from days to decades. It depends on the character of the disseminated agent as well as the countermeasures. Parts: <ul style="list-style-type: none"> <li>• Time scale of event,</li> <li>• Time scale of post event,</li> <li>• Distribution - dissemination, as the (effective) result.</li> </ul>
Expert user	Person permitted access to an instrument's operating parameters located in the restricted mode.
Explosive ordnance / explosifs et munitions (**)	All munitions containing explosives, nuclear fission or fusion materials and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket and small arms ammunition; all mines, torpedoes and depth charges, demolition charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and all similar or related items or components explosive in nature.
Explosive ordnance disposal / neutralisation des explosifs et munitions (EOD) (**)	The detection, identification, onsite evaluation, rendering safe, recovery and final disposal of unexploded explosives ordnance. It may also include explosives ordnance which has become hazardous by damage or deterioration.
Explosive substance	A chemical substance (or mixture of substances) intended to produce an explosive effect in civil applications (explosives for mines and quarries avalanche release,), military or terrorist applications.
Extraction of victims (++)	To take victims out of the hot zone.

Term	Definition
False alarm	Alarm NOT caused by a threat under the specified background conditions.
False-negatives	Failing to detect a real threat.
False-positives	Detecting a non-existent threat.
Fire brigade intervention unit (++)	Group of professionals or volunteers mainly dedicated for fire fighting unit but called for any emergency.
Fire brigade specialized CBRN units (++)	Group of professionals or volunteers belonging to fire brigade but CBRN units specially trained and equipped to face the CBRN risks.
First responder (FR) (++)	The first trained persons to attend or arrive at an incident. Persons include the fire brigade, police and ambulance services. A FR's role lasts (more or less) up to 4 hours (and in most cases less than 24 hours).
First responder decontamination (++)	Decontamination conducted in the warm zone for FR, in a decontamination predetermined decontamination area in order to ensure the safety of the FR and prevent further dissemination of the agent.
Fixed detectors	Fixed detectors are installed, automatic instruments designed to be used at checkpoints of critical facilities to monitor a continuous flow of persons, vehicles, and luggage, cargo or air samples.
FR	Acronym for: First responder
Functional check	A frequently used qualitative check to determine that an instrument is operational and capable of performing its intended function.
Hand-held device	Hand-held devices are lightweight instruments, which can be used to detect, locate and sometimes identify a CBRNE agent.
Hazard Avoidance (+)	The development and adjustment of plans, especially in regard to the deployment and movement of force elements, calculated to avoid or minimize risk of exposure to chemical, biological, or radiological hazards.
Hazard Management (+)	A combination of preparatory and responsive measures designed to limit the vulnerability of forces to chemical, biological, radiological, nuclear and toxic industrial hazards and to avoid, contain, control exposure to and where possible neutralize them.

Term	Definition
Hazard, danger (++)	Physical or biological situation able to cause physical or health damage in a population.
Hazardous Materials(*)	Any material that is flammable, corrosive, an oxidizing agent, explosive, toxic, poisonous, etiological, radioactive, nuclear, unduly magnetic, a chemical agent, biological research material, compressed gases, or any other material that, because of its quantity, properties, or packaging, may endanger human life or property.
Hoax scenario (++)	A scenario in which indications or alerts would deceptively indicate a level of hazard which is non-existent in order to cause disruption of the society. Often involves an announcement.
Hot zone (++)	The contaminated area where a CBRN event has occurred. The area is likely to contain dangerous concentrations of an agent and/or affected people.
Identification (+)	<p>Identification is defined as the characterization and determination of the nature of an agent or material employed in a CBRN attack or resulting from the release of Toxic Industrial Materials. Three levels can be identified:</p> <ol style="list-style-type: none"> <li>Provisional identification: this involves characterization and determination of the chemical and biological agent and the radioactive material for example by the response of hand-held field identification equipment.</li> <li>Confirmed identification: confirms a provisional identification by the means of different technology (e.g. mobile laboratory).</li> <li>Unambiguous identification and proof can only be performed by accredited laboratories through the use of specialized Sampling and Identification teams.</li> </ol>
Identification of agent (++)	The unequivocal assignment of a specific identity to a CBRN agent.
IED	Acronym for: Improvised explosive device.
IMPACT (++)	Project acronym for: Innovative Measures for Protection against CBRN Terrorism.
Improvised explosive device / dispositif explosif de circonstance (IED) (**)	A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic or incendiary chemicals and designed to destroy, incapacitate, harass or distract. It may incorporate military stores, but is normally devised from non-military components.

Term	Definition
Incident (++)	<p>See:</p> <ul style="list-style-type: none"> <li>• Terrorist CBRN incident</li> <li>• Accidental CBRN incident</li> </ul> <p>See also:</p> <ul style="list-style-type: none"> <li>• C-incident</li> <li>• B-incident</li> <li>• R- and N-incidents.</li> </ul>
Incident investigation team (++)	<p>This team should include experts in all of the relevant disciplines and team provide advice and support to the commander. The team should also include a person knowledgeable in chemical, nuclear and biological forensics, if at all possible, or at least a law enforcement forensics specialist.</p>
Indicated value	<p>A scale or decade reading.</p>
Indication or alert (++)	<p>Basic parameter of a CBRN scenario. It describes the way the attack is noticed and may include:</p> <ul style="list-style-type: none"> <li>• Announcement - Description of any announcement or other warning by terrorist group, intelligence or other source including hoaxes</li> <li>• Observations - visible or other observed very early effects</li> <li>• Detections/Warning systems - a) If detection equipment used according to pre-emptive measures, see also below. b) Probable readout on any instrument used by responders</li> <li>• Alert from developing effects, casualties</li> <li>• Alert from health system.</li> </ul>
Individual decontamination (++)	<p>Thorough decontamination of one person.</p>
Innocent alarm	<p>An alarm resulting from an actual increase in radiation level, but for reasons that are not due to the detection of illicit radioactive materials.</p>
Instrument	<p>A complete system consisting of one or more assemblies designed to quantify one or more characteristics of CBRNE materials (e.g. ionizing radiation).</p>
Intervention or controlled zone (++)	<p>The space where FRs are acting.</p>

Term	Definition
Level of protection (++)	<p>Categorization which is based on the immediate danger to health and life for personnel working in contaminated environments and could serve as a basis for suitable (levels of) measures of protection for FRs reacting to CBRN incidents. According to NIOSH/OSHA/EPA definitions.</p> <p>A: Is used when the greatest level of skin, respiratory, and eye protection is required.</p> <p>B: Is used when the highest level of respiratory protection is necessary but a lesser level of skin protection is needed.</p> <p>C: Is used when the concentration(s) and type(s) of airborne substance(s) are known and the criteria for using air-purifying respirators are met.</p> <p>D: "Normal" work uniform affording minimal protection; used for moderate I non-dangerous contamination only.</p>
Marking a zone (++)	<p>To determine a physical limit of the area where a potential danger exists.</p>
Mass decontamination (++)	<p>System or method designed for emergency decontamination of a large number (&gt; 10) of victims. To stabilize and clean the affected persons, including the FRs themselves, in order to take away the immediate hazard and prevent further dissemination of the agent.</p>
Matrix (++)	<p>The material to be collected for CBRN analysis. Examples of different matrices that might be sampled are: liquids, vapour, aerosols, water, solids, soil, clothing, vegetation etc. but also human or animal biological material.</p>
Measure (++)	<p>Basic parameter of a CBRN scenario. This includes information on warning instruments, access to detection equipment, decontamination means, medical prophylaxis and treatment, evacuation plans, capacity for analysis and identification of large number of agents, as well as well-trained FRs.</p>
Measurement (++)	<p>The system function which can create, manipulate, interpret, communicate and store information from all types of sensors that can be included or connected (external sensors) to the system.</p> <p>Sub-functions :</p> <p><u>Detection</u> of "measurement", which is to notice an abnormal situation that can indicate a CBRN event = the same meaning in activation</p>

Term	Definition
	<p><u>Sampling</u>: Collecting material without changing its composition so that it can be further analyzed</p> <p><u>Analysis</u>: Analysis consists of all the steps that are used to assure that the detection of a CBRN-agent was correct and to identify the composition of the contamination, both qualitatively and quantitatively.</p> <p><u>Monitoring</u> is performed to continuously update and ascertain the variation and reduction of the contaminated delineated areas. Monitoring can be performed for a delineated area, where the CBRN-agent is identified or of an area where a high risk is noticed - &gt; Can then be used for "early warning", as a pre-emptive measure with a surveillance purpose (of a specific place or event for example).</p>
Mission (++)	The intentional behaviour of the system. A mission is the goal-directed coordinate deployment of system functions taking into account environmental constraints.
Mixed scenario (++)	Any combination of the use of C, B, R or N agents, explosives or hoaxes in one and the same scenario.
Mixture of unknowns (++)	Issue in lab analysis when a sample may contain several C, B, R and/or N agents which are unknown. Requires suitable separation procedures.
Mobility (++)	The system function which is concerned with the transportation of FRs, casualties and equipment to, from and around a CBRN event.
Monitoring (+)	Monitoring is defined as the continuous or periodic process of determining the presence or absence of chemical, biological or radioactive or toxic industrial hazards. This may or may not include quantification.
Monitoring (Detector)	Means provided to continuously indicate the state or condition of a system or assembly.
Morbidity(*)	The ratio of sick to well individuals in a community; sick rate.
Mortality(*)	The ratio of people who die to those who survive exposure to nuclear/radiological, biological, or chemical agents; death rate.
MSDS (++)	Acronym for: Material Safety Data Sheet.

Term	Definition
NBC contamination control / lutte contre la contamination NBC (**)	The implementation of policy, doctrine and procedures, and the use of equipment to prevent or limit the spread of NBC contaminants; this includes decontamination and avoidance of contaminated areas.
NBC hazard avoidance / prévention des dangers NBC (**)	The avoiding or minimizing of the immediate and residual effects of NBC contamination through the implementation of policy, doctrine, procedures and equipment used to detect, identify, predict, warn and report NBC contamination hazards.
On-site decontamination (++)	Emergency decontamination conducted in the warm zone, in a predetermined decontamination area. In order to take away the immediate hazard and prevent further dissemination of the agent.
Operational plan (++)	The series of coordinated operations which processing will conduct to minimize the consequences of the event.
Over-range reading	The reading of an instrument when exposed to measured intensities (e.g. radiation dose, concentration of an agent) greater than the upper detection limit.
Pandemic(*)	Denoting a disease affecting or attacking the population of an extensive region, country, continent; extensively epidemic.
Pathogen	Biological agents that are disease-producing microorganisms, such as bacteria, mycoplasma, rickettsia, fungi, or viruses.
Penetration (++)	Flow of a chemical through closures, porous materials, seams and holes or other imperfections in a protective clothing material on a nonmolecular level.
Performance test	An evaluation of the performance of an instrument in response to a given influence quantity.
Permeation (++)	Process by which a chemical moves through a protective clothing material on a molecular level. Permeation involves <ul style="list-style-type: none"> <li>• sorption of molecules of the chemical into the contacted (outside) surface of a material,</li> <li>• diffusion of the sorbed molecules in the material, and</li> <li>• desorption of the molecules from the opposite (inside) surface of the material into the collection medium.</li> </ul>
Permeation rate (++)	Quantity of test chemical that passes through the protective clothing material for a given exposed surface area per unit time.

Term	Definition
Personal Protective Equipment (PPE) (++)	The personal clothing and equipment required to protect an individual from biological and chemical hazards and some nuclear effects. This ordinarily includes but must not be limited to a respirator, whole body covering and simple detection, decontamination and first-aid devices.
Physical sign of the event (++)	Any change in environment or people comportment indicating that an unusual phenomenon is occurring leading to think that a CBRN event is occurring.
Placebo mass decontamination (++)	Shower for non-contaminated people in order to avoid psychological effects and reassure valid people.
Planning (++)	The system function which prepares the system to manage all the actions before, during and after a CBRN event. Includes risk assessment, preparation, prevention, improvement process from lessons learned, etc.
Plastic explosive / explosif plastique (**)	Explosive which is malleable at normal temperatures.
Point detection	Point detection refers to devices which can be pointed at a suspect area or be a point source for detection.
PPE	Acronym for: Personal Protective Equipment.
Precision	Degree of agreement of repeated measurements of the same parameter.
Precursor	Intermediary of synthesis which directly precedes the explosive substance during the production cycle.
Protection (++)	The system function which ensures warranty of error-free operation and reliability before, during and after operation. It aims at protection of the FRs, technical equipment and the public as well.
Quarantine(*)	Detaining, isolating, or restricting the activities of people or animals exposed to a communicable disease during the period in which the disease can be transmitted to prevent others from contracting disease.
R and N incidents	Incidents where ionising radiation constitute a danger regardless of if it originates from : <ul style="list-style-type: none"> <li>- An accident at a nuclear installation or accident with radioactive substances or ionising radiation,</li> <li>- Deliberate dissemination through a terrorist action or other criminality,</li> <li>- Use of nuclear weapons.</li> </ul>

Term	Definition
Radioactive material	Radioactive material includes both special nuclear and radioactive material, unless otherwise specifically noted.
Range	All values lying between the lower and upper detection limits.
Readiness(*)	Phase of preparations to deal with an accident or incident.
Reading	The indicated or displayed value of the readout.
Recognition (++)	The determination of the nature of a detected object or phenomenon, and possibly its class or type.
Reconnaissance (++)	Operation consisting of looking for and identifying all consequences of the event (victims, contaminated area, all kinds of damage on beings and materials).
Reconnaissance and survey (++)	Detection of the presence of a given agent in an area prior to its occupation.
Release due to the event (++)	Part of the contaminating agent that escapes in the atmosphere and could contaminate large areas.
Reliability	The detector gives the same result every time for a certain agent.
Requirement (++)	<p>Description of a condition or a capacity that the System shall ensure to reach its objectives. Kinds of requirements are:</p> <ul style="list-style-type: none"> <li>• Functional requirement: describes what each sub-function should accomplish.</li> <li>• Performance requirement: gives qualitative or quantitative details about the performances the sub-function should be compliant with.</li> <li>• Physical Characteristics : quantitative and qualitative expressions (requirements) of material features, such as composition, dimensions, materials, form, fit, and their respective tolerances</li> <li>• System Quality Factors: deals with reliability – availability - maintainability - integrity.</li> <li>• Environmental conditions (temperature, rain, dust, radiation, etc.): Surroundings in which a System operates, including air, water, land, etc. and their interrelation.</li> <li>• Confidentiality - Protection - Security: deals with all security topics.</li> <li>• Interoperability: the ability of a system or a product to work with other systems or products without special effort on the part of the customer.</li> </ul>

Term	Definition
Response	Ratio of the instrument reading to the conventionally true value of the measured quantity.
Response time (++)	The time it takes between an input and an output of some function, e.g. the time between the sampling by a detector and the subsequent signal or the time between an incident and the arrival of FRs at the site.
Restricted or expert mode	Advanced operating mode used by an expert user to access spectral data and to control the parameters that can affect the result of a measurement (for example – radionuclide library, routine function control, calibration parameters, alarm thresholds, etc.). Access to this mode should be limited through password protection or other similar methods.
Re-usability (++)	The issue of repeated use of equipment (after suitable decontamination) during one incident or for several incidents.
Risk (demonstrated) (++)	Consequences of a danger or a hazard on the health or movement of a population.
RN detection (++)	Structure of radiological detection equipment: <ul style="list-style-type: none"> <li>• Health and Safety instruments: are used to give an alarm in the case of any harmful intensities of ionization radiation in surroundings and to monitor the received dose.</li> <li>• Hazard assessment instruments: are mainly meant to search for hot spots and radiation sources or to survey an area, and in some cases also give information of the radiation energy, and hence give the possibility to identify the radionuclide.</li> <li>• Mobile laboratories or portable instruments: are used for surveying larger areas or for radionuclide identification.</li> <li>• Measuring systems: include whole body counters, portal monitors, air filtering systems and stationary systems for monitoring environmental radiation levels, are used to prevent a further spread of the activity, or in the case of a spread, to assess the consequences.</li> </ul>
Robustness	The detector functions appropriately independent on external conditions.
Routine mode	Operating mode that is used by a trained non-expert user. Includes detection and identification of CBRNE material, and (for RN detectors) indication of the ambient dose equivalent rate level.

Term	Definition
Routine test	A test to which each individual device is subjected during or after manufacture to ascertain whether it complies with certain criteria.
Scenario (++)	See: <ul style="list-style-type: none"> <li>• Type of agent</li> <li>• Dissemination</li> <li>• Competence of actor</li> <li>• Target</li> <li>• Indication or alert</li> <li>• Effects</li> <li>• Evolution</li> <li>• Measures</li> </ul> See also: <ul style="list-style-type: none"> <li>• Mixed scenario</li> <li>• Hoax scenario.</li> </ul>
Scene of intervention (++)	The physical place and space area on which the FRs have to intervene in the frame work of an event.
Screening (++)	A systematic examination or assessment of a scene of intervention or a sample, done especially to detect or to classify an unwanted substance or attribute.
Sensitivity	Lowest concentration to be detected within a prescribed test situation.
Sentinel organisms	The use of animals and even plants as indicators for detection.
SIBCRA (+)	Sampling Identification Biological Chemical Radiological Agents (SIBCRA) is a process of the collection, transportation and provisional identification of suspected chemical and biological agents and radioactive materials with the purpose of consequent analysis of samples in a CBRN Laboratory. Conducted by fully trained and equipped personnel to support the capability of CBRN Labs.
Single/Multiple detector	The detector can recognize a single or several agents.
SOP	Acronym for: Standard Operating Procedure
Special nuclear material (SNM)	Plutonium, uranium-233, or uranium enriched in the isotopes uranium-233 or uranium-235. The definition includes any other material that the Commission determines to be special nuclear material, but does not include source material.
Standard deviation	The positive square root of the variance.

Term	Definition
Standard test conditions	The range of values of a set of influence quantities under which a calibration or a measurement of response is carried out.
Standardization / normalisation (**)	The development and implementation of concepts, doctrines, procedures and designs in order to achieve and maintain the compatibility, interchangeability or commonality which are necessary to attain the required level of interoperability, or to optimize the use of resources, in the fields of operations, material and administration.
Stand-off detection	Stand-off detectors are stationary systems or mobile units designed to monitor large areas remotely.
Statistical fluctuations	For any test involving the use of radiation, if the magnitude of the statistical fluctuations of the indication arising from the random nature of radiation alone is a significant fraction of the variation of the indication permitted in the test, then sufficient readings shall be taken to ensure that the mean value of such readings may be estimated with sufficient accuracy to demonstrate compliance with the test in question. The interval between such readings shall be sufficient to ensure that the readings are statistically independent.
Suicide bomber detection	Systems that detect the presence of CBRNE devices concealed by persons engaged in suicide attacks against government installations, public facilities, both domestic and international.
Supplementary tests	Tests intended to provide supplementary information on certain characteristics of the assemblies.
Surveillance (+)	Surveillance is defined as the systematic observation of aerospace, surface areas, places, persons, or things by visual, electronic, mechanical, or other means for discovering the presence or absence of CBRN or TIM hazards. CBRN Surveillance results can prompt CBRN Reconnaissance.
Sustainability (++)	The system function which offers the possibilities to maintain or restore the operability, the integrity and functionality of the system.
Syndromes surveillance	Syndromes surveillance refers to the process of collecting and analysing statistical data on health trends, particularly symptoms reported by people seeking care in health care facilities.

Term	Definition
System (++)	A system is an organized combination of technology (hardware, software) and human personnel, organized in such a way that it can really perform its mission (the tasks in the operational environment for which the system is designed).
Target (++)	Basic parameter of a CBRN scenario. Target description includes <ul style="list-style-type: none"> <li>• Location - Description of location and surroundings (City, production plant, arena, railway station etc.)</li> <li>• Enclosed / open area</li> <li>• Weather - A ground weather state (temperature, wind speed at specified height and if applicable direction, precipitation, stability (stable, neutral, unstable = terms used in NATO A TP45b), humidity, sunlight and of covering of snow).</li> <li>• How many affected - Number of people probably involved, not necessary affected (given, if applicable, in categories: 1, 10, 100 . ...10,000, 100,000 etc.)</li> <li>• When - Time of day and/or referring to specific cycle or event (time and/or e.g. „rush hour", during sports event, demonstration etc.)</li> </ul>
Task (++)	In a System the personnel perform different tasks to accomplish a function. Individuals and teams are trained to make use of the technological possibilities that the System offers.
Terrorist CBRN incident (++)	Any kind of event that produces victims due to C, B, R, and N agents intentionally released by persons or dedicated devices to aggress the population could they be of military, industrial, natural or improvised origin.
Test	A procedure whereby the instrument, circuit, or component is evaluated.
Threat (possible) (++)	Voluntarily announced intention to use CBRN agents against population in order to induce fear or panic.
Toxic Industrial Chemical (TIC) (++)	Any chemical toxic substance, whatever its physical phase, known for its toxicity, which can be variable in time or not.
Toxic Industrial Hazards (TIH) (+)	The hazard resulting from the release by any means of TIM resulting in the contamination or irradiation of personnel or the environment, area or any particular object.

Term	Definition
Toxic Industrial Materials (TIM) (+)	Toxic Industrial Materials (TIM) is a generic term for toxic or radioactive compounds in solid, liquid, aerosolized or gaseous form. These may be used, or stored for use for industrial, commercial, medical, military or domestic purposes. TIM may be chemical, biological, radioactive and described as Toxic Industrial Chemicals (TIC), Toxic Industrial Biological including pathogenic material (TIB) or Toxic Industrial Radiological (TIR) materials.
Trace detection	Detection technologies able to detect CBRNE agents (often explosives molecules) in trace mode (very fine solid particles).
Traceability (++)	Ascertainment of the successive stages in a process or discovery by searching for a cause.
Treatment (++)	<p>The system function which is defined as the process of removing or neutralizing a hazard and treating its consequences from the environment, property, or life form, especially human.</p> <p>Sub-functions “treatment for people” means decontamination and medical treatment. Sub-function “decontaminate Equipment/tools” deals with the process used to clean equipment/tools that are used during a CBRN event. Sub-function “decontaminate facilities” deals with the process used to clean facilities which were involved during a CBRN event.</p>
Triage of contaminated / non contaminated persons (++)	To sort contaminated and uncontaminated people to dispatch contaminated victims toward the showers.
Triage of victims (++)	To sort the victims according to the severity of their wounds.
Type of agent (++)	Basic parameter of a CBRN scenario description. Its description should include scientific and popular name, classification, relevant physical properties, accessibility, and production. Influence on violence, effects, time-scale, measures etc.
Type test	Initial test of two or more production instruments made to a specific design to show that the design meets defined specifications.
Type test report	The manufacturer shall make available, at the request of the purchaser, the report on the type tests performed.

Term	Definition
Uncertainty	The estimated bounds of the deviation from the conventionally true value, generally expressed as a percent of the mean, ordinarily taken as the square root of the sum of the square of two components: 1) random errors that are evaluated by statistical means; and 2) systematic errors that are evaluated by other means.
User's competence	Lab technicians; First responders, experts, end-users, technical competence with respect to detection equipment.
Validation / validation (**)	The confirmation of the capabilities and performance of organizations, individuals, material or systems to meet defined standards or criteria, through the provision of objective evidence.
Validation of detectors	Validation means an official authority would ensure that privately produced detectors meet all specifications.
Vapour detection	Detection technologies able to detect explosive molecules in vapour mode.
Variance	A measure of statistical dispersion of values, which is the sum of the squared deviation of observations from their mean divided by one less than the number of observations.
Vectors(*)	An animal, insect, or other organism that carries and transmits a virus or other microorganism.
Vehicle borne detection	Detection technologies integrated on vehicles (ground vehicles, UAVs, unmanned aerial vehicles, robots), able to provide a stand-off detection capability for CBRNE threats.
Victims (casualties) (++)	Persons that are injured, wounded, poisoned, contaminated by the release or the explosion that have been produced by the event.
Warm Zone (++)	An area separating the hot from the cold zone where the contamination is reduced. The space where the hazard is present only due to transferred contamination from victims and/or equipment. Here FR have to intervene to collect and make triage of victims / involved persons and possibly to provide urgent rescue to critical victims. The atmosphere could be lightly contaminated depending upon the type of agent.
Warning (+)	A command approved statement that a chemical, biological, radiological or nuclear attack or release other than attack has occurred or is presumed to have occurred.

Term	Definition
Warning system (++)	The indication of the presence of a CBRN at a concentration which can cause casualties.
Zoonosis(*)	An infection or infestation shared in nature by humans and other animals that are the normal or usual host; a disease of humans acquired from an animal source.