INTERNATIONAL CBRNE MASTER COURSES SERIES

COLLANA DI SICUREZZA CHIMICA, BIOLOGICA, RADIOLOGICA E NUCLEARE

13

Marco Gambini
Director of Department of Industrial Engineering, University of Rome Tor Vergata
Orazio Schillaci
Full Professor – University of Rome Tor Vergata
Radonav Karkalic
Associate Professor – CBRN Department, Military Academy, University of Defence Republic of Serbia
Giacinto Ottaviani
Rear Admiral – Italian Naval Academy
Sandro Mancinelli
Associate Professor– Didactic Management Unit of International Master Courses in Protection Against CBRNe events, University of Rome Tor Vergata
Francesco D'Errico
Associate Professor–University of Pisa

Valentina Gabbarini
International Master Courses in Protection Against CBRNe events, University of Rome Tor Vergata
Luigi Antonio Poggi
University of Rome Tor Vergata
Jean-François Ciparisse
University of Rome Tor Vergata
Ahmed Gamal Ibrahim
University of Rome Tor Vergata
Gian Marco Ludovici
University of Rome Tor Vergata
Laura Morciano
University of Rome Tor Vergata

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Peace cannot be kept by force; it can only be achieved by understanding.

Albert Einstein

The CBRNe Book Series was born as an initiative of the Directive Board and of the Scientific Committee of "International Master Courses in Protection Against CBRNe events" (www.mastercbrn.com) at the University of Rome Tor Vergata. The evolution and increase in Security and Safety threats at an international level place remarkable focus on the improvement of the emergency systems to deal with crisis, including those connected to ordinary and non–conventional events (Chemical, Biological, Radiological, Nuclear, and explosives). In every industrial Country there are multiple entities with specialized teams in very specific fields, but the complexity of the events requires professionals that not only have specific know-how, but also expertise in the entire relevant areas. Given the global interest in these issues, the Department of Industrial Engineering and the Faculty of Medicine and Surgery of the Tor Vergata University organize the international Master Courses in "Protection against CBRNe events": I Level Master Course in "Protection against CBRNe events" (120 ECTS) and II Level Master Course in "Protection against CBRNe events" (60 ECTS). These courses aim at providing attendees with comprehensive competences in the field of CBRNe Safety and Security, through teaching and training specifically focused on real needs. Both Master Courses are designed according to the spirit of the Bologna Process for Higher Education, the Italian law and educational system. The Master Courses are organized also in cooperation with the following Italian Public Entities:

— Presidenza del Consiglio dei Ministri (Prime Minister's Office);
— Ministero della Difesa (Ministry of Defence);
— Ministero dell'Interno (Ministry of The Interior);
— Istituto Superiore di Sanità (National Health Institute);
— Istituto Nazionale di Geofisica e Vulcanologia (National Institute for Geophysics and Vulcanology);
— ENEA (Italian National Agency for New Technology, Energy and Sustainable Economic Development);

— University Consortia CRATI, MARIS and SCIRE;
— Comitato Parlamentare per l'Innovazione Tecnologica (Parliamentary Committee for Technological Innovation).

And together with the following International Entities:

— OPCW (Organization for the Prohibition of Chemical Weapons)
— NATO Joint Centre Of Excellence (Czech Republic);
— NATO SCHOOL of Oberammergau (Germany);
— HotZone Solutions Group (The Netherlands);
— VVU–026 Sternberk (Czech Republic);
— Seibersdorf Laboratories GmbH (Austria);
— Chernobyl Centre (Ukraine).

All the above–mentioned organizations have signed official cooperation agreements with the University of Rome Tor Vergata in the aim of Master course activities. The Master have also cooperation with OSCE, IAEA, ECDC, KEMEA in the aim of the didactical activities and we are working to formalize this collaboration with a formal cooperation agreement.

Both Master Courses have been officially granted the "NATO selected" status and have been included in the NATO Education and Training Opportunities Catalogue (ETOC) and also they are supported by OPCW.

The purpose of the CBRNe book series is to give a new perspective of the safety and security risks from both a civil and military point of view, touching all the aspects of the risks from the technological to the medical ones, talking about agents and effects, protection, decontamination, training, emergency management, didactic, investigation, communication and policy.

The authors will be experts of the sector coming from civil, military, academic/research and private realities. A special thanks for the realization of this series goes to Prof. Carlo Bellecci for his initial encouragement, continuous support and help.

Nel mese di Agosto 2016 il Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR) ha inserito la collana nella lista di quelle ufficialmente riconosciute con i seguenti riferimenti:

— codice di classificazione: E237557;
— titolo: CBRNE BOOK SERIES.

During the month of August, 2016, the Italian Minister for Instruction, University and Research (MIUR) has officially added this book series in the list of the official publications recognized by the Minister itself with the following references:

— classification code: E237557;
— title: CBRNE BOOK SERIES.

Celso Baía

Operational Response to Hazmat/CBRNe Incidents

Comparison between Milan and Lisbon

Aracne editrice

www.aracneeditrice.it
info@aracneeditrice.it

www.gioacchinoonoratieditore.it
info@gioacchinoonoratieditore.it

via Vittorio Veneto, 20
00020 Canterano (RM)
(06) 45551463

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Introduction

The CBRN Glossary of the European Commission Directorate–General Home Affairs defines "Hazmat" and "CBRN" as two acronyms that respectively translates "Hazardous Materials" and "Chemical, Biological, Radiological, Nuclear" that sometimes is extended to "CBRNe", where the "e" refers to the threat of malicious use of explosives.

In everyday language the term "Hazardous Materials", also referred to as dangerous/hazardous substances or goods, means solids, liquids, or gases that can harm people, other living organisms, property, or the environment (FEMA, 2009). They not only include materials that are toxic, radioactive, flammable, explosive, corrosive, oxidizers, asphyxiates, biohazards, pathogen or allergen substances and organisms, but also materials with physical conditions or other characteristics that render them hazardous in specific circumstances, such as compressed gases and liquids, or hot/cold materials (CFRA – The Chief Fire and Rescue Adviser, 2012).

The Center for Excellence in Emergency Preparedness (CEEP) of Ontario – Canada also refers that «CBRN are weaponized or non–weaponized Chemical, Biological, Radiological and Nuclear materials that can cause great harm and pose significant threats in the hands of terrorists» and defines that a CBRN incident can be classified as: accidental incidents, when are «caused by human error or natural or technological reasons, such as spills, accidental releases or leakages» usually referred as hazmat accidents or intentional incidents, that includes «criminal acts such as the deliberate dumping or release of hazardous materials to avoid regulatory requirements, the malicious, but non–politically motivated poisoning of one or more individuals» and «terrorist acts [...] that involve serious violence to persons or property for a political, religious or ideological purpose and/or that are a matter of national interest».

Traditionally these two acronyms are also largely considered separately by the emergency services and other responders where CBRNe

events being those of a deliberate or malicious nature, and Hazmat incidents as the non–intentional or unplanned/uncontrolled release of a hazardous material (FEMA, 2009).

Even acknowledging that intentional CBRNe incidents differ from Hazmat incidents because they have unique implication relating to federal responsibilities, multi–agency working, public safety, public confidence, national security and international relations, the principles, resources and the operational response to these two situations made by the first responders that arrive on scene, generally speaking, they can be quite similar and be defined as the "actions taken to deal with the immediate effects of an emergency (CFRA – The Chief Fire and Rescue Adviser, 2012). Even in Radiological emergencies, the basic actions made by firefighter should not differ, in general, from those taken in response to emergencies involving other hazardous materials (IAEA – International Atomic Energy Agency, 2006). Therefore, we can assume that on an early stage of an incident, there are no major differences regarding the first response weather if it is a non–intentional Hazmat or a deliberate intentional CBRNe event.

Another issue that has a great importance is related with the response time. In a chemical Hazmat incident, the decisions made and actions taken in the first few minutes of a response will often establish the character of the overall response – and ultimately its success or failure (United States Department of Health & Human Services – National Library of Medicine, 2017). The same principles are applied to Radiological situations where experience shows that local emergency, as fire brigades will have the most important role in the early response (IAEA – International Atomic Energy Agency, 2006).

In both cases, our senses (e.g. smell or sight) may not be able to detect hazardous levels of the material, thus, the initial response is often carried out based on secondary indications of the hazards such as labels, signs or placards indicating the presence of a hazardous material, the appearance of medical symptoms in exposed individuals or readings from specialized instruments. Although the risks and hazards associated with this type of substances are the same irrespective of the region, country or continent, and as such, an equivalent operational response to situations involving the same substances is expected, the existing legal framework in each country with regard to response to Hazmat/CBRNe events may imply that it is effectively different.

Nowadays, lots of information and guidelines that are free available can be used as a very helpful tool to assist in responding to incidents involving dangerous substances. It is very important that the incident commander on scene have all the most suitable information and tools available to help him choose the most appropriate response procedures, because as already mentioned, the actions taken in the first moments of an incident will certainly be determinants and influence the consequences that may arise.

Nomenclature

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ANPC	National Civil Protection Authority of Portugal
CAMEO	Computer–Aided Management of Emergency Operations
CANUTEC	Canadian Transport Emergency Centre
CBRNe	Chemical, Biological, Radiological, Nuclear and explosive
CFRA	Chief Fire and Rescue Adviser
CIQUIME	Chemical Information Center for Emergencies of Argentina
CNVVF	Corpo Nazionale dei Vigili del Fuoco
CWA	Chemical Warfare Agents
DON	Portuguese National Operational Directive n. 3
DOT	United States Department of Transportation
EPA	United States Environmental Protection Agency
ERG2016	Emergency Response Guidebook 2016 Edition
ERICards	Emergency Response Intervention Cards
FEMA	Federal Emergency Management Agency
HAZMAT	Hazardous Materials
IAEA	International Atomic Energy Agency
MARPLOT	Mapping Application for Response, Planning, and Local Operational Tasks
PHMSA	Pipeline and Hazardous Materials Safety Administration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
RSB	Regimento de Sapadores Bombeiros de Lisboa
USAR	Urban Search And Rescue