TRAINING PROGRAM FOR CBRNe/HAZMAT EMERGENCYRESPONSE UNIT, LOCAL EMERGENCY RESPONSE AND MEDICAL PERSONNEL

Proposal of the initial steps for the program development

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Proposal of the initial steps for development of

"TRAINING PROGRAM FOR CBRNE/HAZMAT EMERGENCY RESPONSE UNIT, LOCAL EMERGENCY RESPONSE AND MEDICAL PERSONNEL"

In order to enhance sustainability in capabilities and capacities for preparedness, response, mitigation and restauration countermeasures against CBRNe/HAZMAT events the **inter-agency CBRNe/HAZMAT Emergency Response Unit (ERU)** should be established. The staff of the ERU should be selected from different agencies and services with the aim to serve as the trainers for additional staff within the agencies and services to provide qualified responders for full size and operational core ERT. An illustrative ERU structure is presented in the organogram of Annex 1.

Inter-agency character of the ERU requires joint collaboration of the **three tiers** responders and support services:

First tier are the First Responders (FR) agencies – Fire Service, Law enforcement, Emergency Medical Service, Disaster Emergency Agency, army units, etc.

Second tier will include the Medical First Receivers (MFR) - emergency medical departments, health care facilities, Occupational Safety and Health Administration and services.

Third tier will include staff of supporting agencies and services such as armed forces, coast guard, public services, environmental agency, hazardous waste management providers, etc.

In addition to that each agency and services will be further structured based on operational specialities. For example the Fire service is composed of several operational specialisations such fire suppression, urban search & rescue, HAZMAT, etc. Law enforcement is composed of Order & Traffic police, Explosive Ordnance Disposal (EOD) service, Special Intervention Forces, Criminal & Forensic Investigation service, Legal service, etc.

All emergency response, investigation and restoration personnel will require training by each specialisation for their occupational and labour safety and for high levels of effectiveness work in HAZMAT/CBRNe risk environment.

In this regard the key tasks for an effective formulation and future realisation of a training program for the ERU and for local emergency response and medical personnel should be taken into account as follows:

Task 1. Structure of the ERU

There will be the needs for formulation of the key objectives for the inter-agency ERU with full description of the components (through command, control, communication, operations, and logistics) and operational structure. This task will require a **survey** (inventory analysis) **on the current level of preparedness**, related available SOPs, equipment availability, and training of individuals, sub-teams and response/service teams.

Task 2. HAZMAT/CBRNe scenarios for emergency preparedness analyses

The set of CBRNe scenarios covers a wide variety of emergency response challenges for C, B, R and N events of deliberate or accidental nature (see Annex 2 and 3). The scenarios are inspired by or directly based on accidents (bad practice or failure), natural outbreaks or CBRN terrorism events that have occurred, or likely should occur. The scenario descriptions are generic in order to be adaptable to a wide range of applications associated with the processes of preparedness, response, mitigation and restauration in the cases of CBRNe related events.

The intention is that these scenarios can be adapted and specified in more detail to fit specific needs. For instance, for use in emergency preparedness planning and exercises, the scenarios form a basis for the more detailed storyline development and exercise injects. To do this, local specific background information is needed. Based on who the players are, information is required on the resources available, the emergency response actors and their responsibilities, organization and equipment.

Also the role of the first responders in the initial phase is often decisive for the consequences and outcome of an incident. Carrying out an effective first response can at best reduce the number of lives lost, limit the health consequences, and save property and the environment. The current analysis focuses on preparedness and crisis management for incidents with immediate consequences and symptoms quickly visible, which need to be handled by first responders at the scene.

This analysis can inspire organisations/agencies and others who want to make use of the reference set of CBRN scenarios for CBRN **emergency preparedness planning, education, training, and top-table exercise, tactical, operational and full field exercises**

Task 3. HAZMAT/CBRNe Emergency Response Plan

Purpose of a plan is designed to prepare jurisdiction and its political subdivisions for HAZMAT/CBRNe event/incident response and to minimize the exposure to or damage from materials that could adversely impact human health and safety or the environment. This document **outlines the roles, responsibilities, procedures and organizational relationships of government agencies and private entities when responding to and recovering from a CBRNe and hazardous materials event**. The plan provides guidance for HAZMAT/CBRN incident planning, notification and response.

Task 4. HAZMAT/CBRNe SOP, WP and JOP

The plan from the task 3 is a fundamental starting point for detailed definition of response operations supported with specific standard operation procedures (SOP), detailed working procedures (WP) of individuals, sub-teams and teams including Joint Inter-Agency Operation Procedures (JOP) for the a ERU as whole. The SOPs will be subject of evaluation through training program courses, table top exercises and a field exercises. Thus **SOPs are needed for formulation of the aims, enabling objectives, subjects of training courses and evaluation criteria of the trainees**.

Task 5. Professional Competence of Responders

The methods and procedures used to respond to the release of HAZMAT/CBRNe should conform to the standards set in a Standard for Professional Competence of Responders to HAZMAT/CBRNe events/incidents and only vary by training and competency. In the absence of any competency criteria it will be necessary to add the missing competency curriculum based on required operations needs of the responders and supported staff.

Professional competencies for particular categories of First responders and First Receivers and servicemen/practitioners are key components for training program and the course subjects' development. **Core performance competencies will be a fundamental criterion for development of enabling/learning objectives and the criteria for the performance appraisal of the trainees during training and exercise events** (see Annex 4).

Based on selected priority of the scenarios the **program of training for different categories of the responders should be tailored** accordingly in order to be focused on preparedness and effective and fast response.

Task 6. Equipment identification and availability

Realism of training program and hands on training courses are fully dependent on availability of required equipment for real response operations. Personnel from the ERU and other responders should be **adequately trained to use, handle and maintain all equipment**. Therefore **selection of equipment and required quantity on time** is needed for **realistic individual and team training lectures, hands on practice and the exercises.**

The equipment and material for CBRN/HAZMAT Event Response Unit should be categorised in to 10 technological groups:

1. **Detection, identification, sampling** (detectors/monitors, analytical instruments, mobile laboratory, sampling sets, etc.)
2. **Protection** (personal protection assembles, rescue, safety)
3. **Decontamination** (emergency-personal, operational, thorough and mass decontamination)
4. **Medical** (prophylaxis, first aid, advanced life support and treatment)
5. **Rescue**
6. **Communication** (wireless and line, navigation, recording, optical etc.)
7. **Explosive ordnance disposal** (EOD)

8. **Forensics**
9. **Clean up** (HAZMAT containers, construction machines, waste disposal, etc.)
10. **Logistics** (transportation, board & lodging, administration, security etc.)

Review of available equipment and filling gaps of equipment needed **is a prerequisite for tailoring and conduct of training courses**.

Task 7. CBRNe/HAZMAT Training Program for the ERU and local emergency response and medical personnel.

The training program based on the review outcomes and identified needs of the **tasks 1 to 6** should be divided into 6 categories of training:

Category A: Basic training (Awareness)
Category B: Advanced training (Operational)
Category C: Specialised training (Technicians)
Category D: Live Agent Training (LAT)
Category E: Exercises (scenario based Table top exercises and Field exercises)
Category F: Refresh training (Re-qualification)

Training categories A, B, C, E and F would be primarily conducted in a country. **Category D would require combined training at the special training centres and/or facilities outside the country**.

Design of training courses by a speciality and the performance level will be formulated on a **modular basis** of **instructional 25 Modules** (see Table 1). This approach will allow flexibility in tailoring of specific courses targeted for different categories of the responders (first responders, first receivers, specialists and services staff) and the levels of their required qualifications.

Each training module will contain substantial chapters/tasks and hand on skills elaborated in **three performance levels** for qualification of the individuals:

I. **AL**: Awareness Level
II. **OL**: Operational Level
III. **TL** Technician Level

Each module's level will **be differentiated through its objectives, depth of knowledge and skills required, the content, the quantity of teaching/training hours and performance examinations.**

Table 1. List of CBRNe/ HAZMAT Training Modules

MODULE ID #	MODULE TITLE	MODULE LEVEL
M 1	HAZARD AND RISK ASSESSMENT OF CBRNe/HAZMAT	**AL/OL**
M 2	PROPERTIES OF CBRNe/HAZMAT	**AL/OL**
M 3	EXPOSURE TO CBRNe/HAZMAT	**AL/OL**
M 4	DETECTION AND MONITORING OF CBRNe/HAZMAT	AL/**OL/TL**
M 5	SAMPLING & IDENTIFICATION OF CBRNe/HAZMAT	AL/**OL/TL**
M 6	NON-DESTRUCTION EVALUATION OF CBRNe/HAZMAT	**OL/TL**
M 7	EXPLOSIVE ORDNANCE DISPOSAL OF CBRNe/HAZMAT	**OL/TL**
M 8	RECONNAISSANCE OF CBRNe/HAZMAT SCENE	AL/**OL/TL**
M 9	OCCUPATIONAL HEALTH & SAFETY TO CBRNe/HAZMAT	AL/**OL**
M 10	HEAT STRESS MANAGEMENT	AL/**OL**
M 11	MEDICAL COUNTERMEASURES TO CBRN/HAZMAT	**OL/TL**
M 12	ADVANCED CBRNe/HAZMAT LIFE SUPPORT	**OL/TL**
M 13	EMERGENCY MEDICAL RESPONSE TO CBRNe/HAZMAT	**AL/OL/TL**
M 14	PSYCHOLOGY STRESS TRAUMA FIRST AID	**AL/OL**
M 15	PHYSICAL PROTECTION TO CBRNe/HAZMAT	**AL/OL**
M 16	DECONTAMINATION OF CBRNe/HAZMAT	**AL/OL/TL**
M 17	CONSEQUENCE MANAGEMENT OF CBRNe/HAZMAT EVENTS	AL/**OL**
M 18	COMMAND, CONTROL, COMMUNICATIONS & REPORTING	AL/**OL**
M 19	FORENSIC AND INVESTIGATION OF CBRNe/HAZMAT EVENTS	**AL/OL/TL**
M 20	RESPONSE TO CBRNe/HAZMAT EVENTS	AL/**OL/TL**
M 21	CLEAN UP AND SAFE DISPOSAL OF CBRNe/HAZMAT	AL/**OL/TL**
M 22	ENVIRONMENTAL MONITORING OF SCENE & DISPOSAL SITE	AL/**OL**
M 23	EQUIPMENT MAINTENANCE, REPAIR & STORAGE	**OL/TL**
M 24	LIVE CBRNe/HAZMAT AGENT TRAINING	**OL/TL**
M 25	REFRESH TRAINING FOR CBRNe/HAZMAT	**AL/OL/TL**
M 26	TABLE TOP EXERCISES & FIELD EXERCISES	**AL/OL/TL**

Note: The Module 24 on LIVE CBRNe/HAZMAT AGENT TRAINING will be assigned only for those participants successfully qualified in operational or technicians level training courses (OL/ TL).

An illustrative example of the **CBRNe/HAZMAT Training Program** courses structure is in following Chart 1.
Based on training priorities for the ERU and local response and medical personnel the training programme should be developed in a form of a **Training Development Plan** (see Table 2 and appendixes).

Task 8. Assessment Visit

The assessment visit of **DEKONTA CBRN Ltd and associates staff** based on a **formal invitation of a requested country will be compulsory** in order to assess on-site current capabilities and capacities related to preparedness for CBRNe/HAZMAT events. Round table **discussions** with the representatives of the responders` agencies and the **visits of the emergency installations and the equipment review** will be the essential part of the training requirements identification as a fundamental steps for the program development in close collaboration with a requested country`s responsible representatives.

Chart 1 An illustrative organogram of CBRNe/HAZMAt Training Program

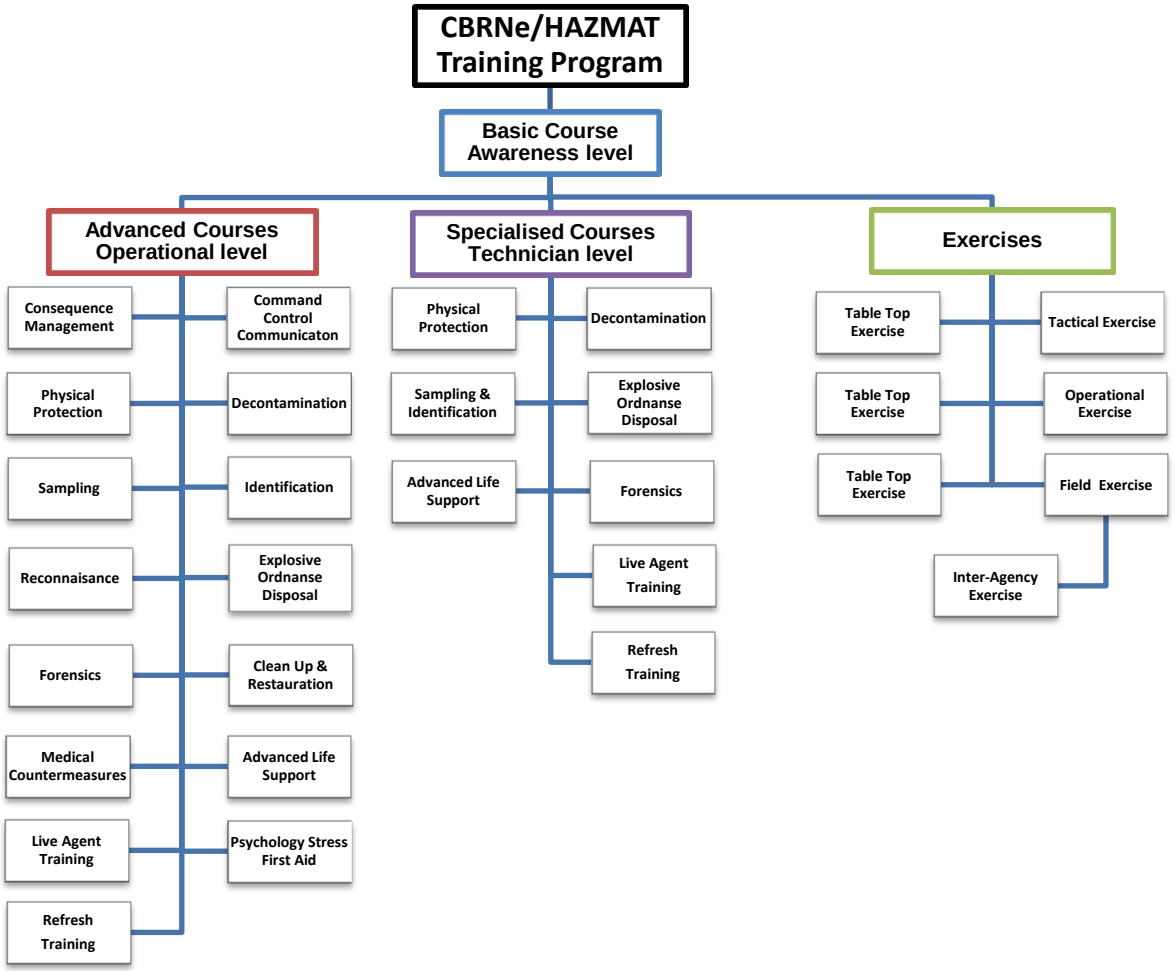

Table 2 An illustrative list and appendixes of the content Training Development Plan

TRAINING DEVELOPMENT PLAN
for
CBRNe /HAZMAT ACCIDENT RESPONSE TRAINING PROGRAM

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APPENDIX G Curriculum Live Agent Training
APPENDIX H Trainee Course Guide
APPENDIX J Trainee Course Evaluation Questionnaire
APPENDIX K Timetable of Courses
APPENDIX L Equipment
APPENDIX M Cost Estimate of Training Program

Illustrative examples of the training courses curricula are in the appendixes.

Appendix A
An example of the Curriculum CBRNe /HAZMAT Accident Response Basic Course
Awareness Level
(2 weeks-10 working days-7 contact hours per day)

ID #		Instruction Subject	Type of Instruction	Contact Hours
MODULE	**M1**	**CBRNe /HAZMAT HAZARD AND RISK ASSESSMENT**		**4**
UNIT	M1/U1	Threats with accidental release and deliberate use of CBRNe /HAZMAT	lecture	
	M1/U2	Methods of release and dispersion of CBRNe /HAZMAT	lecture/demo	
	M1/U3	Meteorological effect and downwind hazard prediction	lecture	
	M1/U4	CBRNe /HAZMAT risk assessment	lecture/demo	
MODULE	**M2**	**PROPERTIES OF CBRNe /HAZMAT**		**2**
UNIT	M2/U1	Classification of CBRNe /HAZMAT	lecture	
	M2/U2	Chemical and physical properties CW/TIC	lecture/demo	
MODULE	**M3**	**EXPOSURE TO CBRNe /HAZMAT**		**4**
UNIT	M3/U1	Toxic and explosive properties and exposure t CBRNe /HAZMAT	lecture	
	M3/U2	Effect of CW/HAZMAT on humans and environment	lecture/demo	
MODULE	**M4**	**DETECTION & MONITORING CBRNe /HAZMA**		**5**
UNIT	M4/U1	Principles of CBRNe /HAZMAT detection	lecture	
	M4/U2	Detectors and monitors	lecture/demo	
	M4/U3	Practice with handheld detection devices	exercise	
	M4/U4	CBRNe /HAZMAT reconnaissance	practice	
MODULE	**M5**	**SAMPLING & IDENTIFICATION CBRNe /HAZMAT**		**3**
UNIT	M5/U1	Sampling CBRNe /HAZMAT	lecture/demo	
	M5/U2	Analytical techniques of CBRNe /HAZMAT	lecture	
	M5/U3	Portable analytical instruments	lecture/demo	
MODULE	**M6**	**NON-DESTRUCTION EVALUATION CBRNe /HAZMAT**		**1**

UNIT	M5/U1	Non-destruction evaluation techniques Identification of CBRNe /HAZMAT fill	lecture	
MODULE	**M7**	**CBRNe /HAZMAT RECONNAISSANCE**		**5**
UNIT	M7/U1	Equipment and tactics for CBRNe /HAZMAT Reconnaissance	lecture	
	M7/U2	On-foot CBRNe /HAZMAT reconnaissance	practice exercise	
MODULE	**M12**	**PHYSICAL PROTECTION CBRNe /HAZMAT**		**7**
UNIT	M12/U1	Principles of protection against CBRNe /HAZMAT	lecture	
	M12/U2	Respiratory protection	lecture/demo	
	M12/U3	Mask Fit Test	practice	
	M12/U4	Skin protection	lecture/demo	
	M12/U6	Collective protection	lecture/demo	
	M12/U7	Testing PPE	lecture/demo	
	M12/U8	Donning/doffing PPE	practice	
MODULE	**M9**	**HEAT STRESS MANAGEMENT**		**2**
	M9/U1	Heat stress management with PPE	lecture	
	M9/U2	Exercise with PPE in hot conditions	exercise	
MODULE	**M13**	**DECONTAMINATION CBRNe /HAZMAT**		**6**
UNIT	M13/U1	Decontamination principles and technologies	lecture	
	M13/U2	Decontamination equipment	lecture/demo	
	M13/U3	Emergency, operational, thorough and mass casualties decontamination	lecture/demo	
	M13/U4	Practice of individual emergency decontamination	practice	
	M13/U5	Practice of operational decontamination	practice	
	M13/U6	Practice of victims decontamination	practice	
	M13/U7	Contamination Control Station	practice	
MODULE	**M10**	**MEDICAL CBRNe /HAZMAT COUNTERMEASURES**		**4**
UNIT	M10/U1	Signs and symptoms of CBRNe /HAZMAT exposure	lecture/demo	
	M10/U2	Prophylaxis and antidotes	lecture/demo	
	M10/U3	Triage and therapy	lecture	
	M10/U4	Resuscitation and management of a patient	lecture/demo	
MODULE	**M11**	**EMERGENCY MEDICAL RESPONSE TO CBRNe /HAZMAT**		**4**
UNIT	M11/U1	Basic Life Support (BLS) and Toxic Advanced Life Support (TOXALS)	lecture/demo	
	M11/U2	Antidote administration	practice	
	M11/U3	Cut-Off contaminated clothing	practice	
	M11/U4	Basic Life Support in contaminated environment	practice	
MODULE	**M17**	**RESPONSE TO CBRNe /HAZMAT EVENTS**		**5**
UNIT	M17/U1	Accident consequence management	lecture	

	M17/U2	Role of the first responders	lecture	
	M17/U3	Search and rescue in contaminated environment	practice	
	M17/U4	Accident response and mitigation of CBRNe /HAZMAT releases	practice	
MODULE	**M19**	**INVESTIGATION OF CBRNe /HAZMAT EVENTS**		**3**
	M19/U1	Investigation of alleged CBRNe /HAZMAT events	lecture	
	M19/U2	Top-table exercise for alleged CBRNe /HAZMA accident	Top-table exercise	
MODULE	**M23**	**EXERCISE OF CBRNE RESPONSE**		**6**
UNIT	M23/U1	Response planning to CBRNe /HAZMAT event	Top-table exercise	
	M23/U2	Scenario driven practical exercise in “CW disposal facility”	Field exercise	
MODULE	**M20**	**CBRNe /HAZMAT SAFE DISPOSAL**		**2**
UNIT	M20/U1	Methods of safe disposal CW effluents and HAZMAT	lecture	
MODULE	**M21**	**ENVIRONMENTAL MONITORING OF DISPOSA SITE**		**2**
UNIT	M21/U1	Principles, legislations and techniques for disposal sites monitoring	lecture	
MODULE	**M18**	**EQUIPMENT MAINTENANCE, REPAIR & STORAGE**		**2**
UNIT	M18/U1	Equipment control and maintenance	lecture/demo	
	M18/U2	Equipment storage and serviceability	lecture	
MODULE	**E**	**EVALUATION**		**3**
UNIT	E1	Evaluation of trainees	Quiz	
	E2	Evaluation of the training course	Questionnaire	
		Total Number of Contact Hours		**70**

Appendix B
Curriculum of Consequence Management Advanced Course
Operational Level (OL)
(1 week-5 working days-6 contact hours per day)

ID #		Instruction Subject	Type of Instruction	Contact Hours
MODULE	**M 15**	**CONSEQUENCE MANAGEMENT**		**10**
UNIT	M15/U1	CM Assessment and Measures	lecture	
	M15/U2	CM Planning Tactics, Techniques, and Procedures	lecture	
	M15/U3	CM Readiness Tactics, Techniques, and Procedures	lecture	
	M15/U4	CM Response Tactics, Techniques, and Procedures	lecture	
	M15/U5	CM Recovery Tactics, Techniques, and Procedures	lecture	
MODULE	**M 16**	**COMMAND, CONTROL, COMMUNICATIONS & REPORTING**		**6**
UNIT	M16/U1	Command and Control Structure	lecture/practice	
	M16/U2	Communication and Reporting	lecture/practice	
	M16/U3	Logistics	lecture	
MODULE	**M 11**	**EMERGENCY MEDICAL RESPONSE TO CBRNe /HAZMAT**		**4**
UNIT	M11/U1	Preparedness of EMS to CBRNe /HAZMAT Event	lecture	
UNIT	M11/U2	Crisis management of medical facilities to CBRNe /HAZMAT Event	lecture	
MODULE	**M 17**	**RESPONSE TO CBRNe /HAZMAT EVENTS**		**8**
UNIT	M17/U1	Response to CBRNe /HAZMAT Event	Top table exercise	
MODULE	**E**	**EVALUATION**		**2**
UNIT	E1	Evaluation of trainees	Quiz	
	E2	Evaluation of the training course	Questionnaire	
		Total number of contact hours		**30**

Appendix C
Curriculum of Analytical Chemist Advanced Course
Operational level (OL)
(2 weeks-10 working days-6 contact hours per day)

ID #		Instruction Subject	Type of Instruction	Contact Hours
MODULE	**M 5**	**SAMPLING & IDENTIFICATION**		**30**
UNIT	M5/U1	Sampling CBRNe /HAZMAT	lecture/practice	
	M5/U5	GC-MS analysis	lecture/practice	
	M5/U6	HPLC-MS analysis	lecture/practice	
	M5/U7	FTIR analysis	lecture/practice	
MODULE	**M21**	**ENVIRONMENTAL MONITORING OF DISPOSAL SITE**		**10**
UNIT	M21/U1	Sampling and preparation of environmental samples	lecture/practice	
	M21/U1	Monitoring network	lecture	
MODULE	**M 19**	**INVESTIGATION OF CW/HAZMAT EVENTS**		**10**
UNIT	M19/U1	Sample collection	lecture/practice	
	M19/U2	Sample transportation	lecture/practice	
	M19/U2	Sample identification	lecture/practice	
MODULE	**M18**	**EQUIPMENT MAINTENANCE, REPAIR & STORAGE**		**6**
UNIT	M18/U1	Quality assurance and maintenance of analytical instruments	lecture/practice	
MODULE	**E**	**EVALUATION**		**4**
UNIT	E1	Evaluation of trainees	Quiz	
	E2	Evaluation of the training course	Questionnaire	
		Total number of contact hours		**60**

Following institutions under the **lead of DEKONTA CBRN Ltd** would be available with their instruction staff and special facilities to **develop a comprehensive training program and conduct training courses** in a country and also hosted specialized training in Czech Republic at the special installations.

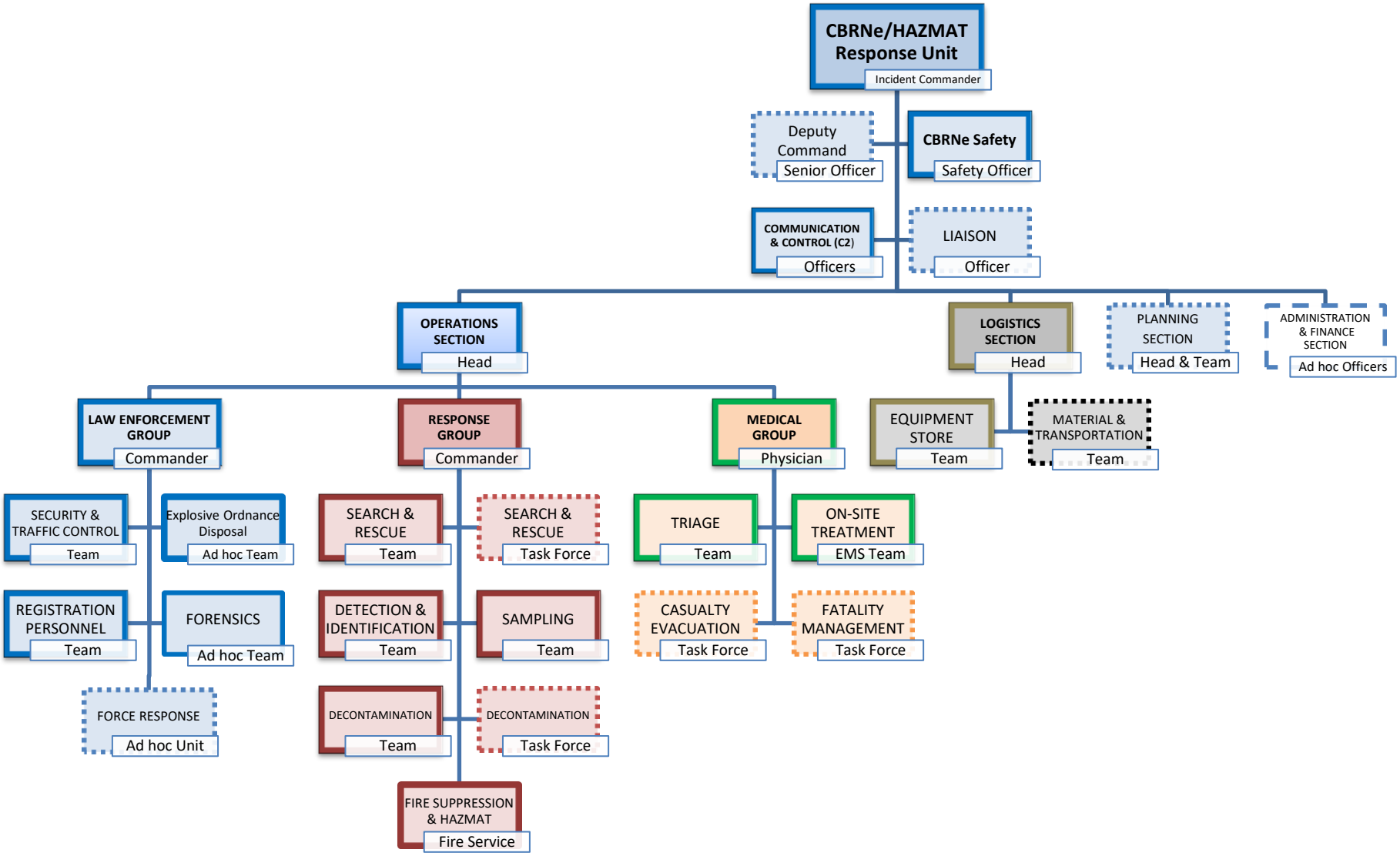
Companies and institutions to be involved in development and joint conduct of CBRNe/HAZMAT Training Program	
	DEKONTA CBRN Ltd., Prague
	DEKONTA JSC, Prague
	National Institute for Nuclear, Chemical and Biological Protection, Pribram
	Military Reserch Institute, Brno
	Centre of Biological Protection, Techonin
	Emergency Medical Service
	Research Centre for Toxic Compounds in the Environment, Masaryk University, Brno
	NATO JCBRN Defence COE, Vyskov

As an example of specialised training for the **scenario B1 and B2 (see Annex 3)** for the **Bio-Hazard Teams** of Emergency Medical Service and health care infection facilities as a part of **Module 13 EMERGENCY MEDICAL RESPONSE TO CBRNe/HAZMAT should be prepared in a short notice with the initial training in a country following hands-on training in Czech Republic** with demonstration of practical operation procedures of the EMS Bio-Hazard Team in collaboration with the Fire service and Police support.

For illustration see short videos (http://www.zzspk.cz/bio-hazard-tym/239-bht-cvicil-na-bulovce-predani-pacienta-s-vnn.html; http://www.zzspk.cz/bio-hazard-tym/92-bio-hazard-tym.html).

Also the **Module 12 ADVANCED CBRNe/HAZMAT LIFE SUPPORT** should be organised as stand-alone course in cooperation with The University of Arizona College of Medicine.

Annex 1 Organogram of CBRNe/HAZMAT Emergency Response Unit



Annex 2 Type of scenarios and environmental locations

Type of scenario	Scenario outline	Threat compound and key properties	Environmental location
Chemical	Highly toxic chemical dispersed in building	Sarin/pesticides Liquid, volatile Rapid onset of symptoms	Indoor Building Local
	Persistent highly toxic chemical dispersed by explosion, spray	Sulphur mustard Liquid, persistent Delayed onset of symptoms	Outdoor Urban area Local
	Pressurised Toxic Industrial Chemicals dispersed due to transportation accident	Chlorine, ammonia, sulphur dioxide, phosgene, toxic gases Rapid onset of symptoms	Outdoor Local
	Industrial toxic waste released in river system and/or water reservoirs	Cyanide salts ,water soluble Rapid and delayed onset of symptoms	Outdoor Water supply Regional
Biological	Respiratory virus disseminated in airplane cabin	Influenza A virus (H1N1) Ebola Contagious Pandemic potential	Indoor International transport system Global
	Anthrax spores disseminated by the postal system	*Bacillus anthracis* Non-contagious Stable, spores	Indoor Postal system Regional
	Attack on food and water supply	Entero Haemorrhagic *Escherichia coli* (EHEC) Contagious	Food & water supply Regional
Radiological	Radiological dispersal due to explosion, fire and spray	Non-Encapsulated radiation source ^{137}Caesium chloride	Outdoor Urban , Local
	Hidden radioactive source in transportation	Encapsulated radiation source ^{192}Iridium	Indoor Public transport
Nuclear	Nuclear power plant or nuclear reactor laboratory accident	Fission products	Outdoor Regional
Hoax	Unknown powder found in building-delivered	Unknown	Indoor Building

Annex 3 Type and the purpose of scenarios

Scenario ID	Title of Scenario	Purpose of the scenario
C1	**Chemical attack inside structure/building** – Chemical agents dispersal through ventilation system – Chemical agents dispersal through chemical improvised devices	• *The ability of the first responders to rapidly detect and identify the cause of the incident* • *The response times and inter-agency cooperation and coordination* • *The capacity of the health system to deal with a mass casualty event* • *The availability and effectiveness of personal protective equipment and detection and identification systems* • *The communication and information strategy towards the public* • *Forensic investigation* • *Clean up and restauration to normality* • *Human and social effects*
C2	**Chemical attack in city urban open-air centre** –Semi/non-volatile chemical agents dispersion through explosion – Chemical agents dispersal through chemical improvised devices Truck tanker (Volatile Toxic industrial chemical (TICs) dispersed) in urban area	• *The ability of emergency services to handle a mass casualty event* • *The ability and plans for registration and tracking of possible victims* • *The communication and information strategy to inform the public and possible victims* • *Inter-agency collaboration, including also non-governmental organizations* • *The health system's ability, capacity and robustness to treat numerous casualties and deal with possible contamination* • *Availability and effectiveness of individual protective equipment and detection and identification equipment* • *The ability to identify the terrorist(s) and prevent further action* • *Forensic investigation* • *Clean up and restauration to normality* • *Human and social impact*
C3	**Chemical transport accident** – Truck road crash causing hazardous chemicals dispersal – Tank-car accident knocks out water supply – Train derailment causing hazardous chemical dispersal – Seaport transportation accident with release of hazardous chemicals	• *The ability of authorities to alert, warn and advice the local population in a hazardous materials event* • *The inter-agency collaboration between first responders, transport authorities, and others* • *The management of the injured people and mobilization of resources* • *Forensic investigation* • *The sufficiency of adequate personal protective equipment (PPE) and training* • *The sufficiency of adequate decontamination*

		equipment and training • *Clean up and restauration to normality* • *Human and social impacts*
C4	**Chemical facility accident** – Explosion at industrial chemical site – Toxic products release to atmosphere – Fire in a chemical warehouse – Toxic waste release to sewage or sea/river system	• *Transnational response coordination and responsibilities* • *The alert routines, both at a national and international level* • *The crisis management, i.e. effective decisions to mitigate consequences, national and international cooperation, communication to the public, communication to authorities in other relevant countries, the management of the injured people, the mobilization of resources and policies for medical treatment)* • *Forensic investigation* • *Clean up and restauration to normality* • *The human and social impact*
C5	**Dissemination of toxic chemical in foodstuff and water supply** – Deliberate chemical contamination of foodstuff and a chain of supply – Poisonous chemical in drinking water system	• *As B4*
C6	Terrorist attack against dangerous goods transport	• *As C3*
B1	**High contagious disease victims transportation** – Isolation and ground transportation of high contagious diseases suspects –Evacuation of airplane with high contagious diseases suspects – Evacuation of ship with of high contagious diseases suspects	• *Identification of* high contagious diseases suspects/patients • *Handling of* high contagious diseases suspects/patients at non-infection medical care facility and private medical practice • *Takeover* of high contagious diseases suspects/patients by the Emergency medical Service • *Isolation and safe transport of* high contagious diseases suspects/patients to infection medical care facility • *Coordination and support of Fire service and Police to of the EMS in transportation of* high contagious diseases suspects/patients • *Procedures, equipment and training of EMS staff for safe isolation and transportation of* high contagious diseases suspects/patients
B2	**Biological attack on air transportation** – Contagious diseases release in airplane – Contagious diseases release	• *The need for improved bio-security procedures at biological resource centres* • *The early warning systems at national and international level and the actions aiming at blocking the spread of the pandemics, including track and*

	at airport	*trace of potentially infected persons and population warning systems* • *The excellence in international coordination* • *The harmonization of microbial diagnostic capacity in the partner countries* • *The harmonization of communication strategies at the international level, in particular media handling and communication of public procedures* • *The mobilization of resources and policies for medical treatment and prophylaxis* • *Forensic investigation* • *Clean up and restauration to normality* • *The human and social issues*
B3	**Biological attack in structures/buildings** – Anthrax letters delivery – Covert contagious diseases release in structures	• *Rapid confirmation the nature of the threat and to assess the risk* • *Implement medical countermeasures for protection of persons with proven and potential exposure to anthrax including mobilization of the pharmaceutical industry* • *Face closure of major public facilities and paralysis of postal distribution at a regional scale* • *Rapidly identify the terrorist(s) and prevent further action* • *Forensic investigation* • *Harmonize communication strategies at the national and regional level, in particular media handling and communication of public procedure* • *Identify and address the human and social issues.* • *Define and apply standards for decontamination of contaminated infrastructures and re-occupancy decisions, including microbiological as well as health safety considerations* • *Clean up and restauration to normality*
B4	**Biological attack on food and water supply** – Deliberate bacterial contamination chain of supply – Deliberate toxin contamination chain of supply – Accidental outbreak of bacterial epidemic contamination	• *Develop and maintain an early warning system for detection of food-borne epidemics* • *Develop and maintain networks of microbiology laboratories able to quickly detect and identify pathogens and scale up their capacity* • *Develop and maintain public health inspection teams able to quickly assess source of contamination* • *Improve cross-sector collaboration for joint risk assessment and "one voice" communication to the citizens* • *Rapidly identify the terrorist and prevent further action* • *Ensure optimal regional collaboration at an early stage, in particular regarding the crisis*

		communication • *Forensic investigation* • *Clean up and restauration to normality*
B5	**Dispersion of anthrax spores at a market place**	• *As B3*
B6	**Outbreak of animal disease**	• *As B4*
B7	**Laboratory accident causing large exposure to viruses-bacteria's**	• *As B3*
R1	**Radiological dispersal inside structure/building** – Radioactive isotope dispersal through ventilation system – Radioactive isotope dispersal through radiological improvised devices	• *The ability of the first responders to rapidly detect and identify the cause of the incident* • *The response times and inter-agency cooperation and coordination* • *The capacity of the health system to deal with a mass casualty event* • *The availability and effectiveness of personal protective equipment and detection and identification systems* • *The communication and information strategy towards the public* • *Forensic investigation* • *Clean up and restauration to normality* • *Human and social effects*
R2	**Radiological dispersal in open-air city centre** – Radioactive isotope spread through explosion – Radioactive isotope spread through fire – Radioactive isotope spread through liquid spray	• *The effectiveness of emergency authorities to detect and identify radioactive release* • *The first responders' competence, training and equipment to deal with a radioactive release event* • *The evacuation of patients* • *The communication to the public regarding the nature of the threat and what to do* • *The management of possibly contaminated people* • *Collaboration between the Fire Service, EMS, Police, the radiation protection authorities and the hospital staff* • *Forensic investigation* • *Clean up and restauration to normality* • *Human and social impacts*
R3	**Radiological attack on public transportation** – Hidden radioactive source	• *The emergency responders ability to detect, identify and secure the radioactive source* • *The authorities ability to find people who may be exposed* • *The ability to estimate exposure doses* • *The investigators ability to find the origin of the source* • *The crisis management, including communication to the public* • *Forensic investigation*

		• *Clean up and restauration to normality* • *The human and social impacts*
R4	**Deliberate contamination of radioactive substances in the food and water chain supply**	• *As B4*
N	**Nuclear material illicit trafficking** power plant accident – Illicit trafficking nuclear products through ground border – Illicit trafficking nuclear material through airport – Illicit trafficking nuclear material through sea port – Incident release of nuclear material to environment	• *Alert-routines, both at a national and an international level* • *The effectiveness of detection and identification systems* • *Transnational response coordination, communication and responsibilities* • *Communication and recommendations to the authorities and to the public* • *The effectiveness of the crisis management (the management of the contaminated people, the mobilization of resources and policies for medical treatment, the decontamination of the infrastructure* • *Forensic investigation* • *Clean up and restauration to normality*
H	**Hoax** – Unknown substance/powder in open-air area – Unknown substance/powder in structure/building – Unknown liquid sprayed over public at mass cultural and social gathering	• *Preparation of the local facility manager and security officers for a high-profile event* • *Collaboration between private and public services* • *Ability to manage large cohorts of potential victims* • *Decisions and communication about the risk and countermeasures including quarantine, decontamination, prophylaxis or simply registration of potentially exposed to an unknown threat compound (C, B and/or R)* • *Procedures, organization and capacities for rapid analysis and identification of unknown samples (C, B and/or R)* • *Ability to quickly distinct hoaxes from real threats* • *Forensic investigation* • *Clean up and restauration to normality* • *The human and social impacts*

Annex 4 Performance competences for responders

Level	Objective	Performance competencies
A. First Responder Awareness (AL)	First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at this level shall have sufficient training or experience to objectively demonstrate competency in the following areas: *The following training courses meet these requirements: TBC*	1. An understanding of what hazardous materials are, and the risks associated with them in an incident. 2. An understanding of the potential outcomes associated with an emergency created when hazardous materials are present. 3. The ability to recognize the presence of hazardous materials in an emergency. 4. The ability to identify the hazardous materials, if possible. 5. An understanding of the role of the First Responder awareness individual in the employer's emergency response plan including site security and control including Transportation's Emergency Response Guidebook for HAZMAT. 6. The ability to realize the need for additional resources and to make appropriate notifications to the communication centre.
B. First Responder Operations (OL)	First Responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. They should be able to demonstrate competency in the following areas:	1. Knowledge of the basic hazard and risk assessment techniques. 2. Know how to select and use proper personal protective equipment provided to the first responder operational level. 3. An understanding of basic hazardous materials terms. 4. Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit. 5. Know how to implement basic decontamination procedures. 6. An understanding of the relevant standard operation procedures and termination procedures.
C. Hazardous Materials Technician (TL)	Hazardous materials technicians are individuals who respond to releases or potential releases of a hazardous material for the purpose of stopping the release. They shall have	1. Know how to implement the employer's emergency response plan. 2. Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment. 3. Be able to function within an assigned role in the Incident Command System.

	received of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:	4. Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician. 5. Understand hazard and risk assessment techniques. 6. Be able to perform advance control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit. 7. Understand and implement decontamination procedures. 8. Understand termination procedures. 9. Understand basic chemical and toxicological terminology and behaviour.
D. Hazardous Materials Specialist (TL)	Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Hazardous materials specialists shall have received training equal to the technician level and in addition have competency in the following areas and the employer shall so certify:	1. Know how to implement the local emergency response plan. 2. Understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment. 3. Know of the state emergency response plan. 4. Be able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist. 5. Understand in-depth hazard and risk techniques. 6. Be able to perform specialized control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available. 7. Be able to determine and implement decontamination procedures. 8. Have the ability to develop a site safety and control plan. 9. Understand chemical, radiological, and toxicological terminology and behaviour.
E. On Scene Incident Commander (OL)	Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:	1. Know and be able to implement the employer's incident command system. 2. Know how to implement the employer's emergency response plan. 3. Know and understand the hazards and risks associated with employees working in chemical protective clothing. 4. Know how to implement the local emergency response plan. 5. Know of the state emergency response plan and of the State or Regional Response Team. 6. Know and understand the importance of decontamination procedures.