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WP3 - PROCEDURES FOR FIRST-LINE RESPONDERS

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INTRODUCTION

The purpose of this procedure is to provide the most efficient, effective and coordinated first response at the scene of any incident where chemical or biological materials may have been released. The overall aim is to save life and minimise the impact of the incident on people, property, the community and the environment by enabling the first responders to work together quickly and efficiently whilst avoiding any unnecessary risks.

In orange, there is supplementary information which, according to CBRN experts, can be useful in support of the procedures.

This procedure is intended for use by first responders from the various emergency services that have statutory responsibility for dealing with such incidents. First responders from other agencies may also be trained in this procedure to support and assist the response by the statutory emergency services (such as emergency centre call takers, stewards at a public event or security guards at shopping malls).

This procedure is intended for use in the **FIRST 20 MINUTES OF AN INCIDENT** so that first responders can complete a series of tactical actions and considerations to ensure that a structured, predictable and effective initial response is delivered at the scene while the emergency services are establishing the command, control and coordination of their agencies' response.

This procedure assumes **NO OTHER CBRN TRAINING, KNOWLEDGE OR ACCESS TO CBRN PERSONAL PROTECTIVE EQUIPMENT (PPE)**. Where first responders have any PPE it should be used in accordance with the training provided by their own agency and the manufacturer's instructions.

The five stages of the first response procedure can be summarised as:

1. RECOGNISE THE POSSIBLE PRESENCE AND RISK OF HAZARDOUS MATERIALS
2. REMEMBER TO PRIORITISE YOUR PERSONAL SAFETY
3. REPORT ON THE SITUATION IMMEDIATELY
4. RESPOND USING THE ‘STEPS 1 2 3 PLUS’ PRINCIPLES
5. REMOVE THE PEOPLE FROM THE HAZARD AND THE HAZARD FROM THE PEOPLE

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1. **RECOGNISE** THE POSSIBLE PRESENCE AND RISK OF HAZARDOUS MATERIALS AT THE SCENE.

Consider and assess the sights, signs, symptoms, smells and sounds that may indicate the presence of hazardous materials. If a CBRN incident is suspected, approach with caution.

SIGHTS

Is there some evidence of hazardous materials at the scene or nearby?

Look for the presence of ADR signs, UN number(s), hazard signs, or MSDS sheets; hazardous material containers; vehicles or warning signs; premises that may store or use hazardous materials…

What can you see that may explain the situation?

The absence of a simple explanation could indicate the presence of hazardous materials as a cause.

SIGNS

Are there certain signs of the possible presence of hazardous materials?

People showing unexplained signs of illness; unexplained vapour or mist clouds; oily droplets on surfaces or water; dead or distressed animals or birds; withered plants; unusual materials or equipment at the scene…

SYMPTOMS

Are there multiple casualties with unexplained symptoms or symptoms that may indicate the presence of hazardous material?

Irritation of the skin, eyes, airway; breathing difficulties; nausea, vomiting, sweating; pinpoint pupils or blurred painful vision; twitching, fitting or unconsciousness; unexplained fatalities…

SMELLS

Are there any unusual smells, or reports of smells, that do not fit the situation?

Smell of a swimming pool, explosives, almonds, ammonia, fuel, burning…

SOUNDS

What can you hear and what are the reports of any unusual sounds from other people from inside any buildings, vehicles, containers or bags?

A hissing sound/escape of gas from somewhere; breaking of glass inside a rucksack; a firework, shot or explosion…

2. **REMEMBER** TO PRIORITISE YOUR PERSONAL SAFETY SO YOU CAN DO YOUR JOB WITHOUT BECOMING A CASUALTY.

The first thing to consider after the presence of hazardous materials is suspected or confirmed at the scene, is to remember to prioritise your personal safety so you can do your job without becoming a casualty. Use caution and keep a safe distance to avoid exposure yourself and by avoiding unnecessary contact with people and surfaces that may have been contaminated.

This procedure assumes no other CBRN training, knowledge or access to CBRN personal protective equipment (PPE). If first responders have any PPE on hand, it should be used in accordance with the training provided by their own agency and the manufacturer's instructions.

The weather is an important factor. Wind may disperse contamination, therefore, staying upwind and uphill of the affected or contaminated area is safer for the responders as well as for the public. It is important to keep in mind that in urban and built environments, or in a sports stadium, the wind direction can change according to building structures. The localised reality of wind movements, in addition to the weather/wind direction that has been officially forecast needs to be taken into account.

Always use caution when entering an area if possible non-CBRN threat(s) are active, such as terrorists. If there are indications that there is a terrorist threat, it might be safer to let affected people come to you.

Also keep in mind your psycho-social state and that of your colleagues. If you do not feel safe or unsure that you can cope with the crisis at hand, inform your colleagues.

For safety distances, please consult:

- for TICs: the Emergency Response Guidebook (ERG): https://www.phmsa.dot.gov/hazmat/erg/emergency-response-guidebook-erg
- for CWAs: the Emergency Response Safety and Health Database (ERSH-DB): https://www.cdc.gov/niosh/ershdb/default.html

3. **REPORT** ON THE SITUATION IMMEDIATELY.

M-ETHANE REPORT

Early and effective situation reporting from the scene is vital to enable all agencies to maintain a shared situational awareness and mobilise resources. This will result in more responders being dispatched to support them (1st line), and further specialised resources being mobilised to establish a fully effective response (2nd and 3rd line). The responding agencies will be able to more quickly and effectively respond based on the shared situational awareness derived from the reports arriving from different responders.

The report should include any sights, signs, symptoms, smells, sounds or other information that may indicate the presence and risk of hazardous materials.

The report should be concise and consistent and based upon the essential facts using the **M-ETHANE** system of reporting: [1]

M – Major Incident

E – Exact location

T – Type of incident

H – Hazards

A – Access and egress

N – Number of casualties

E – Emergency services required

A M-ETHANE report can be used for any type of emergency, and is not specific to a CBRN incident or attack.

[1] Source: Joint Emergency Services Interoperability Principles (JESIP)

M	MAJOR INCIDENT	Has a major incident or standby been declared? (Yes / No - if no, then complete ETHANE message)	*Include the date and time of any declaration.*
E	EXACT LOCATION	What is the exact location or geographical area of the incident?	*Be as precise as possible, using a system that will be understood by all responders.*
T	TYPE OF INCIDENT	What kind of incident is it?	*For example, flooding, fire, utility failure or disease outbreak.*
H	HAZARDS	What hazards or potential hazards can be identified?	*Consider the likelihood of a hazard and the potential severity of any impact.*
A	ACCESS	What are the best routes for access and egress?	*Include information on inaccessible routes and rendezvous points (RVPs). Remember that services need to be able to leave the scene as well as access it.*
N	NUMBER OF CASUALTIES	How many casualties are there, and what condition are they in?	*Use an agreed classification system such as 'P1', 'P2', 'P3' and 'dead'.*
E	EMERGENCY SERVICES	Which, and how many, emergency responder assets and personnel are required or are already on-scene?	*Consider whether the assets of wider emergency responders, such as local authorities or the voluntary sector, may be required.*

MAJOR INCIDENT

Has a major incident or standby been declared? (yes/no: if no, then complete ETHANE message). Include the date and time of any declaration.

Most countries have some procedure for identifying/announcing a large-scale emergency internally (for themselves); to partners/other agencies; to local/regional/national government bodies; to the public. This is usually because the scale or nature of the emergency will mean that one (or more) of the organisations involved may not have sufficient resources (human/equipment/other capacities) to adequately respond to the emergency or its effects. Some organisations may need to invoke special procedures or request assistance from other areas/regions to respond effectively. Some important and additional legal powers may be available to organisations/governments for dealing with certain types of emergency. Each organisation may be affected differently; some may not need to invoke special procedures but may need to get ready (on standby) in case the situation develops in a way that may need them to do so. First responders have a vital role in the early warning that an incident IS or MAY BE a 'major incident'. It is of particular importance that first responders recognise and warn of the possible presence of hazardous materials at the scene which is the topic of this training.

EXACT LOCATION

What is the exact location or geographical area of the incident? Be as precise as possible, using a system that will be understood by all responders.

Take into account that there might be multiple locations and/or multiple hazards/threats.

First responders may decide to install an **INITIAL INCIDENT COORDINATION POINT (IICP)** for immediate coordination between the different types of responders on the scene. This location should also be communicated to dispatch services.

On this IICP there will be a hood consultation, which is an improvised field desk on the hood of a car.

TYPE OF INCIDENT

What kind of incident is it? Provide a physical description of the incident, for example: car crash, train crash, building collapse, explosion, chemical spill, radioactive materials, utility failure, disease outbreak, fire…

Keep in mind that in case of fire, characteristics of products might change, and safety distances may need to be adapted.

HAZARDS

What hazards or potential hazards can be identified? Consider the likelihood of a hazard and the potential severity of any impact.

A visual inspection at the incident scene can give an indication of the physical state of agent(s) released. The physical state of an agent (or upon release), can be:

- Gaseous
- Aerosol
- Liquid
- Solid

It is important to note that:

- Dispersion range of an agent strongly depends on its physical state and can exhibit different properties:
  - Volatile / Flammable / Explosive / Corrosive / … properties
  - Toxic / Infectious / Radiological properties
  - (Non)dissolvability in (non)organic solvents
  - Vapor pressure

- Particle size is directly correlated to dispersion rate, large particles will in general travel less far than smaller particles.

- Aerosols are fine solid particles or liquid droplets floating (in suspension) in air and may contain hazardous C, B, or R/N materials (dissolved, or not).

- Weather conditions (wind speed, wind direction, temperature, humidity) severely affect dispersion of matter suspended in air.

- Liquids will start evaporation when released. Some liquids will evaporate quickly, others very slowly.
  For example: (some) chemical warfare agents (CWAs) like Mustard gas or VX will not evaporate quickly under normal weather conditions. Therefore, these types of CWAs can remain hazardous for longer periods of time after the release, than more volatile CWAs.

- Solid particles, containing C, B, or R/N materials, can be resuspended in air multiple times and dispersed over larger areas. However, concentration of airborne particles will be reduced over time, especially when the source can be located and removed. [2]

ACCESS

What are the best routes for access and egress? Include information on inaccessible routes and rendezvous points, such as the Initial Incident Coordination Point (IICP). Also include information regarding possible parking areas to avoid blockades.

Remember that services need to be able to leave the scene as well as access it.
Take into account that the best access route in CBRN circumstances is from upwind/uphill direction.

[2] Melody. (2021). *A harmonized CBRN training curriculum for first responders and medical staff. Topic 6.2: Mitigation methods to limit dispersion, including decontamination.* [PowerPoint slides]. Melody.

NUMBER OF CASUALTIES

How many casualties are there, and what condition are they in?

An immediate casualty classification in a CBRN environment should make the distinction between:

- Ambulant and non-ambulant:
  This will have an impact on the type of decontamination capabilities that have to be deployed.
- Contaminated and non-contaminated:
  This will have an impact on the amount of decontamination capabilities that have to be deployed.

EMERGENCY SERVICES

Which, and how many, emergency responder assets and personnel are required or are already on-scene? Consider whether the assets of wider emergency responders, such as local authorities or the voluntary sector, may be required.

Consider deploying additional responders or specialists, such as:[3]

- First responders with proper PPE (respiratory & dermal)
- Detection, Identification & Monitoring teams (DIM)
- Medical facilities (ambulances, EHS, (field) hospitals)
- EOD units
- Decontamination units (infrastructure, vehicles, people, pets)
- Law enforcement
- Special police forces
- Forensic specialists
- Military

Proper PPE is also a resource requirement, and when lacking, the actions of first responders arriving on a CBRN scene are severely limited.

[3] Melody. (2021). *A harmonized CBRN training curriculum for first responders and medical staff. Topic 6.2: Mitigation methods to limit dispersion, including decontamination.* [PowerPoint slides]. Melody.

4. **RESPOND** USING THE 'STEPS 1 2 3' PRINCIPLES[4]

After making a M-ETHANE report, the responders should now respond, while still putting their safety first. They should do this by using the **STEPS 1 2 3** principles.

The reasons for approaching a person who is collapsed/incapacitated could include establishing communication with them or the people around them (to instruct/reassure), or to assess their condition visually and report it (for emergency medical assistance).

STEP 1:

One person incapacitated with no obvious reason: approach with caution using standard protocols, while still putting your safety first.

STEP 2:

Two people incapacitated with no obvious reason: approach with caution using standard protocols, while still putting your safety first.

Consider all options, such as a possible CBRN incident.

STEP 3:

Three or more people in close proximity, incapacitated with no obvious reason: approach with caution, while still putting your safety first.

A CBRN incident is probable, consider actions to save lives.

[4] Source: Joint Emergency Services Interoperability Principles (JESIP)

5. **REMOVE** THE PEOPLE FROM THE HAZARD AND THE HAZARD FROM THE PEOPLE.

Use caution and keep a safe distance to avoid exposure yourself and by avoiding unnecessary contact with people and surfaces that may have been contaminated.

Tell those affected to **REMOVE** themselves, **REMOVE** outer clothing, **REMOVE** the substance.[5] Tell those unaffected/the crowd to stay at a safe distance. Act quickly because these actions can save lives.

REMOVE AFFECTED INDIVIDUALS FROM THE IMMEDIATE AREA:

ADVISE

- To REMOVE themselves from the immediate area.
- To move uphill and into the wind if possible if the substance is airborne.
- To bring others who may be affected, if safe to do so.

REASSURE

- Leaving the immediate area will avoid further exposure to any material in the air.
- Help is on the way.

REMEMBER

- To shout or direct from a safe distance to avoid exposure yourself:
- To remain alert: incidents involving hazardous substances can change very quickly.
- To REPORT updates about the developing situation.

REMOVE OUTER CLOTHING:

ADVISE

- To REMOVE outer clothing if it has been affected by the substance.
- To avoid pulling clothing over the head if possible.
- Not to attempt to remove clothing stuck to the skin: trying to pull it off risks further harm.
- Not to smoke, eat, drink, or touch face and eyes.
- Once this has been done, everyone should move away from the discarded clothing, if possible in an upwind direction.

[5] Source: UK National Counter Terrorism Security Office (2018)

REASSURE

- Removal of outer clothing reduces the risk of further exposure by up to 80%.
- Removal will be done by a medical professional as soon as it is practical and safe to do so.

REMEMBER

- You may have to improvise and quickly adapt.
- Remain alert: incidents involving hazardous substances can change fast.
- The risk from hypothermia should be considered when disrobe is carried out.

REMOVE THE SUBSTANCE FROM THE SKIN:

ADVISE

- If the skin is itchy or painful: rinse the affected area with lots of water:
  - Use any available water source to rinse the affected part of the body.
  - Apply water continuously until medical personnel advise you to stop.
  - Try to avoid the water running onto unaffected parts of the body.
- If the skin is not itchy or painful: remove the substance using a dry absorbent material to soak it up or brush it off.

REASSURE

- The actions taken for the symptoms give the best chance of reducing harm.

REMEMBER

- To remain aware of new or worsening signs and symptoms in casualties and others in the area, including responders.
- The risk from hypothermia should be considered when any form of wet decontamination is carried out.
- To stay with the casualties, in a safe place, waiting for more emergency service responders to attend.
- To inform the other emergency service responders of the actions you have taken when they arrive.
- To stay in the area until released by the police, you may have important information they need, you may be asked for a statement or your personal details.
- To consider your own organisation’s reporting requirements (incident report, injury on duty…).

GLOSSARY OF TERMS (FROM THE EU CBRNE GLOSSARY)

CBRN - Chemical Biological Radiological Nuclear

COLD ZONE – The uncontaminated area beyond the hot and warm zones where access is restricted for emergency response operations.

COMMAND - The exercise of authority that is associated with a role or rank within an organisation, to give direction in order to achieve defined objectives.

CONTAMINATION – Presence or transfer of hazardous chemical, biological or radioactive substances/materials on humans, mobile and immobile objects, soil and water.

CONTROL - The application of authority, combined with the capability to manage resources, in order to achieve defined objectives

DECONTAMINATION – The reduction of C, B, R&N contamination of the surfaces of living organisms, soil, water or objects.

EXPOSURE – Process by which a CBRN substance/material becomes available for absorption, swallowing, breathing, toughing the skin or eyes to humans. Exposure may be short term (acute exposure), medium-term or long-term (chronic exposure).

FIRST RESPONDER – Member of an agency that may be first to arrive at the scene of an emergency and who are responsible for making the first reports to their organisations and/or taking the first actions at the scene

HAZARDOUS MATERIAL – Any substance or material which could adversely affect the safety of the public, handlers or carriers or the environment.

HOT ZONE – The contaminated areas where the initial release occurs or disperses to. It will be the area likely to pose an immediate threat to the health and safety of all those located within it.

PPE – Abbreviation for Personal Protective Equipment. Specialised equipment consisting of respiratory protection, protective suit, hard hats, boots and gloves. To be worn by staff during work to prevent exposure or contamination.

WARM ZONE – The area uncontaminated by the initial release of a substance, which becomes contaminated by the movement of people of vehicles. This is an area next to the Hot Zone that is considered safe for workers to enter with appropriate personal protective equipment. This includes areas used for decontamination activities.