First Revision No. 60-NFPA 473-2016 [Global Input]

Remove "Level" or "level" text related to:
Basic Life Support (BLS) "Level" Reponders
Advanced Life Support (ALS) "Level" Responders

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Thu Jan 14 20:17:32 EST 2016

Committee Statement

Committee Statement: To develop consistency with the chapter titles and the text within the document as a whole.
Response Message:

First Revision No. 1-NFPA 473-2015 [Section No. 1.1.1]

1.1.1

This document ~~specifically~~ covers the requirements for basic life support and advanced life support personnel in the prehospital setting.

Submitter Information Verification

Submitter Full Name: Thomas McGowan
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Submittal Date: Mon Dec 14 19:42:16 EST 2015

Committee Statement

Committee Statement: MOS regarding vague terms.
Response Message:

First Revision No. 2-NFPA 473-2015 [Chapter 2]

Chapter 2 Referenced Publications

2.1 General.

The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents,* ~~2013~~ 2018 edition.

NFPA 704, *Standard System for the Identification of the Hazards of Materials for Emergency Response,* ~~2012~~ 2017 edition.

NFPA 1584, *Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises,* ~~2008~~ 2015 edition.

2.3 Other Publications.

2.3.1 U.S. Government Publications.

U.S. Government ~~Printing~~ Publishing Office, 732 North Capitol Street, NW, Washington, DC ~~20402~~ 20401-0001 .

Emergency Response Guidebook, ~~Washington, D.C.: U.S. Department of Transportation, 2012~~ Pipeline and Hazardous Materials Administration, U.S. Department of Transportation, 2016 .

ICS Forms, www.fema.gov/emergency/nims/JobAids.shtm, ICS Form 206.pdf.

Title 18, U.S. Code, Section 2332a, “Use of Weapons of Mass Destruction.” ~~Washington, D.C.: Government Printing Office.~~

Title 29, Code of Federal Regulations, Part 1910.120, “Hazardous Waste Operations and Emergency Response.” ~~U.S. Department of Labor, 1994.~~

2.3.2 Other Publications.

Merriam-Webster’s Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections. ~~(Reserved)~~

NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents,* 2018 edition.

NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications,* 2017 edition.

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 19:45:44 EST 2015

Committee Statement

Committee Statement: Referenced current editions. Other references will be revised after SDM.

Response Message:

Public Input No. 7-NFPA 473-2014 [Chapter 2]

First Revision No. 3-NFPA 473-2015 [Section No. 3.3.1.4]

3.3.1.4* Medical Team Specialist.

Any health care provider or medically trained specialist acting under the authority of the medical director, and within the context of the National Incident Management System, authorized to act as the medical point of contact for an incident. ~~This can include, but is not exclusive to, nurses, nurse practitioners, EMTs, ECAs, physician assistants, and in some cases a health and safety officer.~~

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 19:52:13 EST 2015

Committee Statement

Committee Statement: Deleting a term no longer used in NFPA 473.
Response Message:

First Revision No. 4-NFPA 473-2015 [Section No. 3.3.2]

3.3.2* Allied Professional.

That person who possesses the knowledge, skills, and technical competence to provide assistance in the selection, implementation, and evaluation of ~~mission-specific~~ tasks at a hazardous materials/weapons of mass destruction (WMD) incident. [**472,** 2018]

Supplemental Information

File Name	Description
Annex_A_allied_professional.docx	

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 19:53:18 EST 2015

Committee Statement

Committee Statement: correlating terms with other haz-mat response documents.
Response Message:

A.3.3.2 Allied Professional.

Examples of an allied professional could include certified safety professional (CSP), certified health physicist (CHP), certified industrial hygienist (CIH), radiation safety officer (RSO), or similar credentialed or competent individuals as determined by the AHJ. An allied professional can also be referred to as a Technical Specialist or subject matter expert (SME) in a mission-specific area.

First Revision No. 5-NFPA 473-2015 [Section No. 3.3.4]

3.3.4 Competence.

~~The possession of~~ Possessing the knowledge, skills, and judgment needed to perform indicated objectives ~~satisfactorily~~ .

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 19:57:45 EST 2015

Committee Statement

Committee Statement: correlating definitions to other haz-mat response documents.
Response Message:

First Revision No. 6-NFPA 473-2015 [Section No. 3.3.7]

~~3.3.7~~ ~~Core Competencies.~~

~~The knowledge, skills, and judgment needed by operations level responders who can respond to releases or potential releases of hazardous materials/WMD.~~

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 19:59:22 EST 2015

Committee Statement

Committee Statement: Phrase is no longer used in document.
Response Message:

First Revision No. 7-NFPA 473-2015 [New Section after 3.3.10]

3.3.10 Emergency Response Guidebook (ERG).

The reference book, written in plain language, to guide emergency responders in their initial actions at the incident scene, specifically the *Emergency Response Guidebook* from the U.S. Department of Transportation; Transport Canada; and the Secretariat of Transportation and Communications, Mexico.

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 20:00:28 EST 2015

Committee Statement

Committee Statement: Term used in document and correlated to other haz-mat response documents.
Response Message:

First Revision No. 10-NFPA 473-2015 [New Section after 3.3.11.2]

3.3.11.4* Fissile Material.

Material whose atoms are capable of nuclear fission (capable of being split). [**472,** 2018]

Supplemental Information

File Name	Description
Annex_A_fissile.docx	

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 20:07:11 EST 2015

Committee Statement

Committee Statement: New terms being added to this document.
Response Message:

A.3.3.X Fissile Material.

Department of Transportation (DOT) regulations define fissile material as plutonium-239, plutonium-242, uranium-233, uranium-235, or any combination of these radionuclides. This material is usually transported with additional shipping controls that limit the quantity of material in any one shipment. Packaging used for fissile material is designed and tested to prevent a fission reaction from occurring during normal transport conditions as well as hypothetical accident conditions.

First Revision No. 11-NFPA 473-2015 [New Section after 3.3.11.2]

3.3.11.5 Hazard.

Capable of causing harm or posing an unreasonable risk to life, health, property, or the environment. [**472,** 2018]

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 20:11:58 EST 2015

Committee Statement

Committee Statement: Term used in this haz-mat response document.
Response Message:

First Revision No. 8-NFPA 473-2015 [New Section after 3.3.11.2]

3.3.11.3 Evaluate.

The process of assessing or judging the effectiveness of a response operation or course of action within the training and capabilities of the emergency responder. [**472,** 2018]

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
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Submittal Date: Mon Dec 14 20:02:02 EST 2015

Committee Statement

Committee Statement: Term being recognized within the document.

First Revision No. 9-NFPA 473-2015 [Section No. 3.3.12]

3.3.12 Exposure.

The ~~act or condition whereby responders or civilians come into contact with hazardous materials/WMD that results in any level of physical injury or acute/delayed health effect~~ process by which people, animals, the environment, property and equipment are subjected to or come in contact with a hazardous material/weapon of mass destruction (WMD) . [**472,** 2018]

3.3.13 Exposures.

The people, animals, environment, property, and equipment that might potentially become exposed at a hazardous materials/weapons of mass destruction (WMD) incident. **[1072,** 2017]

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 20:04:03 EST 2015

Committee Statement

Committee Statement: Terms that needed more specific defining based on the haz-mat response documents.

First Revision No. 12-NFPA 473-2015 [Section No. 3.3.13]

3.3.14* Hazardous Material.

~~A substance (matter — solid, liquid, or gas — or energy)~~ Matter (solid, liquid, or gas) or energy that when released is capable of creating harm to people, the environment, and property, including weapons of mass destruction (WMD) as defined in 18 U.S. Code, Section 2332a, as well as any other criminal use of hazardous materials, such as illicit ~~laboratories~~ labs , environmental crimes, or industrial sabotage. ~~Hazardous materials/WMD shall be used throughout this document to represent hazardous materials/weapons of mass destruction.~~ [**472,** 2018]

Supplemental Information

File Name	Description
Annex_defintion_Hazardous_Material.docx	

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 20:14:06 EST 2015

Committee Statement

Committee Statement: Correlated to other haz-mat response documents.
Response Message:

A.3.3.X Fissile Material.

Department of Transportation (DOT) regulations define fissile material as plutonium-239, plutonium-242, uranium-233, uranium-235, or any combination of these radionuclides. This material is usually transported with additional shipping controls that limit the quantity of material in any one shipment. Packaging used for fissile material is designed and tested to prevent a fission reaction from occurring during normal transport conditions as well as hypothetical accident conditions.

First Revision No. 13-NFPA 473-2015 [Section No. 3.3.14]

3.3.15 Identify.

To select or indicate verbally or in writing using standard terms to establish the ~~identity of; the~~ fact of an item being the same as the one described. [**472,** 2018]

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 20:19:35 EST 2015

Committee Statement

Committee Statement: Correlating term to other haz-mat response documents.
Response Message:

First Revision No. 14-NFPA 473-2015 [Section No. 3.3.15]

3.3.16 Incident.

An emergency involving the release or potential release of hazardous materials/~~WMD~~ weapons of mass destruction (WMD). [**472,** 2018] .

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 20:21:38 EST 2015

Committee Statement

Committee Statement: Correlating to other haz-mat response documents
Response Message:

First Revision No. 15-NFPA 473-2015 [Sections 3.3.17, 3.3.18]

3.3.18 Incident Command System (ICS).

A specific component of an incident management system (IMS) designed to enable effective and efficient on-scene incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. [**472,** 2018]

3.3.19* Incident Management System (IMS).

A ~~plan~~ process that defines the roles and responsibilities to be assumed by personnel and the operating procedures to be used in the management and direction of emergency operations to include the incident command system~~,~~ (ICS), unified command, multiagency coordination system, training, and management of resources. [**472,** 2018]

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 20:24:59 EST 2015

Committee Statement

Committee Statement: correlating definition to other haz-mat documents.
Response Message:

First Revision No. 16-NFPA 473-2015 [New Section after 3.3.22]

3.3.24* Personal Protective Equipment (PPE).

The protective clothing and respiratory protective equipment provided to shield or isolate a person from the hazards encountered at hazardous materials/weapon of mass destruction (WMD) incident operations. [**472,** 2018]

Supplemental Information

File Name	Description
Annex_A_definition_PPE.docx	

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 20:27:11 EST 2015

Committee Statement

Committee Statement: Adding term as it is used in this document.
Response Message:

A.3.3.XX Personal Protective Equipment (PPE).

Personal protective equipment includes both personal protective clothing and respiratory protection. Adequate personal protective equipment should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing.

First Revision No. 61-NFPA 473-2016 [Section No. 3.3.22]

3.3.22 Mission-Specific Competencies.

The knowledge, skills, and judgment needed by operations level responders who have completed the ~~requisite core~~ operations level competencies and who are designated by the authority having jurisdiction (AHJ) to perform mission-specific tasks, such as decontamination, victim/hostage rescue and recovery, and evidence preservation and sampling~~, and so forth~~ .

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Fri Jan 29 09:18:36 EST 2016

Committee Statement

Committee Statement: definition consistency for HM documents
Response Message:

First Revision No. 17-NFPA 473-2015 [New Section after 3.3.23]

3.3.25* Priority Conditions.

A process by which a responder can arrange or organize individuals who have had an exposure to a potential hazardous substance.

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 20:30:17 EST 2015

Committee Statement

Committee Statement: Add term to definitions as it used new to EMS industry.
Response Message:

First Revision No. 18-NFPA 473-2015 [New Section after 3.3.24]

3.3.28 Safety Data Sheet (SDS).

Formatted information provided by chemical manufacturers and distributors of hazardous products, which contains information about chemical composition, physical and chemical properties, health and safety hazards, emergency response, and waste disposal of the material. [**472,** 2018]

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 20:31:36 EST 2015

Committee Statement

Committee Statement: Adding term to document as it is revised from industry.
Response Message:

First Revision No. 20-NFPA 473-2015 [Section No. 3.3.25.1]

3.3.29.1 Radiological Weapons of Mass Destruction.

3.3.29.1.1* Improvised Nuclear Device (IND).

An illicit nuclear weapon that is bought, stolen, or otherwise obtained from a nuclear state (that is, a national government with nuclear weapons), or a weapon fabricated from fissile material that is capable of producing a nuclear ~~yield~~ explosion .

3.3.29.1.2* Radiation Dispersal Device (RDD).

A device designed to spread radioactive material through a detonation of conventional explosives or other ~~(non-nuclear)~~ means~~; also referred to as a "dirty bomb."~~ .

3.3.29.1.3* Radiation Exposure Device (RED).

~~Radioactive material, either as a sealed source or as material within some type of container, or a radiation-generating device, such as an x-ray device, that directly exposes people to ionizing radiation; used interchangeably with the term *radiological exposure device* or *radio emitting device*~~ A device intended to cause harm by exposing people to radiation without spreading radioactive material .

Supplemental Information

File Name	Description
Annex_A_definition_RED.docx	

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 20:37:12 EST 2015

Committee Statement

Committee Statement: Correlating to other haz-mat response documents.
Response Message:

A.3.3.XX.1.3

A device, used interchangeably with the term “radiological exposure device” or “radiation emitting device,” consisting of radioactive material, either as a sealed source or as material within some type of container, or a radiation-generating device, to cause harm by exposure to ionizing radiation.

First Revision No. 36-NFPA 473-2015 [Section No. 4.1.1]

4.1.1 Introduction.

All emergency medical services (EMS) personnel at the hazardous materials/WMD basic life support (BLS) responder level, in addition to their BLS certification, shall be trained to meet at least the ~~core~~ competencies of the operations level responders as defined in Chapter 5 of NFPA 472~~, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*~~ , and all competencies of this chapter.

Submitter Information Verification

Submitter Full Name: Thomas McGowan
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Street Address:
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Submittal Date: Mon Dec 14 22:12:45 EST 2015

Committee Statement

Committee Statement: the term in no longer used.
Response Message:

First Revision No. 21-NFPA 473-2015 [Section No. 4.1.2]

Global FR-60

4.1.2 Goal.

The goal of the competencies at the BLS responder level shall be to provide the individual with the knowledge and skills necessary to safely deliver BLS at hazardous materials/WMD incidents, function within the established IMS/ICS, and perform the following duties:

) Analyze a hazardous materials/WMD incident to determine the potential health hazards encountered by the BLS responder, other responders, and anticipated and actual patients by completing the following tasks:

Survey an incident where hazardous materials/WMD have been released and evaluate suspected and identified patients for signs and symptoms of exposure

Collect hazard and response information from available technical resources to determine the nature of the problem and potential health effects of the substances involved

) Plan to deliver BLS to any exposed patient within the scope of practice by completing the following tasks:

Identify preplans of high-risk areas and occupancies to identify potential locations where significant human exposures can occur

Identify the capabilities of the hospital network to accept exposed patients and perform emergency decontamination if required

Identify the medical components of the communication plan

Describe the role of the BLS ~~level~~ responder as it relates to the local emergency response plan and established IMS/ICS

) Implement a prehospital treatment plan within the scope of practice by completing the following tasks:

Determine the nature of the hazardous materials/WMD incident as it relates to anticipated or actual patient exposures and subsequent medical treatment

Identify the need for and the effectiveness of decontamination efforts

Determine if the available medical resources will meet or exceed patient care needs

Describe evidence preservation issues associated with patient care

Develop and implement a medical monitoring plan for responders

Report and document the actions taken by the BLS responder at the incident scene

) Coordinate the following tasks with the hazardous materials safety officer:

Analyze potential health concerns, which could be inclusive of environmental concerns

Plan for treatment and services delivery for patients and responders

Submitter Information Verification

Submitter Full Name: Thomas McGowan

Organization: National Fire Protection Assoc
Street Address:
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Submittal Date: Mon Dec 14 20:43:26 EST 2015

Committee Statement

Committee Statement: Revising text to include better direct communication and coordination.
Response Message:

First Revision No. 22-NFPA 473-2015 [Section No. 4.2.1.2]

4.2.1.2

Given examples of the nine U.S. Department of Transportation (DOT) hazard classes, the NFPA 704 markings, and the Globally Harmonized System (GHS) classifications, the BLS responder shall identify possible types of injuries or illnesses and possible prehospital treatment modalities associated with each hazard class.

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 20:48:22 EST 2015

Committee Statement

Committee Statement: This Public Input appeared as "Reject but Hold" in Public Comment No 473-5 of the 2012 Second Draft Report for NFPA 473 and per the Regs at 4.4.8.3.1. The responder first needs to identify the harm and then the appropriate pre-hospital care.

Response Message:

Public Input No. 13-NFPA 473-2015 [Section No. 4.2.1.2]

Public Input No. 1-NFPA 473-2013 [Section No. 4.2.1.2]

First Revision No. 23-NFPA 473-2015 [Section No. 4.2.1.4]

~~4.2.1.4~~

~~Given various scenarios of hazardous materials/WMD incidents, the BLS responder, working within an IMS/ICS, shall evaluate the off-site consequences of the release based on the physical and chemical nature of the released substance and the prevailing environmental factors, to determine the need to evacuate or to shelter-in-place affected persons.~~

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
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Submittal Date: Mon Dec 14 20:50:55 EST 2015

Committee Statement

Committee Statement: This proposal appeared as Comment 473-7 (Log #15) which was held from the A12 ROC on Proposal 473-5. These responders are already trained to the Ops Core Level (NFPA 472 5.1.2.2), therefore this is redundant.

Response Message:

Public Input No. 2-NFPA 473-2013 [Section No. 4.2.1.4]

Public Input No. 12-NFPA 473-2015 [Section No. 4.2.1.4]

First Revision No. 24-NFPA 473-2015 [Section No. 4.2.1.5]

4.2.1.4

Given the following biological agents, the BLS responder shall describe the signs and symptoms of exposure and/or illness ~~and the likely means of dissemination~~ for the following :

(1) Variola major virus (smallpox)
(2) *Clostridium botulinum*
(3) Coliforms (e.g., *E. coli* O157:H7)
(4) Ricin toxin
(5) *Bacillus anthracis* (anthrax)
(6) Venezuelan equine encephalitis virus
(7) *Rickettsia*
(8) *Yersinia pestis* (plague)
(9) *Francisella tularensis* (tularemia)
(10) Viral hemorrhagic fever
(11) Ebola
(12) Other CDC Category A, B, or C–listed organism

Submitter Information Verification

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Submittal Date: Mon Dec 14 20:52:47 EST 2015

Committee Statement

Committee Statement: Added to list because of the current concern for the virus.
Response Message:

First Revision No. 25-NFPA 473-2015 [Section No. 4.2.1.6]

4.2.1.5

Given ~~examples of various types of~~ a scenario involving a hazardous materials/WMD, ~~incidents involving toxic industrial chemicals (TICs) and toxic industrial materials (TIMs) (e.g., corrosives, reproductive hazards, carcinogens, nerve agents, flammable and/or explosive hazards, blister agents, blood agents, choking agents, and irritants), the BLS~~ the BLS responder shall determine the general health risks to patients exposed to those substances in the case of any release with the following:

(1) Visible cloud

(2) Liquid pooling

(3) Solid dispersion

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 20:55:42 EST 2015

Committee Statement

Committee Statement: This Public Input appeared as "Reject but Hold" in Public Comment No 473-8 of the 2012 Second Draft Report for NFPA 473 and per the Regs at 4.4.8.3.1. This revision was to eliminate the use of the terms "TIC & TIM" because they are already considered hazardous materials.

Response Message:

Public Input No. 11-NFPA 473-2015 [Section No. 4.2.1.6]

Public Input No. 3-NFPA 473-2013 [Section No. 4.2.1.6]

First Revision No. 26-NFPA 473-2015 [Section No. 4.2.1.7]

4.2.1.6 Determining If a Hazardous Materials/WMD Incident Is an Illicit Laboratory Operation.

Given examples of hazardous materials/WMD incidents involving illicit laboratory operations, BLS responders assigned to respond to illicit laboratory incidents shall identify the potential drugs/WMD being manufactured and shall describe the operational considerations, perform a comprehensive scene survey, and complete a hazard and risk analysis to meet the following related requirements:

(1)* Given examples of illicit drug manufacturing methods, ~~describe~~ identify the ~~operational considerations, hazards~~ health hazards associated with the products and ~~products~~ processes involved in the illicit ~~process~~ laboratory

(2) Given examples of illicit chemical WMD methods, ~~describe~~ identify the ~~operational considerations, hazards, and products~~ hazards of the potential products and processes involved in the illicit ~~process~~ laboratory

(3) Given examples of illicit biological WMD methods, ~~describe~~ identify the ~~operational considerations, hazards, and products~~ health hazards of the potential products and processes involved in the illicit ~~process~~ laboratory

(4) Given examples of illicit laboratory operations, describe the potential booby traps that have been encountered by response personnel

(5) Given examples of illicit laboratory operations, describe the agencies that have investigative authority and operational responsibility to support the response

Submitter Information Verification

Submitter Full Name: Thomas McGowan
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Street Address:
City:
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Submittal Date: Mon Dec 14 21:41:55 EST 2015

Committee Statement

Committee Statement: revised to better determine performance and risk associated with illicit laboratories.
Response Message:

First Revision No. 27-NFPA 473-2015 [Section No. 4.2.1.9]

4.2.1.8

Given three examples of pesticide labels and labeling, the BLS responder shall use the following information to determine the associated health risks and prehospital care for an exposure :

(1) Hazard statement

(2) Precautionary statement

(3) Signal word

(4) Pesticide name

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 21:49:53 EST 2015

Committee Statement

Committee Statement: This proposal appeared as Comment 473-10 (Log #12) which was held from the A12 ROC on Proposal 473-4.The BLS responder needs to determine not only the health risk, but the pre-hospital care.

Response Message:

Public Input No. 4-NFPA 473-2013 [Section No. 4.2.1.9]

Public Input No. 10-NFPA 473-2015 [Section No. 4.2.1.9]

First Revision No. 28-NFPA 473-2015 [Section No. 4.2.2]

4.2.2 Collecting and Interpreting Hazard and Response Information.

The BLS responder shall obtain information from the following sources to determine the nature of the medical problem and potential health effects:

(1) Hazardous materials databases

(2) Clinical monitoring

(3) Reference materials (e.g., ~~MSDS~~ SDS and ERG)

(4)* Technical information centers (e.g., CHEMTREC, CANUTEC, and SETIQ) and local, state, provincial, and federal authorities

(5) Allied professionals

(6) Regional poison control centers

Submitter Information Verification

Submitter Full Name: Thomas McGowan
Organization: National Fire Protection Assoc
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 14 21:52:49 EST 2015

Committee Statement

Committee Statement: revisions made to recognize changes in the industry and other countries besides the U.S.
Response Message:

First Revision No. 29-NFPA 473-2015 [Section No. 4.3.1.1]

4.3.1.1

The BLS responder, given an events calendar and pre-incident plans, which can include the local emergency planning committee plan, as well as the agency's emergency response plan and standard operating procedures (SOPs), shall identify the venues for mass gatherings, industrial facilities, potential targets for terrorism, and any other location where an accidental or intentional release of a harmful substance can pose a health risk to any person in the local geographical area as determined by the AHJ and shall identify the following:

(1) Locations where hazardous materials/WMD are used, stored, or transported

(2) Areas and locations that present a potential for a high loss of life or rate of injury in the event of an accidental or intentional release of hazardous materials/WMD

(3)* External factors that ~~may~~ might complicate a hazardous materials/WMD incident, including routes of travel and traffic issues, receiving hospital availability, communications interoperability, and inter-agency cooperation

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Committee Statement

Committee Statement: clarifying some of the external factors
Response Message:

First Revision No. 30-NFPA 473-2015 [Section No. 4.3.2.3]

4.3.2.3

The BLS responder shall describe the BLS protocols for prehospital care and SOPs for a mass casualty incident (MCI), including ~~triage~~ priority condition , treatment, and transport at a hazardous materials/WMD incident where exposures have occurred as developed by the AHJ and the prescribed role of medical control and poison control centers.

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Committee Statement

Committee Statement: term change within the EMS industry
Response Message:

First Revision No. 31-NFPA 473-2015 [Section No. 4.3.4.1]

4.3.4.1

Given scenarios involving hazardous materials/WMD, the BLS responder shall identify his or her role during hazardous materials/WMD incidents as specified in the emergency response plan and SOPs developed by the AHJ, as follows:

(1) Describe the purpose, benefits, and elements of the ~~incident command system as~~ IMS/ICS as it relates to the BLS responder

(2) Describe the typical incident command structure for the emergency medical component of a hazardous materials/WMD incident as specified in the emergency response plan and SOPs, as developed by the AHJ

(3) Demonstrate the ability of the BLS responder to function within the ~~incident command system~~ IMS/ICS

(4) Demonstrate the ability to ~~implement an incident command system~~ initiate an ICS for a hazardous materials/WMD incident where an ~~ICS~~ IMS/ICS does not currently exist

(5) Identify the procedures for requesting additional resources at a hazardous materials/WMD incident

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Committee Statement

Committee Statement: cleaning up terminology with industry recognized abbreviations
Response Message:

First Revision No. 32-NFPA 473-2015 [Section No. 4.4.1]

4.4.1 Determining the Nature of the Incident/Providing Medical Care.

The BLS responder shall demonstrate the ability to identify the mechanisms of injury or harm and the clinical implications and provide emergency medical care to those patients exposed to hazardous materials/WMD agent by completing the following tasks:

(1) Determine the physical state of the released substance, in addition to the environmental influences surrounding the release, as follows:

(a) Solid
(b) Liquid
(c) Gas
(d) Vapor
(e) Dust
(f) Mist
(g) Aerosol

(2) Identify potential routes of exposure and correlate those routes of exposure to the physical state of the released substance, to determine the origin of the illness or injury, as follows:

(a) Inhalation
(b) Absorption
(c) Ingestion
(d) Injection

(3)* Describe the potential routes of entry into the body, the common signs and symptoms of exposure, and the BLS treatment options approved by the AHJ for exposure(s) to the following classification of substances:

(a) Corrosives
(b) Pesticides
(c) Chemical asphyxiants
(d) Simple asphyxiants
(e) Organic solvents
(f) Nerve agents
(g) Vesicants and blister agents
(h) Blood agents
(i) Choking agents
(j) Irritants
(k) Biological agents and toxins
(l) Incapacitating agents
(m) Radioactive materials
(n) Nitrogen compounds
(o) ~~Opiate compounds~~ Hydrocarbon/hydrocarbon derivatives
(p) Fluorine compounds
(q) Phenolic compounds

(4) Describe the basic toxicological principles relative to assessment and treatment of persons exposed to hazardous materials, including the following:

(a) Acute and chronic effects
(b) Local and systemic effects
(c) Dose–response relationship

(5) Given examples of various hazardous materials/WMD, define the basic toxicological terms as applied to patient care:

(a) Threshold limit value — time-weighted average (TLV-TWA)

(b) Permissible exposure limit (PEL)

(c) Threshold limit value — short-term exposure limit (TLV-STEL)

(d) Immediately dangerous to life and health (IDLH)

(e) Threshold limit value — ceiling (TLV-C)

(f) Parts per million/parts per billion/parts per trillion (ppm/ppb/ppt)

(6) Given examples of hazardous materials/WMD incidents with exposed patients, evaluate the progress and effectiveness of the medical care provided at a hazardous materials/WMD incident to ensure that the overall incident response objectives, along with patient care goals, are being met by completing the following tasks:

(a) Locate and track all exposed patients at a hazardous materials/WMD incident, from ~~triage~~ priority conditions and treatment to transport to a medically appropriate facility

(b) Review the incident objectives at periodic intervals to ensure that patient care is being carried out within the overall incident action plan

(c) Ensure that the required incident command system forms are completed, along with the patient care forms, during the course of the incident

(d) Evaluate the need for trained and qualified EMS personnel, medical equipment, transport units, and other supplies based on the scope and duration of the incident

Supplemental Information

File Name	Description
473_FR_32_A.4.4.1_3_.docx	

Submitter Information Verification

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Committee Statement

Committee Statement: recognizing the change of EMS industry terminology

Also add change to A.4.4.1(3) from attached Word file.

Response Message:

A.4.4.1(3)

Examples of hazard classifications include the following:

1. Acids, alkalis, and corrosives
2. Fumigants and pesticides: organophosphates, carbamates, zinc or aluminum phosphide, strychnine, sulfuryl fluoride
3. Chemical asphyxiants: cyanide, carbon monoxide, hydrogen sulfide
4. Simple asphyxiants: nitrogen, helium
5. Organic solvents: xylene, benzene, methylene chloride
6. Nerve agents: Tabun, Sarin, Soman, V agent
7. Vesicants and blister agents: mustard, Lewisite
8. Blood agents: cyanide, cyanogen chloride, arsine
9. Choking agents: ammonia, chlorine, diphosgene, phosgene
10. Pepper spray, irritants, and riot-control agents: CS (orthochlorobenzalmalononitrile), CN (chloroacetophenone), CR (dibenzoxazepine), MACE (phenylchloromethylketone), OC (oleoresin capsicum)
11. Biological agents and toxins: anthrax, mycotoxin, plague, viral hemorraghic fevers, smallpox, ricin
12. Incapacitating agents: BZ, LSD
13. Radioactive materials: cobalt-60, cesium-137, iridium-192
14. Nitrogen-containing compounds: aniline, nitrates
15. Hydrocarbons/hydrocarbon derivatives
16. Fluorine compounds: hydrogen fluoride, hydrofluoric acid
17. Phenolic compounds: carbolic acid, cresylic acid

First Revision No. 33-NFPA 473-2015 [Section No. 4.4.2]

4.4.2 Decontamination.

Given the emergency response plan and SOPs developed by the AHJ, the BLS responder shall do the following:

(1) Determine if patient decontamination activities were performed prior to accepting responsibility and transferring care of exposed patients

(2) Determine the need and location for patient decontamination, including mass casualty decontamination, in the event none has been performed prior to arrival of EMS personnel and complete the following tasks:

(a) Given the emergency response plan and SOPs developed by the AHJ, identify sources of information for determining the appropriate decontamination procedure and identify how to access those resources in a hazardous materials/WMD incident

(b) Given the emergency response plan and SOPs developed by the AHJ, identify (within the plan) the supplies and equipment required to set up and implement the following:

i. Emergency decontamination operations for ambulatory and nonambulatory patients with open wounds

ii. Mass decontamination operations for ambulatory and nonambulatory patients with open wounds

(c) Identify procedures, equipment, and safety precautions for the treatment and handling of emergency service animals brought to the decontamination corridor at hazardous materials/WMD incidents

(d) Identify procedures, equipment, and safety precautions for communicating with critical, urgent, and potentially exposed patients, and identify population prioritization as it relates to decontamination purposes

(e) Identify procedures, equipment, and safety precautions for preventing cross contamination

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Committee Statement

Committee Statement: This proposal appeared as Comment 473-14 (Log #8) which was held from the A12 ROC on Proposal 473-4. EMS responders already required to be able to perform an emergency decon at the Ops Core level.

Response Message:

Public Input No. 5-NFPA 473-2013 [Section No. 4.4.2]

Public Input No. 9-NFPA 473-2015 [Section No. 4.4.2]

First Revision No. 34-NFPA 473-2015 [Section No. 4.4.4]

4.4.4 Preserving Evidence.

Given examples of hazardous materials/WMD incidents where criminal acts are suspected, the BLS responder shall make every attempt to preserve evidence during the course of delivering patient care by completing the following tasks:

(1) ~~Determine~~ Evaluate ~~if~~ the incident ~~is potentially criminal in nature~~ for potential criminal activity, and cooperate with the law enforcement agency having investigative jurisdiction

(2) Identify the unique aspects of criminal hazardous materials/WMD incidents, including crime scene preservation and evidence preservation, to avoid the destruction of potential evidence on medical patients during the decontamination process

(3) Identify, within the emergency response plan and SOPs developed by the AHJ, procedures, equipment, and safety precautions for ~~securing~~ preserving evidence during decontamination operations at hazardous materials/WMD incidents

(4) Ensure that any information regarding suspects, sequence of events during a potentially criminal act, and observations made based on patient presentation or during patient assessment are documented and communicated to the law enforcement agency having investigative jurisdiction

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Committee Statement

Committee Statement: editorial changes for clarity.
Response Message:

First Revision No. 35-NFPA 473-2015 [Section No. 4.4.5]

4.4.5 Medical Support at Hazardous Materials/WMD Incidents.

Given examples of hazardous materials/WMD incident, the BLS responder shall describe the procedures of the AHJ for performing medical monitoring and support of hazardous materials incident response personnel and shall complete the following tasks:

(1) Given examples of various hazardous materials/WMD incidents requiring the use of ~~chemical protective ensembles~~ PPE , the BLS responder shall complete the following tasks:

(a) Demonstrate the ability to set up and operate a medical monitoring station

(b) Demonstrate the ability to recognize the signs and symptoms of heat stress, cold stress, heat exhaustion, and heat stroke

(c) Determine the BLS needs for responders exhibiting the effects of heat stress, cold stress, and heat exhaustion

(d) Describe the medical significance of heat stroke and the importance of rapid transport to an appropriate medical receiving facility

(e) Given a simulated hazardous materials incident, demonstrate the appropriate documentation of medical monitoring activities

(2) The BLS responder responsible for pre-entry medical monitoring shall obtain hazard and toxicity information on the hazardous materials/WMD from the designated hazardous materials technical reference resource or other sources of information at the scene.

(3) The following information shall be conveyed to the entry team, incident safety officer, hazardous materials officer, other EMS personnel at the scene, and any other responders responsible for the health and well-being of those personnel operating at the scene:

(a) ~~Chemical~~ Substance name

(b) Hazard class

(c) Multiple hazards and toxicity information

(d) Applicable decontamination methods and procedures

(e) Potential for cross contamination

(f) Procedure for transfer of patients from the constraints of the incident to the EMS

(g) Prehospital management of medical emergencies and exposures

(4) The BLS responder shall evaluate the pre-entry health status of responders to hazardous materials/WMD incidents as per the AHJ policies and procedures prior to their donning personal protective equipment (PPE) by performing the following tasks (consideration shall be given to excluding responders if they do not meet criteria specified by the AHJ prior to working in chemical protective clothing):

(a) Record vital signs

(b) Body weight measurements to address hydration considerations

(c) General health observations

(d) Body temperature: hypothermia/hyperthermia

(e) Blood pressure: hypotension/hypertension

(f) Pulse rate: bradycardia/tachycardia as defined

(g) Respiratory rate: bradypnea/tachypnea

(5) The BLS responder shall determine how the following factors influence cold and heat stress on hazardous materials/WMD response personnel:

(a) Baseline level of hydration

(b) Underlying physical fitness

(c) Environmental factors

(d) Activity levels during the entry

(e) Level of PPE worn

(f) Duration of entry

(g) Cold stress

(6) The BLS responder shall medically evaluate all team members after decontamination and PPE removal, using the following criteria:

(a) Pulse rate determined within the first minute

(b) Pulse rate determined 3 minutes after initial evaluation

(c) Temperature

(d) Body weight

(e) Blood pressure

(f) Respiratory rate

(7) The BLS responder shall recommend that any hazardous materials team member be prohibited from redonning chemical protective clothing if any of the following criteria is exhibited:

(a) Signs or symptoms of heat stress or heat exhaustion

(b) Abnormal vital signs

(c) Abnormal core body temperature

(d) Abnormal heart rate and/or rhythm

(e) Abnormal blood pressure

(f) * Significant acute body weight loss

(8) Any team member exhibiting the signs or symptoms of extreme heat exhaustion or heat stroke shall be transported to the medical facility.

(9) The BLS responder responsible for medical monitoring and support shall immediately notify the persons designated by the incident action plan that a team member required significant medical treatment or transport. Transportation shall be arranged through the designee identified in the emergency response plan.

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Committee Statement

Committee Statement: cleaning up text
Response Message:

First Revision No. 37-NFPA 473-2015 [Section No. 5.1.1]

5.1.1 Introduction.

All emergency medical services (EMS) personnel at the hazardous materials/WMD advanced life support (ALS) responder level, in addition to their ALS certification, shall be trained to meet at least the ~~core~~ competencies of the operations level responders as defined in ~~Chapter 5 of~~ Section 6.2 (mission-specific PPE) of NFPA 472~~, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*~~ , and all competencies of this chapter.

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Committee Statement

Committee Statement: clarifying exceptions for this chpater
Response Message:

First Revision No. 38-NFPA 473-2015 [Section No. 5.1.2]

Global FR-60

5.1.2 Goal.

The goal of the competencies at the ALS responder level shall be to provide the individual with the knowledge and skills necessary to safely deliver ALS at hazardous materials/WMD incidents and to function within the established IMS/ICS, as follows:

- Analyze a hazardous materials/WMD incident to determine the potential health risks to the ALS provider, other responders, and anticipated/actual patients by completing the following tasks:

Survey a hazardous materials/WMD incident to determine whether harmful substances have been released and to evaluate suspected and identified patients for telltale signs of exposure

Collect hazard and response information from reference sources and allied professionals on the scene to determine the nature of the problem and potential health effects of the substances involved *(See Annex C for a list of informational references.)*

Survey the hazardous materials/WMD scene for the presence of secondary devices and other potential hazards

Inspect the operation for strategies or tactics that might cause undue environmental stress (harm) on the responder

- Plan to deliver ALS to exposed patients, within the scope of practice and training competencies established by the AHJ, by completing the following tasks:

Evaluate high-risk areas/occupancies within the AHJ to identify potential locations where significant human exposures can occur

Identify the capabilities of the hospital network within the AHJ to accept exposed patients and to perform emergency decontamination if required

Evaluate the components of the incident communication plan within the AHJ

Describe the role of the ALS responder as it relates to the local emergency response plan and established IMS/ICS

Identify supplemental regional and national medical resources, including but not limited to assets of the strategic national stockpile (SNS) ~~and the metropolitan medical response system (MMRS)~~ or other government programs

- Implement a prehospital treatment plan for exposed patients, within the scope of practice and training competencies established by the AHJ, by completing the following tasks:

Determine the nature of the hazardous materials/WMD incident as it relates to anticipated or actual patient exposures and subsequent medical treatment

Determine the need or effectiveness of decontamination prior to accepting an exposed patient

Determine if the available medical equipment, transport units, and other supplies, including antidotes and therapeutic modalities, will meet patient care needs

Describe the process of evidence preservation where criminal or terrorist acts are suspected or confirmed

Develop and implement a medical monitoring plan for those responders operating in chemical protective clothing at a hazardous materials/WMD incident

Evaluate the need to administer antidotes to affected patients

- Participate in the termination of the incident by completing the following tasks:

Participate in an incident debriefing

Participate in an incident critique with the appropriate agencies

Report and document the actions taken by the ALS ~~level~~ responder at the scene of the incident

- Coordinate with the hazmat safety officer to complete the following tasks:

Analyze potential health concerns, which might be inclusive of environmental issues

Plan for treatment and services delivery for patients and responders

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Committee Statement

Committee Statement: added additional material for ALS providers to consider when operating at a haz-mat incident.
Response Message:

First Revision No. 39-NFPA 473-2015 [Section No. 5.2.1.2]

5.2.1.2

Given examples of various hazardous materials/WMD incidents at fixed facilities, the ALS responder shall demonstrate the ability to perform the following tasks:

(1) Identify a variety of containers and their markings, including bulk and nonbulk packages and containers, drums, underground and aboveground storage tanks, specialized storage tanks, or any other specialized containers found in the AHJ's geographic area, and evaluate the general health risks based on the physical and chemical properties of the anticipated contents

(2) Identify the following job functions of health-related resource personnel available at fixed facility hazardous materials/WMD incidents:

(a) Environmental ~~heath~~ health and safety representatives

(b) Radiation safety officers

(c) Occupational physicians and nurses

(d) Site emergency response teams

(e) Specialized experts

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Committee Statement

Committee Statement: fix typographical error
Response Message:

First Revision No. 40-NFPA 473-2015 [Section No. 5.2.1.3]

5.2.1.3

The ALS responder shall identify two ways to obtain a material safety data sheet (MSDS) at a hazardous materials/WMD incident and shall demonstrate the ability to identify the following health-related information:

(1) ~~Proper chemical~~ Substance name or synonyms
(2) Physical and chemical properties
(3) Health hazards of the material
(4) Signs and symptoms of exposure
(5) Routes of entry
(6) Permissible exposure limits
(7) Emergency medical procedures or recommendations
(8) Responsible party contact

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Committee Statement

Committee Statement: EMS industry excepted terminology.
Response Message:

First Revision No. 41-NFPA 473-2015 [Section No. 5.2.1.5]

5.2.1.5*

Given examples of the following biological threat agents, the ALS responder shall define the various types of biological threat agents, including the signs and symptoms of exposure, mechanism of toxicity, incubation periods, possible disease patterns, and likely means of dissemination:

(1) Variola major virus (smallpox)
(2) *Clostridium botulinum* (botulism)
(3) Coliforms (e.g., *E. coli* O157:H7)
(4) Ricin toxin
(5) *Bacillus anthracis* (anthrax)
(6) Venezuelan equine encephalitis virus
(7) *Rickettsia*
(8) *Yersinia pestis* (plague)
(9) *Francisella tularensis* (tularemia)
(10) Viral hemorrhagic fever
(11) Ebola
(12) Other CDC Category A, B, or C–listed organism

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Committee Statement

Committee Statement: updating schedule to include a common virus
Response Message:

First Revision No. 42-NFPA 473-2015 [Section No. 5.2.1.6]

5.2.1.6*

Given examples of various types of hazardous materials/WMD incidents involving toxic industrial chemicals, toxic industrial materials, blister agents, blood agents, nerve agents, choking agents, and irritants, the ALS responder shall describe the following to determine the general health risks to patients exposed to those substances and to identify those patients who ~~may~~ might be candidates for antidotes~~.~~ :

(1) Identify the toxidrome for each TIC/TIM/military agent

(2) Determine the BLS and ALS medical modalities

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Committee Statement

Committee Statement: identifying specific terminology
Response Message:

First Revision No. 43-NFPA 473-2015 [Section No. 5.2.1.7]

5.2.1.7*

Given examples of hazardous materials/WMD found at illicit laboratories, the ALS responder shall identify general health hazards associated with the chemical substances ~~that are expected to be encountered.~~ and describe the following:

(1) Route of entry

(2) Mechanism of injury (target organ)

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Committee Statement

Committee Statement: identifying specific health considerations
Response Message:

First Revision No. 44-NFPA 473-2015 [Section No. 5.2.2 [Excluding any Sub-Sections]]

The ALS responder shall demonstrate the ability to utilize various reference sources at a hazardous materials/WMD incident, including the following:

(1) DOT *Emergency Response Guidebook*

(2) ~~MSDS~~ SDS

(3) CHEMTREC/CANUTEC/SETIQ

(4) Regional poison control centers

(5) NFPA 704~~, *Standard System for the Identification of the Hazards of Materials for Emergency Response* ,~~ identification system

(6) Hazardous materials information system (HMIS)

(7) Local, state, federal, tribal, and provincial authorities

(8) Shipper/manufacturer contacts

(9) Agency for Toxic Substances and Disease Registry (ATSDR) medical management guidelines

(10) Allied professionals

(11) Electronic databases

(12) Radiation safety officer (RSO)

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Committee Statement

Committee Statement: recognizing revision to common industry term
Response Message:

First Revision No. 45-NFPA 473-2015 [Section No. 5.3.2.4]

5.3.2.4

The ALS responder shall identify the following mutual aid resources (hospital- and non- hospital- based) identified by the AHJ for the field management of multicasualty incidents:

(1) Mass-casualty trailers with medical supplies

(2) Mass-decedent capability

(3) Regional decontamination units

(4) Replenishment of medical supplies during long-term incidents

(5) Locations and availability of mass-casualty antidotes for selected exposures, including but not limited to the following:

(a) Nerve agents and organophosphate pesticides

(b) Biological agents and other toxins

(c) Asphyxiants

(d) ~~Opiate exposures~~ Hydrocarbon/hydrocarbon derivatives

(e) Radiation exposures or contamination events

(6) Rehabilitation units for the EMS responders

(7) Replacement transport units for those vehicles lost to mechanical trouble, collision, theft, and contamination

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Committee Statement

Committee Statement: recognizing change to EMS terms used within the EMS industry
Response Message:

First Revision No. 46-NFPA 473-2015 [Section No. 5.3.3.2]

5.3.3.2

Given examples of various patient exposure scenarios, the ALS responder shall describe the following information to be transmitted to the medical control or poison control center or the receiving hospital prior to arrival:

(1) The exact name of the substance(s) involved
(2) The physical and chemical properties of the substance(s) involved
(3) Number of victims being transported
(4) Age and sex of transported patients
(5) Patient condition and chief complaint
(6) Medical history
(7) Circumstances and history of the exposure, such as duration of exposure and primary route of exposure
(8) Air monitoring and detection values
(9) Any advanced detection information identified
(10) Vital signs, initial and current
(11) Symptoms described by the patient, initial and current
(12) Presence of associated injuries, such as burns and trauma
(13) Decontamination status
(14) Treatment rendered or in progress, including the effectiveness of antidotes administered
(15) Estimated time of arrival

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Committee Statement

Committee Statement: recognizing the use of monitoring and detection devices during operations
Response Message:

First Revision No. 47-NFPA 473-2015 [Section No. 5.3.4.2]

5.3.4.2

Describe the hazardous materials/WMD ALS responder's role in the hazardous materials/WMD response plan developed by the AHJ or identified in the local emergency response plan as follows:

(1) Determine the toxic effect of hazardous materials/WMD
(2) Estimate the number of patients
(3) Recognize and assess the presence and severity of symptoms
(4) Assess the impact on the health care system
(5) Perform appropriate patient monitoring
(6) Communicate pertinent information
(7) Estimate pharmacological need
(8) Address threat potential for clinical latency
(9) Estimate exposure dosage ~~—~~
(10) Estimate treatment dosage ~~—~~
(11) Train in ~~appropriate monitoring~~ the following diagnostic monitoring equipment:
    (a) SaO2
    (b) Capnography
    (c) Rainbow technology

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Committee Statement

Committee Statement: noting the use of specific monitoring equipment.
Response Message:

First Revision No. 48-NFPA 473-2015 [Section No. 5.3.5]

5.3.5 Supplemental Medical Resources.

Given scenarios of various hazardous materials/WMD mass casualty incidents, the ALS responder shall identify the supplemental medical resources available to the AHJ, including the ~~following:~~ strategic national stockpile (SNS) program.

~~Describe the strategic national stockpile (SNS) program, including the following components:~~

~~Intent and goals of the SNS program~~

~~Procedures and requirements for deploying the SNS to a local jurisdiction~~

~~Typical supplies contained in 12-hour push package~~

~~Role of the technical advisory response unit (TARU)~~

~~Describe the metropolitan medical response system (MMRS) including the following components:~~

~~Scope, intent, and goals of the MMRS~~

~~Capabilities and resources of the MMRS~~

~~Eight capability focus areas of the MMRS~~

5.3.5.1

Describe the ~~strategic national stockpile (SNS)~~ SNS program, including the following components:

(1) Intent and goals of the SNS program

(2) Procedures and requirements for deploying the SNS to a local jurisdiction

(3) Typical supplies contained in 12-hour push package

(4) Role of the technical advisory response unit (TARU)

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Committee Statement

Committee Statement: deletion of (2) and subsections because MMRS is no longer used.
Response Message:

First Revision No. 49-NFPA 473-2015 [Section No. 5.4.1]

5.4.1 Determining the Nature of the Incident and Providing Medical Care.

The ALS responder shall describe the ability to provide emergency medical care to those patients exposed to hazardous materials/WMD by completing the following tasks:

(1) The ALS responder shall determine the physical state of the released substance and the environmental influences surrounding the release, as follows:

(a) Solid

(b) Liquid

(c) Gas, vapor, dust, mist, aerosol

(2)* The ALS responder shall identify potential routes of exposure~~,~~ and correlate those routes of exposure to the physical state of the released substance, to determine the origin of the illness or injury, as follows:

(a) Inhalation

(b) Absorption

(c) Ingestion

(d) Injection

(3) The ALS responder shall describe the potential routes of entry into the body, the common signs and symptoms of exposure, and the ALS treatment options approved by the AHJ (e.g., advanced airway management, drug therapy), including antidote administration where appropriate, for exposure(s) to the following classification of substances:

(a) Corrosives

(b) Pesticides

(c) Chemical asphyxiants

(d) Simple asphyxiants

(e) Organic solvents

(f) Nerve agents

(g) Vesicants

(h) Irritants (riot control agents)

(i) Biological agents and toxins

(j) Incapacitating agents

(k) Radioactive materials

(l) Nitrogen compounds

(m) ~~Opiate compounds~~ Hydrocarbon/hydrocarbon derivatives

(n) Fluorine compounds

(o) Phenolic compounds

(4) The ALS responder shall describe the basic toxicological principles relative to assessment and treatment of persons exposed to hazardous materials, including the following:

(a) Acute and chronic effects

(b) Local and systemic effects

(c) Dose-response relationship

(5) Given examples of various hazardous substances, the ALS responder shall define the basic toxicological terms as they relate to the treatment of an exposed patient, as follows:

(a) *Threshold limit value — time weighted average* (TLV-TWA)

(b) *Lethal doses* and *lethal* concentrations, as follows:

i. LD_{lo}

ii. LD_{50}

~~LD hi~~

iii. LC_{lo}

iv. LC_{50}

~~LC hi~~

(c) *Parts per million/parts per billion/parts per trillion* (ppm/ppb/ppt)

(d) *Immediately dangerous to life and health* (IDLH)

(e) *Permissible exposure limit* (PEL)

(f) *Recommended exposure limit* (REL)

(g) *Threshold limit value — short-term exposure limit* (TLV-STEL)

(h) *Threshold limit value — ceiling* (TLV-C)

(i) *Solubility*

(j) *Poison* — a substance that causes injury, illness, or death

(k) *Toxic* — harmful nature related to amount and concentration

(6) Given examples of hazardous materials/WMD incidents with exposed patients, the ALS responder shall evaluate the progress and effectiveness of the medical care provided at a hazardous materials/WMD incident, to ensure that the overall incident response objectives, along with patient care goals, are being met by completing the following tasks:

(a) Locate and track all exposed patients at a hazardous materials/WMD incident, from ~~triage~~ priority conditions and treatment to transport to the appropriate hospital

(b) Review the incident objectives at periodic intervals to ensure that patient care is being carried out within the overall incident response plan

(c) Ensure that the incident command system forms are completed, along with the patient care forms required by the AHJ, during the course of the incident

(d) Evaluate the need for trained and qualified EMS personnel, medical equipment, transport units, and other supplies, including antidotes based on the scope and duration of the incident

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5.4.5 Medical Support at Hazardous Materials/WMD Incidents.

Given examples of hazardous materials/WMD incidents, the ALS responder shall describe the procedures of the AHJ for performing medical monitoring and support of hazardous materials incident response personnel, and shall complete the following tasks:

(1) The ALS responder responsible for pre-entry medical monitoring shall obtain hazard and toxicity information on the released substance from the designated hazardous materials technical reference resource or other reliable sources of information at the scene. The following information shall be conveyed to the entry team, incident safety officer, hazardous materials officer, other EMS personnel at the scene, and any other responders responsible for the health and well-being of those personnel operating at the scene:

(a) ~~Chemical~~ Substance name

(b) Hazard class

(c) Hazard and toxicity information

(d) Applicable decontamination methods and procedures

(e) Potential for secondary contamination

(f) Procedure for transfer of patients from the constraints of the incident to the emergency medical system

(g) Prehospital management of medical emergencies and exposures, including antidote administration

(2) The ALS responder shall evaluate the pre-entry health status of hazardous materials/WMD responders prior to donning PPE by performing the following tasks:

(a) Record vital signs

(b) Record body weight measurements

(c) Record general health observations

(3) The ALS responder shall determine the medical fitness of those personnel charged with donning chemical protective clothing, using the criteria set forth in the emergency action plan (EAP) and the SOP developed by the AHJ. Consideration shall be given to excluding responders from working in personal protective equipment if they exhibit any significant abnormalities in the following areas:

(a) Body temperature (taking temperature or skin temperature does not correlate to body temperature)

(b) Vital signs

(4) The ALS responder shall determine how the following factors influence heat stress on hazardous materials/WMD response personnel:

(a) Baseline level of hydration

(b) Underlying physical fitness

(c) Environmental factors

(d) Activity levels during the entry

(e) Level of PPE worn

(f) Duration of entry

(g) Cold stress

(5) Given examples of various hazardous materials/WMD incidents requiring the use of chemical protective ensembles, the ALS responder shall complete the following tasks:

(a) Demonstrate the ability to set up and operate a medical monitoring station

(b) Demonstrate the ability to recognize the signs and symptoms of heat stress, heat exhaustion, and heat stroke

(c) Determine the ALS needs for responders exhibiting the effects of heat stress, cold stress, and heat exhaustion

(d) Describe the medical significance of heat stroke and the importance of rapid transport to an appropriate medical receiving facility

(6) Given a simulated hazardous materials/WMD incident, the ALS responder shall demonstrate documentation of medical monitoring activities.

(7) The ALS responder shall evaluate all team members after decontamination and PPE removal, using the following criteria:

(a) Pulse rate — done within the first minute

(b) Pulse rate — 3 minutes after initial evaluation

(c) Temperature

(d) Body weight

(e) Blood pressure

(f) Respiratory rate

(8) The ALS responder shall recommend that any hazardous materials team member exhibiting any of the following signs be prohibited from redonning chemical protective clothing:

(a) Signs or symptoms of heat stress or heat exhaustion

(b) Abnormal vital signs

(c) Abnormal core body temperature

(d) Abnormal heart rate or rhythm

(e) Significant acute body weight loss

(9) The ALS responder shall notify immediately the appropriate persons designated by the emergency response plan if a team member requires significant medical treatment or transport (arranged through the appropriate designee identified by the emergency response plan).

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6.1.1.5

The ALS ~~reponder~~ responder assigned mission-specific responsibilities at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures.

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6.3.4.1*

Given the emergency response plan and existing guidance from the AHJ medical director, the ALS responder assigned to provide clinical interventions at a hazardous materials incident shall identify the toxidromes for the following:

(1) Organophosphates
(2) Carbamates
(3) Military nerve agents
(4) Cyanides
(5) Chlorine and acid gases
(6) Anhydrous ammonia
(7) Hydrogen fluoride
(8) Phenolic compounds
(9) Military vesicant agents
(10) Nitrogen containing compounds
(11) ~~Opiates~~ Hydrocarbons/hydrocarbon derivatives
(12) Bacteria
(13) Viruses
(14) Biologic toxins
(15) Riot control agents
(16) Phosgene
(17) Ionizing radiation

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6.3.4.2*

Given the emergency response plan and existing guidance from the AHJ medical director, the ALS responder assigned to provide clinical interventions at a hazardous materials incident shall describe the clinical application and actions of the following pharmaceuticals based upon approval for clinical use by the AHJ:

(1) Atropine sulfate
(2) Pralidoxime (2-PAM)
(3) Diazepam
(4) Calcium gluconate
(5) Amyl nitrite
(6) Sodium nitrite
(7) Sodium ~~thiosulphate~~ thiosulfate
(8) Hydroxocobalamin
(9) Methylene blue
(10) Sodium bicarbonate
(11) Naloxone
(12) Dimercaprol
(13) Polyethylene glycol
(14) Zinc EDTA
(15) Calcium EDTA
(16) Prussian blue
(17) Water
(18) Magnesium sulfate
(19) Prednisone
(20) Tetracaine (pontocaine)

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First Revision No. 54-NFPA 473-2015 [Section No. 6.3.5]

6.3.5 Competencies: Evaluating Progress. ~~(Reserved)~~

6.3.5.1

The following features of the rehabilitation process shall be evaluated:

(1) Rehabilitation area established in an area free of airborne contamination produced by the incident

(2) Rehabilitation process activated, and personnel assigned to staff the area

(3) Responders assigned to rotate through the rehabilitation evaluated for fluid replenishment, medical monitoring, and heating/cooling measures if required

(4) Environmental conditions monitored in and around the rehabilitation area

(5) Process established for identifying responders who might not be medically fit to return to active duty at the incident or who might require more advanced medical evaluation

6.3.5.2

The following situations, which could require advanced medical evaluation or intervention, shall be described:

(1) Excessive work conditions, including heat or cold stress or significant physical activity

(2) PPE breech or failure resulting in physical injury to the responder

(3) Inhalation exposures to toxic by-products of combustion

(4) Other exposure scenarios that might adversely impact the responder

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6.4.2 Competencies ~~—~~ : Analyzing the Incident.

6.4.2.1 Identifying ~~the~~ General Hazards ~~of Fire Smoke~~ .

Given examples of various types of fire scenes involving residential or commercial structure fires, vehicle fires, aircraft fires, and other hazardous materials/WMD incidents, the ALS responder shall describe the commonly found components of fire smoke, including carbon monoxide and hydrogen cyanide, and shall describe the general health hazards associated with those substances, including the following:

(1) Mechanism of toxicity

(2) Acute and delayed toxicological effects

(3) Dose-response relationship

(4) Signs and symptoms of mild, moderate, and severe exposures

6.4.2.2 Identifying ~~Smoke Inhalation~~ Victims.

Given examples of various types of fire scenes involving residential or commercial structure fires, vehicle fires, aircraft fires, and other hazardous materials/WMD incidents, the ALS responder shall describe the general health risks to patients exposed to fire smoke and shall identify those patients who ~~may~~ might require clinical interventions, including antidotes for associated cyanide poisoning.

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6.4.3 Competencies ~~—~~ : Planning to Deliver ALS Patient Care.

6.4.3.1 Identifying Resources for Treating Acute ~~Smoke Inhalation~~ Patients.

Given examples of smoke inhalation patients, including circumstance of the exposure, signs and symptoms, underlying medical conditions (cardiac arrest, respiratory distress or arrest, seizure, or altered mental status), the ALS responder shall identify the methods and vehicles available to transport smoke inhalation patients and shall determine the location and potential routes of travel to the following appropriate local and regional hospitals, based on patient need:

(1) Adult trauma centers
(2) Pediatric trauma centers
(3) Adult burn centers
(4) Pediatric burn centers
(5) Hyperbaric chambers
(6) Field hospitals
(7) Hospitals or medical centers with FDA-approved cyanide antidotes
(8) Hospitals or medical centers with the capability of performing whole blood cyanide testing

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A.3.3.29 Weapon of Mass Destruction (WMD).

The source of this definition is 18 USC 2332a. [**472,** 2018]

Weapons of mass destruction (WMD) are known by many different abbreviations and acronyms, the most common of which is CBRN, which is the acronym for chemical, biological, and radiological/nuclear, and explosives particulate agents that could be released as the result of a terrorist attack. CBRN agents are further categorized as follows:

(1) *Chemical terrorism agents* are materials used to inflict lethal or incapacitating casualties, generally on a civilian population, and include chemical warfare agents and toxic industrial chemicals:

(a) *Chemical warfare agents* are solid, liquid, gaseous, and vapor agents, including, but not limited to, GB (Sarin), GD (Soman), HD (sulfur mustard), and VX.

(b) *Toxic industrial chemicals* include chlorine and ammonia, which have been identified as mass casualty threats.

(2) *Biological terrorism agents* are liquid or particulate agents that can consist of a biologically derived toxin or pathogen to inflict lethal or incapacitating casualties, such as bacteria, viruses, or the toxins derived from biological material.

(3) *Radiological particulate terrorism agents* are particles that emit ionizing radiation in excess of normal background levels used to inflict lethal or incapacitating casualties, generally on a civilian population, as the result of a terrorist attack.

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A.5.4.2

Most ALS medical treatment at hazardous materials/WMD incidents will be delivered in the cold zone, after decontamination. In some cases, ALS skills need to be delivered in the warm or hot zone prior to or concurrent with decontamination. In those situations, ALS responders need to balance the need for performing life-saving interventions with decontamination, taking into consideration the nature and severity of the incident; the medical needs of the patient; and the need to perform decontamination prior to rendering care.

Life safety of the responder is paramount. ALS responders who anticipate functioning under these conditions should receive training and meet the mission-specific ~~personal protective equipment~~ PPE competencies as defined in Section 6.2 of NFPA 472, ~~*Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*~~ .

It is critical that EMS providers review their responsibilities within their local emergency response plan before an incident occurs to ensure that EMS responders are adequately trained for their expected roles within the IMS/ICS at the hazardous materials/WMD incident. The priorities for ~~triage~~ priority conditions , treatment, or decontamination in the setting of other significant injuries should be based on the following requirements:

(1) *Priority I — Medical Care First*. Medical care outweighs immediate decontamination, and patients should be grossly decontaminated only as priority to transport. Contaminated patients with serious or critical illness, trauma, or burns should be decontaminated while their life-threatening injuries are being addressed.

(2) *Priority II — Combined Priorities.* Medical care needs are balanced with a priority to decontaminate. These patients present with a serious illness other than from the chemical exposure, have trauma or burn injuries, and have not been decontaminated but might have a high level of contamination. There might be a risk to the EMS provider from an ongoing exposure to the hazardous substance. In this situation, it might not be safe to render medical care without the appropriate ~~personal protective equipment~~ PPE . The ABCs (airway/breathing/circulation) and threats to life should be managed along with rapid decontamination.

(3) *Priority III — Decontaminate First.* Decontamination should be performed prior to providing medical care. In this situation, it might not be safe to render medical care without the appropriate ~~personal protective equipment~~ PPE .

Patient conditions are categorized as follows:

(1) A = Critical condition: airway compromised, serious signs or symptoms of shock, cardiac arrest, life-threatening trauma or burns

(2) B = Unstable condition: shortness of breath, unstable vital signs, altered level of consciousness after the exposure, significant trauma or burns

(3) C = Stable condition: stable vital signs, no altered level of consciousness, no significant trauma or burns

See Table A.5.4.2.

Table A.5.4.2 Patient Priority Levels

Level of Contamination	Priority Based on Condition		
	Medically Critical (A)	Medically Unstable (B)	Medically Stable (C)
Heavily contaminated with highly toxic substance	II	III	III
Heavily contaminated with low-toxicity substance	I	II	II
Low-level contamination with highly toxic substance	II	III	III
Low-level contamination with low-toxicity substance	I	I	II
Chemical in eyes: Decontaminate eyes immediately and thoroughly.			

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Annex C Informational References

C.1 Referenced Publications.

The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

C.1.1 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, ~~2013~~ 2018 edition.

C.1.2 Other Publications.

C.1.2.1 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA, 19428-2959.

ASTM E2601, *Standard Practice for Radiological Emergency Response*, ~~2008~~ 2015 .

C.1.2.2 CRCPD Publications.

Conference of Radiation Control Program Directors, Inc., 1030 Burlington Lane, Suite 4B, Frankfort, KY, 40601.

CRCPD Publication 06-6, *Handbook for Responding to a Radiological Dispersal Device — First Responder's Guide — the First 12 Hours*, September 2006.

C.1.2.3 U.S. Government Publications.

U.S. Government ~~Printing~~ Publishing Office, ~~Washington, DC 20402~~ 732 North Capitol Street, NW, Washington, DC 20401-0001 .

Title 18, U.S. Code, Section 2332a, "Use of Weapons of Mass Destruction."

C.2 Informational References.

The following documents or portions thereof are listed here as informational resources only. They are not a part of the requirements of this document.

C.2.1 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam*, ~~2010~~ 2016 edition.

NFPA 30, *Flammable and Combustible Liquids Code*, ~~2012~~ 2015 edition.

NFPA 58, *Liquefied Petroleum Gas Code*, ~~2011~~ 2017 edition.

NFPA 475 , *Recommended Practice for Organizing, Managing, and Sustaining a Hazardous Materials/Weapons of Mass Destruction Response Program* , 2017 edition.

NFPA 1072 , *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications* , 2017 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System and Command Safety* , ~~2008~~ 2014 edition.

NFPA 1984 , *Standard on Respirators for Wildland Fire-Fighting Operations* , 2016 edition.

NFPA 1991, *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies and CBRN Terrorism Incidents* , ~~2005~~ 2016 edition.

NFPA 1992, *Standard on Liquid Splash–Protective Ensembles and Clothing for Hazardous Materials Emergencies*, ~~2012~~ 2017 edition.

Hazardous Materials Response Handbook, 2013.

Wright, C. J., "Managing the Hazardous Materials Incident," *Fire Protection Handbook*, 20th edition, Quincy, MA: National Fire Protection Association, 2008.

C.2.2 Other Publications.

C.2.2.1 ACC Publications.

American Chemistry Council ~~(formerly Chemical Manufacturers Association)~~ , 1300 Wilson ~~Blvd.~~ Boulevard , Arlington, VA 22209.

Recommended Terms for Personal Protective Equipment, 1985.

C.2.2.2 API Publications.

American Petroleum Institute, 1220 L Street, N.W., Washington, DC 20005-4070.

API 2021, *Guide for Fighting Fires in and Around Flammable and Combustible Liquid Atmospheric Petroleum Storage Tanks*, 2001, reaffirmed 2006 .

API PUBL 2510A, *Fire Protection Considerations for the Design and Operation of Liquefied Petroleum Gas (LPG) Storage Facilities*, 1996, reaffirmed 2010 .

C.2.2.3 NFA Publications.

National Fire Academy, Federal Emergency Management Agency, Emmitsburg, MD 21727.

Hazardous Materials Incident Analysis, 1984.

C.2.2.4 NRT Publications.

National Response Team, National Oil and Hazardous Substances Contingency Plan, Washington, DC 20593.

NRT-1, *Hazardous Materials Emergency Planning Guide*, 2001.

C.2.2.5 U.S. Government Publications.

U.S. Government ~~Printing~~ Publishing Office, ~~Washington, DC 20402~~ 732 North Capitol Street, NW, Washington, DC 20401-0001 .

Emergency Response Guidebook, U.S. Department of Transportation, 2012 edition.

Emergency Response, Command, and Planning Guidelines (various documents) for terrorist incidents involving chemical and biological agents. U. S. Army Research, Development, and Engineering Command (RDECOM), available through the Edgewood Chemical Biological Center, website http://www.ecbc.army.mil/hld.

EPA, Emergency Response Program publications, Washington, DC: Environmental Protection Agency, www.epa.gov.

National Toxicology Program, *Report on Carcinogens*, 12th edition, Washington, DC: U.S. Department of Health and Human Services, 2011.

NIOSH/OSHA/USCG/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985.

Title 29, Code of Federal Regulations, Parts 1910.119–1910.120.

Title 40, Code of Federal Regulations, Part 261.33.

Title 40, Code of Federal Regulations, Part 302.

Title 40, Code of Federal Regulations, Part 355.

Title 49, Code of Federal Regulations, Parts 170–180.

C.2.2.6 Additional Publications.

Grey, G. L., et al., *Hazardous Materials/Waste Handling for the Emergency Responder*, New York: Fire Engineering Publications, 1989.

Maslansky, C. J., and S. P. Maslansky, *Air Monitoring Instrumentation*, New York: Van Nostrand Reinhold, 1993.

Noll, G. G., et al., *Hazardous Materials, Managing the Incident*, ~~2nd~~ fourth edition, ~~Stillwater, OK: Fire Protection Publications, 1995~~ Jones and Bartlett, Burlington, MA 2013 .

C.3 References for Extracts in Informational Sections. ~~(Reserved)~~

NFPA 472 , *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents* , 2018 edition.

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