

TCVN

NATIONAL STANDARDS

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1st Edition

**ADDRESSING THE POST-WAR CONSEQUENCES OF
MINE/ERW -
PART 8: MEDICAL SUPPORT FOR DEMINING OPERATIONS**

HANOI - 2014

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Foreword

TCVN 10299-1:2014 was drafted by the Technical Standard Department of Engineering Command, requested by the Ministry of Defense, appraised by the Directorate for Standards, Metrology and Quality and published by the Ministry of Science and Technology.

TCVN 10299 :2014 – *Addressing the post-war consequences of mines/ERW*, includes 10 parts :

- TCVN 10299-1:2014, *Part 1: General provisions*;
- TCVN 10299-2:2014, *Part 2: Assessment and Accreditation of demining organizations*;
- TCVN 10299-3:2014, *Part 3: Monitoring and Evaluation of demining organizations*;
- TCVN 10299-4:2014, *Part 4: Non-technical Survey and Technical Survey*;
- TCVN 10299-5:2014, *Part 5: Demining safety*;
- TCVN 10299-6:2014, *Part 6: Clearance of mine/ERW*;
- TCVN 10299-7:2014, *Part 7: Explosive Ordnance Disposal (EOD)*;
- TCVN 10299-8:2014, *Part 8: Medical support for demining operations*;
- TCVN 10299-9:2014, *Part 9: Investigation of demining incidents*;
- TCVN 10299-10:2014, *Part 10: Management of information*;

Addressing the post-war consequences of mines/ERW - Part 8: Medical support for demining operations

1 Scope

This standard specifies the requirements to ensure medical support for demining operations, as well as duties and responsibilities of relevant organizations.

This standard shall be applied for mine action organizations and other involved parties.

2 Normative references

The following normative references are vital for the application of this standard. For dated references, the cited edition shall be applied. For undated references, the latest edition of the normative documents referred to shall be applied, including amendments or supplements (if any).

TCVN 10299-1:2014, *Part 1: General provisions*

3 Terms and definitions

This standard uses terms and definitions specified in TCVN 10299-1:2014 and the following terms and definitions:

3.1

Medical worker

A person in charge of medical issues in a demining organization.

3.2

Demining accident response plan

A documented plan developed for each demining workplace which details the procedures to be applied to move victims from a demining accident site to an appropriate treatment or surgical care facility.

4 General requirements

4.1 Physical health requirements for demining staff

4.1.1 Demining staff employed should have good health, there should be no physical or mental sickness that might affect their expected assignments

4.1.2 All staff working on a demining site shall receive periodic health checks (1 to 2 times a year) by a specialized medical facility before performing demining tasks

4.2 Planning and preparation

Planning and preparation includes all enabling activities, which shall be done by demining organizations in order to establish and maintain appropriate medical care at the demining workplace, and to make appropriate arrangements with local, national, and international medical treatment facilities (if necessary).

4.2.1 Accident response plan

4.2.1.1 A demining accident response plan shall be developed and maintained by the demining organization for each demining worksite. The plan shall identify:

4.2.1.1.1 The training needs of all employees at the demining workplace, in particular responsibilities of demining staff and medical support staff in casualty evacuation and initial treatment. See Appendix B for more details.

4.2.1.1.2 The equipment and facilities required to implement the demining accident response plan (Appendix A), including:

- first aid and medical equipment;
- medical supplies and drugs;
- adequate means of transportation to move victims from the accident site to medical facilities; and
- communication equipment to call for assistance and/or provide details of the nature and extent of the injuries.

4.2.1.1.3 The location of the nearest hospital with adequate staff and facilities. Mine/ERW accident injuries are usually severe, and surgery and specialized treatment at the nearest hospital with adequate equipment and staff is often required.

4.2.1.2 Preparation for responding to a demining accident shall include:

- medics equipped with first aid techniques, medical skills, and facilities required to respond to a demining accident;
- demining worksite management documentation that includes details of the blood group, infectious diseases (HIV, hepatitis, etc) and known allergies for each demining worker;
- a capacity to transport victims to an appropriate treatment facility or surgical hospital; or insurance to cover the cost of transport to a suitably equipped and staffed hospital;
- insurance to cover the cost of surgery, medical care and treatment, including prosthetics for limbs, eyes, for victims of demining accidents;
- insurance to provide an appropriate disability allowance to demining workers who become victims of demining accidents; and
- the periodic inspection (every 6 months) of emergency response procedures and evacuation procedures from the time of the accident to the delivery of a victim to an appropriate medical facility for medical treatment or surgery.

4.2.2 Occupational health plan

4.2.2.1 The briefing of all demining staff on the health hazards, including insects and water-borne diseases, infections and poisonous animals or insects native to the demining area, and the risk of exposure to toxins in the demining area (such as dioxin agents, toxic chemicals, radioactive substances etc.).

4.2.2.2 The provision, wherever appropriate, of antibiotics against diseases, and other preventive measures.

4.2.2.3 Arrangements for periodic or unscheduled health checks before conducting demining work and occupational medical examination for those at high risk due to their exposure to poisonous elements (e.g.: explosives, propellant, etc.)

4.2.2.4 The provision of up to date prophylactic injections against diseases such as tetanus and hepatitis, as advised by local or international health authorities.

4.3 Evacuation plan

4.3.1 Movement of victims from hazardous areas or out of mechanical demining equipments.

4.3.2 On-site first aid and medical care including:

- general resuscitation, cardiopulmonary resuscitation (CPR);
- temporary bleeding control;
- wound dressing;
- temporary fracture fixtures; and
- movement of victims out of dangerous areas.

4.3.3 The movement of victims to a surgical facility that has the capacity for providing appropriate surgical care and specialized medical treatment, including:

- details of planned routes (airway, roads, waterways) and means of transport (planes, ships, boats, ambulance cars or equivalent, etc.);
- details of security requirements for transportation; and
- fuel, food, and repair facilities & spare parts on route;

4.3.4 The medical care provided to the victim during movement from the accident site to the surgical facility.

4.3.5 The establishment and maintenance of equipment, facilities, and drugs in response to demining accident, including:

- on-site medical care equipment, facilities, and drugs;
- an emergency response vehicle, including adequate and specialized medical care equipment and fittings or fixtures, to assist in the management of the victim during his/her movement to the medical treatment or surgical facility; and
- reparation and maintenance of on-site communication and en-route transportation

5 Demining accident response capability

5.1 The demining worksite shall include:

5.1.1 Demining teams should have resources in order to:

- promptly remove victim(s) from the hazardous area;
- provide immediate first aid to the victim(s) of the demining accident as soon as possible without affecting the safety of others;
- Within 6 hours of the injury, transport the victim(s) to an appropriate medical treatment or surgical facility, or other collection point before further movement of the victim to an appropriate medical facility;
- provide en-route medical care for the victim(s); and
- communicate with the medical facilities, other emergency services, or other co-ordinating organizations responsible for assisting the demining organization in order to appropriately respond to the demining accident.

5.1.2 Staff shall be trained and equipped to:

- a) move victims out of hazardous areas or mechanical demining equipments;
- b) promptly assess the victims' injuries and set priorities on emergency and transportation;
- c) provide basic first aid techniques, including:
 - general resuscitation, cardiopulmonary resuscitation (CPR);
 - prevention and treatment of shock;
 - methods of temporary bleeding control;
 - clean and dress wounds correctly;
 - stabilize fractures;
 - movement of victims as guided;
- d) give antibiotics and anti-tetanus prophylaxis if the victim is not otherwise likely to receive them within six hours after demining accident happens.

5.2 Independent demining teams:

5.2.1 Demining teams that operate independently in remote locations over extended periods shall have additional medical staff.

5.2.2 Required resources (including communication facilities) shall be available in order to timely respond to a demining accident, move victims to an intermediate medical treatment facility or a surgical facility in nearest proximity.

5.2.3 Demining staff shall be provided with first aid training (five basic first aid techniques).

5.3 Training

All people working at demining workplaces shall receive appropriate medical training. The regulations on the degree and level of medical training that will be provided can be found in Appendix B.

6 Responsibilities

6.1 National Mine Action Authority (NMAA)

- establish and maintain documented standards and procedures for providing medical support to demining operations; and
- monitor demining organizations' development and maintenance of demining accident response plans.

6.2 Demining organizations

- develop and maintain demining accident response plans, occupational healthcare plans and its implementation for each demining worksite;
- provide the training and resources needed for the implementation of the demining accident response plan before conducting a clearance task;
- cover the cost of healthcare and surgical treatment, including artificial legs, arms, eyes, etc for mine/ERW victims;
- provide appropriate allowance for demining staff who become victims of mine/ERW.

6.3 Demining employees, medical staff

- apply regulations and procedures in order to reduce the risk of hazards and toxins resulting from a demining accident;
- develop and maintain the skills needed to respond to demining accident emergencies;
- identify and report initiatives to improve work practices that reduce the risk of a demining incident occurring as well as improve the organization's demining accident response plan;
- carry out all actions recommended by the medical authorities for the assurance of occupational health.

Appendix A

(Normative)

Organization of personnel and minimum facilities for a medical support team at a demining worksite**Table A.1 - Minimum personnel of a medical support team at demining worksite**

No	Personnel	Quantity
1	Team leader: doctor/assistant doctor	01
2	Nurse	02
3	Casualty evacuation (plurality)	2-4
4	Driver	01

NOTE: To be applied for demining worksite with over 5 demining teams.

Table A.2 - Minimum medical equipment for a medical support team at a demining worksite

No	Name of equipment	Unit	Quantity
I. Means of transportation			
	Ambulance vehicles or equivalent means of transportation in accordance with the terrain (canoes, boats, ships, airplanes, etc.)	Unit	01
II. Means of ventilation and respiration:			
1	Reused bag valve mask for adults (ambu + mask)	Set	02
2	Larynx mask for adults - all sizes	Set	02
3	Oxygen mask for adults	Unit	02
4	Oral and Nasal Cannula Mayo - all sizes	Unit	2 units per size
5	Oxygen supply in 120 minutes/8 liters/minute (10 liters/20 Mpa (200 Bar)] with oxygen manometer and flow control valve	Set	01
6	Nose-throat ventilation	Unit	02
7	Endotracheal tube - all number	Unit	1 unit per number
8	Endotracheal intubation set	Set	01
9	Endotracheal device (including cannula Krishaber or Sjober + anesthetic drugs + syringe + needle, thread...)	Set	01
10	Oxygen tubing – all sizes	Unit	1 unit per size

No	Name of equipment	Unit	Quantity
11	Fluid and pleura needle	Unit	2 units per type

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Table A.2 (continued)

No	Name of equipment, active element	Unit	Quantity
III. Materials for injection:			
1	Safety glasses	Unit	02
2	Container for sharp items	Unit	01
3	Intravenous needle size 14G, 16G, 18G, 20G	Unit	5 units per size
4	Intravenous cannula	Set	10
5	Adhesive plaster 2,5 cm	Unit	02
6	Venous tourniquet	Unit	02
7	Alcohol pads	Bottle	02
8	Disposable syringe 5 ml	Unit	20
9	Disposable syringe 10 ml	Unit	20
10	Needle size 21G	Unit	20
11	Distilled water 5 ml	Tube	20
12	Sterile glove	Pair	20
IV. Wound dressing tool:			
1	Triangular bandage	Unit	10
2	Sterile gauze 10 cm x 10 cm or 10 cm x 20 cm, 10 units/pack	Unit	20
3	Gauze bandage 10 cm	Unit	20
4	Gauze bandage 15 cm	Unit	20
5	Gauze for chest and belly	Unit	10 units per type
6	Burn dressing	Unit	10
7	Eye bandage	Unit	10
8	Crepe bandage	Unit	04
9	Tourniquet	Unit	05
Antiseptic solution			
10	Polyvinyl pyrrolidone 10 %	Bottle	02
11	Rubbing alcohol 70 ⁰ - 500 ml	Bottle	02
12	Hydrogen peroxide solution 30	Bottle	05
13	Quick antiseptic hand wipe	Bottle	02
V. Fixed splints			
1	Upper-limb brace for arms and forearms (or Kramer splint)	Set	2 sets per type
2	Lower-limb brace for thighs and legs	Set	2 sets per type
3	Neck brace – all sizes	Unit	2 units per size

Bảng A.2 (tiếp theo)

No.	Name of equipment, active element	Unit	Quantity
4	Brace for waist and back – all sizes	Unit	2 units per size
VI. Others:			
1	Tissue scissor	Unit	02
2	Kelly forceps	Unit	02
3	Sterile forceps	Unit	02
4	Stethoscope	Unit	02
5	Sphygmomanometer	Unit	02
6	Victim tag	Set	02
7	Gauze – medium size	Unit	20
8	Ear-light, eye-light	Unit	01
9	Adhesive plaster	Unit	02
10	Sterile surgical bistoury (including handle and blade)	Unit	05
11	Sterile needle with thread (absorbable and non-absorbable) – all numbers	Thread	2 threads per number
12	Minor surgical box: 02 clips, 02 scissors, 02 dissection forceps, blade handle, disposable blade, needles with thread, needle holder	Set	1-2
VII. List of essential drugs			
Cardiovascular drugs			
1	Dopamin 200 mg	Tube	05
2	Dobutamin 250 mg	Tube	05
3	Noradrenaline 1 mg	Tube	20
4	Adrenaline 1 mg	Tube	20
5	Atropine sulphate 1/4 mg	Tube	20
6	Nitroglycerine Spray 200 doses (0,4 mg/dose)	Bottle	01
7	Nifedipin 10 mg	Capsule	10
8	Captopril 25 mg	Tablet	10
9	Amiodaron 150 mg	Tube	05
10	Furosemide 20 mg/2 ml	Tube	05
11	Digoxin 0,25 mg/1 ml	Tube	05
12	Furosemid 40 mg	Compressed tablet	10
13	Amiodaron 200 mg	Tablet	10
14	Nitroglycerin 1 mg/10 ml	Tube	05

Table A.2 (continued)

No.	Name of equipments, active element	Unit	Quantity
15	Nitroglycerin 2,6 mg	Tablet	20
Respiratory drugs			
16	Salbutamol spray – 200 doses (100 microgam/dose) or equivalent	Bottle	02
17	Terbutaline sulfate 0,5 mg	Tube	05
Digestive drugs			
18	Hyoscine-N-butylbromide 20 mg	Tube	10
19	Spasvamerine 40 mg	Compressed tablet	20
20	Metoclopramide chlohydrate 10 mg	Tube	10
21	Berberine 100 mg	Tablet	50
22	Biseptol 480 (Sulfamethoxazole 400 mg + Trimethoprim 80 mg)	Tablet	50
Analgesic, tranquillizer drugs			
23	Morphine 10 mg/ml	Tube	05
24	Pethidine chlohydrate 100 mg	Tube	05
25	Diazepam 10 mg	Tube	05
26	Diazepam 5 mg	Tablet	20
Antibiotic drugs			
27	Cephalosporin 1 g	Bottle	10
28	Ciprofloxacin 400 mg	Tablet	20
29	Cefuroxim 500 mg	Tablet	30
Anti-poison drugs			
30	Naloxone 0,4 mg/ml (if using morphine)	Tube	02
31	Activated charcoal powder	Tube	02
Local anesthetic drugs			
32	Lidocain 2 %/2 ml	Tube	50
Anti-vertigo drugs			
33	Acetyl-DL–Leucine 500 mg	Tube	10
Analgesic, antipyretic, anti-inflammatory drugs			
34	Paracetamol 1 g	Bottle	05
35	Paracetamol 500 mg	Effervescent tablet	10

Table A.2 (continued)

No.	Name of equipments, active element	Unit	Quantity
Infusion			
36	Natriclorua 0,9 % 500 ml	Bottle	05
37	Glucose 5 % 500 ml	Bottle	05
38	Glucose 10 % 500 ml	Bottle	05
39	Glucose 10 % 500 ml	Bottle	05
40	Ringer lactate 500 ml	Bottle	05
41	Hydroxyethyl starch 6 % or equivalent 500 ml	Bottle	05
Anti-allergy drugs			
42	Diphenhydramin hydroclorid 10 mg	Tube	2-5
43	Methylprednisolone Natri succinate 40 mg	Tube	5
44	Chlorpheniramine maleate 4 mg	Compressed tablet	20
45	Loratadin loratadine 10 mg	Compressed tablet	10
Other drugs			
46	Panthenol (burn spray)	Tube	01
47	Calcium chloride 0,5 g/5 ml	Tube	05
48	Kali chlorid 500 mg	Tube	05
49	Kali chlorid 600 mg	Tablet	10
50	Oresol	Packet	10
51	Tobramycine 0,3 % 5 ml	Bottle	02
52	Natriclorid 0,9 % 10 ml	Bottle	10
VIII. Drugs and minimum medical facilities for transportation			
1	Stretcher for ambulance car	Unit	01
2	Litter for transportation of spinal injury victims, and protection hat (or equivalent)	Unit	01
3	Blanket	Unit	02
4	Fresh boiled water 10 Liters	Container	01
5	Means of communication	Set	01
6	Smoke signal tool (if necessary)	Unit	01
7	Flash	Unit	01
8	Oxygen supply - 5 Liters with oxygen manometer and flow control valve, oxygen tubing for adults – all sizes	Set	01

9	Reused bag valve mask for adults (ambu + mask)	Set	02
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Table A.2 (ending)

No.	Name of equipment, active element	Unit	Quantity
10	Larynx mask for adults - all sizes	Set	02
11	Oxygen mask for adults	Unit	02
12	Oral and nasal Cannula Mayo – all sizes	Unit	2 units per size
13	Nose-throat ventilation	Unit	02
14	Endotracheal tube – all numbers	Unit	1 unit per number
15	Endotracheal intubation set	Set	01
16	Endotracheal device (including cannula Krishaber or Sjober + anesthetic drugs + syringe + needle, thread...)	Set	01
17	Oxygen tubing	Unit	1 unit per size
18	Monitor with at least 2 parameters: pulse, SpO2, battery-operated	Unit	01
19	Essential drugs and other equipments as stated in Section III, VI, VII		

Table A.3 - Other necessary medical equipments for a medical support team at demining worksite

No	Name of equipment	Unit	Quantity
1	Gastric lavage toolkit	Set	01
2	Larynx instrument (including tongue depressor with light and battery)	Unit	01
3	Magill forceps 8	Unit	01
4	Magill forceps 9	Unit	01
5	Natri clorua 0,9 %	Liter	10
6	Mobile pump using battery or AC 220 V/50 Hz	Unit	01
7	Monitor with at least 2 parameters: pulse, SpO2, battery-operated	Unit	02
8	Catheter set – all sizes	Set	02
9	Fresh boiled water 10 liter	Container	02
10	Blanket	Unit	02

Appendix B

(Normative)

Level of medical training

B.1 Deminers

Deminers should be trained in:

- a) the responsibilities for and limitations in providing first aid care:
- b) five basic first aid techniques, include:
 - general resuscitation (Cardiopulmonary resuscitation): Rescue breathing, chest compression
 - bleeding control: Temporarily controls of bleeding by elevation of wounded part, pressure points, direct pressure, or use of bandage, stitch the wound edge, tie vessel, tourniquet;
 - wound dressing: Removing any dirt or debris from the wound, cleaning around the wound by antiseptics and sterile devices to prevent wound infection, washing the wound inside-out in a spiral manner. Use appropriate types of bandage for different parts of the body such as circular bandage, X bandage, spiral bandages, etc.
 - temporary fixtures of fractures with specialized or self-made splints;
 - methods of casualty lifting, movement, and placement on a stretcher/litter;
- c) the importance of mutual exchange and encouragement with mine/ERW victims;
- d) the importance of protecting victims from cold, rain, snow, wind, and excessive heat;

B.2 Supervisors and demining team leaders

Demining supervisors and team leaders should be trained in:

- how to evaluate the security situation, and assess the impact of the security situation on the implementation of an effective demining accident response plan;
- how to manage the extraction of a victim from a hazardous area;
- how to manage a demining accident which results in multiple victims;
- how to delegate first aid tasks to others with little or no training;
- how to plan and co-ordinate the evacuation of victims from the demining workplace to the surgical care facility;
- the system for contacting medical treatment and surgical facilities, organizations, or authorities required to facilitate the movement of victims to any intermediate care facilities, and then to an appropriate surgical care facility.

B.3 Medical support staff

Medical support staff should be trained to:

- assess the casualty's general condition, and assess the treatment needed;

- assess the best method of moving the casualty;
- call for medical assistance to treat the casualty on-site, or at an intermediate point before moving to advanced medical facilities;
- treat a casualty appropriately and safely at the demining workplace, and en-route to advanced medical facilities;
- correctly administer immediate antibiotics, oxygen, intravenous fluids, analgesics, and anti-shock drugs.

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Appendix C

(Normative)

Plan to ensure medical support at demining worksite

(UNIT NAME)

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

No:

(Place), day..... month..... year

APPROVED BY

Day.....month.....year

PLAN

To ensure medical support at demining worksite

HEAD OF UNIT
(COMPETENT AUTHORITY)

I. CURRENT SITUATION

Specify the situation related to the medical support at demining worksite:

- the location of demining worksite vs military/civil medical facilities;
- the characteristics of epidemiology, weather and climate at demining area;
- density and types of mines/ERW, etc; and
- status of personnel and equipment of demining organization;

II. THE BASIS FOR DEVELOPMENT OF PLAN

Specify main basis for developing a plan to ensure medical support for demining worksite:

- the volume of work, complexity, and time of implementation;
- the number of people participating in demining process; and
- the estimated number of victims if accident happens;
- the route to move victims to appropriate medical facilities, terrain, etc.

III. OBJECTIVES AND REQUIREMENTS

- objectives; and
- requirements;

IV. CONTENT OF THE PLAN

4.1 Preparation of facilities and equipment for emergency and transportation of victim in the fastest, shortest, and the safest route;

4.2 Demining staff also includes medical staff who are able to:

- position the responsibilities of each demining staff;
- provide health checks prior to conducting a new task;
- provide medical training (Appendix B).

4.3 Demining accident response plan:

- includes a sequence of actions for each demining staff at demining worksite when the accident happens;
- includes a way of reporting to the superiors, calling for support, and sub-contracting with other organizations during accident response process.

4.4 Evacuation plan includes:

- medical facility at an appropriate location; which has the capacity for providing surgical care, or must serve as another collection point before further movement of the victim to an appropriate medical facility;
- means of transportation suitable for the injury and terrain;
- route of transportation;
- method of ensuring safety and communication during the transportation of victims;
- treatment for victim during evacuation process.

V. RECOMMENDATIONS

HEAD OF UNIT
(Signed and sealed)
