

**TCVN 10299-9:2014**

1<sup>st</sup> Edition

**ADDRESSING THE POST-WAR CONSEQUENCES OF  
MINE/ERW –  
PART 9: INVESTIGATION OF DEMINING ACCIDENTS**

**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 mine/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 9 : Investigation of demining incidents

### 1 Scope

This standard provides specifications to demining organizations on the minimum requirements for the reporting and investigation of a demining incident, as well as duties and responsibilities of relevant organizations.

This standard is only applicable for demining organizations and other relevant agencies.

### 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*;

TCVN 10299-8:2014, *Part 8: Medical support for demining operations*;

TCVN 10299-10:2014, *Part 10: Management of information*;

### 3 Terms and definitions

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

#### 3.1

##### **Accident**

An undesired event which results in harm to people (in physical and/or mental aspects), property, or environment.

#### 3.2

##### **Demining accident**

Accidents directly involving a mine/ERW.

#### 3.3

##### **Demining incident**

An incident at a demining workplace involving a mine/ERW.

## **4 Incident reporting and investigation requirements**

### **4.1 Incident reporting**

#### **4.1.1 General requirements**

**4.1.1.1** All incidents happening at a demining area during and after conducting demining operations shall be reported to mine action authority, including:

- an accident to which a mine/ERW or explosive, harms a demining employee, or member of the local population at a demining workplace;
- an incident in which a mine/ERW damages equipment or property at a demining workplace;
- the discovery of a mine/ERW item located in an area previously cleared;
- the location where demining workers are exposed to intolerable risk that results from the application of documented standards or Standard Operating Procedures (SOPs), including the failure of equipment issued to employees; and
- any unplanned detonation of a mine/ERW, or explosive on a demining worksite irrespective of the cause or outcome;

**4.1.1.2** Demining incident reports include:

- initial report;
- detailed report;
- information Management (IM) report;

#### **4.1.2 Demining incident initial report**

**4.1.2.1** Initial report shall be made by demining organizations right after the incident occurs.

**4.1.2.2** The initial report comprises two parts: an immediate report by telephone, and the demining incident initial report in writing, by facsimile or email.

**4.1.2.3** The demining incident initial report provides essential information about the incident in order to permit the NMAA to assist with any emergency response and, if necessary; to provide a general warning to other demining organizations regarding an unforeseen hazard, or a preliminary assessment of the incident.

**4.1.2.4** The report must include the following information:

- a) demining organization;
- b) name and location of demining project (task);
- c) date and time of incident;
- d) details of casualty to include:
  - name, gender, assigned task of victim;
- e) description of injuries (per casualty):

- treatment given and current condition of casualty;
- evacuation methods, routes, destinations, and estimated arrival times;
- list of equipment/facilities/infrastructure damaged, degree of damage, name and address of owner, etc.
- description of how the incident occurred;
- contact details of victims and person in charge of handling relevant work;
- any other information: whether or not the incident occur in a cleared, safe, or contaminated area.

**4.1.2.5** The reporting template can be found in Appendix A.

#### **4.1.3 Demining incident detailed report**

**4.1.3.1** A detailed report shall be prepared by demining organization right after the initial report.

**4.1.3.2** The demining incident detailed report is the result of an internal investigation carried out by the demining organization involved.

**4.1.3.3** The person directly related to the demining incident shall not be included in the investigation group.

**4.1.3.4** The detailed report shall be completed as soon as possible after the incident (normally within 7 days).

**4.1.3.5** The report includes the following information:

- a) general information of the incident (summary of information from the initial report);
- b) details of incident include location, date and time, demining personnel and non-demining personnel involved, mines/ERW or explosives involved; and equipment involved. (Attach photographs, diagrams, and incident plans);
- c) incident site conditions will:
  - describe the conditions on the incident site at the time of the incident, in terms of worksite layout and marking, ground and terrain, vegetation and weather; and
  - provide photographs of the site to highlight the incident site conditions.
- d) Demining team and task details will:
  - provide details of the size and composition of the team (team leader, deminers, supervisors, medics etc), their qualifications and experience, and the most recent refresher training and subjects covered.
  - provide information focusing on the individual directly involved; and
  - provide details of the task including the survey documents (NTS & TS); clearance plan for the task which should include the area to be cleared and depth of clearance; types and number of mines/ERW expected to be found; and any problems encountered during the task.
- e) Equipment and procedures used;

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- Provide details of the equipment used on the site related to the incident (detection equipment, Personal Protective Equipment (PPE), medical equipment, etc.)
  - provide an overview of any procedure related to the incident; and
  - provide details of the work routines followed on the task prior to the occurrence of the incident.
- f) provide details of any mines/ERW or explosives that were involved in the incident: name, type, size, weight, location, details of blast hole (size and depth), fragments of mines/ERW or other debris located, and any known or suspected items involved (photographs attached);
- g) details of injuries: names, sex, age, occupation, injury date sheet is specified in Appendix E;
- h) equipment/property/infrastructure damaged;
- i) medical and emergency support; and
- j) any other matters of relevance.

**4.1.3.6** Reporting template can be found in Appendix B.

### **4.1.4 Report on mines/ERW left after clearance**

- When mines/ERW are found at an area that was previously cleared, the land user shall preserve the site and report to the provincial/city military office via means of communication and then they must send them a written report;
- Upon receiving the report, the provincial/city military office shall organize a fieldtrip to inspect and manage/discuss/handle the mines/ERW found; and report to the mine action authorities at all levels as well;
- A reporting template can be found in Appendix C.

### **4.1.5 IM report**

IM report on demining incidents shall be made in accordance with regulations specified in TCVN 10299-10:2014.

## **4.2 Investigation of demining incidents**

### **4.2.1 General requirements**

**4.2.1.1** The aim of the demining incident investigation is to identify problems and reasons in order to avoid similar situations.

**4.2.1.2** The following incidents should be subject to formal investigation:

- a demining accident resulting in injury or death;
- a demining incident resulting in damage to property;
- a demining incident causing damage that may result in a major claim for compensation from a member of the public;

- a demining incident involving the discovery of a mine/ERW item in an area previously cleared;
- a demining incident where demining workers are exposed to intolerable risks that result from the application of approved standards or procedures including the failure of equipment; or
- a demining incident involving the unplanned detonation of a mine/ERW on a demining worksite;

**4.2.1.3** The formal investigation should ensure that:

- the investigation commences as soon as possible;
- the personnel selected to conduct a formal investigation have had no involvement with the incident and have the qualifications, experience, and skills needed to meet the requirements of the investigation;
- the incident site is safeguarded as much as possible until it is ready to be released, in order to prevent loss of valuable information;
- photographs of the incident site are taken immediately; and
- the investigation report is submitted on time and that it is complete, clear, concise, and accurate (including conclusions and recommendations for improvement if possible).

**4.2.1.4** Investigation of demining incident includes:

- internal investigation;
- independent investigation;

**4.2.1.** Levels of internal investigation and independent investigation are included in Annex D.

**4.2.2 Internal investigation**

- the internal investigation shall be carried out by an appropriately qualified and experienced member of the demining organization, but this shall not be any person who was directly involved in the incident; and
- the detailed incident report is informed by this investigation.

**4.2.3 Independent investigation**

**4.2.3.1** The independent investigation shall be carried out by appropriately qualified and knowledgeable experts assigned by NMAA. The independent investigation team shall be comprised of at least three members, including one member from the demining organization, but this shall not be anyone who was directly involved in the incident.

**4.2.3.2** The independent investigation shall cover the following points:

- a) training qualifications, experience, time and content of additional training program of the personnel involved in the incident (deployment team and supervisor);
- b) operational plan and equipment used at the time of incident;

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c) daily working time of the personnel involved, including break time and the handover among deminers;

d) PPE required while working, and the actual use of PPE by the personnel involved. The following must be determined: did that person use PPE, did he/she use it in a right manner, did that PPE reduce the degree of injury for the users;

e) date of the most recent holiday or day off of the personnel involved;

f) whether the incident resulted from one of the following reasons:

- a weakness in qualification and capability of supervisors and team leader;
- failure of deminers to follow instructions and procedures;
- use of alcohol, beer or stimulant by deminers before and during work;
- sickness or any psychological problems suffered by deminers;
- incorrect use or malfunction of demining equipment;
- failure to strictly follow safety regulations;
- shortcomings in additional training for deminers;
- Weather conditions; or
- any shortcomings in providing support for deminers: initial health check, sources of food, water, accommodation, etc.

**4.2.3.3** The results of the independent investigation shall reveal:

- general information of the incident;

E.g., Mine was detonated by a deminer while he was manually demining.

- detailed task performed at time of incident;
- location, date & time of incident;
- how the incident occurred: personnel, equipment, approved operational plan currently applied at time of incident;
- level of injury for people and level of damage for equipment, property, infrastructure resulting from the incident;
- evaluation of causes and nature of the incident; and
- recommendations and requirements to prevent similar situations.

## **4.3 Investigation procedures**

**4.3.1** As soon as the incident happens, the field person shall provide emergency first aid to the victim (if any) following TCVN 10299-8:2014, preserve the incident site, and prepare the initial report.

**4.3.2** Send the initial report to his/her demining organization.

**4.3.3** Upon receiving the report, the demining organization must continue to report to the higher mine action authorities. When necessary, inform local police and other relevant agencies of the situation for their understanding and cooperation.

**4.3.4** NMAA shall review and analyze the report to determine whether the incident results from the application of standards, SOP or demining equipment:

- If the incident occurs due to the application of standards, SOP or demining equipment, NMAA shall inform all those who are applying the same standards, SOP and demining equipment of the risk of demining incidents and request modifications of standards, SOP or replacement of demining equipment;

- If this is not the case, NMAA shall decide to organize the independent investigation based on the degree of incident (See Appendix D).

## **5 Responsibilities**

### **5.1 National Mine Action Authority (NMAA)**

- establish and maintain procedures for the reporting and investigation of demining incidents.
- appoint personnel to investigate demining incidents;
- disseminate the findings of all investigation reports concerning the reasons and recommendations to all demining organizations; and
- promptly inform mine action authorities and demining organizations of demining incidents, including:
  - the circumstances contributing to and harm resulting from the incident;
  - an analysis of the information collected during the investigation; and
  - the findings of the investigation (i.e. the conclusions and recommendations drawn from the investigation process) .

### **5.2 Demining organization**

- submit the initial report of all demining incidents to the NMAA in accordance with the form and time period specified;
- responsible for the internal investigation team of the incident to prepare detailed report; and
- be well-prepared in order to participate in the independent investigation of the incident upon request.

### **5.3 Demining employees**

- strictly apply and follow all standards, SOPs and operational plan accredited to minimize demining incidents;
- timely report incidents as they happen; and
- report exactly what the investigating organization requires.

**Appendix A**  
(Normative)  
**Demining incident initial report**

Depending on the type of incident, the demining incident initial report may include all or some of the following clauses:

From: Name of demining organization

Date & time report submitted:

To:

**Subject: Demining incident initial report**

1. Organization sub-unit, project number, team name/number
2. Location (province, district, commune, task number)
3. Date & time of incident
4. Details of casualty to include:
  - Name, gender, assigned task of victim
  - Description of injuries (per casualty)
  - Treatment given
  - Current condition of casualty
5. Evacuation methods, routes, destinations, and estimated arrival times
6. List of equipment/facilities/infrastructure damaged
7. Description of how the incident occurred
8. Contact details of victims
9. Any other information:
  - Did the incident occur in a cleared, safe, or contaminated area?
  - Type of equipment used

## Appendix B

(Normative)

### Demining incident detailed report

Depending on the type of incident, the demining incident detailed report may include all or some of the following clauses:

From: Name of demining organization

Date report submitted:

To:

**Subject: Demining incident detailed report**

#### Part 1 – Background (Summary of information from the initial report)

1. Demining organization name
2. Organization sub-unit, project number, team name/number
3. Name of worksite supervisor
4. Location of incident (province, district, commune, task no.)
5. Date & time of incident
6. Type of incident (See clause 4.1.1.1)

#### Part 2 – Details of incident

Provide a general description of how the incident occurred including location; timing; demining personnel and any non-demining personnel involved; mines/ERW or explosives involved; and vehicles/equipment involved. Attach photographs, diagrams, and incident plans (location plan and detailed site plan).

#### Part 3 – Incident site conditions

a. Describe the conditions on the incident site at the time of the incident in terms of worksite layout and marking, ground and terrain, vegetation and weather:

- *Worksite layout and marking:* Describe the layout of the worksite in relation to the location of the incident covering control areas, general worksite markings, and specific worksite markings in the location of the incident. Consider factors such as the effects of weather on the worksite layout.
- *Ground and terrain:* Describe the ground in terms of type of soil, hardness, and moisture content. Describe the terrain as flat, undulating, or hilly.
- *Vegetation:* Describe the vegetation in terms of type, density, size, and root structure. Provide dimensions such as height of grass/crops/bush, and maximum size of the vegetation stems.
- *Weather:* Describe the weather at the time of the incident.

b. Provide photographs of the site to highlight the incident site conditions.

#### Part 4 – Team and task details

- Team details: Provide details of the size and composition of the team (deminers, team leaders, supervisors, medics etc), their qualifications (formal training and in-service training) and experience, (types of work carried out, locations, worksite conditions and mines/ERW

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encountered); and the most recent refresher training and subjects covered. Provide information focusing on the individual involved if that individual is a team member.

- Task details: Provide details of the task including the survey documents (NTS & TS); clearance plan for the task, which should include the area (that was) cleared and the depth of clearance; types and number of mines/ERW expected to be found; time spent working on the task; types and numbers of items found; and any problems encountered during the task.

### **Part 5 – Equipment and procedures used**

- Equipment used. Provide details of the equipment used on the site related to the incident (detection equipment, Personal Protective Equipment (PPE), medical equipment, vehicles and mechanical equipment, etc.)
- Procedures used. Provide an overview of any procedure related to the incident.
- Work routines. Provide details of the work routines followed on the task at the time of the incident and the number of hours worked by personnel (including those involved in the incident) on the day prior to the occurrence of the incident.

### **Part 6 – Explosive hazards involved**

- Provide details of any mines/ERW or explosives that were involved in the incident: name, type, size, weight, location (under or on the ground), etc.
- Provide details of blast holes (size and depth); fragments of mines/ERW or other debris located, and any known or suspected items involved.
- Provide photographs and technical details for any items located, or photographs of blast holes and debris.

### **Part 7 – Details of injuries**

Provide details of all personnel with injuries (both minor and serious) as a result of the incident. Include names, sex, age, occupation, details of injuries (specified in Appendix E).

### **Part 8 - Equipment/property/infrastructure damage**

Provide details of all equipment, property, or infrastructure damaged as a result of the incident:

- For equipment, include detailed descriptions of user, model, years of use, serial numbers (where applicable), current value (if known), details of damage, insurance held by the owner/organization, and (if possible) an estimate of the cost of repair/replacement.
- For property and infrastructure, provide details of the owner(s), damage incurred, insurance held by the owner(s), and (if known) the cost of restitution or repair.
- Attach photos of damaged equipment, property, or infrastructure.

### **Part 9 – Medical and emergency support**

Comment on the effectiveness of the planned medical and emergency support against the actual context, medical equipment and supplies, communication, evacuation transport, medical treatment schemes, and external support to the casualty evacuation. Where deficiencies are identified, provide details and recommendations for improvements.

### **Part 10 – Any other matters of relevance**

**Part 11 – Discussion, conclusion, and recommendations**

*Annexes:*

1. Copy of the initial demining incident report.
2. Witness statements.
3. Incident location and detailed site plans.
4. Site photographs.
5. Training result records, monitoring reports, survey reports, clearance plans, or any other demining documentation required.
6. Photographs and technical details of mines/ERW located, items found, blast holes, etc.
7. Photographs of damaged equipment, property, or infrastructure.
8. Copies of equipment/property ownership documentation (ownership papers, property deeds, insurance details, etc).

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**Appendix C**

(Normative)

**Report on mines/ERW left at an area previously cleared**

From:

Date of submission:

To:

Subject: **Report on mines/ERW left after clearance**

1. Name of former demining project.
2. Location (province, district, village, task no.).
3. Name of demining organization:
4. Name of land owner organization:
5. Incident information:
  - The current land use purpose of the previously cleared area;
  - Location where mines/ERW were found after clearance (latitude and longitude as of WGS 84);
  - Type of mines/ERW found after clearance (attach photos if they are unknown)
  - The depth of mines/ERW left after clearance
  - Types of soil where mines/ERW were found after clearance:

## Appendix D

(Normative)

### Guide for selecting the level of internal investigation and independent investigation

	Type of formal investigation	
	Independent investigation	Internal investigation
<b>1. A demining accident resulting in:</b>		
- minor injury to a demining worker.		x
- serious injury to a demining worker.	x	x
- death of a demining worker	x	x
- any injury to a non-demining worker	x	x
- death of a non-demining worker.	x	x
- resulting in damage to demining organization's equipment of value less than 50,000,000 VND		x
- resulting in damage to demining organization's equipment of value more than 50,000,000 VND	x	x
- causing damage that may result in a major claim for compensation from a member of the community.	x	x
<b>2. A demining incident:</b>		
- where demining workers, visitors or the local population are exposed to intolerable risks that result from the application of approved standards or procedures including the failure of equipment	x	x
- involving the discovery of a mine/ERW item in an area previously cleared or marked as cleared.		x
- involving the unplanned detonation of mines/ ERW or explosives on a demining worksite	x	x
- which could attract media attention.	x	x

**Appendix E**

(Normative)

**Injury data sheet**

Demining organization name:

Organization sub-unit, site office/project number, team name/number:

Location (province, district, village, task no.):

Date and time of incident:

Casualty name:

Gender and age:

Explain the cause of injury:

Types of injury are shown by code (See Table E.1) and placed in the box indicating parts of body that were injured in Figure E.1 and E.2.

**Table E.1 – Abbreviation of types of injury and its meaning**

Code	Meaning	Code	Meaning
A	Abrasions	L	Lacerations
B	Burn	D	Dislocation
F	Fracture	FR	Fragment
LOP	Loss of part/Amputation	H	Hemorrhage
IH	Internal Hemorrhage	LO	Loss of function

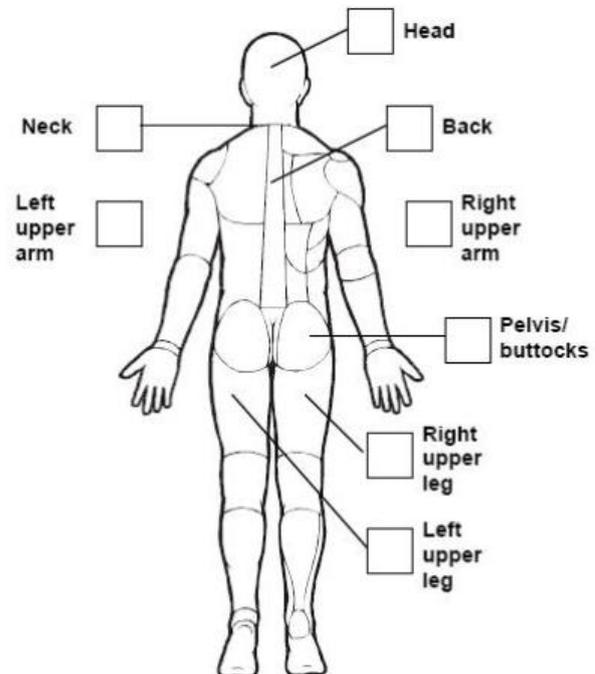
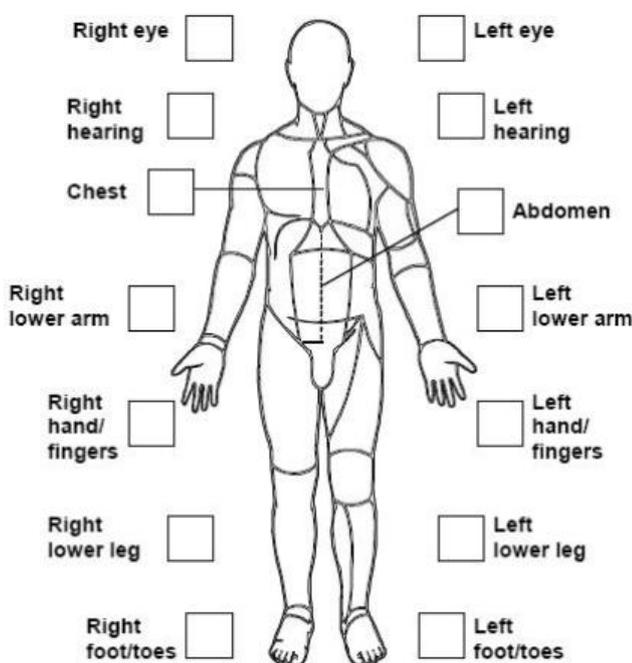


Figure E.1: Illustration of victim's injury – Front

Figure E.2: Illustration of victim's injury – Behind