

RESCUE WORKERS PERCEPTION OF HANDLING MAJOR ACCIDENTS IN REMOTE AND SPARSELY POPULATED AREAS

IN FINLAND, SWEDEN, ICELAND AND SCOTLAND

SUMMARY OF RESULTS FROM AN INITIAL QUESTIONNAIRE



Background





To provide information on some aspects of how major accidents are handled in remote and sparsely populated areas the national CoSafe project leaders from Finland, Iceland, Scotland and Sweden distributed a questionnaire to key personnel in the emergency and rescue services. The questions addressed the suitability and availability of equipment and clothing and allowed respondents to comment on critical limiting factors affecting their ability to manage major incidents. By having three similar but directed questionnaires answers were made relevant to three different accident scenarios - a bus collision, an aeroplane crash and a fire on board a ferry.

The questionnaire answers have been analysed and verified by representative individuals from the various countries involved in the CoSafe project. The information is believed to be accurate but there may be areas where an individual worker's perception of what is available to him or she differs from that which is either expected or is actually available.

Seventy six completed questionnaires were returned, 21 related to the bus collision, 28 the aeroplane crash and 27 the ferry fire; thirteen were from Finland, 19 from Iceland, 18 from Scotland and 26 from Sweden.

Table 1. Questionnaire responses.

Questionnaire Responses

	Airplane	Bus	Ship
 Finland	4	4	5
 Iceland	9	5	5
 Scotland	6	6	6
 Sweden	9	6	11
Total:	28	21	27

Alarm centres and alarm response

Alarm calls (112) are received in specific centres in all countries except Scotland, where the alarm (999) call is forwarded to the ambulance, fire or police emergency centres. Specific alarms can be directed to Maritime or Aeronautical Rescue Control Centres (MRCC and ARCC respectively). The actual emergency service can be activated by mobile phone (commonest), radio, SMS, SAT phones or data transmission. Pagers are used in some countries but not in Iceland.

Alarm or emergency call centres are manned with specifically trained staff in Iceland, Scotland and Sweden. Sweden has alarm operator trained nurses and Finland has police officers working in the alarm centres.

Specific alarms or activation plans and orders are used for bus accidents in Iceland and Sweden, for aeroplane accidents in Finland and Scotland and for shipping accidents in Finland. There can be a system of predetermined attendance with protocol led initial responses.

The responses for the three scenarios are shown in table 2.

Vehicle Responses

Bus collision

All countries with the exception of Iceland will send ambulances and fire trucks. Iceland will initially send police vehicles. Heavy rescue vehicles are used by Finland and Sweden and Iceland and Scotland will send heavy terrain vehicles. Iceland uses helicopters. All countries will send adequate numbers of vehicles, Iceland can in addition send as many as 27 jeeps and Sweden will send stretcher vehicles. After 30 minutes all countries will have at least 2-3 vehicles at the accident site, Scotland may have as many as six.

Aeroplane crash

Ambulances, rescue service and police vehicles are sent immediately by all countries. Helicopters and ATV are sent immediately by Finland, Iceland and Sweden; Scotland sends them in a later phase. In addition Iceland and Finland activate an aeroplane.

Ferry Fire

Boats, helicopters, ambulances and fire trucks are sent immediately by all countries. Iceland is specific about the type of boat it will send. As part of the initial phase Finland may send large numbers of ambulances (12).



Table 2		Finland	Iceland	Scotland	Sweden
Bus collision	Ambulance			Primary	
	Rescue Services	Primary	Secondary	Primary	Primary
	Police			Primary	
	Hospital			Secondary	
	Mountain rescue			Secondary	
	Response time (mins)	5- 15except police (>30)	5 – 15	5 – 15except police (>30)	5 – 15
Aeroplane crash	Ambulance			Immediate	
	Rescue Services			Immediate	
	Police		Immediate		Later
	Hospital			Secondary	
	Mountain rescue		Secondary		Secondary
	Response time (mins)				
Ferry Fire	Ambulance			Immediate	Variable
	Rescue Services	Within 5 minutes		Within 5 minutes	Variable
	Police		Immediate	Immediate	Variable
	Hospital				Variable
	Coast guard	Immediate	Immediate	Immediate	Variable
	Response time (mins)				Within 5 – 15 minutes

Personnel

Bus Collision

Scotland will have as many as 40 people at the site within 30 minutes, Finland, Iceland and Sweden will have 6 – 8.

Aeroplane Crash

All countries will have between 20 and 60 people at the accident site within 30 minutes

Ferry Fire

Scotland will have as many as 35 people at the accident site within 30 minutes. Finland, Iceland and Sweden will have very few if any within that time scale.



Equipment

Details of the equipment responses are shown in Table 3 below.

	Finland	Iceland	Scotland	Sweden
Stretchers	Up to 140 stored at work place, up to 150 stored elsewhere			
Blankets and first aid kits	Adequate numbers in all countries			
Mats	<5	>100	<5	<5
Tents	1 – 4 tents available in all countries			
Road vehicles	4 - 7	20 – 55 - off road 40	20 – 55	4 – 7
Neck collars	Adequate	Not adequate	Adequate	Adequate
I.V. needles	Adequate	Not Adequate	Adequate	Adequate
Analgesics	Adequate	Not Adequate	Adequate	Adequate
Equipment for use in darkness (flash lights, helmet mounted lights, lights mounted on vehicles)	Available + infra red cameras for rescue services and health care	Available	Available	Available

Clothing

Details of the clothing responses are shown in Table 4

	Finland	Iceland	Scotland	Sweden
Wind and waterproof clothing	Available			
Clothing specially/personally assigned	Most organisations			
Common clothing in health care	Yes	Yes in SAR	No	Yes
Age of clothing	5 – 10 years old			
Quality of clothing	Good	Good	Mainly good but some said poor	Mainly good but some said poor
Insulated winter clothing	Available except for hospitals and no trousers for HEMS	Available	Not available in all rescue services	Available
Clothing specially/personally assigned	Most organisations			
Common clothing in health care	Available	Not available	Available	Not available
Age of clothing	Mostly less than 5 yrs old, some up to 10			
Quality of clothing	Good	Good	Poor in Scottish hospitals	Good
Boots	Available	Available	Available	Not for mountain rescue and police
Boots specially/personally assigned	Most organisations (Iceland all personal)			
Common boots in health care	Yes	No	No	Yes
Quality of boots	Good in most situations but some mentions of poor in Scotland and Sweden			
Safety Helmets	Available (but not	Available	Available some	Available (but not

	Finland	Iceland	Scotland	Sweden
	for police)		concerns	for health care)
Helmets specially/personally assigned	Most organisations			
Common helmets in health care	Yes	Yes for SAR		
Quality	Good to very good			
Reflective Safety Vests	Available in all organisations			
Reflective safety vests specially/personally assigned	Most organisations			
Common reflective safety vests within health care	Available	Available and SAR	Available	Available
Quality	Good to very good			
Life Vests	Available but sparse not for police	Available for all organisations	Only for rescue services	Available but sparse not for police and health care
Personal life vests	No	Rescue and coast guard	No	No
Survival suits	Police and health care	Yes in all organisations	No	Rescue services only
Personal survival suits	No	Rescue services and coast guard	No	No
Winter Gloves	All organisations	Rescue service and coast guard	Police and health care	All organisations
Common or personal use of winter gloves	Rescue service	Personal	Healthcare	Healthcare
Quality	Good	Good	Good	Good except health care (poor)
Biologically Protective Gloves	Available	Available except SAR	Available	Available except mountain rescue

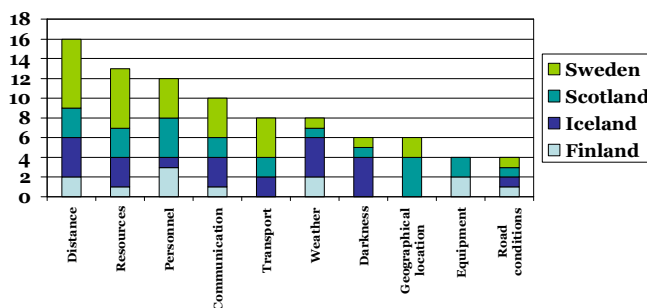


	Finland	Iceland	Scotland	Sweden
Available sizes for Biologically Protective Gloves	Police one size	All	All	All
Quality of Biologically Protective Gloves	Good to very good			
Visors for blood splatter protection	Police	No	Rescue services and hospital	Rescue services
Winter Hats	All organisations	Rescue service only	All organisations	All organisations
Common or personal use of winter hats	Personal	Personal	Common in health care	Common in health care
Marking on protective clothing indicating occupation and role	Available	Available except SAR	Available	Available
Storage of clothing at work place or in vehicle	All organisations and countries			

Critical Limiting Factors

The principal critical limiting factors identified by the respondents are shown in the bar graph.

Critical Limiting Factors



The small numbers of responses in this free text part of the questionnaire should be interpreted with caution and only those mentioned in one form or another four times or more are included. Because many individuals will have completed three separate questionnaires it is likely they will have completed this section only once. As a consequence 16 responses indicating that distance is a critical limiting factor implies that over 50% of respondents highlighted this as an issue in managing a major incident in a remote and sparsely populated area. The data has been charted to show responses from individual countries and it is apparent that darkness is a particular problem identified by workers in Iceland and Scotland has issues with geographical location.

Casualty priority system

All countries use colour and 123 casualty priority systems.

Communication at accident site

All countries use mobile phones at the accident site. Digital radio is used in all countries, except Sweden and Scotland who use analogue radio. SAT phones and TETRA are used on Iceland and Scotland and VIRVE in Finland. The battery capacity for communication equipment is >5 hours. With the exception of SAT phones, knowledge about the communication equipment is good or very good.

Organisation at the accident site

Bus collision

Leadership at the accident site is by the rescue services in Finland and the police in Iceland and Scotland. Sweden divides the leadership between rescue services, healthcare and police. In Finland, Scotland and Sweden a casualty collection point is established 30-100m from the accident site; in Iceland the collection point is 1000-1500m from the accident site.

Aeroplane Crash

Leadership at the accident site is by police in Iceland and Scotland; the rescue services in Finland and the police and ARCC in Sweden. A collection point for casualties is established 100-500m from the accident site in Sweden and Iceland, 500-1000m in Finland and 2000-3000m in Scotland.



Ferry Fire

Leadership at the accident site is by MRCC in Sweden and MRCC and Coast Guard in Finland. In Iceland and Scotland the leadership is by police and coastguard. A collection point for casualties is established indoors in some form of shelter near to the coastline or harbour.

Distribution of patients

Uncertainty about specific pre-determined plans for patient distribution to different hospitals was expressed by all four countries. Generally the first casualties arrive at hospital more than 2 hours after the accident and it can take more than 6 hours for all casualties to have reached hospital.

Debriefing

All countries have established procedures for debriefing their personnel after an accident.

Media

In Scotland the police handle contact with media after a major accident. The other three countries have a variety of ways of doing this.

Insurances for rescue personnel

All rescue workers in all countries have insurance covering injury at the accident site.

Response plans

All countries have established written preparedness and response plans for rescue units. Plans were last revised between 6 months and 3 years ago. The response plans for aeroplane accidents appear to be revised more often. Some authorities/ organisations have specific emergency plans for ship and airplane accidents. The Civil Aviation Authority requires plans to be exercised in order to grant a licence to operate. No special plans were reported for bus accidents.



Conclusion

Although there were a relatively small number of responses to this questionnaire there are important points which arise from the data. However the over riding impression was that most people are generally speaking happy with the systems and resources available to them for the management of the major incidents caused by the three scenarios set up for discussion.

Concerns were expressed about the adequacy of the clothing available to rescue workers, with specific concern about the adequacy of winter clothing and the availability of life vests and survival suits. Comments were made that both the profession and the person's role (written in both English and the home language) should be readily visible on clothing used at the scene of disasters. Work has been done within the CoSafe project to design appropriate clothing and test it in the extreme weather laboratory of the Finnish Institute of Health (FIOH).

Communication issues were highlighted and issues concerning insufficient knowledge about the use of SAT phones was emphasised. A review of the use of TETRA has been undertaken and cold testing of TETRA phones has been carried out in FIOH.

Although no specific problems with availability of equipment were mentioned some issues arose around accessibility. The development of GUIDE as a search tool to help locate equipment by using Google Map addresses this issue. Other CoSafe equipment developments which were addressed in the questionnaire include stretchers and mattress and casualty securing systems.

The responses to the three scenarios has stimulated work on a casualty transportation off road and production of a film of getting out of water in the winter time (available on the CoSafe website, in Swedish).

A specific set of concerns surround the lack of plans for training and management of major disasters. To meet these needs a risk assessment tool (SADCHALET) has been promoted, National Policing Improvement Agency Guidance on Responding to Emergencies and Scottish Resilience Exercise Guidance have been made available to all partners and dynamic injury cards for use during major accident exercises have been developed.

Note has been taken of the critical limiting factors described by respondents and future activity will be directed towards addressing what if anything can be done to reduce the impact some of the issues present to rescue workers at major accidents.

The responses to this questionnaire demonstrated the need for more detailed information and this led to the development and delivery of the second Questionnaire the results of which are reported separately.