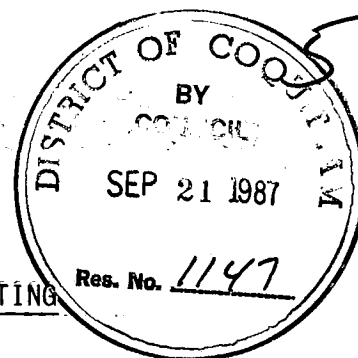


Wednesday, September 2, 1987
Emergency Measures Committee - 12:00 noon



EMERGENCY MEASURES COMMITTEE MEETING

A meeting of the Emergency Measures Committee was held at the Emergency Operations Centre at the Works Yard Service Centre, 2647 Austin Avenue, Coquitlam, B.C. at 12:00 noon on Wednesday, September 2, 1987 with the following persons in attendance:

Mayor L. Sekora	-	Chairman
Alderman W. Ohirko	-	Committee Member
Alderman W. LeClair	-	Committee Member
Dr. A. Arneil	-	Medical Health Officer, S.F.H.U.
J. L. Tonn	-	Municipal Manager
W. Low	-	Emergency Measures Coordinator
N. Nyberg	-	Municipal Engineer
D. Cunnings	-	Parks and Recreation Director
R. Fontaine	-	Assistant Fire Chief
S. Aikenhead	-	Committee Secretary

INTRODUCTION - MAYOR SEKORA

Mayor Sekora stated his reason for calling this meeting of the Committee was to discuss improvements to improve Coquitlam's Emergency Planning Programme.

REVIEW OF EMERGENCY POWERS OF MAYOR AND COUNCIL UNDER EMERGENCY PROGRAMME BYLAW NO. 375, 1974

Neil Nyberg circulated copies of Bylaw No. 375, 1974 to all persons in attendance and briefly reviewed powers conferred to Council and staff through this bylaw. The basic difference between routine municipal operations and an emergency response is the scale of the event and the complexity of the response. Under a true emergency, Council has very broad powers over property and resources.

VIDEO TAPE OF DISASTER RESPONSE

The Committee viewed two video presentations, which illustrated a typical hazardous material rail incident, and the structure of the Provincial Emergency Programme.

STATUS REPORT - EVALUATION OF EXISTING EMERGENCY RESPONSE PLAN

Bill Low stated that although procedures are in place, Coquitlam does not have the formal planning document which is envisaged by Provincial Emergency Programme. There is a requirement to involve other agencies in planning and practicing a coordinated response to major disasters.

In his role as Emergency Programme Coordinator, Mr. Low stated that one of his priorities is to draft a new Emergency Response Plan for the Committee to review. The fundamental change in approach will be increased involvement with other public agencies.

As a former Emergency Coordinator, Don Cummings stressed that his experience showed that while a plan is paramount, practice is critical. He recommended that the Committee should meet under simulated emergency conditions, to help in detecting problems in the planning and response situation.

EMERGENCY MEDICAL SERVICES - STATUS REPORT

The Committee was informed that there was too little information in the Coquitlam plan regarding hospital emergency plans. Dr. Arneil was invited to this meeting to discuss the Emergency Health Services Planning Group's emergency role.

Dr. Arneil stated that hospital, medical and ambulance services are planned on a regional basis. He circulated to the committee members, copies of the preliminary plans for public health functions of the Simon Fraser Health Unit to illustrate the type of planning required to sustain medical services under disaster conditions.

The Emergency Health Services Planning Group is developing similar plans at about the same level of detail.

The Medical Health Officer has a dual role in an emergency - directing the health unit as well as coordinating regional health services under the Provincial Emergency Plan.

Dr. Arneil stated that it was very important for required health services to coordinate with municipal representatives via the Emergency Health Services Planning Group meetings.

This liaison was very important during preparation of the Coquitlam Emergency Response Plan.

EMERGENCY SOCIAL SERVICES - STATUS REPORT

Don Cunnings stated that he felt the School Board should be invited by the Chairman to attend committee meetings; a more active role, involving schools that would be used in an emergency, requires close co-operation between school board authorities and other agencies. Bill Low stated that the school district facilities maintenance supervisor had informed him that school facilities will be available to the District in the event of an emergency or disaster.

Don Cunnings stated that the Provincial Social Services Department may provide emergency housing and social services. He suggested a representative from Social Services Ministry should be invited to Committee Meetings with a view to incorporating emergency social service in the response plan.

Neil Nyberg suggested that it was important to identify resources and expand the liaison among agencies before the next committee meeting. Council, in an executive role, has to indicate which problems require priority solutions and which policy options are preferred to meet the objectives. A series of several meetings, involving priorities, alternatives, and formal policy setting will be requested of the Emergency Measures Committee in the next twelve months.

STATUS REPORT - SEARCH AND RESCUE ORGANIZATION

Rene Fontaine reported that Search and Rescue have 20 active members on strength. They have two portable radios with limited range and have been promised eight more from the Fire Department. The Command Post vehicle with trailer and inflatable Boat, is held at Fire Hall No. 1 for Search and Rescue use.

The R.C.M.P. will install a helicopter pad at the main fire hall on Pinetree Way.

Alderman LeClair left the meeting at this time.

STATUS REPORT - RISK ANALYSIS FOR COQUITLAM

Bill Low circulated to all members of the Committee a report entitled "Emergency Preparedness Canada - Emergency Readiness Education Program - Common Characteristics of Peacetime Disasters". As well, he circulated a report he compiled - "Peacetime Hazard Evaluation". Copies of these reports are attached.

EVALUATION VISIT - CITY OF EDMONTON

A discussion followed on the merits of either sending a committee representative to Edmonton or inviting someone from Edmonton Council or their Emergency Measures Committee to Coquitlam to discuss the Edmonton tornado disaster and what we could learn from that experience.

Don Cunnings stated that detailed disaster analyses are carried out at a special department at the University of Michigan. These studies are extremely helpful to planners and committee members because they are factual and objective. Sample copies of reports from the University of Michigan press should be obtained as a training aid.

NEXT MEETING DATE

It was decided that the next meeting would be at the call of the Chairman. The Committee will be asked to examine a committee structure, involving municipal staff and other agency representatives, who will examine a number of specific topics, contained in the 'Outline Plan'. This 'Outline Plan' will be used to give form to the final preparedness document, by describing chapter titles and tables of content for the ultimate plan. Subcommittees will examine topics like "Communications", "Command and Control", "Equipment Resources", and these findings will flesh out the emergency planning document.

ADJOURNMENT

The meeting adjourned at 2:00 p.m.

Chairman

POTENTIAL HAZARD	RATING FOR POTENTIAL*				Sum of (1) to (4) (5)	Planning Priority (6)
	Historical (1)	Change in Conditions (2)	Effects from Other Areas (3)	Lack of Ability to Cope (4)		
1. Pollution	5	2	0	1	8	1
2. Flooding	5	-1	1	2	7	2
3. Earthquake	1	2	1	3	7	3
4. Landslide	4	1	0	1	6	4
5. Hazardous Materials Spill in Plant	4	1	0	1	6	5
6. Fires - High Density Residential	4	0	0	1	5	6
7. Fires - Industrial	3	1	0	1	5	7
8. Hazardous Materials Spill in Transit	2	1	1	1	5	8
9. Radiation Fallout	0	-1	3	3	5	9
10. Utility Failure, Essential Services	2	0	1	1	4	10

*Rating to be entered in column (1) is based on a scale ranging from 0 (no potential) to 5 (high potential) based on historical evidence.

Rating in columns (2) and (3) is based on a scale ranging from -3 (great improvement) through 0 (no improvement) to +3 (deterioration) from historical records.

Rating in column (4) is based on a scale ranging from 0 (no change) to 3 (high effect) on hazard potential.

POTENTIAL HAZARD	RATING FOR POTENTIAL*				Sum of (1) to (4) (5)	Planning Priority (6)
	Historical (1)	Change in Conditions (2)	Effects from Other Areas (3)	Lack of Ability to Cope (4)		
11. Forest Fire Threatening Populated Area	1	1	1	1	4	11
12. Explosions	0	2	0	1	3	12
13. Tidal Wave	0	0	0	3	3	13
14. Hurricane, Tornado or Severe Windstorm	2	0	0	0	2	14
15. Heavy Snowfall or Ice Storm	2	0	0	0	2	15
16. Passenger Transporta- tion Accident (Airplane, Train, Bus)	0	1	0	0	1	16
17. Bridge Collapse	0	-1	0	1	0	17

*Rating to be entered in column (1) is based on a scale ranging from 0 (no potential) to 5 (high potential) based on historical evidence.

Rating in columns (2) and (3) is based on a scale ranging from -3 (great improvement) through 0 (no improvement) to +3 (deterioration) from historical records.

Rating in column (4) is based on a scale ranging from 0 (no change) to 3 (high effect) on hazard potential.

EMERGENCY PREPAREDNESS CANADA
EMERGENCY READINESS EDUCATION PROGRAM
COMMON CHARACTERISTICS
OF PEACETIME DISASTERS

The attached papers will illustrate some of the common characteristics of various peacetime disasters. Annex "B" lists a number of Peacetime Disasters showing possible major effects, potential actions at the scene, the Agency likely to be responsible, the types of equipment likely to be needed to meet the disaster, and the likely source of such equipment.

Annex "A" portrays the same information in the form of a Matrix which more easily illustrates those elements which are common to one or more types of disaster. They may be used in a municipality as a planning tool.

PEACETIME DISASTER PLANNING

TYPES OF DISASTERS

SERIAL	POTENTIAL ACTIONS	TYPES OF DISASTERS																					
		Aircraft Crash Urban - Rural - Outside Airports	Construction	Dangerous Gas	Earthquake	Explosions	Fire Rural Major	Fire Urban Major	Flood	Forest Fires (Major) in remote areas	Hurricane	Tornado	Windstorm	Landslide	Snowslide Mudslide	Mine Disaster	Nuclear Accident	Power Failure	Tidal Waves	Transportation Rail	Transportation Road/Bus	Transportation Water	
	<u>General Actions</u>																						
1	Warning of Imminence							X			X	X							X				
2	Reconnoitre and obtain accurate assessment	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	Warn other areas that may become involved			X			X	X	X	X						X							
4	Determine jurisdiction and responsi- bility for specific action (a)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	Establish lines of authority	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	Establish emergency headquarters	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	Establish adequate communications	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	Determine special equipment required (b)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	Establish a local danger area	X		X		X	X	X	X							X							
10	Eliminate hazards from damaged utilities	X		X	X	X	X	X			X	X						X	X				
11	Rescue	X	X		X	X	X	X	X		X	X			X				X	X			X
12	Provide for volunteer control		X		X	X	X	X	X	X	X	X	X						X				
13	Arrange for additional manpower				X		X	X	X	X	X	X							X				
14	Arrange for feeding and lodging of workers		X		X	X	X	X	X	X	X	X	X	X	X				X	X			X
	<u>Health Actions</u>																						
15	Determine number of casualties	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X
16	Determine number of deaths	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X
17	Determine number of missing		X		X	X	X	X			X	X	X						X				
18	Notify hospitals of casualties including numbers and types	X	X		X	X	X	X			X	X	X						X	X	X	X	X
19	Request medical assistance and ambulance service	X	X	X	X	X		X			X	X	X	X	X					X	X	X	X
20	Assess danger to public health			X	X				X		X								X				
21	Establish emergency medical facilities		X		X	X	X	X	X	X	X	X	X	X	X				X	X			
22	Establish first aid posts				X		X			X	X	X	X						X				
23	Establish a morgue	X	X		X	X		X			X	X	X							X	X	X	X
	<u>Welfare Actions</u>																						
24	Provide emergency lodging		X	X	X	X	X	X	X		X	X	X	X	X				X	X	X	X	X
25	Provide emergency feeding		X	X	X	X	X	X	X		X	X	X	X	X				X	X	X	X	X
26	Provide emergency clothing		X	X	X	X	X	X	X		X	X	X	X	X				X	X	X	X	X
27	Set up registration and inquiry service	X	X		X	X	X	X	X		X	X	X						X	X	X	X	X
28	Provide personal services		X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
29	Establish special assistance for aged, infirm and home patients				X			X	X		X								X				
30	Arrange for evacuation of population			X	X	X	X	X	X		X	X							X				
31	Arrange for evacuation of livestock			X	X	X	X	X	X		X	X							X				
	<u>Police and Fire Actions</u>																						
32	Police requirements	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
33	Fire fighting requirements	X		X	X	X	X	X		X						X	X						X
34	Crowd control at scene of disaster	X	X	X		X		X			X	X	X							X	X	X	X
35	Evacuation of threatened population		X	X	X										X								
36	Traffic control including emergency routes	X	X	X	X	X	X	X	X		X	X	X	X	X	X			X	X	X	X	X

PEACETIME DISASTERS

TYPE A

AIRCRAFT CRASH (URBAN)
OUTSIDE OF AIRPORT

A. Possible Major Effects

1. Casualties
2. Deaths
3. Fire
4. Explosion
5. Damage to property
6. Nuclear cargo problems
7. International implications
8. Special cargo problems
9. Sudden hospital requirements
10. Disruption of traffic and communications
11. Disruption of utilities

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|--|
| 1. Establish an emergency headquarters | Local government/EMO |
| 2. Establish adequate communications | Police/EMO |
| 3. Define a working area and establish a control perimeter | Police |
| 4. Secure disaster scene for subsequent investigation | Police |
| 5. Rescue and fire fighting | Fire department/Rescue Services |
| 6. Establish routes for emergency vehicles | Police |
| 7. Notify hospitals of casualties including number and type | Medical/Police |
| 8. Establish temporary morgue | Coroner/Police |
| 9. Disposition of nuclear or special cargoes | Police/Industry |
| 10. Establish traffic control | Police |
| 11. Establish crowd control | Police |
| 12. Eliminate hazards from damaged utilities | Engineering/Utilities |
| 13. Protect property and valuables | Police |
| 14. Establish a news release system | Airline authorities
(if commercial plane) |
| 15. Set up an inquiry service | Welfare/Social Services |

C. Equipment

Source

- | | |
|---------------------------------------|--------------------------------|
| 1. Fire fighting and rescue equipment | Fire/Engineering/EMO |
| 2. Ambulances | Medical/Transportation/Police |
| 3. Communication equipment | Police/EMO |
| 4. Auxiliary lighting | Engineering/Utilities |
| 5. Barricades | Engineering |
| 6. Mobile public address equipment | Police/Fire/EMO/Radio Stations |

PEACETIME DISASTERS

TYPE B

CONSTRUCTION

A. Possible Major Effects

1. Casualties
2. Deaths
3. Trapped
4. Disruption of traffic
5. Disruption of utilities

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|---------------------------------------|
| 1. Establish an emergency headquarters | Local government/EMO |
| 2. Establish adequate communications | Police/EMO |
| 3. Rescue | Contractor/Fire/Rescue service |
| 4. Notify hospitals of casualties including number and type | Medical/Police |
| 5. Define a working area and establish a control perimeter | Police |
| 6. Establish traffic control | Police |
| 7. Provide emergency lighting if required | Police/Engineering Dept/Utilities/EMO |
| 8. Eliminate hazards from damaged utilities | Engineering/Utilities |
| 9. Establish welfare services | Welfare/Social Services |
| 10. Establish a news release system | Construction company authorities |
| 11. Set up an inquiry service | Welfare/Social Services |

C. Equipment

Source

- | | |
|------------------------------------|-------------------------------|
| 1. Rescue equipment | Fire/Engineering/EMO |
| 2. Ambulances | Medical/Transportation/Police |
| 3. Communication equipment | Police/EMO |
| 4. Auxiliary lighting | Engineering/Utilities |
| 5. Mobile public address equipment | Police/EMO |
| 6. Powerful cranes | Contractors |
| 7. Welfare equipment | Welfare/Social Services |
| 8. Barricades | Engineering |

PEACETIME DISASTERS

TYPE C

DANGEROUS GASES

A. Possible Major Effects

1. Casualties
2. Deaths
3. Tendency of people to disperse
4. Disruption of traffic
5. Explosions and fire
6. Hazards to humans and livestock
7. Disruption of business and industrial activities
8. Evacuation

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|---------------------------------|
| 1. Establish an emergency headquarters | Local government/EMO |
| 2. Establish adequate communications | Police/Fire/EMO |
| 3. Rescue and fire fighting | Fire Department/Rescue Services |
| 4. Determine nature and effects of the gas | Police/Medical/Industry |
| 5. Warn adjacent areas and define area of risk | Police |
| 6. Evacuate area | Police |
| 7. Eliminate further escape of gases | Engineering/Industry |
| 8. Notify hospitals and casualties including number and type | Medical/Police |
| 9. Establish temporary morgue | Coroner/Police |
| 10. Establish a news release system including instruction to the public | Local government authority |
| 11. Establish welfare services | Welfare/Social Services |
| 12. Establish traffic control | Police |
| 13. Establish evacuation routes | Police/EMO |
| 14. Set up an inquiry service | Welfare/Social Services |

C. Equipment

Source

- | | |
|---|-----------------------------|
| 1. Ambulances | Medical/Police |
| 2. Fire fighting and rescue equipment including respirators and resuscitators | Fire/Police/Rescue services |
| 3. Communication equipment | Police/EMO |
| 4. Decontaminating equipment | Industry/Fire/EMO |
| 5. Mobile public address equipment | Fire Department/Police/EMO |
| 6. Barricades | Engineering |
| 7. Anti-gas clothing if necessary | Rescue services/Police/Fire |
| 8. Emergency feeding facilities | Welfare/Social Services |

PEACETIME DISASTERSTYPE DEARTHQUAKEA. Possible Major Effects

1. Casualties
2. Deaths
3. Trapped
4. Damage to property
5. Material damage - roads and bridges, utilities, buildings
6. Fires, explosions and fire hazards
7. Escape of gases
8. Flooding
9. Slides and/or seismic waves
10. Panic
11. Dangers to public health
12. Evacuation of population and livestock
13. Jurisdictional problems

B. Potential Actions at the SceneAgency Responsible

- | | |
|--|--|
| 1. Establish an emergency headquarters | Local government/EMO |
| 2. Mobilize necessary manpower and equipment | Local government/Canada Manpower centres |
| 3. Request outside assistance including military | Local government |
| 4. Rescue | Police/Fire/Rescue Services |
| 5. Establish adequate communication (internal and external) | Police/EMO |
| 6. Establish medical facilities | Emergency Health Services |
| 7. Establish emergency welfare services | Welfare/Social Services |
| 8. Establish temporary morgue | Coroner/Police |
| 9. Establish control of population | Police |
| 10. Co-ordination and administration of incoming aid | Local government |
| 11. Establish a news release system including instructions to the public | Province/EMO |
| 12. Set up an inquiry service | Welfare/Social Services/Volunteer agencies |
| 13. Eliminate hazards from damaged utilities | Engineering/Utilities |
| 14. Establish salvage operations of essential items if necessary | Police |

C. EquipmentSource

- | | |
|--|--------------------------------|
| 1. Transportation vehicles | Road/Rail/Air authorities |
| 2. Rescue equipment all types | All agencies |
| 3. Public service maintenance vehicles | Engineering/Utilities |
| 4. Mobile generators, lighting and communications equipment | Province/Fire/EMO |
| 5. Medical units and supplies | Health Services |
| 6. Emergency feeding facilities | Welfare/Social Services |
| 7. Piping for emergency repairs to water and sewage facilities | Engineering/Industry |
| 8. Tank cars for potable water supplies | Utilities/Railways |
| 9. Mobile public address equipment | Police/Fire/EMO/Radio stations |

PEACETIME DISASTERS

TYPE E

EXPLOSION

A. Possible Major Effects

1. Casualties
2. Deaths
3. Panic
4. Property Damage
5. Fires
6. Release of dangerous gases, chemicals, etc.
7. Disruption of traffic
8. Disruption of utilities

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|--|
| 1. Establish an emergency headquarters | Local government/EMO |
| 2. Establish adequate communications | Police/Fire/EMO |
| 3. Rescue and fire fighting | Fire Department/Rescue Services |
| 4. Protection of property | Police |
| 5. Define a working area and establish a control perimeter | Police |
| 6. Eliminate hazards from public utilities | Engineering/Utilities |
| 7. Establish routes for emergency vehicles | Police |
| 8. Notify hospitals of casualties including number and type | Medical/Police |
| 9. Establish temporary morgue | Coroner/Police |
| 10. Establish traffic control | Police |
| 11. Establish crowd control | Police |
| 12. Arrange for specialists to deal with hazardous substances | Police/EMO |
| 13. Estimate possible further hazards | Specialists |
| 14. Establish welfare services | Welfare/Social Services/Volunteer Agencies |
| 15. Establish a news release system | Owner of property |
| 16. Set up an inquiry service | Welfare/Social Services |

C. Equipment

Source

- | | |
|---|---------------------------|
| 1. Ambulances | Medical/Ambulance Service |
| 2. Fire fighting and Rescue | Fire Department |
| 3. Communication equipment | Police/Fire/EMO |
| 4. Auxiliary lighting | Police/Fire/EMO |
| 5. Barricades | Engineering |
| 6. Equipment to repair public utilities | Engineering/Utilities |
| 7. Special equipment associates with type of hazard | Supplier |
| 8. Emergency feeding facilities | Welfare/Social Services |

PEACETIME DISASTERS

TYPE F

FIRE - RURAL - MAJOR
(Fire could last two days plus)

A. Possible Major Effects

1. Casualties
2. Deaths
3. Fire
4. Damage to property
5. Disruption of traffic and communication
6. Disruption of utilities

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|---|
| 1. Establish an emergency headquarters | Province/EMO |
| 2. Establish adequate communications | Telephone company/EMO |
| 3. Define a working area and establish a control perimeter | Police |
| 4. Rescue and fire fighting including fire breaks | Fire Department/Rescue Services/
Engineers |
| 5. Establish proper jurisdiction | Government |
| 6. Notify hospitals of casualties including number and type | Medical/Police |
| 7. Warn and mobilize required additional service personnel | Province |
| 8. Warning of spread of fire | Police/News media |
| 9. Establish a news release system | Local government authorities |
| 10. Set up an inquiry service | Welfare/Social Services |
| 11. Establish welfare service | Welfare/Social Services |
| 12. Make decision regarding evacuation of community | Municipal authority/Police |
| 13. Determine need and make arrangements for supplementary water supplies | Fire Department/Transportation/Agencies |
| 14. Establish traffic control | Police |
| 15. Establish volunteer registration control | Volunteer agencies/EMO |
| 16. Eliminate hazards from damaged utilities | Engineer/Utilities |

C. Equipment

Source

- | | |
|--|--|
| 1. Fire fighting and rescue equipment (normal and supplementary) | Fire Department/Provincial government |
| 2. Water tankers | Railway/Road authorities |
| 3. Relay pumps | Engineer Department |
| 4. Communication equipment | Fire Department/Police/EMO |
| 5. Auxiliary lighting | Engineer Department |
| 6. Blankets and food | Welfare/Social Services/Volunteer agencies |
| 7. Medical supplies | Emergency health services |
| 8. Mobile public address equipment | Police/Fire/EMO |

PEACETIME DISASTERS

TYPE G

FIRE - URBAN (Major)

A. Possible Majors Effects

1. Casualties
2. Deaths
3. Fire
4. Damage to property
5. Sudden hospital requirements
6. Disruption of traffic and communication
7. Explosions and other hazards
8. Collapse of buildings
9. Disruption of buildings
10. Evacuation

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|----------------------------------|
| 1. Establish an emergency headquarters | Local government/EMO |
| 2. Establish adequate communications | Police/Fire/EMO |
| 3. Define a working area and establish a control perimeter | Police |
| 4. Secure disaster scene for subsequent investigation | Police |
| 5. Rescue and fire fighting | Fire Department/ Rescue Services |
| 6. Control panic in fire fighting area | Police |
| 7. Establish routes for emergency vehicles | Police |
| 8. Notify hospitals of casualties including number and type | Medical/Police |
| 9. Establish temporary morgue if required | Coroner/Police |
| 10. Establish traffic control | Police |
| 11. Establish crowd control | Police |
| 12. Eliminate hazards from damaged utilities | Engineering/Utilities |
| 13. Warning of spread of fire | Police/News media |
| 14. Establish a news release system | Local government authorities |
| 15. Set up an inquiry service | Welfare/Social Services |
| 16. Establish a welfare service | Welfare/Social Services |

C. Equipment

Source

- | | |
|--|---------------------------------------|
| 1. Fire fighting and rescue equipment | Fire Department |
| 2. Ambulances | Private/Hospitals |
| 3. Water tankers, i.e. street cleaners | Engineering |
| 4. Relay pumps | Engineering |
| 5. Communication equipment | Fire Department/Police/EMO |
| 6. Auxiliary lighting | Engineering/Utilities/Fire Department |
| 7. Blankets and food | Emergency Welfare/Social Services |
| 8. Mobile public address equipment | Police/Fire/EMO |

PEACETIME DISASTERS

TYPE H

FLOOD

A. Possible Major Effects

1. Disruption of the community
2. Damage to property
3. Contamination of normal water supplies
4. Casualties
5. Evacuation of the population
6. Dangers to public health
7. Loss of local economic activities

B. Potential Actions at the Scene

Agency Responsible

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Warning of imminence: <ol style="list-style-type: none"> a. long term b. short term 2. Establish an emergency headquarters 3. Mobilize necessary manpower and equipment 4. Establish adequate communications 5. Establish jurisdiction 6. Establish traffic control 7. Establish dyking as required 8. Check stocks of sand and sandbags 9. Eliminate hazards from damaged utilities 10. Protect property and relocate resources where necessary 11. Establish emergency welfare services 12. Evacuation of personnel, livestock, etc. 13. Storage of furnishings and equipment 14. Establish a news release system 15. Set up an inquiry service 16. Establish emergency health facilities | <p>Provincial flood authority
 Meteorological services
 Police/EMO
 Province/EMO
 Province/Canada Manpower Centres</p> <p>Police/EMO
 Government
 Police
 Engineering
 Engineering
 Engineering/Utilities
 Police/Industry</p> <p>Welfare/Social Services
 Welfare/Social Services/Volunteer agencies/Agriculture
 Province/EMO
 Province/Municipality
 Welfare/Social Services/Volunteer agencies
 Health services</p> |
|--|---|

C. Equipment

Source

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Transportation 2. Communication equipment 3. Dyking equipment 4. Heavy equipment (bulldozers, etc.) 5. Auxiliary lighting equipment 6. Auxiliary power facilities 7. Medical and health supplies 8. Food and lodging 9. Pumps 10. Storage facilities for equipment, furnishings and livestock 11. Mobile public address equipment | <p>Road/Rail/Air authorities
 Province/Police/EMO
 Engineering/Industry
 Engineering/Industry
 Engineering/Utilities
 Engineering/Utilities
 Health Services
 Welfare/Social Services
 Engineer department
 Province</p> <p>Police/Fire/EMO/Radio stations</p> |
|--|--|

PEACETIME DISASTERS

TYPE J

FOREST FIRE (Major and in Remote Areas)

A. Possible Major Effects

1. Casualties from fire or smoke
2. Deaths
3. Damage to property
4. Disruption of traffic and communication
5. Disruption of utilities (Power lines, etc)
6. Losses to local economy

B. Potential Actions at the Scene

Agency Responsible

- | | |
|--|---|
| 1. Establish an emergency headquarters | Province (Lands and Forests) |
| 2. Control traffic and access routes | Police/Lands and Forests |
| 3. Recruit fire fighters | Province/Police/Canada Manpower Centres |
| 4. Fire fighting | Province/Forest Industry |
| 5. Rescue | Rescue services |
| 6. Establish emergency communications | Province |
| 7. Establish water points | Province/Lands and Forests |
| 8. Establish transportation requirements and obtain vehicles | Road/Rail/Air |
| 9. Warning of spread of fire | Lands and Forests/News media/Province |
| 10. Establish a news release system | Lands and Forests/Police/EMO |
| 11. Establish welfare services | Welfare/Agencies |
| 12. Establish first aid posts | Lands and Forest/Medical |

C. Equipment

Source

- | | |
|--|-----------------------|
| 1. Light portable fire fighting equipment | Lands and Forests |
| 2. Water bombers | Province |
| 3. Bulldozers | Province/Industry |
| 4. Tankers | Province/Industry |
| 5. Power saws, shovels, axes, back tanks and other hand tools for fire suppression | Province/Industry |
| 6. Establish emergency welfare services | Welfare |
| 7. Communication equipment | Province/Industry/EMO |
| 8. First aid kits | Health Services |

PEACETIME DISASTERS

TYPE K

HURRICANE/TORNADO/WINDSTORM

A. Possible Major Effects

1. Casualties
2. Deaths
3. Disruption of community
4. Disruption of utilities
5. Damage to property
6. Disruption of traffic
7. Disruption of communications

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|---|
| 1. Warning of imminence | Meteorological service/CBC/Other news media |
| 2. Establish an emergency headquarters | Municipal government/EMO |
| 3. Establish adequate communications | Police/EMO |
| 4. Define a working area and establish a control perimeter | Police |
| 5. Establish routes for emergency vehicles | Police |
| 6. Notify hospitals of casualties including number and type | Medical/Police |
| 7. Rescue | Fire/Police/Rescue Service |
| 8. Establish a temporary morgue | Coroner/Police |
| 9. Eliminate hazards from damaged utilities | Engineering/Utilities |
| 10. Establish a news release system | Police/EMO |
| 11. Protection of property | Police |
| 12. Establish emergency welfare services | Welfare/Social Services/Volunteer agencies |
| 13. Establish an inquiry service | Welfare/Social Services |
| 14. Provide auxiliary power | Engineering/Utilities |
| 15. Clear debris | Engineering |

C. Equipment

Source

- | | |
|------------------------------------|-------------------------------|
| 1. Rescue equipment | Police/EMO |
| 2. Fire equipment | Fire department |
| 3. Ambulances | Medical/Transportation/Police |
| 4. Road clearing equipment | Engineering |
| 5. Barricades | Engineering |
| 6. Auxiliary generators | Various sources |
| 7. Mobile public address equipment | Police/EMO/Radio stations |
| 8. Welfare equipment | Welfare/Social Services |

PEACETIME DISASTERS

TYPE M

MINE DISASTER

A. Possible Major Effects

1. Casualties
2. Deaths
3. Trapped or buried alive
4. Fire - explosions - lethal gases - lack of oxygen
5. Loss to local economy
6. Permanent closure of mine

B. Potential Actions at the Scene

Agency Responsible

- | | |
|--|---|
| 1. Establish an emergency headquarters | Mine authorities/EMO |
| 2. Establish number of missing | Mine authorities |
| 3. Organize and direct mine rescue teams | Mine authorities/Rescue Services |
| 4. Request medical assistance and ambulance service | Mine authorities |
| 5. Define a working area and establish a control perimeter | Police |
| 6. Establish traffic and crowd control | Police |
| 7. Welfare facilities for families and rescue teams | Welfare/Social Services/Volunteer agencies |
| 8. Notify hospitals of casualties including number and type | Medical/Police |
| 9. Establish a news release system and arrange briefing for dependents | Mine authorities/Police/EMO |
| 10. Establish a temporary morgue | Coroner/Police |
| 11. Establish routes for emergency vehicles | Police |
| 12. Establish an inquiry service | Mine authorities/Welfare/Social Services/Volunteer agencies |

C. Equipment

Source

- | | |
|---|--|
| 1. Mine rescue equipment | Mine authorities/Police/Fire Departments |
| 2. Drilling equipment for shafting | Drilling companies |
| 3. Auxiliary lighting | Police/Fire department/EMO |
| 4. Communications equipment for rescue team | Fire Department/EMO |
| 5. Barricades | Engineering |
| 6. Emergency feeding and lodging | Welfare/Social Services |
| 7. Clothing | Welfare/Social Services |
| 8. Specialist manpower | Drilling companies/Other mines/Canada Manpower Centres |
| 9. Ambulances | Medical/Transportation/Police |

PEACETIME DISASTERS

TYPE O

POWER FAILURE

A. Possible Major Effects

1. Casualties - indirect effects due to lack of power
2. Deaths - as above
3. Panic - real danger in crowded areas
4. Disruption of traffic
5. Disruption of utilities
6. Trapped persons

B. Potential actions at the Scene

Agency Responsible

- | | |
|---|--|
| 1. Establish a headquarters for restoration of power | Power authorities |
| 2. Establish a headquarters for emergency services to community | Local government/EMO |
| 3. Restore power | Power authorities |
| 4. Establish a priority for essential requirements | Local government/EMO |
| 5. Control the allocation of auxiliary power | Power authorities/EMO |
| 6. Establish a news release system and keep population informed | Power company authorities |
| 7. Establish traffic control | Police |
| 8. Protection of property by requesting assistance in law enforcement | Police |
| 9. Establish special assistance to aged, infirm and home patients | Health and Welfare |
| 10. Establish an inquiry service | Welfare/Social Services/Volunteer agencies |
| 11. Establish adequate emergency communications | Telephone/Radio facilities |
| 12. Organize an emergency transportation pool | Engineering department/EMO |
| 13. Ascertain the status of water and food and arrange distribution | Health/Welfare/Social Services/EMO |
| 14. Release trapped persons in electrically operated devices | Specialists |
| 15. Assess danger to public health and provide emergency services | Health |

C. Equipment

Source

- | | |
|------------------------------------|---|
| 1. Auxiliary power | Engineering department/Any other source of supply |
| 2. Auxiliary heaters | Engineering department/Any other source of supply |
| 3. Mobile public address equipment | Police/EMO |
| 4. Auxiliary lighting | Engineering/Police/Fire department/Stores, etc. |
| 5. Emergency lodging and feeding | Welfare/Social Services and voluntary organizations |

PEACETIME DISASTERS

TYPE Q

TRANSPORTATION - RAIL

A. Possible Majors Effects

1. Casualties
2. Deaths
3. Fires that may be started
4. Disruption of rail traffic
5. Disruption of railway communications

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|--|
| 1. Warn other traffic | Trainmen or first on scene |
| 2. Establish an emergency headquarters (at scene or divisional point) | Railway staff |
| 3. Establish adequate communications | Railway staff |
| 4. Request a relief train | Railway staff |
| 5. Give an accurate and complete report of accident | Railway staff |
| 6. Request police, ambulance, doctors and heavy equipment when reporting accident | Railway staff |
| 7. Organize rescue parties as required | Railway staff |
| 8. Notify hospitals of casualties including number and type | Medical/Police |
| 9. Arrange temporary reception area for casualties | Medical/Welfare |
| 10. Despatch ambulances to ensure proper distribution of casualties | Medical/Police |
| 11. Establish control routes for emergency vehicles | Police |
| 12. Define a working area and establish a control perimeter | Railway staff/Police |
| 13. Establish a temporary morgue | Coroner/Police |
| 14. Restrict entrance to work area if accident involves radioactive containers or other hazardous materials | Railway staff/Police |
| 15. Establish a news release system | Railroad Company authorities |
| 16. Set up an inquiry service | Welfare/Social Services/Volunteer agencies |

C. Equipment

Source

- | | |
|---|-------------------------------|
| 1. Relief train | Railway authorities |
| 2. Ambulances | Medical authorities |
| 3. Fire fighting equipment | Fire department |
| 4. Heavy recovery equipment including cutting torches | Railway authorities/EMO |
| 5. Special equipment may be required if radioactive material or other hazardous cargo is involved | Suppliers/EMO |
| 6. Auxiliary lighting | Police/Fire/EMO/Railway staff |
| 7. Mobile public address equipment | Police/EMO |
| 8. Emergency feeding facilities | Welfare/Social Services |

PEACETIME DISASTERS

TYPE R

TRANSPORTATION - ROAD/BUS

A. Possible Major Effects

1. Casualties
2. Deaths
3. Fires and explosions
4. Trapped
5. Disruption of traffic

B. Potential Actions at the Scene

Agency Responsible

- | | |
|---|---------------------|
| 1. Establish an emergency headquarters | Police/EMO |
| 2. Establish adequate communications | Police/EMO |
| 3. Request additional police assistance | Police |
| 4. Establish routes for emergency vehicles | Police |
| 5. Request doctors, ambulances, wreckers, fire truck and heavy equipment as required | Police |
| 6. Notify hospitals of casualties including number and type | Medical/Police |
| 7. Define a working area and establish a control perimeter | Police |
| 8. Establish temporary morgue if required | Police/Coroner |
| 9. Special precautions needed when radioactive container or dangerous gases, chemicals, etc. are involved | Police/Industry/EHS |
| 10. Establish a news release system | Police/EMO |

C. Equipment

Source

- | | |
|--|-----------------------|
| 1. Wrecker/tower equipped with cutting torches | Police/Garage |
| 2. Fire fighting equipment | Fire department |
| 3. Barricades to control traffic | Engineer department |
| 4. Radiac test equipment if accident involves radioactive material | Industry/EHS/EMO |
| 5. Test equipment for dangerous gases where applicable | Industry/Fire/EMO/EHS |

PEACETIME DISASTERSTYPE STRANSPORTATION - WATER
(at sea or adjacent to land)A. Possible Major Effects

1. Casualties
2. Deaths
3. Fire/explosion
4. Panic
5. Disruption of shipping traffic in a narrow channel
6. Property damage if in harbour
7. Hazardous cargo

B. Potential Actions at the SceneAgency Responsible

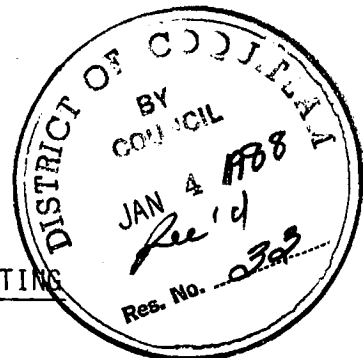
- | | |
|---|---|
| 1. Establish an emergency headquarters | Coast guard/Port authority, St. Lawrence Seaway Authority |
| 2. Establish adequate communications | Police |
| 3. Organize and direct search and rescue | Coast guard/RCAF/Port authority |
| 4. Determine cargo | Port authority |
| 5. Organize a shore-based reception centre to include: welfare services, ambulances, medical staff, temporary morgue, passenger docks have built-in reception areas | Port authority/Coroner/Welfare/Social Services/Health/Immigration |
| 6. Notify hospitals of casualties including number and type | Medical/Police/Coast guard |
| 7. Define a working area and establish a control perimeter | Police |
| 8. Establish routes for emergency vehicles | Police |
| 9. Establish traffic control | Police |
| 10. Establish a news release system | Port authority/EMO |
| 11. Set up an inquiry service | Welfare/Social Services/Volunteer agencies |
| 12. Determine responsibilities of: National Harbours Board, DOT, Coast Guard Service, RCAF, Search and Rescue Provinces, etc. | Agencies involved/EMO |

C. EquipmentSource

- | | |
|---|-----------------------|
| 1. Air/Sea Reacue equipment as provided by Coast Guard, DOT, RCMP, Police, RCAF | All agencies involved |
| 2. Special equipment may be required if radioactive material or other hazardous cargo is involved | Supplier/EMO |
| 3. Limited medical supplies at reception centre | Medical |
| 4. Fire fighting equipment | Fire department |
| 5. Communication equipment | Agency involved/EMO |
| 6. Barricades | Engineer department |
| 7. Mobile public address equipment | Police/Fire/EMO |

505

Thursday, December 10, 1987
Emergency Planning Committee - 12:00 noon



EMERGENCY PLANNING COMMITTEE MEETING

A meeting of the Emergency Planning Committee was held at the Emergency Operations Centre at the Works Yard Service Centre, 2647 Austin Avenue, Coquitlam, B.C. at 12:00 noon on Thursday, December 10, 1987 with the following persons in attendance:

EMERGENCY PLANNING COMMITTEE OF COUNCIL

- | | | |
|-------------------|---|----------------------------------|
| Mayor L. Sekora | - | Chairman |
| Alderman M. Reid | - | Deputy Chairman |
| Alderman D. White | - | Committee Member |
| J. L. Tonn | - | Municipal Manager |
| W. Low | - | Emergency Programme Co-ordinator |
| S. Aikenhead | - | Committee Secretary |

INVITED MEMBERS OF STAFF COMMITTEE

- | | | |
|-------------------|---|------------------------------------|
| D. Cunnings | - | Emergency Social Services Director |
| N. Nyberg | - | Municipal Engineer |
| D. Johnson | - | Fire Chief |
| Dr. A. Arneil | - | Medical Health Officer, S.F.H.U. |
| Insp. R. McMartin | - | Coquitlam Detachment, RCMP |

INVITED GUESTS

- | | | |
|-------------------|---|--------------------------------------|
| Supt. E. Naaykens | - | Coquitlam Detachment, RCMP |
| Mr. S. Urdahl | - | Secretary Treasurer, Sch. Dist. #43 |
| Ms. M. Clappa | - | Emergency Planning Consultant, Prov. |

1. Committee Structure

Bill Low circulated to all present the proposed organization chart for the committee. (Copy attached).

MOVED BY ALDERMAN WHITE
SECONDED BY ALDERMAN REID

That the proposed organization chart dated December 11, 1987 be adopted on the understanding that each individual on the chart will appoint an alternate for their position.

CARRIED UNANIMOUSLY

2. Outline of Proposed Plan

The outline of the proposed Emergency Plan was circulated to all present by Bill Low. (Copy attached)

After some discussion it was proposed that a chapter entitled "Authorities" be inserted between Chapters 3 and 4. This would clarify such questions as:

1. Who determines what is an Emergency.
2. When can Mayor declare a "State of Local Emergency".
3. What powers are provided by such a declarations?
4. Who can order the evacuation of an area.

Supt. Naaykens reported that the P.E.P. Regional Co-ordinator would be able to clarify some of the above questions and could explain how the municipality fits in with the provincial and federal emergency programme plans, and how the municipality can obtain provincial and federal aid, etc.

Under Chapter 6 "Description of District of Coquitlam" there should be information on demographics of the area i.e. where are senior citizens homes, hospitals, schools. The Fire Chief agreed that copies of the Fire Department Zone Maps could be included in the plan.

A section on funding was also suggested for inclusion in the manual. This section would spell out what funding was available, how to quickly access funds in an emergency situation, etc.

Under Section 9(i) Social Services, it was suggested that all local schools be listed with details such as gymnasiums, number of classrooms, washrooms, square footage, etc. Bill Low reported that information such as this would be detailed in a Resources Index.

Also circulated to all members of the committee was a report entitled "Typical Municipal Planning Task."

3. Disaster Response Experience - Edmonton Tornado

Bill Low showed a video to the Committee on the Edmonton Tornado experience which occurred July 31, 1987.

4. Report from Emergency Health Services
Planning Sub-Committee - Dr. Arneil.

Dr. Arneil reported that the Emergency Health Services Planning Sub-Committee are meeting on a monthly basis and include representatives from various health services in the community.

Minutes of the December 4th Sub-Committee Meeting are attached.

With regard to use of schools, he stated his committee has also been looking at schools as possible shelters in an emergency, as well as recreation centres and churches. These buildings should be listed in resource index showing if they can operate independent of power or gas and if they are wheelchair accessible.

With regard to transportation, he asked who would have the authority to second public buses for use in an emergency.

Dr. Arneil reported that he has asked if the Arnprior courses could be given in B.C.

5. Emergency Social Services Planning

Don Cunnings, as Emergency Social Services Director, circulated minutes of the Emergency Social Services Multi-Departmental/Agency Networking Meeting of December 1, 1987.

6. Guest Speaker - Mary Clappa -
Provincial Government Sponsored Consultant

Mary Clappa explained to the committee that her role with the Provincial Government is Emergency Planning Consultant for the Lower Mainland area which covers the area from Whistler to Hope. She is contracted to the Ministry of Social Services and Housing to assist municipalities in disaster training and response and to help them develop their plans.

Her role is in the Social Services section of the plan which involves in assisting in recruitment of a Director and Assistant Director who in turn will recruit co-ordinators to set up organization of feeding, lodging and clothing persons affected by disaster.

Ms. Clappa reported that it takes about nine months of solid work to get the committee established and all the resources lined up. For example, there should be written agreements with hotels and fast food outlets in the area to supply lodging and food in case of a disaster.

She stated she would be putting on workshops in each of the areas showing how to proceed with a plan step by step. There will also be a four day training program offered in 1988 at the Justice Institute or in Victoria for the Social Services Directors.

A discussion followed on how Coquitlam could alert its residents to a problem. It was reported that the RCMP have the Block Watch parents list on a computerized telephone system which can place up to 4,000 calls per hour with any recorded message you wish on it. This works very well as long as the telephones are working. It was suggested that cellular phones would be the alternative if the telephones were out of service. It was reported that they are trying to link the cellular system up to the switching system at B.C. Tel.

7. School Board Participation in Emergency Accommodations Planning

Svein Urdahl, Secretary Treasurer of School District No. 43, reported that they have the school facilities available if there is a disaster and if it happens in the daytime they have the staff there to help. He stated they are part of the community and want to offer whatever assistance they can. Centennial School has lots of room and is centrally located. The students in the high school would probably assist if required. He pointed out that one big problem with using the schools is that if a disaster does occur, parents would probably block access to the schools trying to pick up their children.

The School Board feels that the biggest danger would be an earthquake. Mr. Urdahl circulated to the committee a copy of a manual issued by the Ministry of Education to the School Board entitled "School Earthquake Safety Guidebook".

He assured the committee that the School Board will do all they can to help.

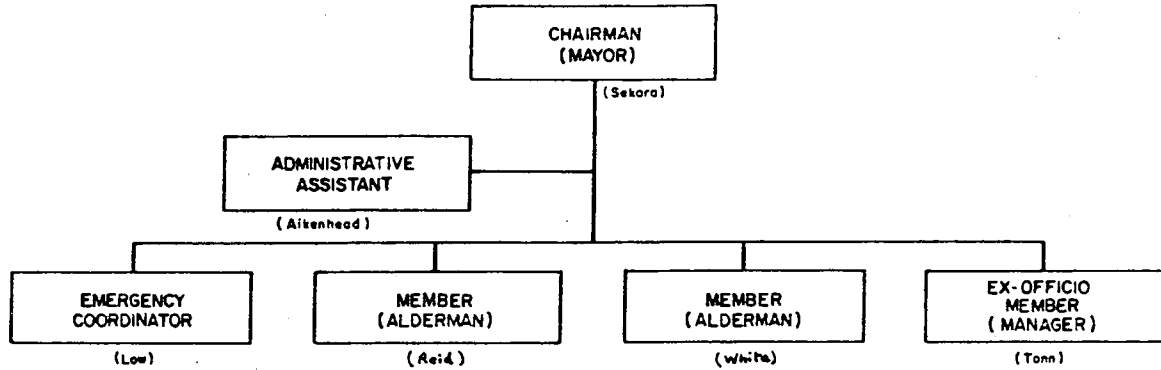
8. Conclusion

Bill Low was asked to arrange the next committee meeting.

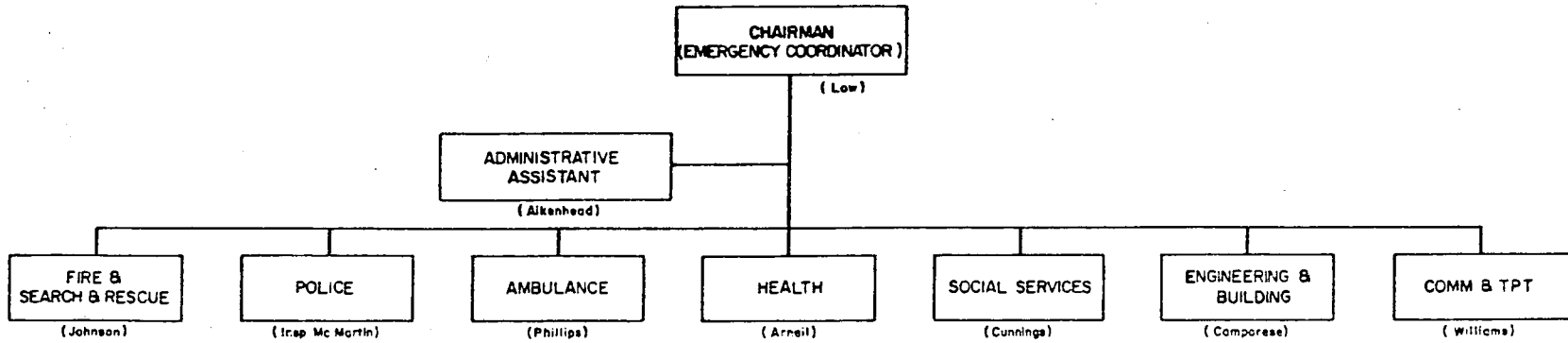
Mayor Sekora declared the meeting adjourned at 2:10 p.m.

CHAIRMAN

EMERGENCY COMMITTEE OF COUNCIL



EMERGENCY COMMITTEE OF STAFF



NOTE:
SUB-COMMITTEES WILL BE ESTABLISHED AS NECESSARY TO PLAN AND ORGANIZE RESPONSE ACTIVITY WITHIN SPECIALIZED FIELDS.

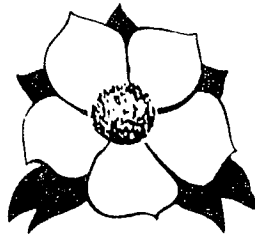
EMERGENCY PROGRAM

DISTRICT OF COQUITLAM

1111 Brunette Avenue,
V3K 1E9

Mayor: L. Sekora

Coquitlam, B.C.
Phone: 526-3611



DISTRICT OF COQUITLAM

EMERGENCY PLAN

EMERGENCY PLAN
DISTRICT OF COQUITLAM

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ANNEXES

- A. Fire Response Plan
- B. Police Response Plan
- C. Emergency Health Services Response Plan
- D. Communications Response Plan
- E. Transportation Response Plan
- F. Engineering Response Plan
- G. Social Services Response Plan
- H. Supply Service Response Plan
- I. Public Information Response Plan
- J. Search and Rescue Response Plan

EMERGENCY PLAN

DISTRICT OF COQUITLAM

DISTRIBUTION

<u>Agency</u>	<u>No. of Copies</u>
Mayor	1
Emergency Executive	5
Emergency Program Coordinator	2
Emergency Planning Committee	
Fire	1
Police	1
Communications and Transportation	1
Health/Medical	2
Ambulance Service	1
Social Services	6
Engineering	2
Supply	1
Public Information	1
Search and Rescue	1
Regional P.E.P.	2
P.E.P. Victoria	2
E.P.C. Victoria	1
E.P.C. Ottawa	2
Spare	10

EMERGENCY PLAN

FOR THE DISTRICT OF COQUITLAM

SERIAL 1 - MAYOR'S INTRODUCTION

PURPOSE

The aim of this Emergency Plan for the District of Coquitlam is to provide for the preservation of life and property, in case of an emergency, and to ensure that all necessary resources of the District are applied to the emergency as an extension of normal functions.

This plan will indicate the planning required by all Municipal Departments and supporting agencies in order to minimize the effects of a natural or man made disaster on the persons or property of this District.

This plan will also include mutual aid preparations to assist persons from other communities who may be victims of like disasters or emergencies.

It is understood that this plan is not final, and that amendments and revisions will have to be made from time to time in the form of new sections or appendices.

Signed

Mayor

DISTRICT OF COQUITLAM

TYPICAL MUNICIPAL PLANNING TASKS

The following tables list some of the more common emergency measures which must be considered by the municipal emergency planning organization. It is emphasized that these lists will not be complete for any specific municipality. Many other items will suggest themselves to the emergency planners as planning progresses and the roles of departments become more clearly defined.

TABLE 1

Area Affected by The Disaster

Serial	Emergency Planning Task	Suggested Responsible Department/Agency	Suggested Cooperating Departments/Agencies
1	Traffic survey for pre-attack voluntary evacuation	Traffic Engineer	Provincial Police, Municipal Police
2	Emergency traffic control plan	Police	Traffic Engineer, Provincial Police
3	Survey of water supply for fire-fighting	Engineer	Fire
4	Provision of emergency drinking water	Engineer	Health
5	Shelter programs	Engineer	Radiological Defence, Assessor, Building Inspector, Welfare, Health
6	Survey of engineer equipment	Engineer	Designated Provincial Engineer, Local contractors, Highways
7	Provision of emergency communications	Communications	Radio amateurs, local DQC representative, Radio taxis, Police, GRS(CB)
8	Radiological Defence	Radiological Defence	Universities, Technical Schools, High School science staffs
9	Fire vulnerability survey	Fire	Engineer, Fire insurance underwriters

Serial	Emergency Planning Task	Suggested Responsible Department/Agency	Suggested Cooperating Departments/Agencies
10	Public information and education program	Public information	Local newspapers, Radio and T.V. stations, Public relations organizations
11	Preservation of essential records	Municipal Clerk	All municipal departments
12	Safety program for school children following warning during school hours	School Board	Coordinator, Police
13	Plans for the evacuation and continuing care of residents of welfare institutions	Welfare	Health, Police, Transport, Coordinator
14	Plans for the evacuation and care of residents of health institutions	Health	Welfare, Police, Transport, Coordinator
15	Municipal legislation to establish the emergency organization	Municipal Council	Municipal Solicitor, Coordinator
16	Recruiting of auxiliaries for existing municipal departments (Fire, Police, etc.)	Departments concerned	Coordinator
17	Development of emergency organizations where needed and recruiting of staffs and workers	Municipal Council	Coordinator
18	Training of departmental staffs and volunteer workers	Departments concerned	Coordinator.
19	Training exercises	Coordinator	All municipal departments
20	Preparation of departmental emergency plans	Departments concerned	Coordinator
21	Planning for emergency government headquarters and selection of departmental assembly areas	Municipal Council	Coordinator, all departments concerned
22	Provision of mutual aid for and by neighbouring municipalities	Coordinator	Councils of neighbouring municipalities
23	Plans for action by the public related to various warning times	Coordinator	All municipal departments

TABLE 2

Area NOT Affected by the Disaster

Emergency Planning Task	Suggested Responsible Department/Agency	Suggested Cooperating Departments/Agencies
Survey of reception accommodation	Welfare	Health, Engineer, Assessor, Building Inspector, Fire
Arrangements for reception of evacuees, registration and inquiry, emergency feeding and allocation of accommodation	Welfare	Police Transport Supply
Care of unattached evacuee children and dependent adults	Welfare	Childrens Aid Society, Homes for Special Care Social Services
Receiving and caring for evacuee casualties	Health	Welfare, Local hospitals, Canadian Red Cross, St. John Ambulance
Provision of emergency drinking water	Engineer	Health
Shelter programs	Engineer	Building Inspector, Radiological Defence, Assessor, Welfare, Health
Sanitation survey, garbage, sewage, vermin control	Health	Engineer
Epidemic control and immunization programs	Health	Schools, Churches, Civic groups, Public information
Survey of water supply for fire-fighting	Engineer	Fire
Survey of engineer equipment	Engineer	Designated Provincial Engineer, Local contractors Highways
Traffic control plan for reception and/or remedial evacuation	Police	Provincial Police, Welfare, Traffic Engineer
Overall plans for remedial evacuation	Coordinator	Police, Radiological Defence, Provincial Police, Welfare, Public Information.

Serial	Emergency Planning Task	Suggested Responsible Department/Agency	Suggested Coordinating Departments/Agencies
13	Plans for the reception and care of residents of welfare institutions	Welfare	Health, Police, Transport Co-ordinator
14	Plans for the reception and care of residents of health institutions	Health	Welfare, Police, Transport Co-ordinator
15	Provision of emergency communications	Communications	Telephone and telegraph, Radio amateurs, Radio taxis, Police, GRS (CB)
16	Plan for maintenance of law and order	Police	Provincial police
17	Public information and education program	Public information	Local newspapers, Radio and T.V. stations, Public relations organizations
18	Municipal emergency legislation to establish the emergency organization	Head of Council	Municipal Solicitor
19	Provision of mutual aid by neighbouring municipalities	Coordinator	Heads of Council of neighbouring municipalities
20	Recruiting of auxiliaries for existing municipal departments (Police, Fire, etc.)	Departments concerned	Co-ordinator
21	Development of emergency organizations where needed and recruiting of staffs and workers	Head of Council	Co-ordinator
22	Training of departmental staffs and volunteer workers	Departments concerned	Co-ordinator
23	Training exercises	Coordinator	All municipal departments and agencies
24	Preparation of emergency plans	Departments concerned	Co-ordinator
25	Preparation of instructions for public action following receipt of fallout warning	Co-ordinator	All municipal departments

SIMON FRASER HEALTH UNIT AREA
LOCAL EMERGENCY HEALTH SERVICES
PLANNING COMMITTEE

A meeting of the above committee was held on Friday, December 4th, 1987 at St. Mary's Hospital.

Present: Brian Coley - St. Mary's Hospital
Pat Cully - Royal Columbian Hospital
Aurele Remilliard - Queens Parks Hospital
Allan Arneil - Simon Fraser Health Unit

Guest: E.M. Derbyshire - Provincial Emergency Health

Absent: David Chang - Riverview Hospital
Representative - Eage Ridge Hospital

Regrets: John Phillips - Provincial Ambulance Service (EHS)

Previous minutes - accepted as circulated

Business Arising:

(1) Radio Communication between hospitals:

It has been decided that hospitals not now on the radio communication link in the lower mainland will not proceed towards doing so until it has been ascertained what problems there might be.

(2) Mr. Spence and Mr. Clegg:

Dr. Arneil to invite Messrs Spence and Clegg to the next meeting of this committee (January 15th).

(3) Joan Stewart - Red Cross:

Dr. Arneil to invite Joan Stewart to the February meeting.

(4) Pharmacist:

Invitation to the March meeting to be discussed at the next meeting.

(5) Detailed List of Emergency Supplies:

Pat Cully has this information and will forward to Dr. Arneil to be sent out with the minutes.

(6) Dr. Arneil did write to Mr. de Burger re the need for someone to check emergency supplies re location and condition. By coincidence, just as this was being discussed, Mr. Derbyshire walked in to say he had just been doing that in our area and the situation was as follows:-

(A) C.C.U,

1/3 of one in No.2 firehall PoCo: Keys thought to be available

1/3 of one in Kyle Centre Po.Mo: Keys could not be found.

1/3 of one in City Yard (Austin) Coq: Keys with coordinator
and yard manager.

1 in Woodlands (New Westminster): Keys available at all times.

continued.....

It was agreed DR. Arneil would write to the emergency coordinator for these areas to ask them to ascertain that there is immediate availability of these supplies and specifically that keys are available. It is realized that the Ambulance Service are responsible for release of these supplies.

- (B) H.D.S.U.s (2 stretchers, 1 large + 3 medium burn dressings, 6 dressings, I.V. Clamp, Ringer Lactate).
17 at Royal Columbian - Pat Cully to check
7 at St. Mary's Hosp. - Brian Coley to check

(C) E.H.s none

(D) A.T.C.s none

Mr. Derbyshire indicated that if storage space can be found that more supplies could be stored in this area. 800 (100x8) cu.ft of dry, clean, heated space required. It was agreed Dr. Arneil would contact the municipal coordinators to see if they can locate storage space. Dr. Arneil to contact emergency coordinators in transportation of these supplies as required.

(7) Emergency Accommodation:

It was agreed that Dr. Arneil would contact all emergency coordinators to ask them if they could supply a list of the accommodation available in each area for emergency evacuation to include such things as capacity, heating, whether on main floor, accessibility, geographic location etc.

(8) Transportation of Personnel:

There is some lack of clarity as to how personnel would be transported to the site of a disaster, or to various facilities where there could be sick persons or casualties. Dr. Arneil to ascertain from local coordinator.

(9) Training Courses:

It was agreed that the present system of sending one, or at the most two persons at a time to Arnprior to take a course was not as effective as it could be.

It was concluded that a training program carried out in B.C. would be much more effective -

- (a) probably cheaper
- (b) more in total could be trained
- (c) several from the one area could be trained together to reinforce each other in the community setting.

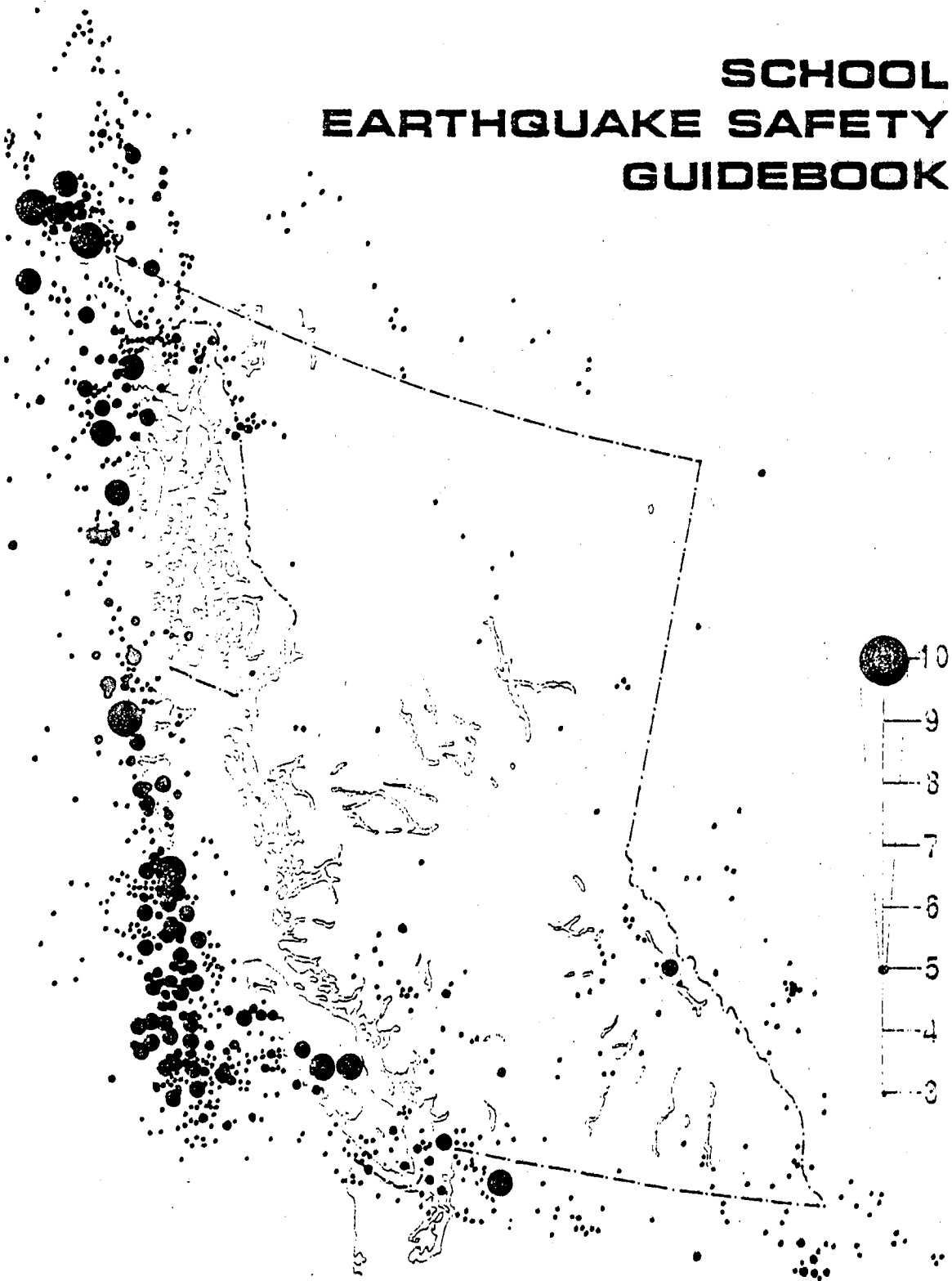
It was felt that this should not be a mini course but rather the full 4½ days that is given in Arnprior. It was felt that a core teaching team, with all their 'props' could come from Arnprior but one local expert also in different facets of the program. Perhaps some money could be available from the J.E.P.P. funds. Dr. Arneil to contact Mr. Ron de Burger - Chairman of Disaster Planning for Health, re this possibility.

Next Meeting: January 15th 1988 9:15 am at Riverview Hospital
(Mr. Chang to arrange accommodation)

ASA/mbd
c.c. Committee Members
c.c. Mr. Derbyshire
c.c. Each Municipal Coordinator: *Comp*

ASA
Dr. A.S. Arneil
Recorder

SCHOOL EARTHQUAKE SAFETY GUIDEBOOK



SCHOOLS EXCELLENCE

ACKNOWLEDGEMENTS

Much of the information contained in this guidebook is taken from the Guidebook for Developing a School Earthquake Safety Program published by the U.S. Federal Emergency Management Agency with their permission.

The cover is based on a map provided by Geological Survey of Canada.

The idea of checklists was suggested by a School Earthquake Awareness Program prepared by Betty Roper and Elizabeth Hutton for School District No. 86 (Creston/Kaslo).

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INTRODUCTION

The first indication of an earthquake may be:

- . a low or loud rumbling noise
- . a sudden violent jolt
- . a shaking and moving of objects.

Earthquakes have shaken British Columbia since the time of Indian legend. Southwest B.C. is in a dynamic geological setting called a subduction zone, similar to that in western Mexico. Continuous movement of the earth's plates in this region builds up stresses that result in earthquakes. Small tremors actually occur daily, but periodically the movement becomes dangerously large. Although the risk is highest in the coastal region, earthquakes can and do occur anywhere in B.C.

In 1946, an earthquake of 7.3 magnitude caused serious damage in Courtenay on Vancouver Island. (In comparison, the September 1985 earthquake in Mexico had a magnitude of 8.1.) Thirty schools in Courtenay school district were damaged; fortunately, it was Sunday morning and the buildings were empty. In 1965, just south of the border in Seattle, an earthquake of 6.5 magnitude caused damage to eight schools and death to seven people in the community.

The purpose of this guidebook is to assist school district staff, teachers, parents, and students to make their schools safer, and to know what to do before and after an earthquake occurs in their area.

SAFETY PROGRAM

It is recommended that an earthquake safety program be established and maintained in every school district. To organize this program, each school board should form an Earthquake Safety Committee.

Members could be:

- . school principals
- . district maintenance staff
- . teachers
- . parents (PTA)
- . trustees
- . senior grade students.

The committee may also recruit experts from the community, either as committee members or as resource persons; for example:

- . local fire, police and emergency officials
- . Red Cross or St. John's Ambulance personnel
- . geologists, structural engineers, geophysicists, doctors
- . municipal building inspectors
- . communications experts such as local radio or newspaper people and ham radio operators.

The first task for the committee should be to define its main objectives; for example to:

- . initiate earthquake drills in the schools
- . initiate hazard reduction procedures
- . prepare a response plan
- . establish a communications plan.

Guidelines on how to achieve these objectives are contained in this guidebook.

After having defined its objectives, the district committee may delegate tasks to individual school principals or district staff; for example:

- . implementation of earthquake drills
- . introduction of staff training programs
- . identification and correction of hazards
- . preparation of local response plan
- . preparation of local communications plan.

Local school responsibilities can either be undertaken by the principal personally, or delegated to a school working group comprising perhaps an administrator, a teacher, a parent, and a senior grade student.

EARTHQUAKE DRILLS

Earthquakes happen with no warning; therefore, life-protecting actions must be taken at the first indication of ground shaking. Even in the most severe earthquakes, buildings rarely collapse completely. Injury and even death are most often caused by the shattering and falling of non-structural elements such as window glass, ceiling plaster, lighting fixtures, chimneys, roof tiles, and signs. There will be no time to think what to do; therefore, of all earthquake-preparedness measures, EARTHQUAKE DRILLS ARE THE MOST IMPORTANT.

Regular earthquake evacuation drills should occur separately from, but with the same frequency as fire drills. Drills should regularly simulate emergencies such as jammed doors, and blocked hallways and stairways.

Drills

The following are recommended drill procedures for a teacher and class of students:

- . TAKE COVER under desks or tables
- . FACE AWAY from windows
- . ASSUME "CRASH" POSITION on knees, head down, hands clasped on back of neck or head covered with book or jacket
- . COUNT ALOUD to 60; earthquakes rarely last longer than 60 seconds and counting is calming.

The teacher should:

- . issue the TAKE COVER order
- . also take cover for 60 seconds
- . review evacuation procedures.

If the teacher is injured, two student monitors should have designated authority to give instructions.

In other areas of the school, at the first sign of an earthquake, occupants should:

- . move away from windows, shelves and heavy objects that may fall
- . take cover under a table or desk, in a corner or doorway
- . in halls, stairways and other areas where no cover is available, move to an interior wall, kneel with back to wall, place head close to knees, clasp hands behind neck, cover side of head with arms
- . in the library, move away from where books and bookshelves may fall, take cover

- . stay inside; usually the most dangerous place is just outside where building debris may fall; exit only after shaking has stopped
- . in science laboratories, extinguish all burners, if possible, before taking cover; stay away from hazardous chemicals that may spill
- . in other areas, such as gymnasiums, auditoriums, music rooms, and industrial education shops, the district or school committee should prepare appropriate guidelines based on the above.

Simulation exercises should occur outdoors as well as inside the school. Students and teachers should move to an open space away from buildings and overhead power lines; lie down or crouch because legs will be unsteady, and look around to be aware of dangers that may require movement.

On the school bus, the driver should stop the bus away from power lines, bridges, buildings, and overpasses; occupants should remove heavy objects from overhead racks, stay in seats, and hold on to the seat in front.

Indoors or outdoors TAKE ACTION AT THE FIRST INDICATION OF AN EARTHQUAKE.

After an earthquake, building evacuation should occur as soon as possible, due to the possibility of aftershocks, building collapse, fires, and explosions.

Students should:

- . EVACUATE the building in single file when instructed by the teacher or monitor
- . KEEP CALM
- . WEAR SHOES
- . DO NOT use an elevator.

Teachers should:

- . INSTRUCT students to evacuate when all shaking has stopped
- . LEAD CLASS to the designated assembly area
- . BE PREPARED to choose alternative escape route in case of fire or exit blockage
- . TAKE class list, I.D. tags, first aid kit
- . APPLY I.D. information to all primary and injured students
- . GIVE FIRST AID, if necessary
- . DO NOT re-enter the building unless instructed by the principal.

Copies of the standard drill procedures should be given to each teacher to implement in the classroom. In fact, an earthquake may not occur during the childhood of the students. However, the earthquake safety lessons they learn will stay with them and be useful in adulthood, both for themselves and to pass on to their children. Handicapped students should participate.

Discussions and Projects

Earthquake drills should be preceded by classroom discussions. These should be about the need for and purpose of drills. Teachers should dispel myths such as "the earth will open up and swallow you". The contents of this guidebook may be used to explain what to expect, what to do, and why.

The noises of building movement, windows breaking, and objects falling, that accompany an earthquake, can cause emotional stress and panic. Students should be prepared for this by classroom discussion.

Students can carry out projects that are both useful and educational; for example:

- . prepare an earthquake safety kit to be kept near the exit door, students can suggest contents, e.g.,
 - copy of class roll book
 - first aid supplies
 - flashlight and spare batteries
 - felt pen (for I.D. marking)
 - games
 - plastic garbage bags for emergency protection.
- . make posters describing what to do in the event of an earthquake
- . identify hazards in the classroom, school, school grounds, neighbourhood, and home
- . illustrate this guidebook.

Evaluation

Periodically, the district committee and principals should evaluate the effectiveness of their earthquake drills. The following checklist may be used both for evaluation and in the initial planning of the drills:

- . have complete 'quake-safe' action drills been issued to all concerned?
- . are all students and staff familiar with the "take cover" procedure?
- . have students and teachers demonstrated their ability to take cover immediately?
- . do students know what to do in areas without shelter?
- . do students stay quiet during drills?
- . are teachers able to maintain relative calm and reassure their students?
- . do students and teachers know and understand evacuation procedures?
- . does everyone know their safe evacuation assembly area?
- . do teachers remember to take their class roster and evacuation checklists to the assembly area after evacuation?
- . have other staff members practised their roles during earthquake drills?
- . have emergency variations been practised; e.g., exits blocked, aftershocks occurring, etc.?
- . have students had ample opportunity to discuss their fears and concerns about earthquakes, including how they can help each other?
- . have parents been informed about the earthquake drills?
- . have the drills been extended into the family and home?

HAZARD REDUCTION

The following is from a report on the non-structural damage that occurred to five schools shaken by an earthquake in California:

- Windows** The 31-year-old junior high library had eight-by-ten foot double-height glass windows on the north and south walls. All windows imploded and littered the room. There were dagger-shaped pieces everywhere. The floor tile and wooden furniture were gouged with flying glass. The school superintendent believes that, had school been in session, death and serious injury would have occurred in the library. The glass in the library windows was not tempered.
- Lights** Approximately 1,000 fluorescent bulbs fell from their fixtures and broke. Many fixtures also came down. There were no safety chains on the fixtures. Although hanging fixtures suffered much more damage than recessed fixtures, glass in the older recessed fixtures was shaken out and broke. The elementary school library lost all its fixtures.
- Chemicals** In the second-floor high school chemistry lab, sulphuric acid and other chemicals stored in glass containers in open cabinets overturned and broke. Acid burned through to the first floor. Cupboard doors sprang open and glass cabinet doors broke, allowing chemicals to fall. The lack of electric ventilation caused toxic fumes to permeate the building.
- Basements** Where water pipes entered through concrete walls, they were severed by the movement of the walls. Basements were flooded to five feet. All electrical supply and switching mechanisms were in the basement; all were destroyed by water.
- Equipment** File cabinets flew across the room; bookcases fell over; free-standing cupboards, cabinets and shelving fell. Machine shop lathes and presses fell over.

Hazards can be considered in three categories:

- . Classroom hazards that can be corrected by students and teachers
- . Maintenance hazards that require special skills for correction
- . Neighbourhood hazards that possibly cannot be corrected, but can be taken into account in the response plan.

The following are suggestions on how to eliminate hazards:

Classroom Hazards

- . heavy loose objects that could cause injury should not be stored on shelves or hanging where they can fall more than one metre above the floor
- . hazardous materials such as may be found in science laboratories and industrial education shops must be stored in an approved cabinet or a designated storage room
- . aquariums should be located away from seating areas.

Maintenance Hazards

- . all industrial education machine tools and equipment must be securely fastened to the floor or wall
- . all kitchen equipment in teaching kitchens and home economics rooms must be secured against rolling or overturning
- . exhaust hoods should be secured to structure
- . lockers, shelves, cupboards, bookcases, filing cabinets, storage racks, pianos, etc., exceeding the height of one metre above the floor should be secured to structural member(s) of a wall or partition
- . clocks, projection screens, TV monitors, heavy pictures, light fixtures, and similar appendages should be secured to a structural member of a wall or partition

- . unreinforced masonry chimneys should be removed, if possible, and replaced with a metal flue secured to the structure; alternatively, the chimney may be braced to the roof structure with metal reinforcing angles and straps; unreinforced masonry of any kind should be removed, if possible, or braced
- . covered play areas and other free-standing structures may be braced at low cost, in consultation with a structural engineer
- . appendages over access doors or footpaths should be removed if practical; alternatively, check the support and possibly provide additional fixing to structure
- . slate and tile roofs should be checked, and loose pieces refixed; a restraining board may be fitted at the eaves; in the long-term, replace with metal roofing or asphalt shingles
- . tee bar and other ceiling spaces should be checked to ensure that all components are firmly secured to the floor or roof structure above
- . glass lighting fixtures should be replaced with plastic
- . plain glazing in hazardous locations should be replaced with tempered glass, wired glass, or polycarbonate sheets
- . any old slate chalkboards or marble toilet partitions should be replaced with modern fixtures
- . heavy gymnasium equipment should be secured to the structure or braced against overturning.

It is recommended that, prior to assessing hazards throughout the school, a plan or plans of the school and grounds are prepared. Such a plan(s) will:

- . enable the location of all hazards to be shown
- . assist in the preparation of emergency response procedures
- . enable evacuation routes to be shown
- . identify the location of safe assembly areas
- . enable the location of the following items to be shown:
 - power line routes (overhead and underground)
 - gas, water and sewer lines
 - outside faucets

- mains switches and shut-off valves
- mechanical equipment
- hazardous materials storage
- fire extinguishers
- first aid equipment

Neighbourhood Hazards

The purpose of identifying neighbourhood hazards is to assist in the planning of post-earthquake procedures such as the designating of assembly areas. It may be impossible to reduce such hazards, but to know what can happen is the basis of a good earthquake safety program.

This list may be compiled with assistance from the local municipal police or fire authorities, utility companies, and federal or provincial emergency program personnel:

- . facilities containing hazardous materials; e.g., gas stations
- . high-voltage power lines
- . major traffic routes; e.g., freeways and railway lines
- . major oil and natural gas pipelines
- . transformers and underground utility vaults
- . multi-storey buildings vulnerable to collapse
- . water towers
- . landslide areas
- . flooding from collapsed dams or dykes
- . exposure to tsunamis (seismic sea waves).

RESPONSE PLAN

A response plan should provide short-term shelter (one-two hours) for the entire school population and long-term shelter (up to 24 hours) for students whose parents have been unable to collect them. The long-term plan must take into account the fact that an earthquake can occur at any time during the day; in the middle of winter; that the building may be unsafe for re-entering; and all services, including telephones, may be disrupted.

The First Two Hours

During the first two hours after an earthquake, adults in a school must cope with many tasks, such as to:

- . organise building evacuation and security
- . provide first-aid to injured persons
- . check and account for all those who were in the school
- . provide all students with identification tags indicating name, age, address, phone, parents' names, work address and phone, any medical problems
- . organize search and rescue teams to locate missing persons
- . extinguish small fires
- . check damage to utilities, if necessary shut off main power, gas and water
- . seal off areas where hazardous materials have been spilled
- . calm and reassure frightened persons
- . authorize release of students to parents, keep records of such releases
- . establish communication with emergency assistance, and other schools in the district
- . handle the traffic into and out of the school grounds
- . distribute emergency supplies and equipment
- . prepare for long-term care and shelter.

The following planning decisions should be made in preparation for the first two hours:

- . who will give instructions to evacuate the building?
- . how will this be done if the P.A. system is damaged?
- . what should be done if an aftershock occurs during evacuation?
- . have evacuation routes and assembly areas been established; are they the same as fire escape routes and areas; if not, why not, and could this cause confusion?
- . are there any potential hazards along the evacuation routes?
- . what emergencies could occur and what should be done if, for example, power fails, exit door jams, debris blocks exit, fire breaks out, students are injured and should not be moved?
- . in the worst weather conditions possible, where will the school population find short-term shelter?
- . how will all persons be identified and kept track of?
- . how will the arrival of parents, and the handover of their children be processed?
- . what steps can be taken to reduce anxiety and fear among students and adults?
- . if it is necessary to evacuate the school grounds, how will this be accomplished and how will parents be informed of the new location?

In addition, the following information should be established:

- . a chain of command for decisions after an earthquake
- . a list of emergency response agencies; e.g., fire, police, gas, electricity
- . procedures to provide for first aid, search and rescue, communication, building damage assessment, and student security
- . location(s) of outdoor assembly areas, first aid stations, command and communication station, student release station
- . a list of persons responsible for various actions and/or with required skills
- . an inventory of supplies and a plan of the school.

Expert judgement may be needed to determine whether or not buildings are safe for re-entry. The emergency response plan should contain the names of local engineers and other experts who can assess:

- . structural and non-structural damage
- . damage to utilities
- . the likelihood of fire
- . hazardous material spills.

Care and Shelter

Within two hours after a major earthquake, most parents will come to collect their children. However, some parents may be unable to reach the school, either because of transportation difficulties or because they are casualties themselves. Obviously, young children must not be released to go home alone.

General care and shelter guidelines should be included in a district response plan. However, each school will have individual problems and solutions that will need to be addressed locally, for example:

- . based on an analysis of the number of parents working, single parents, locations of home and workplace, what is a reasonable estimate of the numbers and ages of children that may require long-term care and shelter?
- . what is the likelihood of the school building surviving a major earthquake and, if unlikely, what alternative shelter arrangements can be made?
- . if long-term care and shelter has to be provided:
 - what supplies are needed?
 - have any individual special medication needs been identified?
 - which adults will undertake the long-term care?

Answers to some of these questions should take into account that shelter plans may be influenced by the type of construction of the school building. Preplanning advice from architects, engineers, and other experts may determine the likelihood of a building being able to survive an earthquake and, therefore, provide shelter.

For example, an old, three-storey, masonry building should not be relied on for shelter, whereas a single-storey, masonry building built to current standards probably will remain intact. Arrangements might be made for local experts to visit each school within a few hours after any serious earthquake to give advice on re-entry.

Outdoor shelter plans may use the practical knowledge of local organizations such as "outdoors" clubs and scout groups.

The district may allocate specific "safe" schools for the provision of long-term care and shelter. St. John's Ambulance and Red Cross guidelines may be used for the equipping of these schools. The following items might be included:

- . first aid supplies
- . soap, towels, cleaning and sanitation supplies
- . food and cooking equipment
- . potable water
- . bedding.

Except for basic supplies, it is not practical for a school to store large quantities of these items. Arrangements for storage and delivery by parents and neighbours can be made.

In addition to the physical needs of students and staff, anxiety and fear are to be expected after a major earthquake. Young students particularly should be encouraged to express their concerns, while at the same time be continually reassured about, for example:

- . the likelihood that parents may be delayed because of traffic disruption
- . reminders that parents have been told that students are being cared for.

To keep students occupied, they can:

- . be encouraged to express their feelings through drama, art and writing
- . be encouraged to comfort each other; physical contact can reduce feelings of separation, loneliness and fear
- . discuss the chores that will face everyone at home; emphasizing their role in restoring order
- . review the actions that would be necessary if there was an aftershock.

Training

To improve the quality of the potential response of staff, teachers, and students following an earthquake the district committee should:

- . keep an up-to-date list of teachers and staff members trained in first aid/CPR
- . provide regular training and refresher courses in first aid/CPR by association with the local St. John's Ambulance or Red Cross organizations
- . consider providing first aid training for students (this has far wider benefits than for response to earthquakes)
- . consider training of staff and teachers in:
 - fire detection and abatement
 - how and when to turn off utilities
 - search and rescue techniques
 - mental trauma alleviation.

These subjects should be discussed with local fire department and ambulance personnel who may provide recommendations for contact with other sources of related skills.

Communications

After an earthquake, the following may occur:

- . loss of electrical power and telephone lines may disrupt communication systems for a long period
- . the telephone switchboard may be swamped by incoming calls
 - if it is working
- . traffic may jam-up around the school
- . unauthorized persons may volunteer to take students home.

The response plan should contain a communication plan prepared in association with local fire, police, and hospital, the local emergency planning program office, and the local media (radio and TV stations). That plan should provide for alternative ways to convey and receive messages.

Reporting procedures should be developed; e.g.:

- . to whom reports should be given
- . how to report, in the absence of telephone and power

- . the use of portable two-way radios
- . the use of local radio and TV stations
- . the identification and use of amateur radio "hams"
- . what information should be given; e.g., condition of buildings and occupants, emergency situations
- . do not contribute more than necessary to the overloading of emergency systems; e.g., in the first hour use telephones only to report life-threatening situations
- . when using radio communication to emergency services, keep messages clear and brief
- . if there is no way to report to the outside authorities, pre-planning may assume helicopter and/or ground reconnaissance
- . a visual signal system for air/ground reconnaissance may use coloured flags or canvas panels to communicate prearranged messages such as "medical help needed" or "we are all O.K."; do not place signals on a roof in case of unperceived structural damage and/or aftershocks.

Copies of the district communications plan should be retained in every school and also by all the local emergency organizations.

Periodically, simulation exercises should be carried out to test the effectiveness of the plan, assuming a variety of scenarios.

The following equipment items are suggested for each school to facilitate communications. Such items can also have application in other more normal situations:

- . the public address system installation can be linked to an emergency power system such as that provided for the normal emergency lighting
- . a battery-powered megaphone
- . battery-powered walkie-talkies and portable two-way radios
- . coloured flags or canvas panels for isolated schools to communicate prearranged signals to air or ground reconnaissance.

Parent Awareness

The most important feature of a communications plan is the means for communicating with parents. It is imperative that parents are aware of the plan, otherwise they may risk their own safety and also impede the organized procedures to retrieve their children.

The policies and rules that parents should follow must be clearly stated at parent meetings and in letters to parents. At least one such letter per year should be sent, and it would be most effective to also send a letter immediately after public news of an earthquake elsewhere.

The following is a sample letter:

Dear Parent:

Because our school is located in an earthquake-prone area, we want to remind you that, in the event of an earthquake occurring, the following procedures will be followed.

No student will be dismissed from school unless a parent (or guardian designated by a parent) comes for him/her.

No child will be allowed to leave with another person, even a relative or babysitter, unless we have written permission to that effect or that particular person is listed on the student's emergency card in our files. With this in mind, if your child's card is not up-to-date, please request a new card from our office.

All parents or designated guardians, who come for students, must have them signed out at the office or at the alternative Student Release Station at the entrance to the school yard. Signs will be posted (indicate where) if this alternative location is being used.

We are prepared to care for children in the event of a critical situation, or if parents are not able to reach the school. We have a number of people with first aid certificates, and will be in communication with local emergency services. We do ask for your help in the following areas:

- please do not call the school; we must have the lines open for emergency calls
- following an earthquake or other emergency, do not immediately drive to the school; streets and access to our school may be cluttered with debris; the school access route and street entrance areas must remain clear for emergency vehicles
- do turn your radio to _____ or _____ on the A.M. dial; information and directions will be given over the radio.

INDIVIDUAL CHECKLISTS

Checklists should be prepared summarising what each person should do before, during, and after an earthquake. The following pages provide samples that can be adapted to individual situations. For example, students' and teachers' checklists can be made into wall posters for the classroom.

Student

Before

- . learn what to expect and what to do during an earthquake
- . identify hazards in the classroom, school, home
- . participate in earthquake drills
- . know the name and address of your guardian, if designated by your parent(s).

During

- . follow teacher's instructions
- . TAKE COVER under a desk or table
- . ASSUME "CRASH" POSITION
- . COUNT to 60
- . if out of the classroom, take cover in a doorway in the "CRASH" position; count to 60, join the nearest class when shaking stops.

After

- . follow evacuation instructions from teacher or designated monitor
- . wear shoes
- . put on identification tag
- . comfort and reassure other students
- . DO NOT use an elevator
- . DO NOT re-enter school without permission
- . DO NOT go home without permission; be aware that your parent/guardian may be delayed in coming for you
- . talk about what has happened.

Teacher

Before

- . hold classroom discussions
- . practise drills
- . hold hazard hunts, correct hazards where possible
- . appoint two student monitors in case you are injured
- . prepare class lists and identification tags with name, address, phone number, age and medical alert information.

During

- . issue the TAKE COVER order at first sign of tremor
- . assume "CRASH" position for 60 seconds
- . talk calmly to reassure students
- . review evacuation procedures.

After

- . instruct students to evacuate
- . lead class to the designated assembly area
- . be prepared to choose alternative escape route in case of fire or exit blockage
- . take class list, I.D. tags, and first aid kit
- . administer first aid, if necessary
- . do not re-enter the building unless instructed by the principal
- . write I.D. information on foreheads of primary and injured children, if tags not available
- . reassure students
- . remind students that parents may be delayed in calling for them
- . encourage students to talk about their fears and anxieties.

Principal

Before

- . set up a chain of command, and define staff roles and responsibilities (first aid, roll call, search and rescue, etc.)
- . establish earthquake and evacuation drills for all staff and students
- . in large schools, decentralize first aid equipment, student lists, and instructions for turning off gas, electricity, water, etc.
- . be aware of your area's lines of communication, disaster planning, emergency channels, etc.
- . obtain battery-operated C.B. radio, and learn local emergency radio frequencies
- . designate an outdoor evacuation assembly area
- . ensure staff knowledge of industrial first aid.

During

- . take cover and assume "CRASH" position.

After

- . stay calm: your attitude will act as a role model for everyone
- . ensure that all power, fuel, and water mains have been shut off
- . account for all staff and students
- . in a major quake, await instructions from emergency officials over battery-operated, or car, radio
- . oversee conservation and distribution of uncontaminated water as well as preparation of emergency facilities
- . allow dismissal of students only when it is safe to travel and a designated adult comes for him/her; keep accurate records of students released.

Parent/Guardian

Before

- . be aware of school's earthquake policy and procedures
- . provide school with name of alternative guardian.

During

- . take cover under table, bed, or in doorway away from windows in "CRASH" position.

After

- . do not phone the school - they may be trying to reach you or emergency response services
- . when safe to travel, go to the school to collect your child - your child will NOT be released otherwise
- . if you are unable to reach the school, contact the designated guardian to collect your child.

Maintenance Staff

Before

- . co-ordinate with principal to identify and eliminate, if possible, potential interior and exterior earthquake hazards
- . inspect chemical storage areas regularly
- . establish earthquake drill with responsibilities for shutting off power, fuel, and water mains clearly described
- . establish procedure for setting up emergency toilets, uncontaminated water supplies, and first aid centres
- . know location and use of fire fighting equipment.

During

- . stay calm and take cover in "CRASH" position.

After

- . immediately carry out pre-arranged duties; e.g., shutting off gas main, fire fighting, water supply control, etc.
- . report to principal and assist in search and rescue, if necessary
- . with supervisor, determine safety of building for possible re-entry
- . assist in setting up emergency facilities, if necessary.

Bus Driver

Before

- . be acquainted with school earthquake procedures
- . obtain radio-phone or C.B. radio for bus.

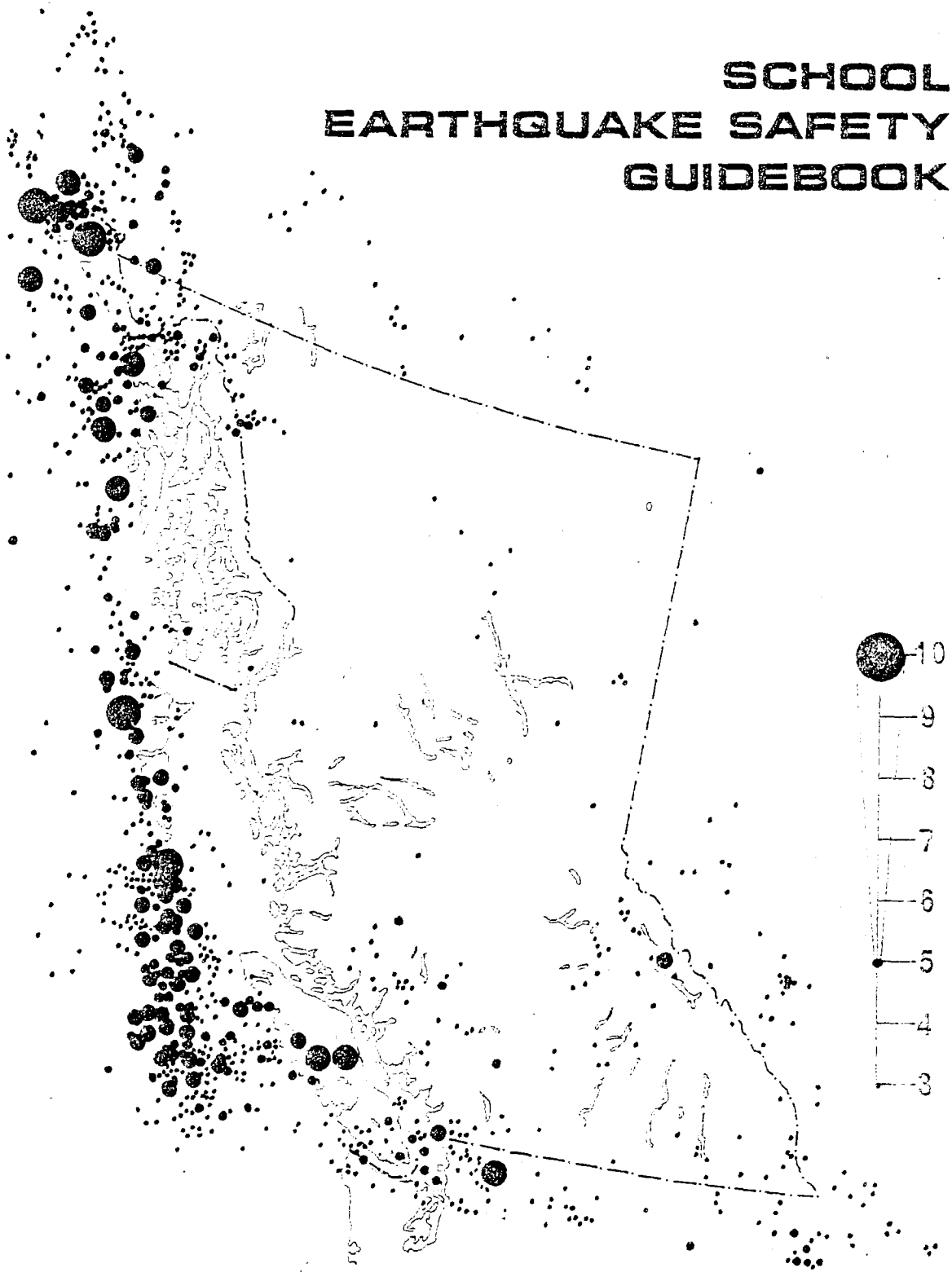
During

- . stop bus away from power lines, overpasses, bridges, etc., pull into side road or driveway, if possible
- . stay in the bus
- . with students, assume "CRASH" position between seats or in aisles and count aloud to 60.

After

- . if roads are passable, proceed with caution
- . if bus is immobilized in an unsafe position, evacuate to an open area because of danger of aftershocks
- . administer first aid, if necessary
- . when safe to do so, proceed with students on foot to nearest undamaged shelter
- . contact supervisor, school, police, or other emergency authority by any means possible without leaving students unattended
- . stay with the students until help arrives or until instructed to move.

SCHOOL EARTHQUAKE SAFETY GUIDEBOOK



SCHOOLS EXCELLENCE

ACKNOWLEDGEMENTS

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INTRODUCTION

The first indication of an earthquake may be:

- . a low or loud rumbling noise
- . a sudden violent jolt
- . a shaking and moving of objects.

Earthquakes have shaken British Columbia since the time of Indian legend. Southwest B.C. is in a dynamic geological setting called a subduction zone, similar to that in western Mexico. Continuous movement of the earth's plates in this region builds up stresses that result in earthquakes. Small tremors actually occur daily, but periodically the movement becomes dangerously large. Although the risk is highest in the coastal region, earthquakes can and do occur anywhere in B.C.

In 1946, an earthquake of 7.3 magnitude caused serious damage in Courtenay on Vancouver Island. (In comparison, the September 1985 earthquake in Mexico had a magnitude of 8.1.) Thirty schools in Courtenay school district were damaged; fortunately, it was Sunday morning and the buildings were empty. In 1965, just south of the border in Seattle, an earthquake of 6.5 magnitude caused damage to eight schools and death to seven people in the community.

The purpose of this guidebook is to assist school district staff, teachers, parents, and students to make their schools safer, and to know what to do before and after an earthquake occurs in their area.

SAFETY PROGRAM

It is recommended that an earthquake safety program be established and maintained in every school district. To organize this program, each school board should form an Earthquake Safety Committee.

Members could be:

- . school principals
- . district maintenance staff
- . teachers
- . parents (PTA)
- . trustees
- . senior grade students.

The committee may also recruit experts from the community, either as committee members or as resource persons; for example:

- . local fire, police and emergency officials
- . Red Cross or St. John's Ambulance personnel
- . geologists, structural engineers, geophysicists, doctors
- . municipal building inspectors
- . communications experts such as local radio or newspaper people and ham radio operators.

The first task for the committee should be to define its main objectives; for example to:

- . initiate earthquake drills in the schools
- . initiate hazard reduction procedures
- . prepare a response plan
- . establish a communications plan.

Guidelines on how to achieve these objectives are contained in this guidebook.

After having defined its objectives, the district committee may delegate tasks to individual school principals or district staff; for example:

- . implementation of earthquake drills
- . introduction of staff training programs
- . identification and correction of hazards
- . preparation of local response plan
- . preparation of local communications plan.

Local school responsibilities can either be undertaken by the principal personally, or delegated to a school working group comprising perhaps an administrator, a teacher, a parent, and a senior grade student.

EARTHQUAKE DRILLS

Earthquakes happen with no warning; therefore, life-protecting actions must be taken at the first indication of ground shaking. Even in the most severe earthquakes, buildings rarely collapse completely. Injury and even death are most often caused by the shattering and falling of non-structural elements such as window glass, ceiling plaster, lighting fixtures, chimneys, roof tiles, and signs. There will be no time to think what to do; therefore, of all earthquake-preparedness measures, EARTHQUAKE DRILLS ARE THE MOST IMPORTANT.

Regular earthquake evacuation drills should occur separately from, but with the same frequency as fire drills. Drills should regularly simulate emergencies such as jammed doors, and blocked hallways and stairways.

Drills

The following are recommended drill procedures for a teacher and class of students:

- . TAKE COVER under desks or tables
- . FACE AWAY from windows
- . ASSUME "CRASH" POSITION on knees, head down, hands clasped on back of neck or head covered with book or jacket
- . COUNT ALOUD to 60; earthquakes rarely last longer than 60 seconds and counting is calming.

The teacher should:

- . issue the TAKE COVER order
- . also take cover for 60 seconds
- . review evacuation procedures.

If the teacher is injured, two student monitors should have designated authority to give instructions.

In other areas of the school, at the first sign of an earthquake, occupants should:

- . move away from windows, shelves and heavy objects that may fall
- . take cover under a table or desk, in a corner or doorway
- . in halls, stairways and other areas where no cover is available; move to an interior wall, kneel with back to wall, place head close to knees, clasp hands behind neck, cover side of head with arms
- . in the library, move away from where books and bookshelves may fall, take cover

- . stay inside; usually the most dangerous place is just outside where building debris may fall; exit only after shaking has stopped
- . in science laboratories, extinguish all burners, if possible, before taking cover; stay away from hazardous chemicals that may spill
- . in other areas, such as gymnasiums, auditoriums, music rooms, and industrial education shops, the district or school committee should prepare appropriate guidelines based on the above.

Simulation exercises should occur outdoors as well as inside the school. Students and teachers should move to an open space away from buildings and overhead power lines; lie down or crouch because legs will be unsteady, and look around to be aware of dangers that may require movement.

On the school bus, the driver should stop the bus away from power lines, bridges, buildings, and overpasses; occupants should remove heavy objects from overhead racks, stay in seats, and hold on to the seat in front.

Indoors or outdoors TAKE ACTION AT THE FIRST INDICATION OF AN EARTHQUAKE.

After an earthquake, building evacuation should occur as soon as possible, due to the possibility of aftershocks, building collapse, fires, and explosions.

Students should:

- . EVACUATE the building in single file when instructed by the teacher or monitor
- . KEEP CALM
- . WEAR SHOES
- . DO NOT use an elevator.

Teachers should:

- . INSTRUCT students to evacuate when all shaking has stopped
- . LEAD CLASS to the designated assembly area
- . BE PREPARED to choose alternative escape route in case of fire or exit blockage
- . TAKE class list, I.D. tags, first aid kit
- . APPLY I.D. information to all primary and injured students
- . GIVE FIRST AID, if necessary
- . DO NOT re-enter the building unless instructed by the principal.

Copies of the standard drill procedures should be given to each teacher to implement in the classroom. In fact, an earthquake may not occur during the childhood of the students. However, the earthquake safety lessons they learn will stay with them and be useful in adulthood, both for themselves and to pass on to their children. Handicapped students should participate.

Discussions and Projects

Earthquake drills should be preceded by classroom discussions. These should be about the need for and purpose of drills. Teachers should dispel myths such as "the earth will open up and swallow you". The contents of this guidebook may be used to explain what to expect, what to do, and why.

The noises of building movement, windows breaking, and objects falling, that accompany an earthquake, can cause emotional stress and panic. Students should be prepared for this by classroom discussion.

Students can carry out projects that are both useful and educational; for example:

- . prepare an earthquake safety kit to be kept near the exit door, students can suggest contents, e.g.,
 - copy of class roll book
 - first aid supplies
 - flashlight and spare batteries
 - felt pen (for I.D. marking)
 - games
 - plastic garbage bags for emergency protection.
- . make posters describing what to do in the event of an earthquake
- . identify hazards in the classroom, school, school grounds, neighbourhood, and home
- . illustrate this guidebook.

Evaluation

Periodically, the district committee and principals should evaluate the effectiveness of their earthquake drills. The following checklist may be used both for evaluation and in the initial planning of the drills:

- . have complete 'quake-safe' action drills been issued to all concerned?
- . are all students and staff familiar with the "take cover" procedure?
- . have students and teachers demonstrated their ability to take cover immediately?
- . do students know what to do in areas without shelter?
- . do students stay quiet during drills?
- . are teachers able to maintain relative calm and reassure their students?
- . do students and teachers know and understand evacuation procedures?
- . does everyone know their safe evacuation assembly area?
- . do teachers remember to take their class roster and evacuation checklists to the assembly area after evacuation?
- . have other staff members practised their roles during earthquake drills?
- . have emergency variations been practised; e.g., exits blocked, aftershocks occurring, etc.?
- . have students had ample opportunity to discuss their fears and concerns about earthquakes, including how they can help each other?
- . have parents been informed about the earthquake drills?
- . have the drills been extended into the family and home?

HAZARD REDUCTION

The following is from a report on the non-structural damage that occurred to five schools shaken by an earthquake in California:

- Windows** The 31-year-old junior high library had eight-by-ten foot double-height glass windows on the north and south walls. All windows imploded and littered the room. There were dagger-shaped pieces everywhere. The floor tile and wooden furniture were gouged with flying glass. The school superintendent believes that, had school been in session, death and serious injury would have occurred in the library. The glass in the library windows was not tempered.
- Lights** Approximately 1,000 fluorescent bulbs fell from their fixtures and broke. Many fixtures also came down. There were no safety chains on the fixtures. Although hanging fixtures suffered much more damage than recessed fixtures, glass in the older recessed fixtures was shaken out and broke. The elementary school library lost all its fixtures.
- Chemicals** In the second-floor high school chemistry lab, sulphuric acid and other chemicals stored in glass containers in open cabinets overturned and broke. Acid burned through to the first floor. Cupboard doors sprang open and glass cabinet doors broke, allowing chemicals to fall. The lack of electric ventilation caused toxic fumes to permeate the building.
- Basements** Where water pipes entered through concrete walls, they were severed by the movement of the walls. Basements were flooded to five feet. All electrical supply and switching mechanisms were in the basement; all were destroyed by water.
- Equipment** File cabinets flew across the room; bookcases fell over; free-standing cupboards, cabinets and shelving fell. Machine shop lathes and presses fell over.

Hazards can be considered in three categories:

- . Classroom hazards that can be corrected by students and teachers
- . Maintenance hazards that require special skills for correction
- . Neighbourhood hazards that possibly cannot be corrected, but can be taken into account in the response plan.

The following are suggestions on how to eliminate hazards:

Classroom Hazards

- . heavy loose objects that could cause injury should not be stored on shelves or hanging where they can fall more than one metre above the floor
- . hazardous materials such as may be found in science laboratories and industrial education shops must be stored in an approved cabinet or a designated storage room
- . aquariums should be located away from seating areas.

Maintenance Hazards

- . all industrial education machine tools and equipment must be securely fastened to the floor or wall
- . all kitchen equipment in teaching kitchens and home economics rooms must be secured against rolling or overturning
- . exhaust hoods should be secured to structure
- . lockers, shelves, cupboards, bookcases, filing cabinets, storage racks, pianos, etc., exceeding the height of one metre above the floor should be secured to structural member(s) of a wall or partition
- . clocks, projection screens, TV monitors, heavy pictures, light fixtures, and similar appendages should be secured to a structural member of a wall or partition

- . unreinforced masonry chimneys should be removed, if possible, and replaced with a metal flue secured to the structure; alternatively, the chimney may be braced to the roof structure with metal reinforcing angles and straps; unreinforced masonry of any kind should be removed, if possible, or braced
- . covered play areas and other free-standing structures may be braced at low cost, in consultation with a structural engineer
- . appendages over access doors or footpaths should be removed if practical; alternatively, check the support and possibly provide additional fixing to structure
- . slate and tile roofs should be checked, and loose pieces refixed; a restraining board may be fitted at the eaves; in the long-term, replace with metal roofing or asphalt shingles
- . tee bar and other ceiling spaces should be checked to ensure that all components are firmly secured to the floor or roof structure above
- . glass lighting fixtures should be replaced with plastic
- . plain glazing in hazardous locations should be replaced with tempered glass, wired glass, or polycarbonate sheets
- . any old slate chalkboards or marble toilet partitions should be replaced with modern fixtures
- . heavy gymnasium equipment should be secured to the structure or braced against overturning.

It is recommended that, prior to assessing hazards throughout the school, a plan or plans of the school and grounds are prepared. Such a plan(s) will:

- . enable the location of all hazards to be shown
- . assist in the preparation of emergency response procedures
- . enable evacuation routes to be shown
- . identify the location of safe assembly areas
- . enable the location of the following items to be shown:
 - power line routes (overhead and underground)
 - gas, water and sewer lines
 - outside faucets

- mains switches and shut-off valves
- mechanical equipment
- hazardous materials storage
- fire extinguishers
- first aid equipment

Neighbourhood Hazards

The purpose of identifying neighbourhood hazards is to assist in the planning of post-earthquake procedures such as the designating of assembly areas. It may be impossible to reduce such hazards, but to know what can happen is the basis of a good earthquake safety program.

This list may be compiled with assistance from the local municipal police or fire authorities, utility companies, and federal or provincial emergency program personnel:

- . facilities containing hazardous materials; e.g., gas stations
- . high-voltage power lines
- . major traffic routes; e.g., freeways and railway lines
- . major oil and natural gas pipelines
- . transformers and underground utility vaults
- . multi-storey buildings vulnerable to collapse
- . water towers
- . landslide areas
- . flooding from collapsed dams or dykes
- . exposure to tsunamis (seismic sea waves).

RESPONSE PLAN

A response plan should provide short-term shelter (one-two hours) for the entire school population and long-term shelter (up to 24 hours) for students whose parents have been unable to collect them. The long-term plan must take into account the fact that an earthquake can occur at any time during the day; in the middle of winter; that the building may be unsafe for re-entering; and all services, including telephones, may be disrupted.

The First Two Hours

During the first two hours after an earthquake, adults in a school must cope with many tasks, such as to:

- . organise building evacuation and security
- . provide first-aid to injured persons
- . check and account for all those who were in the school
- . provide all students with identification tags indicating name, age, address, phone, parents' names, work address and phone, any medical problems
- . organize search and rescue teams to locate missing persons
- . extinguish small fires
- . check damage to utilities, if necessary shut off main power, gas and water
- . seal off areas where hazardous materials have been spilled
- . calm and reassure frightened persons
- . authorize release of students to parents, keep records of such releases
- . establish communication with emergency assistance, and other schools in the district
- . handle the traffic into and out of the school grounds
- . distribute emergency supplies and equipment
- . prepare for long-term care and shelter.

The following planning decisions should be made in preparation for the first two hours:

- . who will give instructions to evacuate the building?
- . how will this be done if the P.A. system is damaged?
- . what should be done if an aftershock occurs during evacuation?
- . have evacuation routes and assembly areas been established; are they the same as fire escape routes and areas; if not, why not, and could this cause confusion?
- . are there any potential hazards along the evacuation routes?
- . what emergencies could occur and what should be done if, for example, power fails, exit door jams, debris blocks exit, fire breaks out, students are injured and should not be moved?
- . in the worst weather conditions possible, where will the school population find short-term shelter?
- . how will all persons be identified and kept track of?
- . how will the arrival of parents, and the handover of their children be processed?
- . what steps can be taken to reduce anxiety and fear among students and adults?
- . if it is necessary to evacuate the school grounds, how will this be accomplished and how will parents be informed of the new location?

In addition, the following information should be established:

- . a chain of command for decisions after an earthquake
- . a list of emergency response agencies; e.g., fire, police, gas, electricity
- . procedures to provide for first aid, search and rescue, communication, building damage assessment, and student security
- . location(s) of outdoor assembly areas, first aid stations, command and communication station, student release station
- . a list of persons responsible for various actions and/or with required skills
- . an inventory of supplies and a plan of the school.

Expert judgement may be needed to determine whether or not buildings are safe for re-entry. The emergency response plan should contain the names of local engineers and other experts who can assess:

- . structural and non-structural damage
- . damage to utilities
- . the likelihood of fire
- . hazardous material spills.

Care and Shelter

Within two hours after a major earthquake, most parents will come to collect their children. However, some parents may be unable to reach the school, either because of transportation difficulties or because they are casualties themselves. Obviously, young children must not be released to go home alone.

General care and shelter guidelines should be included in a district response plan. However, each school will have individual problems and solutions that will need to be addressed locally, for example:

- . based on an analysis of the number of parents working, single parents, locations of home and workplace, what is a reasonable estimate of the numbers and ages of children that may require long-term care and shelter?
- . what is the likelihood of the school building surviving a major earthquake and, if unlikely, what alternative shelter arrangements can be made?
- . if long-term care and shelter has to be provided:
 - what supplies are needed?
 - have any individual special medication needs been identified?
 - which adults will undertake the long-term care?

Answers to some of these questions should take into account that shelter plans may be influenced by the type of construction of the school building. Preplanning advice from architects, engineers, and other experts may determine the likelihood of a building being able to survive an earthquake and, therefore, provide shelter.

For example, an old, three-storey, masonry building should not be relied on for shelter, whereas a single-storey, masonry building built to current standards probably will remain intact. Arrangements might be made for local experts to visit each school within a few hours after any serious earthquake to give advice on re-entry.

Outdoor shelter plans may use the practical knowledge of local organizations such as "outdoors" clubs and scout groups.

The district may allocate specific "safe" schools for the provision of long-term care and shelter. St. John's Ambulance and Red Cross guidelines may be used for the equipping of these schools. The following items might be included:

- . first aid supplies
- . soap, towels, cleaning and sanitation supplies
- . food and cooking equipment
- . potable water
- . bedding.

Except for basic supplies, it is not practical for a school to store large quantities of these items. Arrangements for storage and delivery by parents and neighbours can be made.

In addition to the physical needs of students and staff, anxiety and fear are to be expected after a major earthquake. Young students particularly should be encouraged to express their concerns, while at the same time be continually reassured about, for example:

- . the likelihood that parents may be delayed because of traffic disruption
- . reminders that parents have been told that students are being cared for.

To keep students occupied, they can:

- . be encouraged to express their feelings through drama, art and writing
- . be encouraged to comfort each other; physical contact can reduce feelings of separation, loneliness and fear
- . discuss the chores that will face everyone at home; emphasizing their role in restoring order
- . review the actions that would be necessary if there was an aftershock.

Training

To improve the quality of the potential response of staff, teachers, and students following an earthquake the district committee should:

- . keep an up-to-date list of teachers and staff members trained in first aid/CPR
- . provide regular training and refresher courses in first aid/CPR by association with the local St. John's Ambulance or Red Cross organizations
- . consider providing first aid training for students (this has far wider benefits than for response to earthquakes)
- . consider training of staff and teachers in:
 - fire detection and abatement
 - how and when to turn off utilities
 - search and rescue techniques
 - mental trauma alleviation.

These subjects should be discussed with local fire department and ambulance personnel who may provide recommendations for contact with other sources of related skills.

Communications

After an earthquake, the following may occur:

- . loss of electrical power and telephone lines may disrupt communication systems for a long period
- . the telephone switchboard may be swamped by incoming calls
 - if it is working
- . traffic may jam-up around the school
- . unauthorized persons may volunteer to take students home.

The response plan should contain a communication plan prepared in association with local fire, police, and hospital, the local emergency planning program office, and the local media (radio and TV stations). That plan should provide for alternative ways to convey and receive messages.

Reporting procedures should be developed; e.g.:

- . to whom reports should be given
- . how to report, in the absence of telephone and power

- . the use of portable two-way radios
- . the use of local radio and TV stations
- . the identification and use of amateur radio "hams"
- . what information should be given; e.g., condition of buildings and occupants, emergency situations
- . do not contribute more than necessary to the overloading of emergency systems; e.g., in the first hour use telephones only to report life-threatening situations
- . when using radio communication to emergency services, keep messages clear and brief
- . if there is no way to report to the outside authorities, pre-planning may assume helicopter and/or ground reconnaissance
- . a visual signal system for air/ground reconnaissance may use coloured flags or canvas panels to communicate prearranged messages such as "medical help needed" or "we are all O.K."; do not place signals on a roof in case of unperceived structural damage and/or aftershocks.

Copies of the district communications plan should be retained in every school and also by all the local emergency organizations.

Periodically, simulation exercises should be carried out to test the effectiveness of the plan, assuming a variety of scenarios.

The following equipment items are suggested for each school to facilitate communications. Such items can also have application in other more normal situations:

- . the public address system installation can be linked to an emergency power system such as that provided for the normal emergency lighting
- . a battery-powered megaphone
- . battery-powered walkie-talkies and portable two-way radios
- . coloured flags or canvas panels for isolated schools to communicate prearranged signals to air or ground reconnaissance.

Parent Awareness

The most important feature of a communications plan is the means for communicating with parents. It is imperative that parents are aware of the plan, otherwise they may risk their own safety and also impede the organized procedures to retrieve their children.

The policies and rules that parents should follow must be clearly stated at parent meetings and in letters to parents. At least one such letter per year should be sent, and it would be most effective to also send a letter immediately after public news of an earthquake elsewhere.

The following is a sample letter:

Dear Parent:

Because our school is located in an earthquake-prone area, we want to remind you that, in the event of an earthquake occurring, the following procedures will be followed.

No student will be dismissed from school unless a parent (or guardian designated by a parent) comes for him/her.

No child will be allowed to leave with another person, even a relative or babysitter, unless we have written permission to that effect or that particular person is listed on the student's emergency card in our files. With this in mind, if your child's card is not up-to-date, please request a new card from our office.

All parents or designated guardians, who come for students, must have them signed out at the office or at the alternative Student Release Station at the entrance to the school yard. Signs will be posted (indicate where) if this alternative location is being used.

We are prepared to care for children in the event of a critical situation, or if parents are not able to reach the school. We have a number of people with first aid certificates, and will be in communication with local emergency services. We do ask for your help in the following areas:

- please do not call the school; we must have the lines open for emergency calls
- following an earthquake or other emergency, do not immediately drive to the school; streets and access to our school may be cluttered with debris; the school access route and street entrance areas must remain clear for emergency vehicles
- do turn your radio to _____ or _____ on the A.M. dial; information and directions will be given over the radio.

INDIVIDUAL CHECKLISTS

Checklists should be prepared summarising what each person should do before, during, and after an earthquake. The following pages provide samples that can be adapted to individual situations. For example, students' and teachers' checklists can be made into wall posters for the classroom.

Student

Before

- . learn what to expect and what to do during an earthquake
- . identify hazards in the classroom, school, home
- . participate in earthquake drills
- . know the name and address of your guardian, if designated by your parent(s).

During

- . follow teacher's instructions
- . TAKE COVER under a desk or table
- . ASSUME "CRASH" POSITION
- . COUNT to 60
- . if out of the classroom, take cover in a doorway in the "CRASH" position; count to 60, join the nearest class when shaking stops.

After

- . follow evacuation instructions from teacher or designated monitor
- . wear shoes
- . put on identification tag
- . comfort and reassure other students
- . DO NOT use an elevator
- . DO NOT re-enter school without permission
- . DO NOT go home without permission; be aware that your parent/guardian may be delayed in coming for you
- . talk about what has happened.

Teacher

Before

- . hold classroom discussions
- . practise drills
- . hold hazard hunts, correct hazards where possible
- . appoint two student monitors in case you are injured
- . prepare class lists and identification tags with name, address, phone number, age and medical alert information.

During

- . issue the TAKE COVER order at first sign of tremor
- . assume "CRASH" position for 60 seconds
- . talk calmly to reassure students
- . review evacuation procedures.

After

- . instruct students to evacuate
- . lead class to the designated assembly area
- . be prepared to choose alternative escape route in case of fire or exit blockage
- . take class list, I.D. tags, and first aid kit
- . administer first aid, if necessary
- . do not re-enter the building unless instructed by the principal
- . write I.D. information on foreheads of primary and injured children, if tags not available
- . reassure students
- . remind students that parents may be delayed in calling for them
- . encourage students to talk about their fears and anxieties.

Principal

Before

- . set up a chain of command, and define staff roles and responsibilities (first aid, roll call, search and rescue, etc.)
- . establish earthquake and evacuation drills for all staff and students
- . in large schools, decentralize first aid equipment, student lists, and instructions for turning off gas, electricity, water, etc.
- . be aware of your area's lines of communication, disaster planning, emergency channels, etc.
- . obtain battery-operated C.B. radio, and learn local emergency radio frequencies
- . designate an outdoor evacuation assembly area
- . ensure staff knowledge of industrial first aid.

During

- . take cover and assume "CRASH" position.

After

- . stay calm: your attitude will act as a role model for everyone
- . ensure that all power, fuel, and water mains have been shut off
- . account for all staff and students
- . in a major quake, await instructions from emergency officials over battery-operated, or car, radio
- . oversee conservation and distribution of uncontaminated water as well as preparation of emergency facilities
- . allow dismissal of students only when it is safe to travel and a designated adult comes for him/her; keep accurate records of students released.

Parent/Guardian

Before

- . be aware of school's earthquake policy and procedures
- . provide school with name of alternative guardian.

During

- . take cover under table, bed, or in doorway away from windows in "CRASH" position.

After

- . do not phone the school - they may be trying to reach you or emergency response services
- . when safe to travel, go to the school to collect your child - your child will NOT be released otherwise
- . if you are unable to reach the school, contact the designated guardian to collect your child.

Maintenance Staff

Before

- . co-ordinate with principal to identify and eliminate, if possible, potential interior and exterior earthquake hazards
- . inspect chemical storage areas regularly
- . establish earthquake drill with responsibilities for shutting off power, fuel, and water mains clearly described
- . establish procedure for setting up emergency toilets, uncontaminated water supplies, and first aid centres
- . know location and use of fire fighting equipment.

During

- . stay calm and take cover in "CRASH" position.

After

- . immediately carry out pre-arranged duties; e.g., shutting off gas main, fire fighting, water supply control, etc.
- . report to principal and assist in search and rescue, if necessary
- . with supervisor, determine safety of building for possible re-entry
- . assist in setting up emergency facilities, if necessary.

Bus Driver

Before

- . be acquainted with school earthquake procedures
- . obtain radio-phone or C.B. radio for bus.

During

- . stop bus away from power lines, overpasses, bridges, etc., pull into side road or driveway, if possible
- . stay in the bus
- . with students, assume "CRASH" position between seats or in aisles and count aloud to 60.

After

- . if roads are passable, proceed with caution
- . if bus is immobilized in an unsafe position, evacuate to an open area because of danger of aftershocks
- . administer first aid, if necessary
- . when safe to do so, proceed with students on foot to nearest undamaged shelter
- . contact supervisor, school, police, or other emergency authority by any means possible without leaving students unattended
- . stay with the students until help arrives or until instructed to move.