

# EARTHQUAKE PLANNING FOR BUSINESS

A GUIDE FOR BUSINESSES IN BRITISH COLUMBIA



**epicc**  
Emergency Preparedness for  
Industry & Commerce Council



Institute for Catastrophic  
Loss Reduction

Institut de Prévention des  
Sinistres Catastrophiques



Emergency Preparedness for  
Industry & Commerce Council

[[www.epiccc.org](http://www.epiccc.org)]

EPICCC is a nonprofit, government-endorsed society supported by and for the benefit of businesses and institutions throughout British Columbia, established to influence and help businesses prepare for emergencies and disasters.

EPICCC provides a supportive forum in which businesses are encouraged to practice effective emergency management procedures with a goal of surviving disasters. Membership is open to businesses, organizations and government agencies of all sizes.

### **MISSION**

To lead businesses in preparing to survive a disaster.

### **VISION**

Disaster resilient businesses within disaster resilient communities.

### **PURPOSE**

Disaster survival of business, industry and commerce for our communities.

---



Institute for Catastrophic  
Loss Reduction

Institut de Prévention des  
Sinistres Catastrophiques

[[www.iclr.org](http://www.iclr.org)]

Founded in 1998 as a coordinated joint effort among Canada's property and casualty insurers, the University of Western Ontario and other partners, the Institute for Catastrophic Loss Reduction is a research institute committed to multi-disciplinary disaster prevention research and education. Its mission is to reduce disaster losses by identifying and supporting actions that reduce human vulnerability and improve societal capacity to anticipate, mitigate, withstand and recover from disasters.

The activities of the Institute are built around four organizational priorities:

- Build safer communities
- Establish safety partnerships
- Enhance industry awareness
- Promote consumer awareness

---

© Emergency Preparedness for Industry and Commerce Council

Published May 2003

ISBN No. 0-9732213-7-2

Cover art supplied by Bill Adams [[www.myartclub.com/bill.adams](http://www.myartclub.com/bill.adams)]

# Table of Contents

<b>Table of Contents</b>	1
<b>Introduction</b>	2
<b>Why Earthquake Planning is Important for B.C. Businesses</b>	3
<b>Before an Earthquake: Preparedness</b>	
Emergency Planning	6
The Emergency Plan	7
Risk Assessment	8
Emergency Preparedness Checklist	9
Utilities Checklist – Gas and Electricity	11
Utilities Checklist - Telecommunications	12
Fire Management Checklist	13
Employee Awareness and Education Checklist	14
Internal Aid and Response Team Checklist	15
Evacuation Procedures Checklist	16
Special Needs Checklist	17
Water and Food Checklist	17
First Aid Supplies Checklist	18
Emergency Supplies Checklist	18
<b>Before an Earthquake: Mitigation</b>	
Workplace Hazards Checklist	19
Computer Network Server Checklist	20
<b>During an Earthquake: Response</b>	
Information for Employees	21
<b>After an Earthquake: Response</b>	22
<b>After an Earthquake: Recovery</b>	
Utilities Information	23
Business Recovery Checklist	24
Insurance Checklist	26
<b>Next Steps</b>	27



# Introduction

This guide is designed to assist B.C. workplaces to minimize life, property and economic losses following a major earthquake. Whether you own, rent or lease your property, whether you are a large or small business, and whether you are a volunteer or the Chief Executive Officer of your organization, this guide is prepared for you.

The guidelines herein are intended to equip B.C. business owners, managers, supervisors and employees with the tools to develop earthquake preparedness and response plans and procedures by:

- Offering guidance and a standard approach to earthquake planning
- Providing a framework with which to prepare your organization for its specific earthquake vulnerabilities
- Providing a template for developing your organization's emergency plans

To use this guide, you will not need an in-depth knowledge of emergency management. What you *do* need is the authority to create a plan and a commitment from the most senior members of your organization to make earthquake preparedness part of your workplace culture.

If your organization already has a plan, use this guide as a resource to assess and update it.

This document is not specific to sectors or industries. It is intended as a general guide to assist business managers or corporate emergency planners with a range of issues that will aid in the preparation of their own specific earthquake emergency preparedness plans.

Each building and type of occupancy has individual conditions, so each owner or operator must tailor his or her emergency plan to fit actual needs and operating styles. In summary, the intent of the guide is to help initiate the planning process and improve preparedness over time, as business needs dictate and as the availability of funding permits.

*As you proceed through the checklists, do not be discouraged if you initially answer "no" to many of the questions.*

**NO** →  **YES**

**REMEMBER** that every corrective action increases the earthquake preparedness of your business. The resulting information should help you prepare an emergency plan specific to your needs and requirements.

## **Disclaimer**

*This guide is meant to provide practical and reliable earthquake preparedness, response and recovery information for B.C. businesses. The information represents the best, most current information available at the time of publication and is offered to proactively reduce life, property and economic losses in the event of an earthquake. Its use, however, cannot guarantee the safety of people or property.*

**Liability for any losses that may occur in an earthquake, or as a result of using these guidelines, is specifically disclaimed.**

# Why Earthquake Planning is Important for B.C. Businesses

## **The Earthquake Threat**

Canada has experienced many earthquakes of significant magnitude. The most serious loss of life in any recorded Canadian earthquake occurred in 1927, when a submarine earthquake measuring magnitude 7.2 occurred beneath the Grand Banks south of Newfoundland, causing an underwater landslide. This created a massive tsunami (sea wave) which drowned 27 people.

The West Coast experienced two magnitude seven earthquakes in the early 1900s, one on Vancouver Island in 1918 and the other offshore in 1929. One of the best-documented quakes was a 1946 event near Courtenay, which measured magnitude 7.3. The shock was felt throughout most of Vancouver Island, Vancouver and the Lower Mainland. In the Courtenay region, thirty schools had to be closed due to earthquake damage and one person was killed.

The largest recorded earthquake in Canada had a magnitude of 8.1, occurring off the Queen Charlotte Islands in 1949. Luckily, because the islands are sparsely populated, damage was minimal.

Experts believe that British Columbia is not only susceptible to a major earthquake, but that one is long overdue. While the magnitude of such an earthquake cannot be predicted, recent events in California and the Pacific Northwest have heightened awareness of the need for emergency planning, preparedness and risk management before a major earthquake occurs.

## **The Earthquake Impact**

The impact of earthquakes on B.C. workplaces could be severe in terms of life, property and economic losses. Business owners, managers, supervisors, and employees all must be aware of not only the physical and emotional impact an earthquake could have on their lives, but also of the economic impact of lost productivity in the workplace.

In the 1989 Loma Prieta earthquake in the San Francisco Bay Area, for example, it is estimated that 50% of small businesses in Santa Cruz were permanently disabled. Of 1100 businesses surveyed following the 1994 Northridge earthquake in California, 25% failed to recover from the damage. The loss of jobs directly related to these events had a significant economic impact on the area.

In the 1995 Kobe, Japan earthquake, direct property losses alone amounted to US\$147 billion, not including equipment and inventory losses. It is estimated that an additional \$50 billion to \$150 billion was lost due to indirect business interruption and lost production. More than 1000 small and medium sized businesses closed permanently, largely due to the prolonged period of reduced cash flow.

In Canada and the United States, experience with earthquakes has demonstrated that most buildings in the affected area will survive a large event with minimal structural damage. However, non-structural damage often renders buildings inoperable for an indefinite period. Typical damage ranges from toppled building contents (shelving and filing cabinets) to severe water damage resulting from ruptured water lines.

It is imperative that individuals recognize, plan and prepare for the impacts of a large earthquake occurring at the workplace by ensuring that plans are developed, implemented and practiced regularly to minimize the physical, property and economic losses.

The following guidelines are offered to encourage and support the development and implementation of programs and procedures to provide staff with the training and preparation needed to be able to survive a damaging earthquake.

## **The Importance of Emergency Planning**

Experience in other jurisdictions indicates that many businesses are ill-prepared for most disasters, particularly earthquakes.

The goal of earthquake planning for business is to promote safety, minimize impact and assist in a speedy recovery. Planning should be aimed at ensuring that employees, facilities and business activities are prepared to meet emergency conditions.

If you are a business owner, your employees are your most important asset and must be protected. Similarly, if you own a building, the well-being of businesses that reside within are tied to your economic interests. If these are disrupted in some way, that income stream may be interrupted or lost.

The objectives of earthquake planning are:

- To minimize potential for injury/death of employees and customers
- To evaluate and reduce hazards
- To reduce expenses caused by loss and liability
- To put tested procedures and equipment in place
- To plan for business resumption following an earthquake

## **Workplace Regulations**

Workplaces throughout Canada are legally required to comply with the Canada Labour Code and its general charge of responsibility:

*"Every employer shall ensure that the health and safety at work of every person employed by the employer is protected."*

If you are not familiar with the Canada Labour Code, details can be viewed on-line at: <http://laws.justice.gc.ca/en/L-2/>.

In addition, workplaces throughout British Columbia are required to comply with the provincial Workers Compensation Act (1998) and with the current Occupational Health and Safety (OHS) Regulations. If you are unfamiliar with the Workers Compensation Act or the OHS Regulations, details can be viewed on-line at <http://www.worksafebc.com/> or the official version may be acquired from Crown Publications at:

521 Fort Street  
Victoria, B.C. V8W 1E7  
Phone: (250) 386-4636  
Fax: (250) 386-0221  
email: [crown@pinc.com](mailto:crown@pinc.com)

## **The Value of Earthquake Planning**

- Earthquake planning is all-hazard planning; it ensures preparedness for a variety of hazards, including fire, hazardous spills, flooding, power outages and communication failures.
- Earthquake planning helps an organization fulfill their moral responsibility to protect employees, the community and the environment.
- Earthquake planning facilitates compliance with regulatory requirements of local, regional, provincial and national governing bodies.
- Earthquake preparedness enhances a company's ability to recover from financial losses, regulatory fines, loss of market share, damages to equipment and products, or business interruptions.
- Earthquake planning reduces exposure to civil or criminal liability in the event of an incident.
- Earthquake planning enhances a company's image and credibility with its staff, customers, suppliers and the community at large.

## **The Earthquake Planning Guide**

This guide is organized into four sections, corresponding with the four phases of emergency management:

- Preparedness
- Mitigation
- Response
- Recovery

### ***Preparedness***

This section offers checklists that can be used to assess current practices and capabilities. It is meant to highlight areas that need to be strengthened in order for your workplace to be better equipped to deal with an earthquake.

### ***Mitigation***

This section identifies steps that can be taken to reduce the risk of injury or loss in the event of an earthquake.

### ***Response***

This section provides guidance on what employees should do during and immediately following an earthquake.

### ***Recovery***

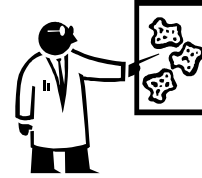
This section is meant to assess your company's existing recovery capabilities and assist in planning for recovery following an earthquake.

# Before an Earthquake: Preparedness

An essential ingredient in risk reduction is **preparedness**.

**Earthquake preparedness** includes identifying and, where practical, eliminating hazards where the impact of a major earthquake could:

- kill or injure people
- destroy or damage property
- ruin or impair business operations



It also includes both advance preparation and ongoing updates for the procedures needed to restore your operation in a timely manner following a major earthquake.

## **Emergency Planning**

The overall objective in emergency planning is to create a system that will ensure an effective and efficient response to emergency situations.

Specifically, this will include:

- Overall management and coordination of emergency operations
- Establishment of a “chain of command” and delegation of authority
- Coordination of requests for assistance and allocation of company resources and other support
- Establishment of priorities and resolution of conflicting demands for support
- Coordination of inter- and intra-regional aid and community based support
- Coordination, direction and distribution of emergency public and employee information
- Collection, evaluation and distribution of damage assessments and other essential information
- Coordination and maintenance of communication with appropriate governmental agencies and news media

In your emergency planning, it is important to remember that, following a major disaster such as an earthquake, you may need to be self-reliant for 72 hours or longer. Government emergency services such as fire, police and ambulance resources will be fully committed and immediate assistance will not be available in the aftermath of a disaster.

Roads, bridges, transit systems and essential lifelines could be severely disrupted. Senior staff may be unavailable, injured, at home or in transit. Continuity of management means planning for disruption of normal lines of authority.

*The person in charge of your business on a daily basis will likely be in charge during an emergency...but what if she or he is not available?*



# Before an Earthquake: Preparedness

## The Emergency Plan

Many organizations already have a fire or evacuation plan for their facilities. If you have a smaller business, without a plan of any type - for fire, earthquake or any other major emergency - this general plan may provide a framework for you to get started.

A plan is only one element of a broader program of preparedness. It helps to ensure that employees are aware of the possibility of an emergency and the company's approach to responding to an emergency.

### QUESTIONS TO BE ANSWERED:

*Do you have an emergency plan of any type?*

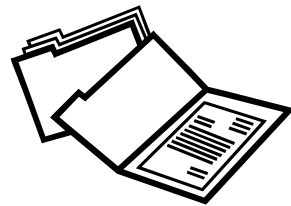
*Are you organized for emergency planning?*

*How vulnerable is your business to damage, injury and loss?*

*What can be done to reduce risks to employees and their families?*

*What will you and your staff do when the earthquake strikes?*

*How soon will you be able to resume business following an earthquake?*



### ELEMENTS OF THE WRITTEN PLAN:

#### A. INTRODUCTION

- Purpose of plan
- Objective of plan
- Company policies
- Emergency preparedness summary

#### B. RISK ASSESSMENT

- Types of hazards
- Levels of loss associated with hazards
- Business impact analysis
- Mitigation of hazards

#### C. EARTHQUAKE PREPAREDNESS

- Organization/structure
- Mitigation of hazards
- Utilities, records and essential services
- Employee awareness, training and procedures
- Supplies and resources

#### D. EARTHQUAKE RESPONSE

- Life saving actions
- Damage assessment
- Notification and mutual aid
- Utilities

#### E. BUSINESS RECOVERY / CONTINUITY

- Staff availability and facility assessment
- Supplies and services
- Staffing call-back scheme
- Data network and telecommunications



# Before an Earthquake: Preparedness

## Risk Assessment

To decide how much action is required to reduce the vulnerability of your business to an earthquake, you must first estimate your risk. Earthquake risk varies from location to location, business to business, structure to structure and person to person.

	YES	NO
Have measures been taken to reduce the risk of injury (or even death) of building occupants as a result of an earthquake?	<input type="checkbox"/>	<input type="checkbox"/>
Do you know the costs of repairing or replacing your building after a large earthquake?	<input type="checkbox"/>	<input type="checkbox"/>
Do you know the cost to your business of not being able to use your building(s) after a large earthquake?	<input type="checkbox"/>	<input type="checkbox"/>
Does your building comply with the latest revisions to building and fire codes and other applicable requirements?	<input type="checkbox"/>	<input type="checkbox"/>
After being faced with a major emergency or loss of operating capacity, can your company or business recover its competitive position quickly and efficiently?	<input type="checkbox"/>	<input type="checkbox"/>
Have critical functions and processes been identified and appropriate recovery strategies considered?	<input type="checkbox"/>	<input type="checkbox"/>

These may be difficult questions. However, a "no" answer simply points you in the direction of the information that you need to obtain, or actions that you need to follow.

Risk assessment forms the basis of how much effort, time and money a business or building owner wishes to assign to each potential emergency situation and how much time and effort is reasonable to expend in improving a structure.

***"All-Hazard" Approach:***

*Earthquakes can trigger related hazards (e.g. fire, water damage). As such, a good earthquake plan can also assist in dealing with other, more "regular" emergencies such as fires, floods and power outages.*

# Before an Earthquake: Preparedness

## Emergency Preparedness Checklist



YES	NO
-----	----

- Does your business have an Emergency Plan that includes earthquakes?
- Does your business have an emergency preparedness program that acknowledges its employees as its most important asset and that their safety and well-being is a major concern?
- Does your business have a person or department responsible for developing/updating its Emergency Plan, with the responsibility to implement it after an earthquake?
- Does your business have a specific Emergency Plan for each building, integrated with the emergency plans of other building tenants? Does the plan integrate with the overall building fire safety and evacuation plans?
- Have you met with your local emergency preparedness coordinator to ensure that your emergency procedures and plans are integrated with your local government's overall emergency planning measures?
- Are there designated response personnel including back-ups within each building (and for each floor)?
- Do all persons who could be called upon to implement any portion of your Emergency Plan know what could be expected of them?
- Do you have clear, explicit and up-to-date notification procedures and a call-out list covering both business and non-business hours?
- Does your Emergency Plan identify telephone numbers - and other means of communicating - for community response agencies such as fire, police, ambulance or utilities? Are these contact numbers updated regularly?
- Does your Emergency Plan deal with the hazards of flying glass, collapse of a building or its components such as ceilings, light fixtures, overturned furniture and equipment, as well as fires caused by damage to utility lines or pipes?
- Has your company or business designated an alternate site of operations?
- Are mutual aid agreements in place with nearby businesses for temporarily accommodating each other's employees and operations?
- In multi-use buildings, are all tenants involved in or aware of your emergency plans?
- Does the company have a required inspection schedule to reduce potential hazards?

# Before an Earthquake: Preparedness



## Emergency Preparedness Checklist (cont'd)

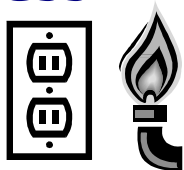


YES	NO
-----	----

- Are all Workers Compensation Board rules and regulations for emergency preparedness followed?
- Is a Current Assets Register kept up-to-date?  
(Useful for identifying lost/destroyed items for insurance claims.)
- Are operating and leasing records, legal and financial information and other important documents kept in a secure, fireproof facility on-site, as well as duplicated and stored in a secure, fireproof facility off-site?
- Are there drawings showing "essentially as built" details of your facility which are stored off-site?
- Are you aware that modern buildings with sealed windows may have to be evacuated if power fails and air conditioning systems shut down?
- Are you aware that any building may have to be evacuated if power failures prevent fans from clearing carbon monoxide, particularly from underground parking facilities?
- Does your location have an emergency generator that starts automatically if commercial power fails?
- Do employees know how to operate the generator and is there enough fuel for at least 24 hours?
- Are there lists of maintenance personnel available to perform emergency repairs?
- Does your location have battery-operated auxiliary lights which come on automatically if commercial power or emergency power fails?
- Have emergency lighting levels been checked for adequacy?
- Are batteries checked on a regular (e.g., monthly) basis?
- Have provisions been made to protect fire suppression systems from earthquake damage (e.g., sprinkler, carbon dioxide, Halon)?
- Has the company formulated a policy for the unique preparedness arrangements required for employees/customers having physical disabilities?
- Does the plan take into consideration that outside help probably will not be available to the company for perhaps three days or more after a major earthquake?

# Before an Earthquake: Preparedness

## Utilities Checklist – Gas and Electricity



YES	NO
-----	----

- Do employees know what gas smells like, where to check for problems, and when or when not to shut the supply off?
- Do you know that unnecessary shutoffs of natural gas or propane may result in long delays while waiting for service to be restored?
- Do all employees know where the main gas service shutoff valve is located and how to turn it off?
- Do employees know NOT to turn the gas back on once it is off without the services of a qualified individual?
- Has a crescent wrench approximately 30 cm (12") long been stored in a location where anyone needing to turn off the main gas service valve will find it?
- Have you contacted your gas utility if the meter appears vulnerable to vehicular traffic, or objects falling from overhead structures?
- Is gas piping, water piping, sewage piping, electrical conduits, etc. secured against excessive movement and protected from objects that could fall from overhead structures?
- Have air conditioning and cold water supply systems been made earthquake-resistant?
- Does your business have a reliable heating company to do regular maintenance on all gas appliances? (This company can assist in the re-lighting of appliances and doing repairs after an earthquake).
- Have employees been informed of the location of the main service shutoff and shutdown procedures?
- Are alternate power sources available? (e.g., emergency generators, emergency lighting)
- Are procedures in place to routinely (e.g., monthly) test alternate emergency power sources?
- Are all main switches and/or breakers clearly identified as to their function in electrical rooms/vaults?
- Is electrical equipment such as transformers, breakers and switchgear adequately secured?
- Are procedures in place to ensure the shutdown of machinery and equipment in an earthquake?

# Before an Earthquake: Preparedness



## Utilities Checklist – Telecommunications



YES	NO
-----	----

- Have you pre-arranged for a distant (out-of-province) contact to act as your Company Message Centre in the event of a major earthquake?
- Have key clients been advised to check with that contact in the event of an earthquake?
- Have provisions been made for an alternate communications system so employees can communicate with their families?
- Has a notification network been established using "fan-out" or alternate reporting site call procedures to facilitate distribution of information to employees and their families?
- Are you aware that loss of electrical power could result in your telephone network being inoperable unless you install an "Uninterruptable Power Supply"?

# Before an Earthquake: Preparedness

## Fire Management Checklist



YES	NO
-----	----

- Are periodic fire safety drills conducted?
- Do trained employees and/or municipal fire department personnel conduct fire inspections on a regular basis?
- Is your facility equipped with an approved fire alarm and/or voice alerting communication system?
- Do fire exit areas have battery-operated auxiliary lights which come on automatically if commercial power or emergency power fails?
- Do all employees understand alarms and signals for evacuation (auditory and/or visual)?
- Is there an approved smoke control system?
- Is your facility equipped with a fire suppression system?
- Have these systems been evaluated for seismic capabilities, in accordance with the requirements of the applicable standards?
- Are fire/smoke alarms and/or sprinkler systems periodically inspected and continuously maintained in accordance with fire code regulations?
- Are a sufficient number of fire extinguishers available?
- Are fire extinguishers located along usual paths of travel?
- Are employees trained in the location and use of fire extinguishers and any other fire emergency systems?
- Are fire extinguishers inspected monthly and serviced annually?

# Before an Earthquake: Preparedness



## Employee Awareness and Education Checklist

Employees fully aware of the potential support systems in place in the event of an earthquake, both at home and at work, will respond well in the event of such a disaster.

If your employees are properly trained in their responsibilities and duties prior to, during, and after an earthquake, the magnitude of personal injuries, damage to equipment/property and business interruption can be kept to a minimum. Failure to educate and train your employees will increase the risk for significant losses in these areas.

It is also important that employees prepare their families for emergencies, so they can focus on responding to emergencies at work with less worry about family members.

The following checklist is designed to assist businesses to evaluate their awareness and training needs for emergency planning.

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	Are emergency plans and procedures part of your company employee training program?
<input type="checkbox"/>	<input type="checkbox"/>	Are all floor plans prominently posted, showing exit routes and stairwells from floor areas?
<input type="checkbox"/>	<input type="checkbox"/>	Have you completed a survey of your employees' skill levels?
<input type="checkbox"/>	<input type="checkbox"/>	Have you developed a list of your company's emergency response training requirements (e.g., first aid, building damage assessment, light rescue, survival, fire extinguisher usage)?
<input type="checkbox"/>	<input type="checkbox"/>	Do all employees understand their duties and responsibilities during an emergency or disaster?
<input type="checkbox"/>	<input type="checkbox"/>	Are personnel familiar with emergency shutdown procedures and controls in their work area?
<input type="checkbox"/>	<input type="checkbox"/>	Are all employees fully aware of the meaning of different audible and/or visual alarm devices?
<input type="checkbox"/>	<input type="checkbox"/>	Have employees created a family emergency plan at home? Have employees prepared personal emergency kits for their families to be self sufficient for 72 hours or longer?
<input type="checkbox"/>	<input type="checkbox"/>	Have employees arranged out-of-area telephone contacts for themselves and their families? Have they arranged meeting places for their families (e.g., weekday, weeknight, weekend)?



# Before an Earthquake: Preparedness



## Internal Aid and Response Team Checklist



YES	NO
-----	----

- Do you have an employee emergency response team to deal with all emergency situations?
- Have emergency response team members been trained in their duties, such as site security, rationing food and materials, defining tasks and making assignments, determining if stairs are safe, directing evacuation and maintaining records of emergency supplies?
- Have emergency response team members been given the responsibility and training for Building Damage Assessment and basic search and rescue following the earthquake (because help may be hours away)?
- Have Emergency wardens, recorders and runners been designated to organize employees, customers, and co-ordinate their activities after the earthquake?
- Have Emergency wardens, recorders and runners been instructed in their responsibilities with respect to building management, city officials and other key emergency services personnel?
- Have Emergency wardens been instructed to inspect each work area to determine what equipment and furnishings might potentially fall and injure employees?
- Is there a schedule for giving Emergency wardens, recorders and runners training sessions once or twice a year?
- Does your company encourage employees to be trained in first aid and cardiopulmonary resuscitation (CPR)?
- Have realistic drills been scheduled to verify that procedures are sound and that important components have not been overlooked?

# Before an Earthquake: Preparedness



## Evacuation Procedures Checklist



YES	NO
-----	----

- |                          |                          |   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Does your business have an evacuation plan which specifies who will make the decision whether or not to evacuate?           |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your evacuation plan address the evacuation of customers or clients?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Do all employees understand signals for evacuation?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Are floor plans prominently posted showing exit routes and stairways from floor areas?                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | Are exits clearly marked?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is each exit route always kept free of obstruction with a minimum clear width of 1.1 metres (44 inches)?                    |
| <input type="checkbox"/> | <input type="checkbox"/> | Is every door leading to an exit always free to open from the interior so there is no chance of anyone being locked inside? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do exit passages have emergency lighting?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is there a minimum of two alternate means to escape from floors above or below ground level?                                |
| <input type="checkbox"/> | <input type="checkbox"/> | Are elevators programmed to return to the ground floor level automatically in the event of an emergency?                    |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you have a pre-determined meeting area established so employees know where to report after evacuating the building?      |

# Before an Earthquake: Preparedness

## Special Needs Checklist



YES	NO
-----	----

- Have employees with special needs (e.g., hearing, sight, pregnancy, or mobility impairments) been identified?
- Has an evaluation been made of the special needs of each disabled employee in the event of an earthquake (i.e., working with each person to assess their needs)?
- Have Emergency Wardens been directed to recruit specific individuals as "buddies" to assist persons with special needs in emergencies?
- Have disabled employees been advised to carry medical information and extra medical supplies?
- Have employees requiring special equipment been advised to have back-up equipment?  
(e.g., extra batteries for powered wheelchairs or hearing aids, alternative power supplies for respirators, and extra catheters or bladder pads because toilets may be out of operation.)
- Has evacuation drill been conducted specifically to evaluate special needs of employees and customers?

## Water and Food Checklist

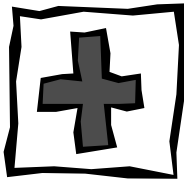


YES	NO
-----	----

- Is there a supply of fresh water sufficient to sustain employees, visitors and customers for 72 hours or longer?
- Is the water kept in appropriate unbreakable, non-transparent containers?
- Is stored water replaced periodically? (Note: Self-bottled water must be changed every three months)
- Is there a supply of non-perishable food sufficient to sustain employees, visitors and customers for 72 hours or longer?
- Is the food supply periodically replaced to maintain freshness?
- Are food supplies locked up to ensure their availability in an emergency?
- Is food stored at multiple locations?
- Is food and water stored in locations least vulnerable to destruction in an earthquake?

# Before an Earthquake: Preparedness

**First Aid Supplies Checklist**



YES	NO
-----	----

- Are first aid supplies kept readily available and in a cabinet safe from damage?
- Are there enough medical supplies to handle a heavy casualty load that could result from an earthquake? (Note: minimum first aid requirements per Worker’s Compensation Board regulations would not be sufficient for a significant disaster response)
- Are first aid supplies dispersed to locations throughout the office to be convenient to all employees and accessible in a disaster?
- Are first aid supplies portable in case they need to be moved to safer locations in an emergency?
- Are first aid supplies secured so they will be available when needed and can be strictly controlled?
- Are there enough supplies to handle the needs of clients, visitors and others whom the business may have some legal liability to protect?
- Are first aid supplies regularly inspected and replenished?
- Have some employees been trained in the use of all of the medical supplies?
- Are supplies available to deal with fatalities?
- Do you have pager and telephone numbers for first aid attendants?
- Do you have an “on call” first aid attendant at all times?

**Emergency Supplies Checklist**

YES	NO
-----	----

- Does each floor of your building have an adequately stocked and easily recognizable Emergency Supplies Cabinet?
- Is there an emergency supply of sanitary materials such as toilet paper, plastic garbage bags and powdered lime?
- Is there a warm blanket or sleeping bag available for each person?
- Are flashlights and spare batteries or emergency lightsticks available?
- Are tarps or plastic sheets available to construct an emergency shelter if necessary?

# Before an Earthquake: Mitigation

## Workplace Hazards Checklist



### A. BUILDING AND EXTERIOR

YES	NO
-----	----

- Is the workplace in an earthquake-resistant building?
- Have exterior building components been checked by qualified professionals for security and adequacy of support (e.g., awnings, chimneys, cornices, fascia, signs)?

### B. INTERNAL INFRASTRUCTURE

YES	NO
-----	----

- Are interior partitioning walls securely anchored to the floor and to adjoining walls, with tops adequately braced to the overhead structure?
- Are separate hot water tanks securely braced to prevent movement and reduce probability of gas leaks and/or water leaks?
- Can large panes of glass that might shatter and injure employees be designed or installed to eliminate potential injuries due to shattering?
- Are the heating systems and air ducts covered with insulation that could spill particles into the heating/cooling system if an earthquake causes pipe connections to break?

### C. ROOM CONTENTS

YES	NO
-----	----

- Has a qualified professional inspected all of your offices and other work locations for structural and non-structural earthquake hazards?
- Are cabinets, bookcases and free-standing storage racks and shelves securely anchored to prevent tipping during intense shaking?
- Are overhead objects such as light fixtures, air-handling units, space heaters and ceiling tiles sufficiently secured so they will not break free during intense shaking?
- Are desk drawers, file drawers, and cabinet doors fitted with secure latches and kept closed when not being accessed?
- Are personal computers, printers, telephones and other potential projectiles secured to desks?
- Are restraints installed across the front of shelves to prevent them from dumping their contents?
- Are heavy objects stored on lower shelves, lighter objects on higher shelves?

# Before an Earthquake: Mitigation

## Workplace Hazards Checklist (cont'd)

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	Have heavy mechanical or manufacturing equipment and appliances been adequately anchored or otherwise restrained?
<input type="checkbox"/>	<input type="checkbox"/>	Are toxic materials (including photocopier toner, janitorial cleaning products and other building maintenance supplies) safely stored?
<input type="checkbox"/>	<input type="checkbox"/>	Is space beneath desks and tables kept clear and readily accessible for use as a place of refuge during an earthquake?
<input type="checkbox"/>	<input type="checkbox"/>	Is a hammer or similar device available to break earthquake resistant-glass in the event that escape through windows is required?

## Computer Network Server Checklist



YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	Have built-up floors in the computer server room been braced?
<input type="checkbox"/>	<input type="checkbox"/>	Are all walls and light fixtures braced?
<input type="checkbox"/>	<input type="checkbox"/>	Are all ceiling grids braced to handle sway?
<input type="checkbox"/>	<input type="checkbox"/>	Has computer equipment and tape storage shelving been anchored?
<input type="checkbox"/>	<input type="checkbox"/>	Have cables and their connections been tested for ability to resist a major earthquake?
<input type="checkbox"/>	<input type="checkbox"/>	Have air conditioning and cold water supply systems been made earthquake-resistant?
<input type="checkbox"/>	<input type="checkbox"/>	Are there plastic or vinyl tarps/covers available to prevent damage to computers from fire suppression systems or pipe leakage in the area?
<input type="checkbox"/>	<input type="checkbox"/>	Are essential computer databases, programs and software, backed up off-site sufficiently often to facilitate a timely business recovery? Is backup hardware available?
<input type="checkbox"/>	<input type="checkbox"/>	Has your company developed a comprehensive disaster preparedness plan for its electronic data processing facilities?

# During an Earthquake: Response

## Information for Employees:

### REMAIN CALM

#### AT WORKPLACE:

- Do not leave your work area unless you are clearly in danger where you are.
- **DUCK, COVER AND HOLD:** Crouch down and cover your head and neck with your hands. Get under a nearby desk or heavy table and hang onto it; if it moves, move with it. Stay there until the shaking has stopped completely.
- Watch for falling plaster, bricks, light fixtures and other objects.
- Keep away from file cabinets and other heavy objects that may fall.
- Move away from windows.
- Wait to use stairs until advised that they are safe.
- Take directions from your floor warden.

#### OUTSIDE:

Stay outside, move into open areas - well away from buildings, walls, trees and power lines.

#### IN A VEHICLE:

- If driving when an earthquake strikes, move to the shoulder of the highway, away from bridges, overpasses, power lines, and large buildings as quickly as is safe.
- Stay in your vehicle and wait for the shaking to stop.

If riding public transit, the vehicle typically will stop. Remain calm and follow instructions from transit system staff members who have been trained to handle earthquakes and other emergencies.

### STAY CALM AND EXPECT AFTERSHOCKS

# After an Earthquake: Response

In the first few hours following an earthquake, the following steps should be taken:

Activate the emergency plans discussed previously in the Earthquake Preparedness section of this guide.

Activate your Emergency Response Team to:

- Assess the situation and check for hazards.
- Check for injuries and render first aid as needed. (Note: Seriously injured persons should not be moved unless doing so is the only way to avoid imminent danger of further injury.)

Monitor emergency media for damage and public safety information. If necessary, use battery-powered radios.

Check for obvious structural damage and any resulting hazards such as fires, gas leaks, exposed/arcing electrical components/wires, leaking sewage, broken water pipes, dangling fixtures/furnishings. Leave switches and valves as found unless a hazard exists.

Arrangements must be made with a professional structural engineer to inspect offices and buildings following the disaster in order to determine whether or not it is safe to re-enter or continue to operate within.

Employees must be trained not to run outside as soon as the shaking stops. They should remain calm and not use the stairways or elevators until they are notified that it is safe to do so.

- Outdoor assembly areas should be designated for employees in case they have to evacuate the building.
- Inform employees of the locations of the assembly areas.
- Instruct employees on alternate routes to the assembly areas.
- Make plans for temporary alternative shelter.
- Inform families of evacuation and alternative shelter plans.
- Inform employees to take a roll call after they have arrived at the assembly area.
- Instruct staff to make a list of employees who are missing as well as a list of those who are present, including persons who are not normally part of the office group such as visitors or temporary employees.
- Make provisions to forward lists of missing, unaccounted for, and extra persons to a central co-ordination point so unnecessary searches will not be made for employees who are at other locations. Lists will be useful for reporting on the status of employees and visitors to the authorities and to family members.



# After an Earthquake: Recovery



## **Utilities Information - Gas**

If there is no danger of fire and no smell of leaking gas, consider leaving the gas supply turned on as it may be the only source of energy available for some time.

If you do smell gas, report it immediately to the gas utility or the fire department.

If the gas odour is very strong within a building, or has a strong presence both outside and inside a building, follow these procedures:

- Evacuate everyone to at least 100 metres (325 feet) from the building; if many people are to be evacuated, solicit assistance from police and fire departments, as available.
- Extinguish cigarettes and all other potential sources of ignition.
- DO NOT operate any electrical switches; leave them as found.
- DO NOT plug in or remove any electrical cords/appliances.
- Shut off the gas supply to the building at the gas meter, using a wrench approximately 30 cm long (12").

**NEVER open a gas valve after a temporary shutoff.** When it is safe to reactivate the gas supply, only a trained, fully qualified person should do it.

## **Utilities Information - Electricity**

Treat all downed electrical wires as live, unless confirmed otherwise by a representative of the electrical utility. Report any downed wires to the electrical utility. Rope off or secure areas where downed wires are involved, maintaining a distance of a minimum of 10 metres (33 feet) from barriers to downed wires. Shut off the power to any damaged areas of the building using the circuit breakers.

## **Utilities Information - Telephone**

Ensure telephones are not used for any calls, except for emergencies requiring immediate assistance.

Replace all telephone receivers that may have been dislodged.

## **Utilities Information - Water and Sewage**

Conserve water as much as possible. Water tanks and toilet tanks are sources of stored water, but must be treated with iodine tablets before use.

If you suspect that water and sewer mains are broken near your location, shut off the water supply to your building, both to conserve your supply and avoid contamination.

If your water supply is operating, fill available containers with cold water for storage - service may still be damaged by aftershocks. NOTE: Even if working, the water supply could be contaminated by broken sewer or other water lines.

Do not use toilets if water or sewer lines are obviously broken. Make alternate arrangements for human waste disposal.

# After an Earthquake: Recovery



## Business Recovery Checklist

The effectiveness of a business recovery plan after an earthquake can mean the difference between the success or failure of your business. Business resumption operations should be initiated as soon as practical after life safety concerns and preliminary damage assessment are dealt with.

*It is estimated that 25% of small- and medium-sized businesses do not recover after a disaster...*

***Plan ahead to survive!***

YES	NO
-----	----

- |                          |                          |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company emergency plan include business resumption?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have an alternate location from which to operate?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you identified the critical functions of each department that must remain operating, and the staff needed to perform them?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have a staff succession plan in place? Can essential staff who may be injured or unavailable be replaced by other staff?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have a plan for keeping essential employees at work and for the orderly departure of non-essential employees?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have a mobilization plan for essential employees?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have sufficient food and other necessary provisions to sustain essential employees who must stay at, or return to work, after a disaster to get computer and other vital systems operating?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Is there a plan for the orderly return of various employee groups?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Do employees have proper company identification that will give them access to office locations?  |
| <input type="checkbox"/> | <input type="checkbox"/> | If you are in a branch facility or office, is there a procedure for gathering, analyzing and reporting to your headquarters data on the impact of the earthquake? (Consider injury to employees, damage to facilities, losses to shareholders, etc.) |

# After an Earthquake: Recovery



## Business Recovery Checklist (cont'd)

YES	NO
-----	----

- |                          |                          |   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Have liaison people been designated to report injuries, deaths, damage and needed resources to the appropriate authorities, including emergency services and the employees' families? |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have in place a priority list for the replacement and/or repair of facilities and equipment?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have an identified Critical Incident Stress Management plan and planned professional guidance?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have a plan or prearranged agreement with suppliers from outside the earthquake zone to provide critical parts for equipment that may have been damaged?            |
| <input type="checkbox"/> | <input type="checkbox"/> | Are essential company vehicles parked in seismically-secure locations rather than in or under unreinforced structures that could collapse?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your plan include a provision for transportation of employees and/or work crews within a disaster area?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have an auxiliary communication system, such as a radio transmitter and receiver, which can operate independently of normal power supplies?                         |
| <input type="checkbox"/> | <input type="checkbox"/> | Have arrangements been made to provide portable radio units in company vehicles if required to do business?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Have provisions been made for a communication system other than telephones, so employees can contact their families regarding their condition and vice versa?                         |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you have sufficient cash immediately available to purchase meals and supplies?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Has security been arranged to control access to facilities if your building has been damaged?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your business recovery plan include periodic exercises?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does your company have in place a priority list for the replacement and/or repair of facilities and equipment?  |

# After an Earthquake: Recovery



## Insurance Checklist

A devastating earthquake could render a business incapacitated; maybe temporarily, possibly totally.

Because the B.C. Disaster Financial Assistance Program does not provide assistance for losses suffered as a result of disaster if insurance is reasonably and readily available, it is important for businesses to secure and maintain appropriate insurance coverage. (For more information about the Disaster Financial Assistance Program, visit the Provincial Emergency Program (PEP) web site at <http://www.pep.bc.ca>)

You will want to ensure that your insurance policy(s) include earthquake as a specific peril. You will also want to make sure that they will compensate you for not only the loss of your physical property, but also the financial loss you may sustain if your business is subject to an extended shutdown after an earthquake or other catastrophic event.

Insurance policies can insure on a replacement cost basis, so it will be important to determine how much insurance coverage you need. Remember that your policy(s) will require a deductible to be paid in the event of a claim.

Insurance policies are not all alike. Some policies afford broader coverage than others. Hence, one of the first steps is to meet with a professional insurance representative to review the policy(s) to determine what is and is not covered.

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	Is earthquake insurance included in your company's policy?
<input type="checkbox"/>	<input type="checkbox"/>	Does your company have a current property appraisal?
<input type="checkbox"/>	<input type="checkbox"/>	Is there insurance to match the value of property?
<input type="checkbox"/>	<input type="checkbox"/>	Is business interruption included?
<input type="checkbox"/>	<input type="checkbox"/>	Does your company's policy include contingent off-premises coverage?
<input type="checkbox"/>	<input type="checkbox"/>	Can a temporary substitute location be funded?
<input type="checkbox"/>	<input type="checkbox"/>	Does your company's policy include coverage for all machinery and equipment, including electronic data processing equipment?
<input type="checkbox"/>	<input type="checkbox"/>	Is your company's policy limit in the general liability section sufficient?

# Next Steps

Congratulations on getting through the checklists! You have assessed your risk, evaluated your level of preparedness and learned about post-earthquake recovery. You are now ready to start a more comprehensive preparedness program to ensure that your business will be among the survivors after the next major earthquake or other disaster.

## Here are some next steps:

1. Create an emergency planning committee with interested members of your organization. Ensure that at least one member has the authority to make and implement decisions.
2. Work through the checklists to determine where further efforts are required. Divide and delegate activities as necessary.
3. Hold regular meetings to regroup, discuss challenges and share successes.
4. Attend an EPICC Member Planning Workshop, to get assistance in completing your plans and to have specific questions answered. Visit <http://www.epicc.org> for more information.
5. Stick to it. Remember that every corrective action reduces the vulnerability of your business to an earthquake.

---

**For further information on earthquakes and earthquake preparedness, contact your local municipal government or one of the following:**

**Emergency Preparedness for Industry and Commerce Council (EPICC)**

Surrey, British Columbia  
Phone: (604) 580-7373  
Fax: (604) 586-4334  
[www.epicc.org](http://www.epicc.org)

**Institute for Catastrophic Loss Reduction (ICLR)**

Toronto, Ontario  
Phone: (416) 362-6112  
Fax: (416) 361-5952  
[www.iclr.org](http://www.iclr.org)

**Provincial Emergency Program (PEP)**

Victoria, British Columbia  
Phone: (250) 952-4913  
Fax: (250) 952-4888  
[www.pep.bc.ca](http://www.pep.bc.ca)

**Office of Critical Infrastructure Protection and Emergency Preparedness (OCIPEP)**

B.C. Regional Office  
Victoria, British Columbia  
Phone: (250) 363-3621  
Fax: (250) 363-3995  
[www.ocipep.gc.ca](http://www.ocipep.gc.ca)