

Fire Safety in Private Healthcare Facilities



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Overview

- ▶ Risk Assessment
- ▶ Firefighters' Challenges
- ▶ Mitigation Measures
- ▶ Statutory Requirements

Risk Assessment - Fire

Risk - the likelihood that a person may be harmed or suffer adverse effects if exposed to a hazard

Anticipated risk	Risk nature
Fire risk	<ul style="list-style-type: none"><li>• Ignition sources: naked flames, faulty or misused electrical equipment, cooking equipment, hot surfaces, human factors<li>• Fire load: flammable liquids, medical gases, fuel, furniture, mattress, personal effects,<li>• Oxygen: oxidizing agents, medical oxygen<li>• Nearby buildings

Risk Assessment - Life

Anticipated risk	Risk nature
Life risk	<ul style="list-style-type: none"><li>• Clientele dependency<li>• Density<li>• Activities: sleeping, medical treatment<li>• Human Behaviour<li>• Risk to Firefighters

Siting Concerns

Factor	Nature
Siting	<ul style="list-style-type: none"><li>• On / Off-site Assessment<li>• Accessibility of FS appliances<li>• Water supplies<li>• Co-existence

Firefighters' Challenges

Rapid fire growth



Firefighters' Challenges

Affected by neighboring buildings

Firefighters' Challenges

Vulnerable group of people

- ▶ Restricted mobility
- ▶ Under medication
- ▶ Dependent on electrical/mechanical equipment

Firefighters' Challenges

Emergency Evacuation

Firefighters' Challenges

**Massive engagements of logistic support
and manpower**

Firefighters' Challenges

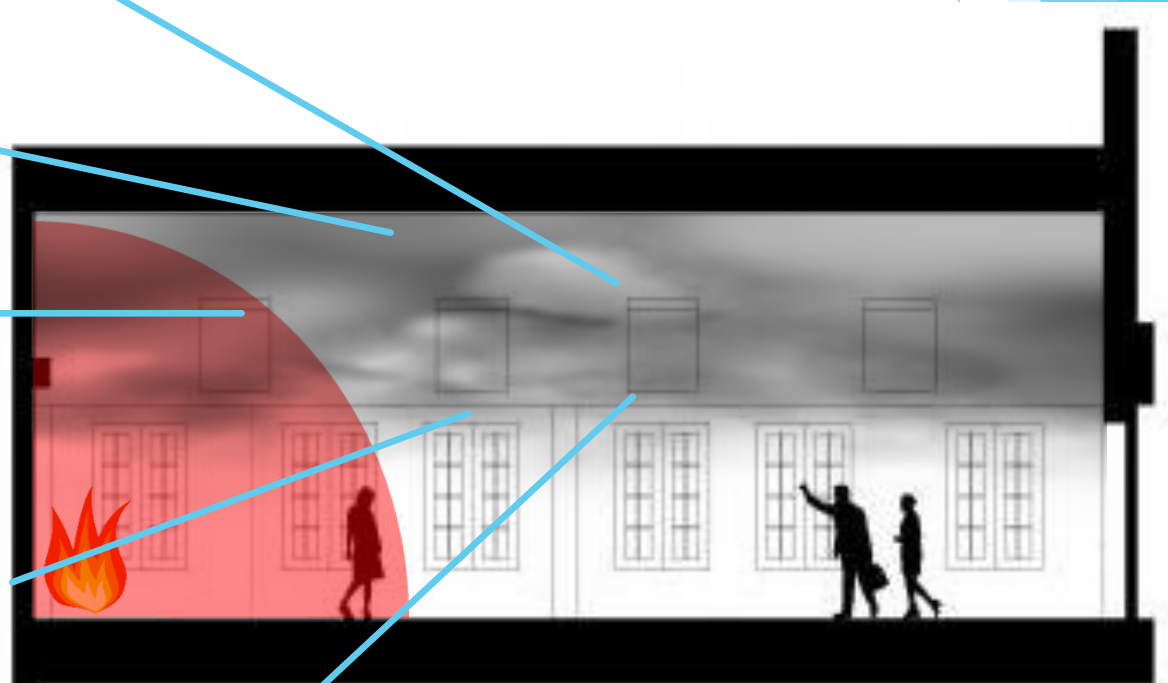
Evacuation constraints - Tenability limit

Smoke layer height: 2-2.5m

Ambient temperature $>60\text{ }^{\circ}\text{C}$

Radiated heat: $2.5\text{kW}/\text{m}^2$

Toxicity:
CO 6,000ppm
HCL 500ppm
HCN 150ppm

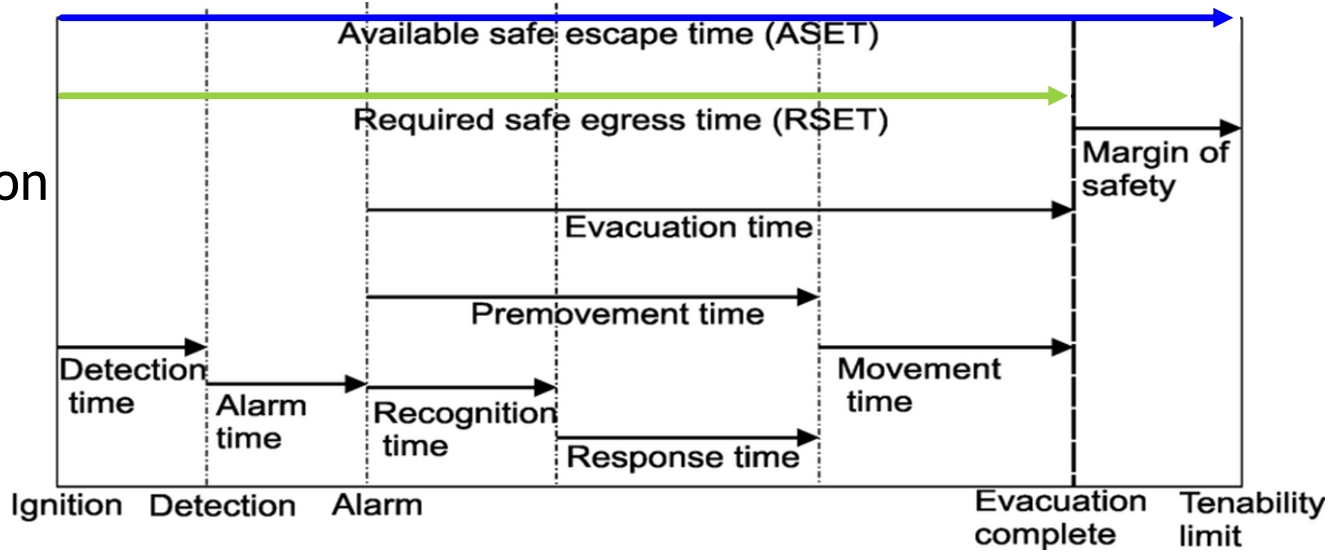


Visibility: 10m

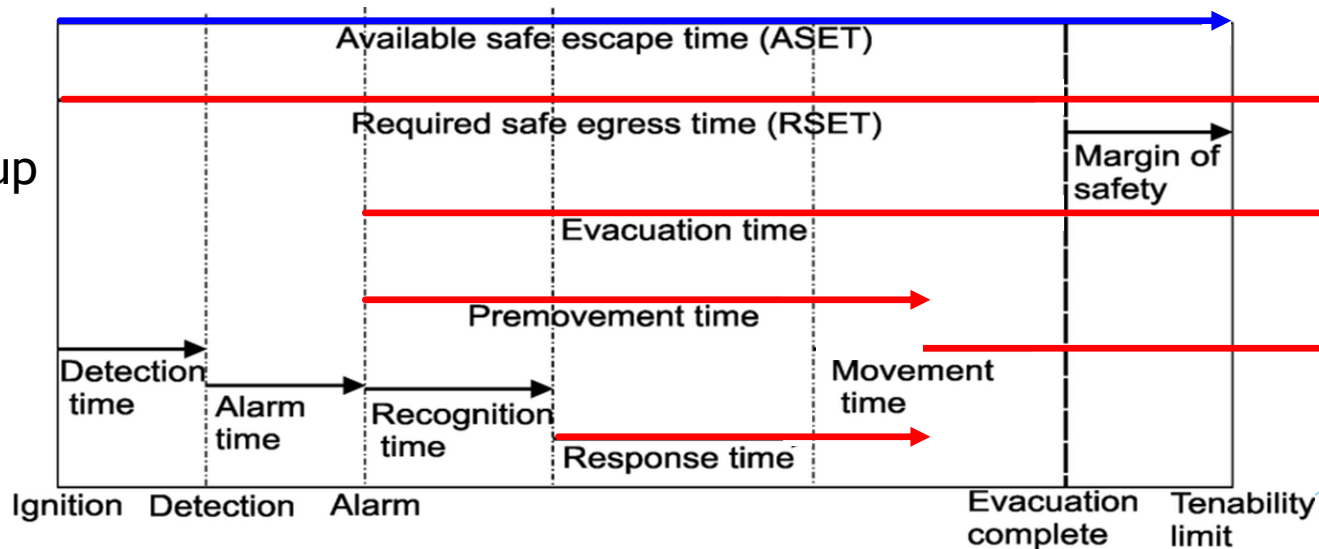
Firefighters' Challenges

Evacuation constraints - Human factors

Normal Person
 $ASET > RSET$



Vulnerable group of people
 $RSET > ASET$



Mitigation Measures - Fire Risk

Preventing, attacking & limiting the fire

Anticipated risk	Mitigation Measures
Fire risk	<ul style="list-style-type: none">• Automatic fire detection system• Sprinkler system• PU foam (Fire retardant)• Dangerous Goods control• Fire resistance rating• Fire safety management plan• Housekeeping

Mitigation Measures - Life Risk

Facilitate evacuation

Anticipated risk	Mitigation Measures
Life risk	<ul style="list-style-type: none"><li>• Emergency lighting<li>• Exit sign<li>• Reduce clientele number<li>• Compartmentation<li>• Number of escape routes and exits<li>• Evacuation strategy<li>• Management of escape routes

Mitigation Measures - Siting

Factors to be considered

	Control Measures
Siting	<ul style="list-style-type: none">• Building design• Emergency vehicular access (EVA)• Fire fighting water supplies• Co-existence with other business• Fire Safety Management

Crucial Risk Mitigation Measures

Fire Evacuation Strategy - Vulnerable group of people

Horizontal evacuation

To an adjoining fire compartment

Vertical evacuation

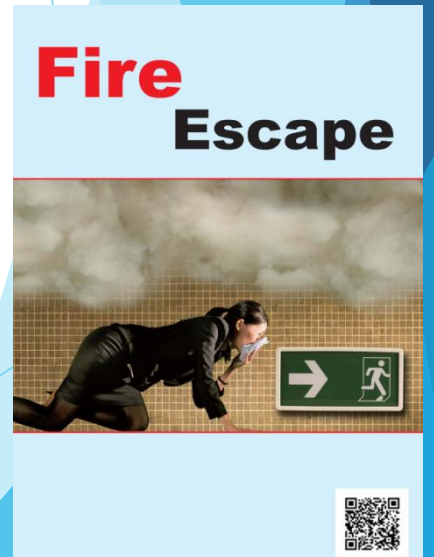
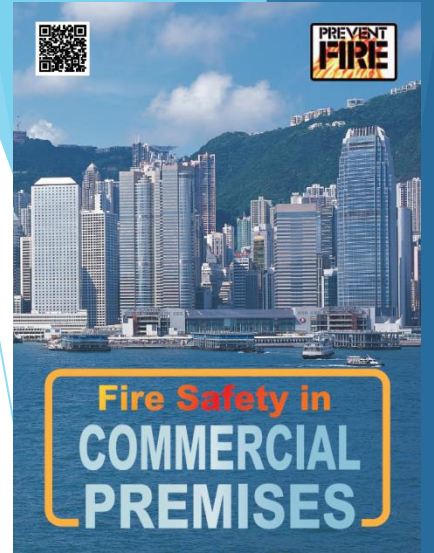
Additional risks are present to clientele during vertical escape phase

Statutory Requirements

- Fire Services Ordinance, Cap. 95, Laws of HK
- Dangerous Goods Ordinance, Cap. 295, Laws of HK
- Fire Safety (Commercial Premises) Ordinance, Cap 502, Laws of HK
- Fire Safety (Buildings) Ordinance, Cap 572, Laws of HK

Fire Services Ordinance, Cap.95

- Passageways, corridors, staircases, staircase landings and smoke lobbies clear from obstruction
- Smoke stop doors closed and unlocked
- Fire Service Installations or equipment in efficient working order
- No obstruction to any Fire Service Installations and equipment
- Annual inspection of FSI by Registered Fire Service Installations Contractor



Dangerous Goods Ordinance, Cap.295

- Manufacture
- Store
- Convey
- use



防火通告第四號
FIRE PROTECTION NOTICE NO.4

危險品
DANGEROUS GOODS

危險品條例(第295章)
Dangerous Goods Ordinance (Chapter 295)

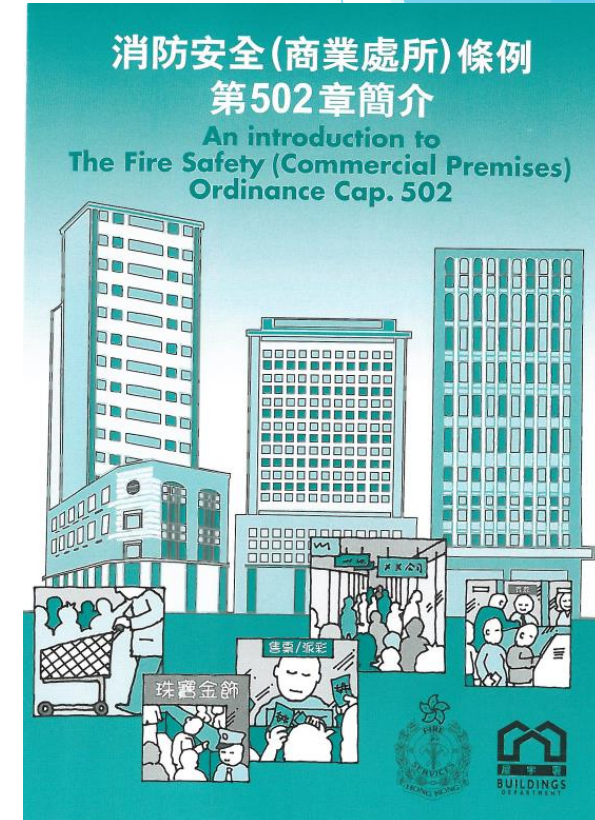
2016年4月
April 2016

Fire Safety (Commercial Premises) Ordinance, Cap. 502

Specified Commercial Buildings - Pre 1987

Specified Commercial Premises -

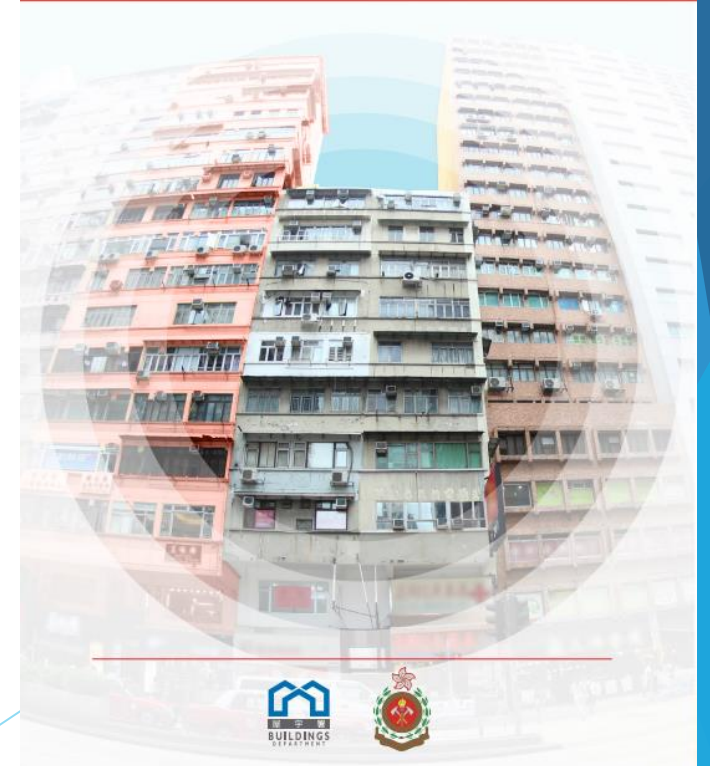
- Banking
- Off-course betting centre
- Jewelry & goldsmith with security area
- Supermarket
- Shopping arcade



Fire Safety (Buildings) Ordinance, Cap. 572

- Partly for domestic purposes and partly for non-domestic purposes; or
- For domestic purposes with more than 3 storeys; and
- Pre-1987

**An Introduction to
the Fire Safety (Buildings)
Ordinance Cap.572**



Fire Safety (Commercial Premises) Ordinance, Cap. 502

Fire Safety (Buildings) Ordinance, Cap. 572



Premises/Building		Composite Building / Commercial Building		
		Commercial/Non-domestic Portion (Cap. 502 & Cap.572)		Domestic Portion (Cap. 572 only)
		Owner	Occupier	Owner
Fire Service Installations and Equipment				
Automatic Sprinkler System		✓		
Fire Hydrant and Hose Reel System		✓		✓
Manual Fire Alarm System		✓		✓
Emergency Lighting	Common areas	✓		✓
	Non-common areas		✓	
Automatic cut-off device for the mechanical ventilating system	Common areas	✓		
	Non-common areas		✓	
Fire Extinguisher	Non-common areas		✓ (Cap.502)	



Thank you