UNSMS

Security Management Operations Manual

Chapter II

UNITED NATIONS FIRE SAFETY GUIDELINES

Promulgation Date: 28 June 2012

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I. Fire safety risk assessments

A. Introduction

1. For a fire to start, three things are needed:

   a) Heat/energy (hot surfaces, electrical equipment, static electricity, smoking, open flame, friction or abrasion);

   b) Fuel (flammable gases, flammable liquids, flammable solids); and

   c) Oxygen (always present in the air, additional sources from oxidizing substances).

Figure 1

2. If any one of these elements is missing, a fire cannot start. Taking measures to prevent the three elements from coming together will therefore reduce the chances of a fire occurring. Fire can be extinguished by removing, limiting or interrupting one or more of these elements or corrupting the chemical process of combustion.

3. Fire and the smoke containing toxic gases generated by a fire are a significant risk to life. Good management of fire safety is essential to ensure that fires are unlikely to occur; if they do occur that they are detected forthwith, likely to be controlled or contained quickly, effectively and safely; or, if a fire does occur and grow, that everyone in the premises is able to escape to a place of total safety quickly and easily in a controlled and organized manner.

B. Fire Safety Risk Assessment

4. A Fire Safety Risk Assessment must be completed by, or under the direction of, the Fire Safety Focal Point (FSFP) for each site to help ensure that fire safety procedures, fire prevention measures and fire precautions (plans, systems and equipment) are all in place and working properly at all times. The risk assessment should identify any issues that need attention. Although all issues should be addressed, resource constraints usually do not allow this to happen all at once. Risk assessments are used to establish priorities so that the most dangerous situations are addressed first. A template for recording the Fire Safety Risk Assessment is provided at annex I.

5. A Fire safety risk assessment is a methodical look at the premises, the activities carried out there (including materials, substances and machinery) and the likelihood that a fire could start and cause harm to those in and around the premises. The aims of a Fire Safety Risk Assessment are:

   a) To identify potential and actual fire hazards;

   b) To reduce the risk of those hazards causing harm to as low a level as reasonably practicable;

c) To decide what physical fire precautions and management arrangements are necessary to ensure the safety of persons in the premises and the protection of high value assets if a fire does occur.

6. A **hazard** is anything that has the potential to cause harm. Hazards are evaluated in terms of the likelihood that a problem may occur and the damage it might cause. A **risk** is the chance of that harm occurring. From this evaluation a risk level is established using a risk analysis table (see figure 2 below).[1]

Figure 2

Risk analysis table		Impact				
		Negligible	**Minor**	**Moderate**	**Severe**	**Critical**
Likelihood	**Very likely/ imminent**	Low	Medium	High	Very High	Un-acceptable
	Likely	Low	Medium	High	High	Very High
	Moderately likely	Very low	Low	Medium	High	High
	Unlikely	Very low	Low	Low	Medium	Medium
	Very unlikely	Very low	Very low	Very low	Low	Low

Likelihood: The likelihood of a fire occurring taking into consideration the hazards identified during the review.

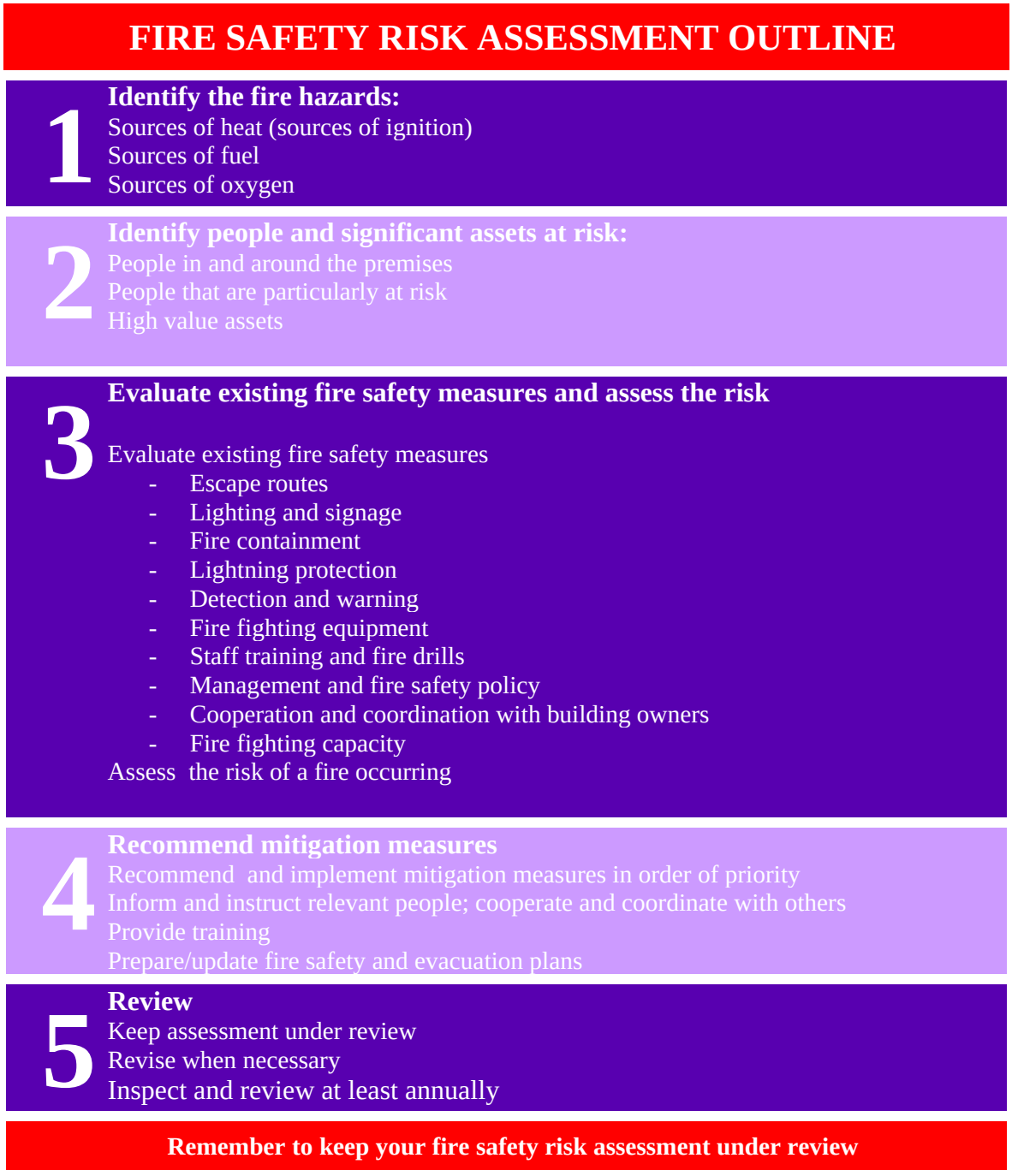
Impact: The probable impact if there is a fire.

C. Conducting a Fire Safety Risk Assessment

7. Every site and premises occupied by a United Nations organization is required to have an up-to-date written Fire Safety Risk Assessment. The FSFP in each organization is responsible for conducting the assessment or ensuring that it is completed by a competent person. Figure 3 below shows the five steps that need to be taken to complete a fire risk assessment.

[1] The risk management table is taken from the UNDSS model found in the *Security Policy Manual*, chapter IV Security Management, section A, "Policy and Conceptual Overview of the Security Risk Management Process" (2011).

Figure 3



8. A Fire Safety Risk Assessment will help to determine the likelihood of a fire starting in a location and the dangers from fire faced by people at the location or in the immediate vicinity.

9. Information for the assessment will come from employees, colleagues and representatives, from people who have responsibility for other parts of the building and from structural and building related documentation (permits, certificates etc).

For leased premises, the input and support of the building owner or manager is essential. An inspection of the premises will be necessary to provide the required details. The "Fire Safety Inspection Form" (see template at annex II) should be used to gather and record detailed information for the assessment.

10. It is important to carry out a fire safety inspection in a practical and systematic way and to allocate enough time to do the task properly. The whole premises should be taken into account, including outdoor locations and any rooms and areas that are rarely used. Small premises may easily be assessed as a whole. For larger premises it may be helpful to divide the location into a series of assessment areas using natural boundaries.

11. Once the fire safety inspection has been completed and information recorded on the "Fire Safety Inspection Form" (annex II) the assessment should be completed using the "Record of Fire Safety Risk Assessment" (annex I) and the following steps:

a. Step 1: Identify the hazards within the premises

12. Identify sources of:

a) Ignition, such as open flames, heaters, hot works, power-driven machinery developing high temperatures and/or emitting sparks, or some commercial processes;

b) Fuel, such as built-up waste, display materials, textiles or overstocked products, storage and utilization of materials/substances, stored items including potentially hazardous materials and substances;

c) Oxygen, such as air conditioning or medicinal or commercial oxygen supplies, oxidizing agents and substances/materials contributing to combustion.

b. Step 2: Identify people at risk

13. Identify people who may be especially at risk such as:

a) People working close to potential hazards and performing processes involving potentially hazardous materials/substances, tools and machinery;

b) People working alone or in isolated areas (such as in roof spaces or storerooms);

c) Children or parents with babies, the elderly or infirm and people who are physically or mentally challenged and all individuals not familiar with the premises and emergency procedures.

c. Step 3: Evaluate existing fire safety measures and assess the risk

14. Evaluate the level of risk for the premises. To effectively evaluate the risk it will be necessary to assess the adequacy of existing fire safety measures including:

a) Escape routes;

b) Lighting and signage;

c) Fire containment measures;

d) Lightning protection;

e) Detection and warning equipment;

f) Fire fighting equipment;

g) Staff training and fire drills;

h) Management and fire safety policy;

i) Cooperation and coordination with building owners;

j) Fire fighting capacity.

15. Assess the risk of a fire by considering the likelihood that a fire will occur and the impact a fire would have in terms of human, operational and financial costs to the organization.

d. Step 4: Recommend mitigation measures

16. Those hazards which pose the highest level of risk should be mitigated first; however other risks should be mitigated concurrently if the means and resources are available. Fire hazards should be removed or reduced and fire mitigation measures enhanced in order to reduce the identified risk. After introducing mitigation measures to reduce the risk as far as possible, the risk that is left (residual risk) should be assessed to determine whether it is acceptable or whether there are any further measures that should be taken to provide an adequate level of fire safety.

e. Step 5: Review

17. The risk assessment should be reviewed and updated as changes that may affect the assessment occur. In any event, a full inspection and review of the assessment should be conducted annually.

II. Fire safety planning

A. Fire Safety Plan

a. Purpose

1. A Fire Safety Plan covers designated actions that must be taken by those with key responsibilities, staff and visitors in the event of a fire. As a comprehensive management tool, the Fire Safety Plan will identify the types and locations of fire protection, alarm systems and suppression equipment; detail staff appointments and responsibilities; indicate training needs; graphically display fire escape routes, emergency exits and safe assembly areas; indicate emergency alarms, evacuation drills, telephone numbers and other essential means of communication; and identify general procedures to be followed.

2. The main objective of the Fire Safety Plan is to provide a safe environment for the occupants of the facility by:

   a) Controlling fire hazards at the facility;

   b) Ensuring that fire protection systems (especially monitored fire detection and alarm systems) and firefighting equipment are maintained, fully operational and effective and sufficient organizational means to react to fire incidents are in place;

   c) Ensuring safe, timely and effective evacuation from the premises and/or hazardous areas in the event of a fire or emergency;

   d) Establishing fire safety regulations binding for all staff and other personnel within the premises.

b. Distribution of the Fire Safety Plan

3. Full copies of the Fire Safety Plan should be distributed to the facility owner/manager, Organization Country Representative, Security Focal Point, Chief Security Adviser (CSA), Security Adviser (SA) and all organizational units/sections that have a role to play in emergency response. Subject to local circumstances and security considerations, a copy of the Plan may be provided to the local Fire Department.

4. Extracts from the Plan, such as related policies and procedures, access limitations and staff obligations must be distributed to all staff upon assuming duties and refresher briefings should be held at least annually.

c. Preparing a Fire Safety Plan

5. This section outlines what should be included in a Fire Safety Plan. This is a guide and may be adapted and rearranged to meet the specific situation at the facility to which the Plan applies. Annex III provides a sample template which may be used as

a guide in preparing a Plan, but the template plan must be adapted so that it is specific and relevant to the site/organization.

6. A Fire Safety Plan is a mandatory requirement for all United Nations premises.

7. Fire Safety Plans should include the information indicated in the headings in Figure 4 below:

Figure 4

FIRE SAFETY PLAN OUTLINE

1 Introduction
- Objectives

2 Definitions

3 General information
- Facility information
- Fire service information
- Emergency contacts (extensions, call signs, etc.)
- UN fire safety unit information (if applicable)
- Fire drills
- Training requirements

4 Control of fire hazards
- Major hazards, maintenance and housekeeping
- Hazard monitoring and control
- Fire safety policies and procedures

5 Monitoring and maintenance of fire protection systems
- Fire safety systems and equipment maintenance and inspection/certification

6 Emergency response
- Overview
- Fire and Emergency Organization (FEO)
- Procedure for reporting fire or other emergency
- Evacuation procedures
- Site plans
- Floor plans

7 Annexes
- Site plans
- Floor plans
- "In Case of Fire"
- Fire Protection Plans indicating all detection, alarm and suppression-related systems and their components

B. Content of the Fire Safety Plan

a. Section 1: Introduction

8. This section provides an introduction to the Fire Safety Plan and the objectives of the Plan and may provide an overview of the emergency evacuation procedures applicable to the facility.

b. Section 2: Definitions

9. Provide definitions of key terms used in the Fire Safety Plan to ensure readers have a clear understanding of what the Plan is referring to. In providing definitions it is essential to use terms and definitions applicable to the location of the facility. For example in defining classes of fire (Class A, B, C, etc) there are regional variations in definitions. Apply the definition used by the host country fire code or in the region of the host country if there is no country fire code. Also take into consideration the design and description on existing fire extinguishers (to avoid potentially dangerous misinterpretation of fire classes).

c. Section 3: General information

i. Building information

10. This section should contain a general description of the building and should include as much information as possible, such as access to the building, building height, distance from other buildings, type of ownership and control (leased, owned), age of building, major occupancy types (office, residential, commercial), construction type/structure (timber, steel, brick, concrete block, poured concrete), type of roof, building protection from lightning, stairs and corridors (width), core hours for the facility, overview of fire safety features (automatic sprinklers, fire alarm system, emergency power, compartmentalization, lighting, elevators for fire fighters, smoke/flame/heat detector controls, gas detection systems, etc.), refuge areas, areas requiring access restrictions (e.g. flammable liquid storage, electrical system main-boards, etc.), and the number of employees.

ii. Fire Department information

11. Provide details of the local fire service that will respond to calls in an emergency. It is in the interest of the organization for the FSFP to liaise closely with the fire service to ensure an effective response in an emergency. The Plan should detail any local fire service requirements, which may include some of the requirements discussed below.

12. In some locations the local fire code may provide the fire service with the authority to review and approve Fire Safety Plans. The fire service may require or recommend changes to procedures, organization and systems, and may have the authority to determine the method of evacuation (total, voice-controlled, etc).

13. In most locations, in the event of an alarm, the responding fire service is in charge of

fire suppression and post-event safety measures and only the officer-in-charge of the fire service can authorize the fire alarm system to be reset and declare the facility/area clear and safe for the occupants to re-enter. This section should cover this point, and if authority does not lie with the head of the fire service should clearly indicate where the authority does lie.

14. Make sure to properly specify the location where the Fire Department will be met by assigned personnel (carrying communication tools, required keys, etc.) on arrival at the facility in the event of an emergency and any obstacles which may impede access. The Plan must make provision for unobstructed access to the premises and unobstructed routes through the premises for fire appliances and other emergency response vehicles.

iii. Fire Safety Unit

15. If the facility has a dedicated Fire Safety Unit, provide details of the officer-in-charge, the mandate and the fire-fighting capacity of the unit.

iv. Fire drills

16. Detail the required minimum fire drills per year. At least two fire drills are required. Generally all occupants should participate in fire drills unless specifically exempted. Fire drills should be pre-planned. This section should outline who must be given advance notice of fire drills and who should participate in planning (e.g. building owners, fire department). Also include when a "lessons learned" debrief session will be held following drills. Fire and safety drills and briefings are to be documented.

v. Training

17. Specify the frequency at which all occupants will be reminded of their responsibility in case of a fire, as well as how frequently the fire emergency organization (fire wardens, security personnel, etc) will meet. The minimum in both cases is annually.

18. In some occupancy assembly settings where occupants are unfamiliar with the building, the Fire Safety Plan should make provisions for fire safety briefings at the commencement of assembly sessions. Provision should be made for audible evacuation announcements in the event of alarm activation (the evacuation message should be at least in the local language and English). Information about emergency procedures, escape routes and fire exits should also be accessible and visible on wall map information panels. Staff/personnel familiar with the site are to be assigned evacuation warden functions.

d. Section 4: Control of fire hazards

i. Major fire hazards, maintenance and housekeeping procedures

19. Provide details of the fire hazards relevant to the facility and the applicable general housekeeping procedures for the maintenance and control of these hazards.

20. The following paragraphs address the major workplace fire hazards common to many facilities. Hazards specific to the facility should also be included together with relevant control measures.

ii. Electrical fire hazards

21. Electrical system failures and the misuse/unauthorized manipulation of electrical installations and equipment are leading causes of workplace fires and accidents. Fires can result from loose or corrupted ground connections and/or cabling, wiring with frayed insulation, or overloaded fuses, circuits, motors or outlets, as well as from exposure of these to the environment (direct sunlight, dust, rain).

22. To prevent electrical fires, employees shall:

a) Make sure that worn wires are replaced;

b) Use only appropriately rated fuses;

c) Never use extension cords as substitutes for wiring improvements;

d) Use only approved extension cords, e.g. list the approved extension cords labels applicable to the country;

e) Check wiring in hazardous locations where the risk of fire is especially high;

f) Check electrical equipment to ensure that it is either properly grounded or double insulated;

g) Ensure adequate spacing while performing maintenance;

h) Refrain from using any electrical devices or components that have not been provided by the organization or approved by the electrical engineer and the FSFP;

i) Refrain from manipulating/tampering with any electrical device.

iii. Protection from lightning

23. Lightning associated with thunderstorms and bad weather generates a variety of fire hazards. The massive power of lightning's electrical charge and intense heat can induce destructive power surges through building electrical systems, burn holes in gas piping, explode brick and roofing materials, ignite combustible/flammable substances and cause building fires.

24. To ensure adequate protection from lightning:

a) Lightning protection systems are to be professionally installed;

b) Ensure that all persons designing, installing, testing, modifying, repairing or maintaining lightning protection system are licensed/certified;

c) Ensure that lightning protection systems are regularly inspected, maintained and tested. Special attention must be paid to the grounding connection;

d) Occupants should not tamper with, cover, obstruct or alter professionally installed lightning protection systems;

e) Any damage must be promptly reported.

iv. Portable heaters

25. All portable heaters shall be approved by a designated person/unit (preferably an electrician and the FSFP). Portable electric heaters should have tip-over protection that automatically shuts off the unit when it is tipped over. There must be adequate distance between the heater and combustible furnishings or other materials at all times.

v. Office fire hazards

26. Fire hazards are common in office space due to the frequency of use of electrical items and the prevalence of combustible materials.

27. Some measures to prevent office fires include:

a) Use only approved appliances and devices;

b) Avoid overloading circuits with office equipment;

c) Turn off non-essential electrical equipment at the end of each workday;

d) Keep storage areas clear of rubbish;

e) Ensure that extension cords are not placed under carpets;

f) Ensure that trash and paper set aside for recycling is not allowed to accumulate.

vi. Cutting, welding, open flame work and cooking facilities

28. Effective management of hazards related to cutting, welding, open flame work and cooking should be assigned to a responsible person who will ensure:

a) All necessary hot work permits have been obtained prior to work beginning;

b) Cutting and welding are done by authorized personnel in designated cutting and welding areas whenever possible;

c) Adequate ventilation is provided;

d) Torches, regulators, pressure-reducing valves and manifolds are UL[2] listed or

[2] See www.ul.com.

FM[3] approved;

e) Oxygen-fuel gas systems are equipped with listed and/or approved backflow valves and pressure-relief devices;

f) Cutters, welders and helpers are wearing eye protection and protective clothing as appropriate;

g) Cutting or welding is prohibited in areas covered by a sprinkler system while sprinkler protection is out of service;

h) Cutting or welding is prohibited in areas where explosive atmospheres of gases, vapours or dusts could develop from residues or accumulations in confined spaces;

i) Cutting or welding is prohibited on metal walls, ceilings or roofs built of combustible sandwich-type panel construction or having combustible covering;

j) Confined spaces such as tanks are tested to ensure that the atmosphere is not over 10 per cent of the lower flammable limit before cutting or welding in or on the tank;

k) Small tanks, piping or containers that cannot be entered are cleaned, purged, and tested before cutting or welding on them begins;

l) A fire watch has been established;

m) Special care should be taken if heat is used in conjunction with flammable materials in cooking, such as gas, oils and fats;

n) Ducts serving food grinders, cookers and ovens should be kept clean to avoid a build-up of grease.

vii. Flammable and combustible materials

29. Certain types of substances can ignite at relatively low temperatures and/or pose a risk of catastrophic explosion if ignited. Such substances obviously require special care and handling. A qualified/certified person should be designated to regularly evaluate the presence of combustible materials and ensure that effective control measures as listed below are in place.

Class A combustibles

30. These include common solid combustible materials (wood, paper, cloth, rubber and plastics) that can act as fuel and are found in non-specialized areas such as offices. To handle Class A combustibles safely:

a) Dispose of waste daily;

[3] See www.fmglobal.com.

b) Keep trash in metal-lined receptacles with tight-fitting covers (metal wastebaskets that are emptied every day do not need to be covered);

c) Keep work areas and movement areas clean and free of fuel paths that could allow a fire to spread;

d) Keep combustibles away from ignition sources, such as hot plates, soldering irons, heaters, heat-emitting electrical appliances or other heat or spark producing devices;

e) Store paper stock in closed metal cabinets;

f) Store rags in metal bins with self-closing lids;

g) Do not order/store excessive amounts of combustibles;

h) Make frequent inspections to anticipate fires before they start.

31. Water, multi-purpose dry chemical (ABC), foam and carbon dioxide are approved fire extinguishing agents for Class A combustibles.

Class B combustibles

32. These include flammable and combustible liquids (oils, greases, tars, oil-based paints and lacquers), flammable gases,4 and flammable aerosols. To handle Class B combustibles safely:

a) Use only approved pumps, taking suction from the top, to dispense liquids from tanks, drums, barrels or similar containers (or use approved self-closing valves or faucets);

b) Do not dispense Class B flammable liquids into containers unless the nozzle and container are electrically interconnected by contact or by a bonding wire. Either the tank or container must be grounded;

c) Store, handle and use Class B combustibles only in approved locations where vapours are prevented from accumulating and reaching ignition sources such as heating or electric equipment, open flames or mechanical or electric sparks;

d) Do not use a flammable liquid as a cleaning agent inside a building (the only exception is in a closed machine approved for cleaning with flammable liquids and in conformity with manufacturers' safety instructions);

e) Do not use, handle or store Class B combustibles near exits, stairs or any other areas normally used as exits;

f) Do not weld, cut, grind or use unclassified electrical appliances or equipment

[4] These items are listed as Class B combustibles under North American standards. European Union standards list them under Class C.

near Class B combustibles;

g) Do not generate heat or allow an open flame or smoking near Class B combustibles;

h) Know the location of and how to use the nearest portable fire extinguisher rated for Class B fires.

33. Water should not be used to extinguish Class B fires caused by flammable liquids. Water can cause the burning liquid to spread, making the fire worse. To extinguish a fire caused by flammable liquids, remove the air from around the burning liquid.

34. The following fire-extinguishing agents are approved for Class B combustibles:

a) Carbon dioxide;

b) Multi-purpose dry chemical (ABC, BC);

c) Foam (AB).

viii. Smoking

35. Smoking is prohibited in all United Nations buildings. Certain outdoor areas may also be designated as no smoking areas.

a) The areas in which smoking is prohibited outdoors are identified by NO SMOKING signs;

b) Sufficient and suitably placed ashtrays or bins are to be provided in smoking areas and should be emptied regularly. Ashtrays and bins should not be emptied into containers which can be easily ignited or with general rubbish;

c) Authorized open smoking areas should be inspected at regular intervals to ensure that safety measures are not breached.

ix. Hazard monitoring and maintenance

36. Fire hazards are identified in the Plan because they pose a risk and require control measures. A table in the Fire Safety Plan identifies personnel responsible for specific maintenance, inspection, testing and housekeeping activities for controlling fuel and other fire safety hazards.

e. Section 5: Fire safety systems and equipment management and maintenance

37. This section provides a list of all fire prevention, life safety and fire control systems including make and model (where applicable) and provides the name and contact details of the entity responsible for maintenance. Where possible the daily, weekly, monthly, semi-annual and annual requirements for various equipment, inspection, testing and maintenance should be provided.

38. The list should include fire/smoke/flame detection, alarm systems, extinguishers, fixed extinguishing systems, fire hoses, hydrants, fire fighting appliances, personal protection equipment, signage, exits, emergency power systems, intercommunication systems, electromagnetic locking devices, elevators, smoke/heat venting equipment, smoke control measures, fire pumps, water tanks and any other relevant equipment.

f. Section 6: Emergency response and evacuation

39. This section sets out the emergency response and evacuation procedures established under the Evacuation Plan including:

a) The Fire Emergency Organization (FEO);

b) Procedure for reporting fire or other emergency;

c) Evacuation procedures;

d) Site plan showing escape routes, exits, assembly point(s), fire suppression devices and installations, hydrants, etc., and routes/spaces for fire service and emergency responders;

e) Floor plans showing exits, evacuation routes, safe rooms, fire compartments, extinguishers and blankets, fire hoses and manual alarm boxes.

i. Fire Emergency Organization

40. In this section, detail the organizational structure for responding to a fire emergency at the facility. This section should include the name and contact information for key positions, which will include the FSFP, Building Fire Warden/s and Fire Wardens. If the Fire Emergency Organization has other key positions, the above information should also be recorded for each position.

41. A procedure should be established for the selection and appointment of Fire Wardens and Building Fire Wardens. This procedure may be included in the Fire Safety Plan.

42. Include a description of the duties, responsibility and authority for the key functions including the FSFP, Fire Wardens and Deputy Fire Wardens and Building Fire Wardens. The generic description of duties is provided below.

ii. Fire Safety Focal Point

43. The FSFP is responsible for coordinating fire safety for the organization in-country including:

a) Coordinating fire safety issues with facilities managers/owners, host country authorities and organization management.

b) Coordinating fire safety inspections, fire safety risk assessments and recommending remedial fire safety measures.

c) Preparing the Fire Safety Plan and Emergency Evacuation Plan.

d) Nominating and training fire wardens as part of the Fire Safety Plan.

e) Ensuring that a competent certified entity conducts periodic maintenance of fire safety and fire fighting systems, where available.

f) Rehearsing the building evacuation plans through regular drills as required by United Nations Minimum Operating Security Standards.

g) Briefing and training personnel on fire safety.

h) Monitoring adherence to fire safety policy.

i) Advising management on all aspects of fire safety.

j) In the event of a fire or an emergency evacuation, providing supervision and coordination in accordance with the Fire Safety Plan and Emergency Evacuation Plan.

44. In the event of a fire and / or emergency evacuation, providing qualified supervision and coordination in accordance with the fire Safety Plan and Emergency Evacuation Plan as outlined below:

a) Ensuring that the fire department/fire unit has been notified of the fire/fire alarm/emergency and that responders are en route;

b) Maintaining a presence at the designated fire control centre or (if qualified and equipped with personal protection equipment) at the scene;

c) Coordinating response activities (if internal and external responders are engaged);

d) Coordinating evacuation in accordance with the Evacuation Plan;

e) Providing to the fire department/fire unit a situation report (SITREP) and guidance on arrival.

45. After an evacuation:

a) Receiving a report from the Building Fire Warden once the building has been evacuated;

b) When the fire department or other authorized unit has cleared the facility and authorized occupants to return, the FSFP performs or initiates a final safety inspection, gives the “all clear” and authorizes the return to the facility or portions that have been cleared.

iii. Deputy Fire Safety Focal Point

46. The Deputy FSFP is subordinate to the FSFP and performs the duties of the FSFP in his/her absence and supports the FSFP as required.

iv. Fire Wardens and Deputy Fire Wardens

47. Each floor/designated area shall be under the direction of a team of Fire Wardens that have responsibility for the evacuation of occupants in the event of fire or other emergencies. Fire Wardens have the following responsibilities:

    a) Each Fire Warden shall be familiar with the Fire Safety Plan, the location of exits and the location and operation of manually operated fire alarm devices;

    b) When an alarm sounds, the Wardens shall put on their red cap/helmet (or item of clothing issued to identify them as wardens);

    c) Begin to direct occupants to the nearest emergency exits, inform them of the location of the Assembly Point and direct them go there once they have vacated the premises;

    d) If the Fire Safety Plan has provisions for partial evacuation, then evacuation from other floors shall be carried out when instructions are received from the FSFP (or delegate as provided for in the Evacuation Plan) or when conditions dictate such action;

    e) The Fire Wardens shall be the last persons to evacuate their area making a quick check of rest rooms and closing doors as they proceed to the exits;

    f) In the event of an occupant's refusal to evacuate, the Fire Wardens should not attempt to remove anyone forcibly. The Fire Wardens shall report this to the Building Fire Warden;

    g) Fire Wardens shall have available details of occupants on their floor with disabilities that cannot use fire stairs unaided. When evacuating the floor, arrangements must be made to assist persons with disabilities to evacuate the premises/scene to a safe area;

    h) Once clear of the building, the Fire Warden must report to the Building Fire Warden at the assembly point stating that the floor is clear, or provide details of any persons refusing to evacuate.

v. Building Fire Wardens

48. The Building Fire Warden shall be fully conversant with the Fire Safety Plan and has the following responsibilities:

    a) When an alarm sounds, the Building Fire Warden shall put on a white cap/helmet (or item of clothing issued to identify him/her as the Building Fire Warden),

evacuate the building and move to the assembly area;

b) The Building Fire Warden shall receive and note reports from successive Fire Wardens as they arrive at the assembly area;

c) Once all floors/areas have been accounted for the Building Fire Warden shall report those findings to the FSFP, except for situations requiring immediate action (such as refusal to evacuate), which must be communicated forthwith.

vi. Procedure for reporting fire or other emergency

49. This subsection covers alert and notification requirements including

a) Action on discovery of a fire;

b) Sounding the alarm;

c) Notifying the fire unit/department and/or other relevant response units.

50. A list of all relevant emergency contact numbers should be provided.

vii. Evacuation procedures

51. This section covers the facility Evacuation Plan which includes:

a) Description of emergency alarm/voice communication system and instructions to occupants on procedures to be followed when the alarm sounds;

b) Emergency egress or escape routes and whether full or partial facility evacuation is required;

c) Location of designated assembly areas;

d) Instructions and special provisions for persons requiring assistance;

e) Location of “safe rooms”;

f) Procedures for the use of elevators during evacuation;

g) Confining, controlling and extinguishing the fire. Instructions that occupants are only to attempt to extinguish a fire if they are experienced with fire extinguisher use, the fire is still small, they are not putting themselves at risk, extinguishers are readily available and safe escape is guaranteed;

h) Procedures for verifying that all staff have been evacuated and accounted for;

i) Instructions on when and how the “all clear” will be given.

g. Section 7: Site plans

52. Site plans for the facility should include:

a) An up-to-date plan of the facility as a whole, and for all structures and levels thereof, designated areas for the storage and use of potentially hazardous materials/substances, and potentially hazardous areas and installations (main electricity switchboards/panels, gas-pipes, etc.);

b) Occupancy assembly point;

c) Locations of fire hydrants and fire extinguishers;

d) Access routes and designated areas for fire department and other emergency response vehicles.

h. Section 8: Floor plans

53. Floor plans should identify the locations of the following:

a) Exits/emergency exits;

b) Horizontal and vertical escape (corridors, stairs, evacuation fire lifts, ramps);

c) Primary evacuation routes;

d) Secondary evacuation routes;

e) Accessible egress routes;

f) Areas of refuge;

g) Manual fire alarm boxes and emergency communication devices;

h) Portable fire extinguishers;

i) Occupant-use hose stations;

j) Fire alarm annunciators and controls;

k) Areas and installations classified as potentially hazardous;

l) First aid equipment and evacuation aids (evac-chairs, stretchers, etc.).

C. Emergency Evacuation Plan

a. Purpose

54. The purpose of an Evacuation Plan is to establish a systematic method for evacuating a building in the event of a fire or other emergency. No plan, or a poorly prepared plan, may lead to a disorganized evacuation in an emergency and the resulting confusion could result in injury, loss of life and property damage. It is of utmost

importance that the Plan is tested at least twice annually and shortcomings are rectified.

b. Objective

55. The Evacuation Plan aims to increase the preparedness of staff to ensure a rapid and safe evacuation to the designated assembly in a safe location. The Evacuation Plan provides information for occupants on:

a) Location of exits and emergency exits;

b) Location of the door/window keys;

c) Location of primary and secondary evacuation routes;

d) Location of assembly areas;

e) Clear and direct procedures for evacuation;

f) Responsibility of the Fire and Emergency Organization members and the staff.

56. To ensure the Plan is effective:

a) The Plan should be disseminated to all staff;

b) Staff should be trained and briefed on evacuation procedures;

c) Every new staff member should be provided a copy of the Plan, briefed on the evacuation procedures, provided a guided tour of the escape routes and assembly areas and introduced to his/her fire wardens;

d) Visitors attending conferences and meetings or present for other reasons should be briefed on the location of escape routes and doors since they may need to participate in an evacuation at any time;

e) Occupants and staff with Fire and Emergency Organization functions should be aware of their responsibilities and participate in refresher training/briefings regularly and upon changes to the Plan;

f) Regular emergency evacuation drills should be held.

c. Designated staff authorized to order evacuation

57. In the case of a fire where an alarm is activated, evacuation will normally be an automatic response to a fire alarm, unless alternative measures are in place for the facility. In other emergencies requiring a decision to evacuate, a designated staff member should be delegated authority to order an evacuation. (This may be the Security Focal Point, Head of Agency, FSFP, Commander of the Fire Unit, etc).

d. Outline of evacuation procedures

58. An outline of the general evacuation procedure and the means of notification of evacuation should be included in the Plan. The evacuation message should be communicated in such a way that all the personnel present in the premises can hear it, e.g., activation of a fire alarm system, use of the public address system, loud hailers, shouting, etc. The message should be clear and repeated several times; it should state the requirement for evacuation, areas to be evacuated and the location of the assembly area(s).

59. The key elements which should be included in the Evacuation Plan are detailed in figure 5.

Figure 5

EVACUATION PLAN OUTLINE

1 Introduction
- Objectives
- Emergencies which may require evacuation

2 Evacuation Procedure
- General building evacuation procedure
- Evacuation instructions
- Procedure for persons needing assistance
- Safe rooms
- Assembly area

3 Responsibilities – Fire Emergency Organization
- Staff
- Fire Safety Focal Point
- Fire Wardens
- Building Fire Warden
- Other (Security etc)

4 Site Information
- Assembly areas
- Safe rooms
- Fire Safety Focal Point and Deputy FSFP
- Fire Wardens and Deputy Fire Wardens
- Building Fire Warden

5 Annexes:
- Site plan showing assembly areas.
- Floor plans showing escape routes, emergency exits etc.
- "IN CASE OF FIRE or EMERGENCY"

60. An evacuation plan template is provided in annex IV as a guide to assist in the preparation of an Emergency Evacuation Plan. This is a generic template and must be adapted to the facility.

e. Persons needing assistance

61. Provision must be made in the Evacuation Plan for persons needing assistance. Depending on the nature of the facility, it may be necessary to designate fire "safe rooms" on each floor. These, unless otherwise specified, are rooms designed to withstand fire and its side effects (heat and smoke) for at least 90 minutes, that are easily accessible to individuals with limited mobility, have closeable fire doors, are equipped with reliable and redundant means of communication, have windows of appropriate size to the outside which can be easily opened, and will be checked by Fire Wardens.

f. Conclusion and summary

62. Having effective Fire Safety and Emergency Evacuation Plans is essential to ensure effective management of fire safety and provide safe procedures for evacuation in an emergency. Keeping plans simple, maintaining staff awareness and training and regular fire drills are key elements for emergency preparedness. Plans must be evaluated for their effectiveness during drills and updated regularly.

III. Fire safety and fire prevention

A. Introduction

1. Fire safety refers to precautions that are taken to prevent or reduce the likelihood of a fire that may result in death, injury, property damage or hinder programme delivery, alert those in a structure to the presence of a fire in the event one occurs, better enable those threatened by a fire to safely evacuate and reduce the damage caused by a fire. Fire safety measures include those that are planned during the construction of a building or implemented in structures that are already standing, and those that are taught to occupants of the building.

2. Threats to safety caused by fire are referred to as “fire hazards”. A fire hazard may include any situation that increases the likelihood that a fire may start or may impede escape in the event a fire occurs. As discussed in part I, the risk assessment identifies fire hazards and recommends mitigation measures to reduce the fire hazards. The Fire Safety Plan details the required actions to control fire hazards, in order to reduce the impact should a fire occur and enable those threatened by fire to safely evacuate or escape.

B. Objectives

3. The objectives of fire safety and fire prevention are first, protecting lives, second, preventing property damage, and third, protecting United Nations operations by preventing fires and limiting damage or loss.

C. Key fire safety elements

4. Some key elements of an effective fire safety programme include:

   a) Compliance with applicable fire and building codes;

   b) Effective housekeeping;

   c) Inspections and testing;

   d) Training of staff;

   e) Regular evacuation drills;

   f) Acting on fire safety violations;

   g) Continuous monitoring, evaluation and improvement.

D. Fire and building codes

5. Building construction and maintenance should be compliant with the local building

and fire codes.[5] Building and fire codes provide detailed standards which must be complied with and provide measures aimed at preventing fires and reducing the impact if a fire occurs.

6. A typical fire safety code includes administrative sections about the rule-making and enforcement process, and substantive sections dealing with fire suppression equipment, particular hazards such as containers and transportation for combustible materials, and specific rules for hazardous occupancies, industrial processes and exhibitions.

7. Sections of the fire safety code may establish requirements for obtaining permits and specific precautions required to remain in compliance with a permit. Once a permit is issued, the same authority (or another delegated authority) may inspect the site and monitor safety during work, with the power to halt operations when unapproved practices are observed or when unforeseen hazards arise.

8. Where a local fire code exists it is the responsibility of the FSFP to liaise with host country fire safety officials to ensure that code provisions are complied with.

9. In the absence of a national fire code and/or building codes specifying fire safety standards, the FSFP may be guided by the base level standards contained in these Guidelines. More detailed guidance may be found in fire codes which have international recognition. It should be noted that there is no single internationally recognized fire code. In most cases geographical location will assist in determining which code may be most applicable. A list of some internationally recognized fire codes is contained in annex VIII (See also chapter V, “Fire codes”).

10. The local fire code may contain provisions relating to some of the fire safety elements below which must be complied with, e.g., the code may specify the requirement for fire evacuation drills, system/device inspection and testing more frequently than the minimum standard as set by these guidelines. Where this is the case, the local fire code provisions must be complied with.

E. Housekeeping

11. Recognition and prompt correction of general hazards that can be addressed through thorough housekeeping is essential to fire safety efforts. An area or site-specific checklist, targeting known or anticipated housekeeping issues and fire hazards should be developed for each department, section and unit. Housekeeping inspections should be documented and corrective action taken on all discrepancies noted.

12. Non-essential combustible materials must be identified and removed from the workplace to reduce the potential for fire (limit quantities to those required for average daily use).

[5] Where local codes do not provide an acceptable level of fire safety they shall be exceeded by application of minimum standards as contained in these Guidelines and (where necessary) the application of an internationally acceptable code (see Annex H).

13. Designated smoking areas with ample ashtrays should be established and located away from flammable and/or combustible materials.

14. All stock should be stored on or in safely anchored non-combustible storage racks. Stock should be at least four inches off the floor (to minimize potential water damage) and clear of any heating, electrical and fire protection equipment (except for any required detection devices).

15. Adequate aisle space should be maintained to provide staff members and fire department personnel with easy access to the facility, all buildings and all parts of buildings. There should be ample floor drains, free of obstructions, to carry water away from stock and equipment.

16. In order to contain hazardous materials (HAZMAT) and fuel spills, there must be adequate spill basins of a capacity sufficient to hold the maximum volumetric capacity plus additional 50% of stored materials (extinguishing agent, water) reliably and over extended periods.

F. Fire prevention inspections and tests

a. Inspection and testing

17. As noted in part I, a full and detailed site inspection should be conducted in conjunction with the Fire Safety Risk Assessment and when reviewing the risk assessment, using the fire safety inspection form. Periodic fire safety inspections should also be conducted on a regular basis. Such inspections and testing are necessary to:

    a) Ensure fire hazards are being managed and controlled;

    b) Ensure evacuation routes and systems are accessible and functional;

    c) Ensure fire prevention, detection and suppression systems and equipment are appropriately maintained and functional.

18. A schedule for fire inspections and systems testing should be established for each facility. The frequency may vary according to the nature of the facility, however in general daily, weekly and monthly inspections and testing are recommended under the direction of the FSFP. These inspections do not replace the Fire Safety Risk Assessment and annual review of the risk assessment but constitute an integral part of the fire safety programme.

19. It is important to correct deficiencies immediately. Inspection reports should be maintained for recordkeeping purposes. Department managers and supervisors are responsible for ensuring that work areas are maintained according to fire safety policies and procedures.

20. The FSFP shall ensure that all tests of fire systems are fully communicated to staff prior to such test being conducted and FSFPshall also ensure that whenever any part

of the fire system is being tested or is off-line, a fire-watch consisting of the appropriate amount of personnel is posted in the affected area to initiate a response in the event of a fire.

21. All inspections should be documented using an inspection checklist. A generic fire prevention inspection checklist is attached at annex V. This checklist should be modified as necessary to ensure that each point is site specific and inspection frequency should be adjusted as required to meet local conditions.

b. Periodic inspections, testing and maintenance by a service contractor

22. Inspections, testing and maintenance shall be conducted by a competent and certified service contractor on fire safety systems and equipment in accordance with the guide below or more frequently if required under the manufacturer's guidelines or warranty standards.

23. A table detailing the inspection maintenance frequency and name and contact details of the service contractors shall be kept up to date in the Fire Safety Plan.

G. Training

24. The policy on fire safety management requires all United Nations personnel to practice fire safety measures at the individual level. All building and facility users play a key role in fire safety and fire prevention; therefore it is essential that they receive initial training and regular ongoing training to raise their level of awareness and ability to react in the event of a fire or other emergency.

25. General fire safety briefings for all staff should include fire safety awareness, fire prevention, use of fire extinguishers and evacuation procedures.

26. More specialized training is required for those assigned to monitor and control hazards and systems or play any key role in the Fire Emergency Organization. Fire Wardens, Building Fire Wardens and security staff must be trained in the fire and safety emergency procedures described in the Fire Safety Plan before they are given any responsibility for fire safety.

27. The training should include:

a) Instructions on the detection, alarm and suppression system and public address system in use in their area of responsibility;

b) Procedures for the use of elevators and for evacuation of staff members and other occupants, especially those in need of assistance;

c) Procedures established to facilitate access to the premises and all locations therein by fire department and other emergency response entities;

d) Use of fire extinguishers and rescue equipment (if any) in use at the facility;

e) Procedures during and after a building evacuation, a fire or any other emergency.

28. Awareness and knowledge may be enhanced by the dissemination of brochures explaining emergency procedures, display of "In case of fire" notices, and providing copies of the Fire Safety Plan to all staff.

29. Evacuation, fire and other emergency response drills shall be used to provide additional training for staff members and occupants, to allow them to become fully familiar with the use of building's safety systems. Drills provide Fire Wardens and Building Fire Wardens the opportunity to practise, so that they can carry out their assigned functions safely in the event of a real emergency.

H. Emergency evacuation drills

30. An evacuation drill is a method of practising the evacuation of a building for a fire or other emergency. Generally, the emergency notification system (usually an alarm signal or announcement) is activated and the building is evacuated as though a real emergency has occurred. Usually, the time it takes to evacuate is measured to ensure that it occurs within a reasonable length of time, and the evacuation is evaluated to determine whether improvements need to or can be made to the Evacuation Plan.

I. Planning

31. Fire and safety drills should be planned in advance. Consideration may be given to involving the local fire and safety services as well as other response entities (e.g. police, ambulance) in the drill. The fire service should, in any event, be advised of the intended drill if there is any likelihood that they will be contacted during the drill by concerned staff, neighbours or witnesses to the drill. Ideally, the fire service will be invited to participate in the drill actively (under a scenario) or as observers.

32. In facilities where critical services, operations or functions are performed it will be important to liaise with key stakeholders to minimize disruption.

33. The host country services (police, security) responsible for the security and safety of the facility should be notified.

34. The procedure for conducting fire drills must be included in the Fire Safety Plan. When developing the fire drill procedures, consider the following factors to ensure the fire drills are relevant:

a) The building use and associated fire hazards;

b) The safety features provided in the building;

c) The desirable degree of participation of staff members, other occupants and security wardens;

d) The measurable benefit of such drills.

J. Participation by occupants

35. Total evacuation drills should be undertaken for United Nations facilities. All building occupants are required to participate in evacuation drills, unless there is a critical function which must be maintained during the drill. In these cases only those performing the critical function may be excluded, however the Fire Warden responsible for the area must report the continued presence of those remaining in the building to perform critical functions when reporting to the Building Fire Warden.

36. Total evacuation drills ensure prompt, safe, coordinated evacuation of everyone during a real emergency. A total evacuation drill affords the greatest opportunity to assess the emergency responses of Fire Emergency Organization personnel, security personnel, staff members and other occupants.

37. Occupants evacuated during a drill or other emergency response may require protection from the weather and external temperatures. If this is the likelihood, then an alternate assembly point with suitable shelter, if available, should be included in the Fire Safety Plan and the Evacuation Plan.

K. Unannounced/announced fire drills

38. Fire drills should be unannounced. There is merit in informing occupants that a fire drill will be held within a given period without advising a specific time and date e.g., within the following week, and having them review the Evacuation Plan.

L. Unobstructed/obstructed means of egress

39. An unobstructed fire drill assumes that all exits and evacuation routes from the building are open and available for use. Staff members and occupants participating in unobstructed drills use the primary evacuation route from the room or area occupied at the time the drill was initiated.

40. Obstructed drills involve blocking one or more exits or evacuation routes to simulate that fire conditions have obstructed their use. In this type of drill, where primary evacuation routes are obstructed occupants use alternate evacuations route(s) under the direction of the Fire Warden(s).

M. Drill utilizing simulation aids and props

41. Props and other aids may be used to simulate fire, endangered persons, HAZMAT release or other possible circumstances. In advance of the fire drill, participants must be aware of the prop's purpose and potential presence, particularly when the purpose of the prop is not visually obvious. For example, the use of a certain type of light, traffic cone or other object to simulate a fire may not mean anything if people have not been instructed about the prop's purpose in advance of the drill.

42. Smoke generators should not be used during fire drills. The use of smoke could cause panic or other unforeseen reactions resulting in harm to occupants.

N. Time and location

43. To ensure uniform abilities and responses of all staff members and occupants, emergency evacuation drills need to be scheduled at various times to assess responses on other people before, during and after regular hours.

44. Adding a simulated fire location for the drill provides the opportunity to practise using what may be a realistic fire scenario. Consider that risks, hazards and responses will vary in different locations in the facility/building. When planning a drill exercise, consider whether a simulated fire scenario and emergency response expectation is relevant to the location, time and circumstances. A fire or other emergency scenario that is relevant and could realistically occur is more likely to be taken seriously by staff, occupants, wardens and other participants (local emergency responders).

O. Pre-drill and post-drill notifications

45. If applicable, appropriate pre-drill and post-drill notification procedures with the fire services, other emergency response entities and the occupants/management of neighbouring facilities should be developed. The fire services and building services may want to test the monitoring service's (if any) response to an alarm signal. To do this, the monitoring service will not be notified in advance of the drill.

P. Fire drills in buildings/facilities not equipped with a fire detection and alarm system

46. In facilities not equipped with continuously monitored detection and alarm systems, the method established under the Fire Safety Plan to alert occupants of an emergency situation will be used. In these cases, Fire Wardens must be trained to verbally or otherwise instruct staff members and occupants to evacuate the building and/or facility using the nearest or alternate emergency exit, and shall have quick access to the designated means of communication (e.g. bullhorns, etc.).

Q. Fire drill evaluation

47. An evaluation should be conducted for each emergency evacuation drill. The evaluation of the response during such drills will assist the FSFP in identifying areas that require improvement in the plan as well as training and briefing needs.

48. Depending on the size of the facility, it will likely be desirable and necessary to have more than one person involved with the emergency evacuation drill evaluation. Observers participating in the evaluation must be conversant with the emergency response and evacuation procedures.

49. The following may be considered in the evaluation:

    a) Action on discovering a fire or other emergency;

    b) Alarm activation and emergency communication;

c) Alarm effectiveness and response by occupants, first responders and wardens;

d) Notifying the fire department/fire response unit;

e) Response to the fire alarm signal and code voice messages;

f) Evacuating individuals in imminent danger;

g) Confining, controlling and/or extinguishing the fire;

h) Voice communication or paging systems;

i) Smoke control equipment, fixed fire extinguishing system or other specialized fire or HAZMAT protection devices;

j) Fire elevators, passenger elevators, escalators and their emergency operation and control;

k) Designated equipment or machinery that must be shut down, automatically or manually;

l) Electromagnetic locking and door release or hold open devices(s);

m) Emergency power system transfer where applicable;

n) Fire detection and alarm system and other equipment or systems that require resetting.

50. A written record should be made of the fire drill for use in the evaluation. The evacuation drill report (annex VI) may be used by those conducting the evaluation. As with other documents provided in the annexes the report form should be modified, if necessary, to match the situation in the organization/site it is being used for.

51. All staff members and occupants with specific responsibilities as part of the Fire Emergency Organization should attend a short debriefing meeting after every fire drill. This meeting provides valuable input from key participants, other staff and external observers and assists in evaluating procedures and response. During the debriefing, challenging areas can be identified and solutions can be discussed and implemented.

52. Where the evaluation identifies needed improvements these should be specified and corrective action should be taken within an acceptable period of time.

R. Violations

53. Violations detected during inspections should be corrected as soon as reasonably practical considering potential hazards/risks. Minor violations should be recorded with the inspection report. Serious violations should be reported by the FSFP with recommended remedial actions. More detail on fire safety violations is contained in

part IV.

S. Reporting

54. Clear and concise reporting lines and reporting procedures are essential to ensure that issues identified during inspections, testing or as a result of violations are remedied. Reporting lines will vary by organization, however the FSFP is responsible for maintaining records and initiating reporting of fire safety issues that require further attention. The FSFP shall establish standardized reporting formats for the duty station to ensure that all relevant reports and documents related to the following are maintained in an appropriate manner:

    a) Inspections;

    b) Tests;

    c) Incidents;

    d) Violations;

    e) Fire safety requests, queries, inquiries and actions.

55. Fire incident and emergency incident reports shall be written in a clear, concise and factual manner in accordance with the standardized format and copies shall be kept for a minimum of two years or for a longer period as determined by organizational or administrative requirements.

T. Continuous monitoring, evaluation and improvement

56. Ongoing and effective housekeeping, regular inspections, testing and maintenance of systems, training of staff, evacuation drills and early action on fire safety violations contribute to an effective fire safety and fire prevention programme. Continuously monitoring and evaluation of existing measures enables early identification of problem areas and, when appropriately addressed, improvements in fire safety arrangements.

IV: Fire safety violations and investigations

A. Introduction

1. This chapter addresses the follow-up action to be taken on fire safety violations and investigations following a fire.

B. Fire safety violations

2. A fire safety violation is defined as an act or omission that compromises or may compromise fire safety at United Nations premises. Fire safety violations may arise when any person, department, unit or agency erects, constructs, enlarges, alters, moves, converts, demolishes, equips, uses, occupies or maintains any building or structure in contravention of applicable host country fire safety codes or standards where applicable or the provisions of these Guidelines.

3. Fire safety violations may occur as a result of lack of awareness, carelessness, negligence or a deliberate action by a person, department, unit or organization. When a violation is identified action must be initiated to correct the violation as soon as possible.

4. The FSFP should monitor fire safety violations, as they may indicate a need for additional or improved fire safety installations, equipment and training for staff.

5. Depending on the nature of the violation and the time frame for correction, a follow-up inspection will be necessary to ensure that corrective action has been taken, or if the action will take some time to implement, a regular review of progress should be made and interim mitigation implemented until the remedial action is completed. In cases where the violation is not serious, a record should be maintained of the violation and remedial action taken and a record retained on file.

6. In cases where the fire safety violation is serious, corrective action should be taken as soon as possible and a report submitted detailing all of the facts of the matter, in accordance with the United Nations organization's internal procedures for administrative action.

7. The following are some examples of minor, moderate and serious violations:

a. Minor

a) Electrical outlets do not have an intact cover;

b) Extinguisher height (handle) not between 80 and 120 cm;

c) Non adherence to the non-smoking policy;

b. Moderate

a) Temporary heating appliances left unattended;

b) Fire extinguishers not having annual inspection by qualified entity;

c) Fire alarm, fire extinguishing and sprinkler system failing to have routine servicing/testing by a qualified entity;

d) Lightning protection system not having annual inspection and servicing by a qualified entity;

e) Extension cords used as a substitute for permanent wiring and cords used in the path of travel (cords can be damaged by walking on them);

c. Serious

a) Cutting, welding, grinding or the use of candles and other open flames, oil lamps or incense without proper authorization;

b) Escape routes not clear - blocked aisles, blocked/locked doors, and fire doors chocked open;

c) Sprinklers blocked by storage;

d) Serious accumulation of combustible waste;

e) No, or incomplete/outdated Fire Safety Plan or Evacuation Plan;

f) Power cables being overloaded or electrical work being done by unprofessional or unqualified persons;

g) Hindered access for fire appliances and/or other emergency vehicles;

h) Blocked electrical circuit breaker panels, or such panels not protected from tampering by unauthorized persons;

i) Defective electrical fixtures (broken or missing outlets or switch plate covers and electrical light fixtures);

j) Improper storage of combustibles (outside designated areas) and unauthorized/improper storage and use of flammable liquids/hazardous materials;

k) Inoperative exit signs and emergency lighting due to burned out bulbs and bad batteries for back up in case of electrical power failure;

l) Tampering with smoke detectors or other components of the fire detection and alarm system and/or with fire suppression installation and devices;

m) Unauthorized access to areas restricted for fire and safety reasons (HAZMAT stores, fuel stores, workshops, technical areas, etc.);

n) Performing potentially hazardous work without adequate qualification / certification and / or without using personal protection equipment;

o) Failing to remove excessive combustible vegetation from protection zone around the facility.

C. Fire investigation

8. All fire incidents involving United Nations facilities should be reported immediately to the organization's FSFP,[6] who will inform the country level representative of the organization and the UNDSS CSA or SA. The FSFP should ensure that the fire scene is contained and access strictly controlled pending an investigation.

9. A preliminary written report should be prepared as soon as reasonably practicable covering:

a) Time, date and location of the fire;

b) Summary of the circumstances;

c) How and when the fire was detected;

d) Who was alerted, when and by whom;

e) How, when and by whom the fire was extinguished;

f) Suspected cause of the fire;

g) Losses sustained (casualties, injuries, material losses);

h) Statements from personnel involved;

i) Any other relevant information.

10. An investigation will be required to determine the cause of the fire and the relevant associated facts. The person/unit assigned to conduct the investigation may need the assistance of a trained and certified technical fire investigator. In many cases the attending fire service will be able to conduct a technical fire investigation to determine the cause and origin of the fire. The Technical Fire Investigations Checklist (see annex VII) may be used for recording findings for the investigation file.

11. The technical investigation will involve inspecting and evaluating the scene to determine the area or point of origin, source of ignition, materials ignited, the act or activation that brought ignition source and materials together and assessing the subsequent progression, extinguishing and containment of the fire. To accomplish this the technical fire investigator will need to:

[6] The reporting line may vary depending on the organization, e.g. in an organization with a Security and Safety Section, the fire incident would normally be reported directly to the Chief of Security or equivalent.

a) Conduct an exterior survey;

b) Conduct an interior survey;

c) Interpret and correlate burn patterns;

d) Examine and remove fire debris and reconstruct the area of origin;

e) Inspect the performance of building systems such as HVAC, fire protection systems, utilities and special equipment;

f) Document the scene by photos, field notes and diagrams;

g) Locate, collect and package evidence as required;

h) Maintain chain of custody for all evidence;

i) Compile complete investigative report of all documents including photos, interviews, evidence and other related items.

12. In the event that the host country does not have trained technical fire investigators, the CSA/SA should find out whether such capacity exists within any other United Nations organizations in the country. If no such capacity exists, the CSA/SA should coordinate through the DSS/DRO desk with DHSSSfor assistance from United Nations resources.

13. Photographic documentation is required for the general information about the site, and at each step of the technical investigation. This is necessary as the physical investigation may require moving objects and disturbing the debris, leading to destruction of the evidence.

14. Interviewing parties/witnesses and recording their statements provides important information and should be done as soon as possible because the reliability of this type of information decreases over time after the incident. Interviews and recording of statements is normally done by the investigator assigned to conduct the investigation, not the technical fire investigator; however the technical investigator should be provided access to anyone who can assist with additional information for the technical aspect of the investigation.

V. Fire safety standards

A. Introduction

1. United Nations system organizations confront many challenges in achieving adequate and acceptable fire safety coverage. Major obstacles include the following:

   a) United Nations organizations are often located in space which poses fire safety hazards and over which the United Nations has no proprietary right to enforce or make significant structural changes;

   b) Limited or non-existent fire safety regulations resulting in buildings available to United Nations having minimal fire safety features;

   c) Inadequate infrastructure to support fire safety systems and provide the necessary resources to fight fires.

2. There are three key elements to overcoming these challenges:

   a) Using risk management principles, United Nations system organizations shall combine fire prevention and mitigation strategies and measures to protect United Nations personnel and facilities;

   b) Make adequate provision within each relevant budget for fire safety requirements;

   c) Collaborate with host country authorities, including local fire services and, wherever possible, building owners.

B. Fire codes

3. This chapter establishes basic fire safety standards applicable to United Nations facilities where no specific national fire code provides such standards. If a local fire/building code provides adequate fire safety standards then that code should be followed.

4. In the absence of a host country fire code or where code provisions are limited and more comprehensive guidance is required than is contained in these Guidelines, reference should be made to a fire code that is the most applicable to the geographical location. A list of some fire codes that have some degree of international application is provided in annex VIII. It must be understood that fire codes are not standalone documents and are linked to other codes and standards. Thus European fire codes also tie into European building, electrical and other codes. In the United States of America, the National Fire Protection Association (NFPA) codes tie into other NFPA codes, standards and guides. To avoid variations in standards, the same set of codes should be used throughout the organization in the country. It would be problematic, for example, for one part of the organization to

apply European electrical codes while another part is applying North American fire codes.

5. In determining which fire code may be the most applicable, the following may be considered:

   a) Building, electrical and related codes and standards most commonly used in the host country;

   b) Which codes, if any, have been applied by other large United Nations organizations or other international organizations present in the same country;

   c) Whether the country is aligned to a more developed country on which it bases fire safety, building, electrical and other standards. For example, countries belonging to the Commonwealth may be influenced by British standards, whereas Francophone countries may be more strongly influenced by European standards;

   d) The United Nations is developing performance specification guidelines for United Nations common premises based on the 2009 International Building Code of the International Code Council (ICC), thus premises governed by these Guidelines should apply the ICC International Fire Code 2009.

C. Variances

6. When there are practical difficulties involved in applying the provisions of these Guidelines or any other applicable codes or standards, the FSFP, with the approval of the country level representative of the United Nations organization and after consultation with the SA, the relevant facilities management section, the building owner (where necessary) and, if relevant, host country authorities, may grant variances for individual cases, as long as the intent and purpose of the fire safety regulations are maintained and stipulations are adhered to. Variances will not be approved where fire-safety requirements or the structural integrity of any building may be diminished by so doing, and/or where the health and/or life of individuals may be in jeopardy.

7. Approved variances are to be thoroughly substantiated and recorded in the Fire Safety Plan.

D. Unsafe buildings or structures

8. Any building or structure or portion thereof deemed to be structurally unsafe, not provided with adequate egress or having any other feature that constitutes a fire hazard or that can be identified as dangerous to human health and/or life is prohibited for use or occupancy.

E. Standards

9. The standards set out in this section provide base level standards only. Because of

the varied nature and location of United Nations organizations, prescribing global standards is a challenge. To provide direction in terms of minimum standards which need to be applied, the following terms are used:

a) MUST means mandatory, i.e., organizations are required to abide by this standard;

b) SHOULD means mandatory except where current local circumstances mean that it is not possible. Alternative measures must be implemented to mitigate risks;

c) RECOMMENDED means highly desirable in accordance with best practice, but not mandatory.

F. Risk assessments

10. Before any premises are considered for tenancy or occupation by a United Nations organization the following requirements apply:

a) When United Nations offices are to be accommodated in a newly constructed building, the fire safety measures must be incorporated at the design stage. Consultation must be undertaken with local fire authorities to ensure compliance with host country building and fire regulations. Where local fire authorities, building codes and fire codes are limited or non-existent, a qualified and certified engineer should be engaged to advise on fire safety measures. Any fire safety measures incorporated into the design must have sufficient infrastructure, internal and/or external, to support them.

b) For existing facilities, the building owner should guarantee in writing that the building and its offices systems fully comply with host country building and fire codes, and that an inspection of the building has been conducted by a qualified and certified host country engineer who has certified it as having met host country statutory fire safety and occupancy requirements.

c) For existing facilities a Fire Safety Risk Assessment must also be completed by a United Nations FSFP or United Nations appointed certified fire safety consultant/contractor to assess the suitability of the premises from a fire safety perspective. This is particularly important when the host country has inadequate or no fire safety code. An effective assessment will assist decision makers in the cost/benefits evaluation of the premises, particularly where expensive upgrading will be required to ensure the facility has adequate fire safety measures.

11. A Fire Safety Risk Assessment must be conducted for all United Nations occupied premises at least annually and additionally when there is any occupancy change. The Risk Assessment must be reviewed and approved by the representative of the United Nations organization at the country level who authorizes implementation of recommended mitigation measures.

12. A copy of the Fire Safety Risk Assessment must be provided to the CSA/SA/Country Security Focal Point as applicable.

G. Fire safety plans and evacuation plans

13. A Fire Safety Plan must be completed for any facility occupied by United Nations organization staff. The Fire Safety Plan should contain the information set out in part II, Fire Safety Planning (see figure 4).

14. Every building within a facility must have a current, written Emergency Evacuation Plan in place. The Emergency Evacuation Plan must be specific to the facility and should contain information as set out in chapter II, Fire Safety Planning, (see figure 5).

15. Fire Safety and Emergency Evacuation Plans must be reviewed and updated annually or as necessitated by changes in staff assignments, occupancy or the physical composition of the building.

16. Fire Safety and Evacuation Plans should be available in the workplace for reference and review by staff members.

17. Signs detailing action required on discovering a fire and action required on hearing a fire alarm must be posted in visible locations on each floor, work area and other area as determined by the nature of the facility.

18. Emergency Evacuation Plans must be fully tested at least twice yearly through emergency evacuation drills.

19. An evaluation should be conducted for each emergency evacuation drill and where necessary modifications made to improve the effectiveness of the Emergency Evacuation Plan.

H. Fire prevention

20. The following standards should be applied as general precautions to prevent fires in United Nations facilities:

    a) Combustible waste material creating a fire hazard must not be allowed to accumulate in buildings or structures or upon premises;

    b) Clearance between any devices or material capable of igniting a fire (ignition source) must be maintained in an approved manner;

    c) Care must be taken to avoid negligently setting fire to combustible material in such a manner that it endangers the safety of persons or property;

    d) The open burning of material and recreational fires is prohibited on United Nations premises unless authorized by the FSFP, conducted under the provisions of local law and the capacity exists to immediately extinguish the fire;

    e) Open flames are prohibited in all United Nations offices unless authorized by the FSFP and used in a manner consistent with local law;

f) Where authorized, open flames such as from candles, lanterns, kerosene heaters and gas-fired heaters must not be located on or near decorative material or similar combustible materials;

g) The use of candles should not be permitted in areas where occupants stand, or in an aisle or exit. The use of candles may be approved by the FSFP on a case-by-case basis but, where permitted, must be in an approved container;

h) Torches and other devices, machines or processes liable to start or cause fire must not be operated or used in or upon hazardous fire areas, except when authorized by the FSFP and when appropriate means of extinguishing any fire which may occur are available;

i) Smoking is prohibited in all United Nations buildings and offices. In areas of any United Nations facility where smoking is permitted, the FSFP must institute fire safety measures consistent with local laws, including the provision of non-combustible ashtrays and match receptacles;

j) A lighted match, cigar or cigarette or other flaming or glowing substance or object must not be dropped, thrown or placed on any surface or receptacle where it can cause an unwanted fire;

k) Where the United Nations organization maintains vacant premises, all efforts must be taken to:

(i) Maintain fire protection systems;

(ii) Remove combustible materials;

(iii) Remove hazardous materials;

l) Indoor displays consisting of highly combustible goods must not be permitted;

m) Storage of combustible material or other potentially hazardous material in buildings must be orderly. Material stored shall be separated from heaters and heating devices by distance or shielding so that ignition cannot occur. Substances/materials falling under the HAZMAT category must be stored as set forth in their accompanying Material Safety Data Sheet (MSDS) and applicable safety regulations;

n) Combustible material must not be stored in exits or exit enclosures;

o) Grass, weeds and other growth near the facility capable of being ignited and endangering the facility should be cleared and controlled.

I. Fire detection and alarms

21. Buildings in which United Nations organizations have offices, workplaces or sleeping accommodation must have adequate means of detecting fire and alerting

occupants.

22. There are many types of fire alarm systems each suited to different building types and applications. A fire alarm system can vary significantly in both price and complexity, from a manual system comprising hand bells, gongs, etc., to a single panel with a detector and sounder in a small agency office, to an addressable fire alarm system in a multi-level building. The type of system selected for a United Nations facility will be determined by various factors including location, function and size of the facility, occupancy, infrastructure, relevant fire and building codes if available and the Fire Safety Risk Assessment.

23. Basic manual systems comprising hand bells, gongs or similar items may be a sufficient and effective means of alerting occupants in the event of a fire in the workplace. Where sleeping accommodation is provided in a United Nations facility, a means of automatic fire/smoke detection must be provided. At the most basic level this may consist of battery powered smoke alarms installed in each room; however these should only be considered as a temporary measure and regular checks must be made to replace depleted batteries.

24. At the more advanced, and more effective, level, an automatic fire detection and alarm system is designed to detect the unwanted presence of fire by monitoring environmental changes associated with combustion. In general, a fire alarm system is classified as either automatically activated, manually activated, or both. Automatic fire detection and alarm systems are intended to notify the building occupants to evacuate in the event of a fire or other emergency, report the event to a central monitoring station in order to initiate a response by fire services, and to prepare the structure and associated systems to control the spread of fire and smoke.

25. Where an automatic fire detection and alarm system is installed in United Nations facilities the system should also incorporate manual activation capability.

26. Automatic fire detection alarm systems with manual activation capacity should be installed in United Nations facilities, except where this would not be a practical option due to:

    a) The small size/occupancy of the facility;

    b) The nature of the facility;

    c) Insufficient infrastructure;

    d) A combination of the above.

27. All high-rise buildings used by United Nations organizations must be covered by an automatic fire detection and alarm system with manual activation capacity. For the purpose of these standards a high-rise building is a multi-storey building more than 23 metres (75 feet) in height which is horizontally divided at regular intervals into useable levels.

28. Fire detection and alarm systems installed in United Nations facilities must be designed by a licensed engineer, approved by the FSFP and installed and maintained by a competent entity. Installation and maintenance must be in accordance with manufacturers' specifications and applicable fire safety standards.

29. The following types of devices may be used:

    a) Smoke detectors;

    b) Heat detectors;

    c) Flame detectors;

    d) Duct smoke detectors;

    e) Air sampling devices;

    f) Manually activated pull or "break glass" alarm stations;

    g) Direct phone lines to local fire service (or United Nations fire unit or Security and Safety Section, if applicable).

30. Alarms are an important part of the detection system because they provide notification to occupants of a building or facility that an emergency (fire) is in progress.

31. Alarms/fire warning systems should be audible, where the sound is transmitted by means of an annunciator, (e.g. siren, bells, whistle, etc.) and visual (e.g. strobe lights, for the hearing impaired or in environments where noise may be a factor).

32. When staff members discover a fire, they should immediately raise an alarm by activating the manual fire alarm point, if installed, or in accordance with procedures established under the Fire Safety Plan, to initiate building evacuation. The calling of emergency numbers for reporting fires (security, local fire department), should be initiated once the alarm has been raised and evacuation commenced.

33. The FSFP should ensure that fire detection and alarm system and other hazard detection/alarm systems are tested at least every 6 months and any defects reported immediately for repair.

34. Fire detectors and alarms should be calibrated so that they are unaffected by ambient environmental levels (e.g. heat, noise, light). The FSFP, in consultation with the building management, shall determine the best type of protection the premises. In special use occupancies, one or a combination of the various types may be employed to provide optimal coverage.

35. Automatic fire detection and alarm systems and safety systems (e.g. gas detection) must be tested after installation and serviced in accordance with manufacturers' specifications and applicable legislation on a regular basis by an authorized entity.

36. Fire detection and alarm systems should be operable at all times (full redundancy). Defects must be repaired as soon as reasonably practicable. If a system or part of the system is not operational, alternate means of detecting fires and warning occupants (e.g. a fire watch) must be implemented.

J. Emergency voice communications

37. An emergency voice communications system comprises a public address system and/or inter-communications system, integrated with an automatic fire alarm system. The system is used to provide pre-recorded and manual voice messaging to building occupants and provide alerts to occupants in the event of a fire or other emergency. Trained emergency personnel are able to broadcast a variety of specific messages to the occupants to relay emergency evacuation requirements. Such a system should provide the ability to communicate with Fire Wardens in each evacuation zone/floor in the building via intercom.

38. Key elements of the system include:

    a) A master emergency control panel;

    b) Additional emergency control panels if necessary;

    c) A distribution system to transmit warning signals/messages to each evacuation zone;

    d) A Fire Warden inter-communication point located on each floor or in each evacuation zone (where required);

    e) Integration with the automatic fire detection and alarm system, except for facilities protected by a supervised fire detection and alarm system and continuously available response capacity (fire unit).

39. Emergency voice communications should be installed and integrated with the fire alarm system where an automatic fire alarm system is installed except in situations as noted in 38. e) above.

40. Where an emergency voice communications system is installed emergency response personnel, including the Building Fire Warden and Fire Wardens, must be trained in the use of the system and use the system during emergency evacuation drills. The system should be used for emergency purposes only.

K. Fire fighting systems

41. Fire fighting equipment, as well as safety and rescue equipment, devices and substances must be installed in all United Nations facilities and vehicles in accordance with applicable legislation and regulations and manufacturers' recommendations and must be accessible at all times.

42. Fixed fire fighting systems installed in United Nations facilities must be designed by

a licensed engineer, approved by the FSFP and installed and maintained by a competent entity. Installation and maintenance must be in accordance with manufacturers' specifications and applicable fire code standards.

43. Fire fighting systems installed in United Nations facilities must be appropriate to the location and resources available. For example, sprinkler systems, which may be highly effective and mandatory in some locations, would not be appropriate in locations where water supplies are inadequate and unreliable.

L. Fire blankets

44. Fire blankets must be installed and readily available in kitchens, kitchenettes and workplaces where their utilization in case of a fire may be of benefit.

M. Portable fire extinguishers

45. All United Nations offices must be equipped with portable fire extinguishers, and a system of inspecting, maintaining, recharging and testing them should be in place.

46. Portable fire extinguishers are classified and labelled according to their ability to handle specific classes and sizes of fires. There are regional differences in fire classification as illustrated in the table below (figure 6). It is essential that the FSFP has a clear understanding of the fire classification and symbols on extinguishers applicable to the host country (see figure 7), and that this be reflected in the Fire Safety Plan and training of staff.

Figure 6 - Fire classification table (for illustrative purposes only)

Fuel	Fire classification			Type of extinguisher used
	North American	European	Australian	
Combustible solids (wood, cloth, paper, plastic[7])	A	A	A	Water Foam Dry chemical
Flammable liquids (alcohol, gasoline, paint) (Melting solids – Europe)	B	B	B	Foam Dry chemical Carbon dioxide
Flammable gases (natural gas, hydrogen, butane)	B	C	C	Carbon dioxide Dry chemical
Electrical energized objects	C	Not classified	E	Carbon dioxide Dry chemical
Combustible metals (magnesium, sodium, potassium)	D	D	D	Dry powder Metal or sand
Cooking oil and fat	K	F	F	Wet chemical

[7] In Europe plastic is listed under flammable liquids as a "melting solid".

Figure 7 - Examples of symbols used to represent fire classifications

Fire classification	Symbols		
Combustible solids (wood, cloth, paper, plastic)			
Flammable liquids (alcohol, gasoline, paint) (Melting solids – Europe)			
Flammable gases (natural gas, hydrogen, butane)			
Electrical energized objects			
Combustible metals (magnesium, sodium, potassium)			
Cooking oil and fat			

47. Fire extinguishers should be selected and distributed based on the classes of anticipated workplace fires and on the size and degree of hazard which would affect their use. Where fire extinguishers supplement other fixed fire fighting systems (e.g. sprinklers, fixed hose, standpipe system), distribution may be less than specified.

48. Extinguishers must be conspicuously located, readily accessible and unobstructed. They should not be located in positions where access could present a hazard to the potential user. Where practicable, they should be located along normal paths of travel, along escape routes and near exits.

49. As a guide, fire extinguishers should be mounted 800 mm to 1,200 mm from the floor to the top of the extinguisher and no less than 100 mm from the floor to the bottom of the extinguisher.

50. A red rectangular sign with white legend (words and/or symbols) and enclosure

should indicate the presence of an extinguisher and should be positioned directly above the extinguisher, the bottom edge of which is not less than 2 m above the floor.

51. Extinguishers for Class A fires should be distributed throughout the site so that the travel distance to any extinguisher will be 23 m or less. This general requirement does not apply to large assembly areas.

52. Portable fire extinguishers for use on other classes of fires should be distributed so that the travel distance from the hazard area to any extinguisher appropriate for the hazard is 15 m or less.

53. Portable fire extinguishers must be inspected and maintained by a certified entity at least annually. Each extinguisher must be fitted with a tag/label with the date of the last maintenance recorded and the date (month/year) of the next inspection.

54. A visual inspection of fire extinguishers must be conducted at least monthly by the FSFP or delegate to ensure the extinguishers are fully charged and serviceable. If the extinguisher is damaged or needs recharging, it must be replaced immediately. The inspection should ensure:

    a) The extinguisher is not blocked by equipment, coats or other objects that could interfere with access in an emergency;

    b) The pressure is at the recommended level. On extinguishers equipped with a gauge, that means the needle should be in the green zone - not too high and not too low;

    c) Hose, nozzle and/or other parts are uncorrupted and not obstructed. The pin and tamper seal (if it has one) are intact;

    d) There are no dents, leaks, rust, chemical deposits or other signs of abuse or wear. Wipe off any corrosive chemicals, oil, gunk etc. that may have landed on the extinguisher;

    e) The inspection label (preferably self-adhesive and, if taken off self-destroying) or tag is intact and valid.

N. Use of portable fire extinguishers

55. United Nations personnel should to be trained in the use of portable fire extinguishers to put out small incipient fires (i.e. small fires in the beginning stage). The following should be included in the training provided to staff:

    a) The first and paramount objective is to prevent injury to personnel;

    b) Raise the alarm to initiate building evacuation and qualified response;

    c) Assist/rescue and/or evacuate others in need;

d) When attempting to extinguish or control the fire, ensure that an escape route and exit are available;

e) Stay low, away from heat and smoke;

f) Aim and discharge extinguisher at the base of the fire.

56. Portable extinguisher operation (pressurized) follows the PASS principle:

a) **P**ull the pin;

b) **A**im extinguisher nozzle at the base of the fire;

c) **S**queeze the operating lever;

d) **S**weep the nozzle from side to side at the front base of the fire until it is out, the extinguisher is depleted or the situation becomes unsafe.

O. Sprinkler systems

57. This section provides a basic description of sprinkler systems. Where retroactive fitting of a fire sprinkler system is being considered, the system must be designed by a licensed engineer, approved by the FSFP and installed and maintained by a competent entity. Installation and maintenance must be in accordance with manufacturers' specifications and fire code standards.

58. Automatic sprinklers provide continuous coverage for protected areas and, where required by host country fire regulations, must be installed as a component of the fire prevention and suppression systems in buildings occupied by United Nations organizations.

59. In areas where host country fire regulations do not require the installation of automatic sprinkler systems, such systems should be considered during the design phase for all new office buildings based on the following criteria:

a) 375 m^2 (4,000 ft^2) or more in floor area;

b) Three or more stories in height;

c) 11 m (36 ft) or more in height.

60. Sprinkler systems installed in United Nations facilities should be automatic and fully integrated with the fire detection and alarm system.

P. Standpipe systems

61. This section provides a basic description of standpipe and fixed hydrant systems. Where retroactive fitting of these systems is being considered, the systems must be designed by a licensed engineer, approved by the FSFP and installed and maintained by a competent contractor. Installation and maintenance must be in accordance with

manufacturers' specifications and applicable fire safety standards.

62. Standpipe systems are fixed piping systems with associated equipment that transports water from a reliable water supply to designated areas of buildings where hoses can be deployed for fire-fighting. Such systems are typically provided in high-rise and large-area buildings. Standpipe systems significantly improve the efficiency of manual fire-fighting operations by providing access to a water supply within a building and eliminating the need to run hoses from a fire appliance to the fire. Even in buildings protected by automatic sprinkler systems, standpipe systems can serve as a backup and complements the sprinklers. All standpipe systems are designed to deliver water for manual fire-fighting although the designs used to accomplish this may vary.

63. Standpipe and fire hose systems are strongly recommended in all United Nations facilities.

64. Standpipe and fire hose systems should be provided in United Nations facilities where the following conditions exist:

    a) More than three stories above ground level;

    b) More than 15 m (50ft) above ground level and containing intermediate floors or balconies;

    c) More than one floor below ground level;

    d) More than 6.1 m (20ft) below ground level.

65. There are two main categories of standpipe systems:

    a) Wet standpipes (also referred to as "wet risers"), which are extinguisher water pipelines that are continually kept full of water and pressurized for manual or automatic fire fighting systems;

    b) Dry standpipes (also referred to as "dry risers") are pipelines which are kept empty of water and to which water is supplied by a designated on-site pump and/or fire services engines when it is required.

66. Normally the standpipe system will be installed in the building stairwell or fire resistant shaft.

67. Standpipe systems can be either wet or dry and can be stand-alone systems or connected to the sprinkler system. Stand-alone systems are recommended as the flow rate and output of water is different - connected systems may interfere with each other.

68. Adequate water supplies for sprinkler and standpipe systems must exist separately from other water supplies within the building. In environments where freezing is possible, a dry standpipe system should be used.

69. Standpipes and hose cabinets must also be clearly visible, readily identifiable and used only for fire equipment.

70. Couplings provided on standpipe systems and hydrant systems for attaching fire service hoses must be compatible with the hose fittings used by local fire services or adaptors must be readily available.

71. Each cabinet containing pre-connected hoses must be conspicuously identified (see Fire Point Signs below). Signs must be permanently marked and weatherproof. Each reel/rack should be provided with a label which includes the wording "Fire hose for use in emergency only" and clear operating instructions.

72. Fire hoses and nozzles that are pre-connected to a standpipe system must be inspected regularly for deterioration and wear.

73. Standpipe systems must be inspected and maintained by a certified person or entity at least annually, and more frequently if specified by the manufacturer.

Q. Protection for areas requiring fixed fire suppression systems

74. Computer server rooms and other areas with valuable equipment or documentation should be protected by a fixed suppression system, with an extinguishing agent that will not harm the sensitive equipment and material if activated, or constitute a serious health hazard to individuals.

75. Automated fire suppression systems must provide for sufficient evacuation time between the triggering of the alarm and the release of the agent itself.

76. Areas protected by fixed extinguishing systems that use extinguishing agents in concentrations known to be hazardous to worker safety and health must be posted with appropriate hazard warning or caution signage and warning devices, audible and visible, at the exterior entrance and interior of the location.

77. Fixed fire suppression systems installed in United Nations facilities must be designed by a licensed engineer, approved by the FSFP and installed and maintained by a competent entity. Installation and maintenance must be in accordance with manufacturers' specifications and applicable fire safety standards.

R. Water

78. Water is a critical resource for fire fighting; thus a reliable and sufficient source of water must be available for protection of United Nations facilities in the event of a fire. If local water supplies are inadequate for fire fighting a water reserve must be established and stored at the facility. The reserve water must be specifically for fire fighting purposes and this fact clearly communicated with signage.

S. Fire protection

79. In the event of a fire, staff must be protected from the effects of the products of

combustion as they evacuate the building. The type of material used in building construction, office furniture, furnishings and interior space design may provide fire protection. Appropriate fire rated materials and fire resistant materials should be used for building construction, interior floor and wall coverings and furnishings.

80. Open floors should be compartmentalized to prevent the spread of fire.

81. Interior stairways which serve as an escape route leading from one floor to another must be enclosed to prevent transfer of heat, smoke and gases from one floor to another.

82. Doors to offices should remain closed when not occupied after hours, or immediately closed when a fire is discovered.

83. Doors to exit stairs must be self closing and remain closed at all times.

84. Corridors leading to exits should be protected by fire rated partitions.

85. Evacuation routes are to remain clear at all times, with no obstructions.

86. Assembly areas should be located a safe and reasonable distance away from structures, in an area that is not expected to be affected by potential hazards associated with a fire (smoke, debris, heat, etc.) or emergency response traffic.

87. Personnel who operate equipment that may accelerate the rate of fire propagation or increase the spread of smoke and gases must be trained in emergency shutdown procedures for such equipment. Training in emergency shutdown procedures is to be provided at regular intervals and such training is to be documented.

88. Vegetation capable of being ignited and endangering property must be cut down and removed.

T. Elevators

89. Elevators provide a rapid form of travel from the upper floors of buildings to building exits. The following are important for staff safety during a fire:

    a) Elevators must not be used during a fire emergency for evacuation.

    b) Where elevators are installed in a facility a sign must be placed in every elevator lobby indicating “IN CASE OF FIRE DO NOT USE ELEVATORS. USE STAIRS ONLY”. This sign should also be displayed in Braille;

    c) Smoke detectors should be placed in elevator lobbies;

    d) Elevators should be taken out of service during fires and recalled to the lobby;

    e) Elevators should be placed on standby for fire department response, provided they meet specific safety requirements.

U. Evacuation: means of egress and escape

90. Means of egress from a building are considered to be the most important factor in protecting life in the event of a fire, together with an automated and monitored fire detection and alarm system.

91. The means of egress is a continuous and unobstructed way of travel from any point in a building or structure to a public way or open area outside the building or structure. The means of egress consists of three distinct parts; first, the exit access (escape route), second, the exit and third, the exit discharge.

a. Exit access

92. Included below are key requirements for exit access paths:

a) Exit paths must be clearly identifiable and clearly marked with visible signs (see signage section below);

b) Emergency lights must be available to illuminate emergency exit paths and emergency stairs. All emergency lighting must be maintained and tested frequently;

c) Exit paths should not be routed through boiler rooms or other high risk areas;

d) Exit paths, including emergency stairways, must be kept free of obstructions;

e) Emergency stairways must be constructed of and fitted out with fire resistance rated material;

f) Exit path doorways must open in the direction of travel;

g) Stairwell doors locked from the stairwell side primarily for security reasons must be equipped with panic hardware on the inside, so they can be opened at all times and must be clearly marked as exit doors.

b. Exit

93. Included below are the requirements for the exit:

a) Exit doors must be marked with illuminated signs which must be clearly visible;

b) Revolving, sliding and overhead doors must not serve as emergency exit doors. Such doors will not allow adequate and safe discharge from a building (except for sliding doors meeting safety requirements, as they may be pushed open in the direction of exit travel);

c) Exit doors must be equipped with panic hardware and open and swing in the direction of exit travel, and staff members must be able to open the door without any special knowledge or hardware such as keys;

d) As a minimum requirement, two emergency exits at opposite sides must be provided for each room bigger than 200 m^2 and an occupancy of more than 20 persons. The same applies to all rooms or areas in structures of more than 500 m^2;

e) Minimum width of exits must be 0.8 m for occupancy of up to 20 persons, 0.9 m for up to 40 persons, 1.0 m for up to 60 persons and 1.2 m for up to 120 persons. For occupancy of more than 120 persons, the width of the exits must be increased by 0.1 m per 10 additional persons. The minimum height of such exits is 2.10 m;

f) Special consideration must be given during construction and repair to ensure that a sufficient number of emergency exits are available for occupants;

g) Exit doors must have signage posted on the outside, indicating their function and the requirement to keep them unobstructed at all times;

h) All staff members must know how to safely evacuate from their work areas during emergencies;

i) Staff members must be aware of alarm signals, primary and secondary exit routes and assembly areas.

c. Exit discharge

94. The requirements for exit discharge include:

a) Exit doors discharging to streets or other areas where vehicles or other hazards are or may be present must be posted to alert staff members of hazard;

b) Physical barriers should be installed to protect occupants discharging into areas where hazards are or may be present;

c) Emergency lighting must be provided in the exit discharge area.

d. Access controlled exit doors

95. Where electronic locking is provided on exit doors as part of an electronic access control system the following should be applied:

a) Loss of power to the part of the system that controls the doors should automatically unlock the doors;

b) Activation of the fire alarm system should automatically unlock the doors;

c) A manual unlocking device shall be located within 1.5 m of the doors. The device should be readily accessible and be identified by a sign that reads “Push to Exit”;

d) A sensor may be provided on the egress side to automatically detect an occupant

approaching and unlock the doors. Where a sensor is used a manual unlocking device must also be located near the doors as specified above.

96. In cases where, for security reasons, it is desirable that exit doors with electronic locking as part of the access control system remain secure during a power outage or fire alarm activation, the following should be applied:

a) When there is a loss of power to the part of the system that controls the doors, or a fire alarm activation, the door will be configured to remain locked;

b) A break-glass emergency door release device must be installed within 1.5 m of the doors to enable unlocking of the door and egress in an emergency. Where a break-glass emergency door release device is installed it must be clearly visible and be identified by a sign that reads “Emergency Door Release”;

c) Provision must be made for manual release of all internal doors that are electronically controlled to enable egress from the controlled area.

V. Emergency/standby power

97. Every building in which the United Nations organizations have workspace must maintain an on-site source of emergency and standby power.

98. Emergency power for power and illumination to areas essential for life safety of building occupants should operate within 10 seconds after failure of normal electrical service to the building. Essential life safety systems covered by the emergency power supply include:

a) Emergency voice communications / public address system;

b) Exit signs;

c) Means of egress lighting;

d) Fire detection and alarms systems and essential safety systems;

e) Fire pumps and designated fire elevators.

99. All the above shall be equipped with adequate uninterruptible power supply (UPS) (batteries, accumulators, etc.) to ensure no interruptions in service, i.e., full redundancy is a requirement.

100. Standby power for power to systems that would create a hazard or adverse effect on fire fighting or rescue operations if lost should operate within 60 seconds after failure of normal electrical service. Such systems include:

a) Communications;

b) Ventilation or smoke removal (ventilation is normally shut down to reduce oxygen supply; de-ventilation for safety locks to or from emergency stairwells

must be continuously available).

101. Emergency and standby power systems can be powered by devices such as a storage battery or group of batteries, a fuel operated generator or a UPS. Where a fuel operated generator is maintained, an on-site fuel supply sufficient for not less than 6 hours full demand must be provided.

W. Provisions for physically challenged staff

102. During a fire physically challenged staff members have a potentially high risk from the effects the fire. The FSFP must implement the following to ensure the safe evacuation of physically challenged staff:

    a) Include provisions for physically challenged staff in the Fire Safety and Evacuation plans;

    b) Assign one, or preferably more, staff members with specific responsibility for assisting in the evacuation of such staff;

    c) Where feasible, provide necessary equipment to facilitate their evacuation, e.g. specialized chairs or transport devices to move physically challenged persons into and down an emergency stairway;

    d) Ensure that points of access and egress are able to accommodate physically challenged staff and any equipment used to transport them;

    e) Install panic hardware or other emergency devices able to be operated by physically challenged persons;

    f) Ensure physically challenged persons, fire wardens, security personnel and the local fire or rescue services are aware of the provisions made for evacuation of physically challenged persons.

X. Hot work

103. Ensuring fire safety in the performance of hot work (welding, cutting and brazing) operations during demolition, construction, renovation or maintenance activities is a critical component of fire prevention.

104. A procedure must be established for the issuance of hot-work permits by a competent person within the organization.

105. Hot-work permits should not be issued unless the individuals in charge of the performance of such works are capable of performing such works safely.

106. Hot work must not be conducted in the following areas unless approval has been obtained from the FSFP:

    a) Areas where the sprinkler system is impaired;

b) Areas where there exists the potential of an explosive atmosphere, such as locations where flammable gases, liquids or vapors are present;

c) Areas with readily ignitable materials, such as storage of large quantities of bulk sulfur, baled paper, cotton, lint, dust or loose combustible materials;

d) At other locations as specified by the FSFP.

107. Hot-work areas should not contain combustibles or if combustibles are present must be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles, and adequate ventilation must be available.

108. Where hot-work has been approved the following should be implemented:

a) Inspection of the area where work is to be done to see how close combustible materials are to the work area;

b) Floors are to be kept clean and clear of debris;

c) Openings should be protected;

d) Establish fire watches, if hazards warrant. A fire watch should stay on duty following the shut-down of all spark-producing equipment (recommended time is from 30 to 60 minutes);

e) Provide fire extinguishing equipment, usually manned by a standby employee;

f) Communicate with and coordinate the activities of all departments concerned with fire protection;

g) Isolate combustible materials from sources of ignition;

h) Limit unauthorized use of flame or spark-producing equipment;

i) Special precautions, such as using fire-resistant tarps, to cover areas/equipment that cannot be removed from the hot-work area;

j) Provide fire extinguishing equipment suitable for potential hazards at the site for immediate use;

k) Brief workers on fire safety measures, especially on the requirement to alert designated staff in case of fire, on extinguishers which have been made readily available, on escape routes and exits, etc;

l) Ensure workers are equipped with and utilizing adequate personal protection equipment.

Y. Fire watches

109. During the performance of hot works or when fire safety measures are temporarily or

permanently disabled, the FSFP must ensure that a qualified person (building employee, staff member or contract employee) is detailed to serve as a fire watch in at-risk areas. Fire watches will be provided with a means of communication to initiate emergency action during the period that hot works are being performed or until fire safety measures are restored.

110. Fire watch should also be instituted in United Nations organizations by the FSFP during special events or assemblies when it is in the interests of public safety.

Z. Hazardous material

111. The handling and storage of hazardous materials on United Nations premises must be done in accordance with host country regulatory requirements (where such exist) and United Nations policies and procedures.

112. When hazardous material is located on any United Nations premises, the FSFP must ensure that a hazardous material management plan is included in the Fire Safety Plan and that staff handling the material are appropriately trained.

113. The following are some of the factors to be considered when developing a plan for the safe handling and storage of hazardous material:

a) All hazardous materials must be properly labeled including their exact contents, hazardous properties, date of receipt and, if appropriate, date of expiration;

b) The physical and health-hazard properties of hazardous materials on site shall be known and shall be made readily available to staff members. Information should be recorded on a Material Safety Data Sheet (MSDS). As different terminology may be used by host country authorities the following is a descriptions of an MSDS:

(i) An MSDS is a form with data regarding the properties of a particular substance. It is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment and spill-handling procedures. MSDS information must include instructions for the safe use and potential hazards of the material;

(ii) MSDS formats can vary from source to source within a country depending on national requirements. MSDS meeting international standards shall be required upon or before the purchase of potentially hazardous materials/substances;

(iii) In some jurisdictions the MSDS is required to state the risks, safety and effect on the environment of the chemical. MSDS shall include “R” and “S” (risk and safety) phrases and “H” (hazard) phrases;

(iv) The specific MSDS must apply to the same supplier and international standards as the product;

c) There are stringent requirements for the storage of potentially hazardous substances (toxic, explosive, highly and extremely flammable, carcinogen, etc.), especially with respect to access to such substances and areas where they are used. Hazardous substances should be stored in the original packaging from the manufacturing plant or in containers constructed to withstand the effects of the product over the maximum storage time. Since transport containments are not commonly used for storage by end-users as they are not designed for this purpose, an MSDS will provide appropriate guidance concerning adequate containment, areas and rooms. Safeguards must also be provided to minimize the risk of an unintentional reaction or release that could endanger people or property. In addition, the signing and posting are different from those for transportation.;

d) United Nations personnel working with any potentially hazardous materials must receive Hazard Communication Training (HCT). HCT should teach staff how to identify hazardous materials, read labels, use an MSDS and identify hazards by category. HCT also covers how a chemical can enter the body and the difference between acute and chronic health problems. It teaches safe work practices when handling hazardous materials and how to store them properly. Proper emergency response procedures are also covered in the HCT training course;

e) A plan of action must be established to effectively handle hazardous chemical spills. Spill containment systems or means to render a spill harmless to people or property must be provided and included in the Fire Safety Plan;

f) Written procedures must be provided for exposure to, contact with or ingestion of hazardous materials;

g) Written procedures must be provided for disposal of hazardous materials;

h) Operators must be provided with adequate personal protection equipment and means of first aid in accordance with an MSDS on substance characteristics, “S” phrases and other applicable regulations;

i) Written procedures must be provided for disposal of hazardous materials, which must be documented and in accordance with host country legal requirements.

AA. Fire response options

114. It is the responsibility of the FSFP to establish procedures to handle fires and related emergencies and document these in the Fire Safety Plan. Options for fire response will depend on:

a) Size and physical characteristics of the facility;

b) Type of routine and potentially hazardous operations on the premises;

c) Authorized funding;

d) Number of trained security personnel available for fire protection and suppression duties;

e) Type, extent and capacity of fire protection equipment available.

115. Options for fire response include:

a) All staff members or selected staff members are trained to utilize fire extinguishers for incipient fires.[8] Initial training should be conducted when the employee commences duty and refresher training provided annually. This alternative provides the opportunity to prevent a small incipient fire from becoming a larger one. Staff members must clearly understand their limits when this option is selected and the decision-making process to be applied prior to engaging in active fire suppression;

b) An organized fire unit to fight incipient stage fires only. If this is the choice, the following are required;[9]

(i) Specific procedures, training and leadership structure;

(ii) All necessary protective clothing and fire fighting equipment;

(iii) Training and education on special hazards;

(iv) Training in standard operating procedures, tactics and use of equipment;

(v) A higher, specialized level of training for the fire unit leaders and instructors.

c) An organized fire unit to fight both incipient stage and interior structural fires. This option is the equivalent of a professional fire service within the organization and is particularly suitable for large mission facilities where there are limited host country fire fighting resources. If it is decided that the fire unit should fight both incipient stage and interior structural fires, the unit must be satisfy all the requirements in subparagraph (b) above and members must be equipped and trained accordance with the United Nations Guidelines for Fire Units.

116. Where a duty station has a fire unit established to fight incipient and interior structural fires and it is deemed appropriate by the FSFP, members of the brigade should be organized and trained to support orderly and efficient evacuation, make the best use of the fire protection equipment available and operate it effectively during an emergency. Where the host country has an operational fire service it would be appropriate for the organization's fire unit to perform training exercises

[8] An incipient fire is one that is in the initial stage and can be controlled or extinguished with portable fire extinguishers.

[9] Detailed guidance for fire units, including training requirements and essential equipment, is provided in the United Nations Guidelines for Fire Units.

with the host country fire service and establish a joint fire-response plan to ensure the most effective response in an emergency.

BB. Access for fire and rescue equipment

117. Emergency access routes for fire and rescue equipment must be maintained. The FSFP should work closely with sections responsible for facilities management to ensure that clear routes are maintained and proper signs posted.

CC. Signage

118. Fire safety signage standards vary from location to location. All fire safety signs should be consistent in colour, size, design and positioning. Every sign shall have plainly legible letters and preferably combine a pictograph with explanatory text. Text should be in the host country official language(s) and English.

119. Signs under subparagraph (c) below for which illumination is not required must be photo luminescent. Guidance is provided below on appropriate signage and colour coding standards. Avoid using a wide range of sizes and designs. A general standard of colour coding relating to fire safety is detailed below and is recommended for United Nations facilities.

    a) Red indicates fire equipment. A red circle with a diagonal line indicates something which is not allowed, e.g. no smoking;

    b) Yellow warns to proceed with caution or indicates specific hazards, e.g. high voltage;

    c) Green is the colour of safety and used for means of egress signage, exit doors, assembly areas, first-aid equipment locations, etc. In some locations, however, other colours (such as red) may be used to indicate an exit;

    d) Blue is a cautionary colour which indicates mandatory action required to ensure safety.

120. The most important fire safety signs are escape signs directing people along escape routes to the fire exits and assembly points.

121. Exits, emergency and exit access doors must be marked by signage readily visible from any direction of egress travel. Egress routes leading to exits must be marked by fire safety signs indicating the path of egress travel where the exit or path of egress is not readily visible to occupants. Exit signs (illuminated and redundant) should be installed above each and every exit.

122. All fire safety signs marking escape routes must feature a pictograph. This is the “running man” sign. Pictographs may be used on their own or with additional explanatory text. A combination of pictograph and text is recommended.

123. Signs for escape routes may include directional arrows, but arrows on their own are

not acceptable. Care should be taken not to obscure any fire safety signs, for example with stored equipment or temporary signs and notices.

124. Figure 8 illustrates signage appropriate for fire escape routes, fire exits and assembly points.

Figure 8 - Escape route signs

125. Fire exit signs should follow the same convention:

a) A pictogram plus the words FIRE EXIT or EMERGENCY EXIT indicate a specific fire/emergency exit route to be used during an evacuation (see figure 9).

b) The pictogram plus the single word EXIT is only used to indicate the conventional route out of the building (see figure 9).

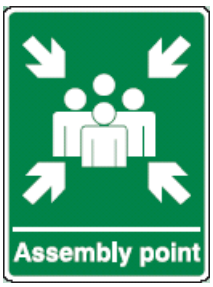
Figure 9 - Exit signs

126. For fire exit doors fitted with panic bars, the door just above the bar should be fitted with a sign saying “Push Bar To Open” (see figure 10). This is in addition to the “Fire Exit” sign.

Figure 10 - Panic bar door opening signs

127. Assembly points located on the site of the facility should be indicated with signs. Where the assembly point is off-site then signs indicating the direction of the Assembly Point should be posted near exits. Suitable signage is indicated in figure 11.

Figure 11 - Assembly point signs



128. The adequacy of escape route signage can be checked by walking along escape routes relying on the signs to provide direction to the exit. At each direction sign, the next sign should be visible.

a. Mounting of emergency egress signage

129. Fire safety egress signs mounted on walls should be located between 1.7 m and 2.0 m from floor level.

130. Fire/emergency exit signs for doors should be located above the door rather than on the door itself; however, where exit doors are limited to emergency use only, a sign should also be placed on the door indicating "Exit for emergency use only". If the door is armed as part of the security alarm system this should also be indicated (see figure 12).

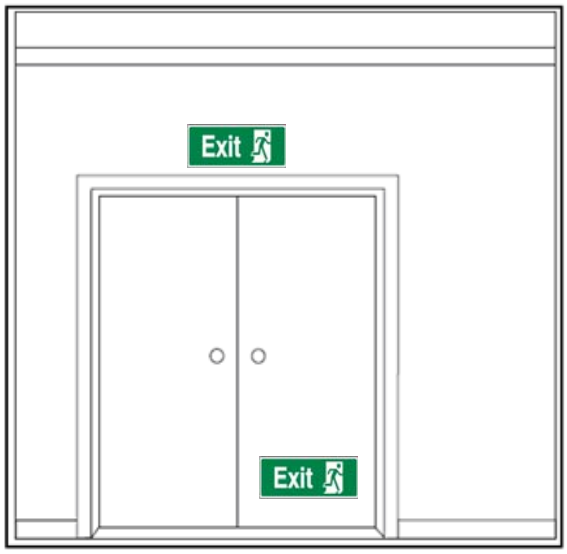
Figure 12 - Exit for emergency use only signs

131. Fire safety signs mounted above doors should be located between 2.0 m and 2.5m from floor level

132. To improve visibility of signs when smoke is present, all exit signs should be mounted both close to the floor and at eye level (see figure 13 below). The floor level sign should be mounted between 150 mm and 455 mm from the floor. For exit doors the sign may be mounted on the door or adjacent to the door with the nearest edge of the sign within 100 mm of the door frame.

133. All exit signs posted above doors must be illuminated in all buildings. This can be done by external lighting positioned to light the sign, but the best method is to use signs which have internal illumination (the sign itself lights up).

Figure 13 - Positioning of exit signs



134. Where refuge points have been established for occupants with disabilities, these should be clearly identified (see figure 14).

Figure 14 - Refuge point signs

b. Fire door signs

135. Fire doors are normally fire-resistant doors which are used as a passive fire protection measure to reduce the spread of fire and smoke between areas and to enable safe egress from a building. Blue fire door signs featuring a blue background with white graphics should be posted on all fire doors. They indicate the actions which must be taken to minimize the risk in the event of a fire, such as, “Fire door keep shut” (see figure 15).

Figure 15 - Fire door signs

136. All fire doors should have signage affixed reminding staff to comply with the instructions displayed. Signage must be displayed on both sides of the door. Fire doors on storage areas and cupboards should have signs reading "Fire Door Keep Locked".

c. Fire action signs

137. Fire action signs should be displayed in United Nations facilities and are required in larger facilities, particularly conference buildings or premises with a lot of visitors or members of the public. Fire action signs give brief instructions on the action to take on discovering a fire. A template design is included in annex III, (Fire Safety Plan Template, annex A, "In Case of Fire"). Various designs are also available commercially and on the Internet and can be adapted to suit the site. Two examples of signs commercially available are shown in figure 16.

Figure 16 - Fire action signs

d. Fire point signs

138. Fire point signs indicate the presence of a manual fire alarm activation point, fire

fighting equipment, fire phone, etc. Where any of these items are present fire point signs must be displayed and be readily visible to occupants. Fire point signs are red with white symbols and wording. Examples are provided in figure 17.

Figure 17 - Fire point equipment signs

DD. Provision of emergency lighting

139. Emergency escape routes and exits must be provided with emergency lighting of adequate intensity in the case of failure of normal lighting.

140. The emergency lighting system is to be either continuously in operation and able to remain in operation in the event of a general power failure or capable of repeated automatic operation without manual operation. The power source for emergency lighting may be provided by a generator or reliable rechargeable batteries, providing a minimum uninterrupted power supply for 60 minutes.

141. The main purpose of emergency lighting systems is to illuminate escape routes in the event of a power failure, so that everyone can still find their way safely out of the building. When doing a Fire Safety Risk Assessment and during routine fire safety inspections, escape routes must be checked to ensure that sufficient emergency lighting is provided and that it is functional.

142. Emergency lighting systems will need to cover the following areas:

    a) Every exit;

b) All exit access;

c) All exit discharge;

d) Lift lobbies;

e) Break-glass call points;

f) Any safety equipment or machinery that would need to be closed down in an emergency;

g) Outside each exit from the building.

EE. Lightning protection

143. In regions where the incidence of lightning strikes is moderate to high, the hazards associated with lightning must be considered during the Fire Safety Risk Assessment and mitigation measures implemented. Specialist guidance must be sought from an engineer qualified to advise on lighting mitigation.

144. Some structures are inherently more at risk of being struck by lightning. The risk for a structure is a function of the size (area) of a structure, the height and the number of lightning strikes per year per square mile for the region. For example, a small building will be less likely to be struck than a large one, and a building in an area with a high density of lightning strikes will be more likely to be struck than one in an area with a low density of lightning strikes.

145. A lightning protection system is designed to protect a structure from damage due to lightning strikes by intercepting such strikes and safely passing their extremely high voltage currents to “ground”, thereby mitigating the fire hazard. Most lightning protection systems include a network of lightning rods, metal conductors and ground electrodes designed to provide a low resistance path to ground for potential strikes.

146. Lighting protection installed at United Nations facilities must be designed by a licensed engineer, approved by the FSFP and installed and maintained by a competent contractor. Installation and maintenance must be in accordance with manufacturers’ specifications and fire code standards.

FF. Occupancy load

147. United Nations organizations must establish safe occupancy loads for their facilities. The occupant load of a building affects the number and capacity of its means of egress and has an impact on the structure's occupancy classification, its plumbing fixtures and its ventilation rates. Therefore, it is essential that a proper occupant load calculation be performed when a new building is designed or an existing one assessed. The occupancy load must be established prior to occupancy and adhered to during the period of occupancy.

148. Occupancy load refers to the safe number of people permitted in a building at one

time based on the building's floor space, load-bearing capacity and function. Building codes apply different requirements for different types of occupancies. Therefore a conference building is required to meet different requirements than an office building, living accommodation or storage facility. Occupancy load calculations are based on the estimated space an individual occupies, which varies depending on the venue and event type. Tables that provide these numbers are usually found in building codes so may vary by location.

149. Where the occupancy load has not been established, the FSFP should initiate the process through the United Nations organization's administrative structure to ensure that occupancy loads are established and documented by a certified engineer.

150. Occupancy loads are an important component of fire safety and must not be exceeded. Occupancy loads should be monitored during routine fire safety inspections, particularly for assembly areas and any other areas where there might be a tendency to exceed the approved occupancy.

GG. Camp facilities

151. Camp facilities, which may include a variety of temporary and fixed structures within a defined and controlled perimeter, are established to support field missions such as peacekeeping operations and relief and humanitarian missions. Fire safety must be incorporated into the design of camp facilities and a fire safety specialist should be part of the project planning team.

152. Camp facilities typically involve a large number of low-level structures spread over a large site and may incorporate a broad range of operational functions with associated fire hazards. Space planning is particularly important in such facilities to ensure that fires are contained and that fire fighting appliances have ready access in the event of a fire.

HH. Tent facilities

153. Tent facilities are used as temporary structures in support of a number of United Nations activities including field missions, as annexes for external conferences under the control of a United Nations organization and to supplement permanent United Nations structures. Where tent facilities are used, fire safety must be factored into the planning, design and layout to ensure appropriate fire mitigation measures provided. The standards set out in this section should be applied for tent facilities, canopies and membrane structures of a similar nature.

154. For the purposes of this section the term 'tents" includes tents, canopies and membrane structures.

155. All tent fabrics and floorings must be treated with flame retardant and certified as such by an accredited third party agency institution or underwriter.

156. Tents must have a permanently affixed label identifying the size and fabric or material type.

157. Combustible materials such as hay, straw, shavings or similar materials must not be located within any tent used as assembly area (i.e., an area where people will gather to meet, eat, drink or similar activities). The areas within and adjacent to the tent must be maintained clear of all combustible materials or vegetation that could create a fire hazard within 6 m of the structure. Combustible rubbish must be removed from the structure at least once a day.

158. Open flame or other devices emitting a flame, fire or heat or any flammable or combustible liquids, gas, charcoal or other cooking device shall not be permitted inside or located within a tent or within 6 m of a tent unless approved by the FSFP.

159. Operations such as food preparation and cooking that use solid flammables, butane or other similar devices which do not pose an ignition hazard maybe approved by the FSFP. A separation distance of 5 m must be maintained between food preparation and cooking facilities and mess tents used for eating.

160. Mess tents and other facility tents with separate wings that form one central core should be configured to allow the safe dismantling of these wings in the event that an adjacent wing catches fire.

161. Assembly tents and facility tents such as maintenance, messing, supply and recreation tents must be arranged so as to provide sufficient exits for safe evacuation, with a maximum travel distance to an exit not exceeding 23 m. The following is a guide for the minimum number of exits based on occupancy:

    a) 10-199 2 exits at 1.8 m each;

    b) 200-499 3 exits at 1.8 m each;

    c) 500-999 4 exits at 2.4 m each;

    d) 1000-1999 5 exits at 3.0 m each.

162. Distances of not less than 15 m must be maintained between all facility tents and sleeping accommodation.

163. For other than military or formed police units in field missions, distance of not less than 6 m must be maintained between individual tents and 10 m between rows of tents used for sleeping. Spacing must be sufficient to provide an unobstructed fire break passage way not less than 3.6 m wide free from guy ropes or other obstructions on all sides of tents. For camps used by military and formed police units, distances may be adjusted based on available land size; however, every effort should be made to achieve the above distances and where reduced distances are applied, adequate fire mitigation measures must be implemented.

164. Smoking must not be permitted in tents. "No Smoking" signs shall be posted in conspicuous locations.

165. Generators, heaters and other equipment using fuel should be kept a distance of not

less than 3 m from any tent.

166. Travel distance to an exit in tents for sleeping accommodation, including modular joint units, should not exceed 15 m.

167. Portable fire extinguishers must be provided in visible locations and distributed so that the travel distance to the nearest fire extinguisher is not more than 23 m.

168. Fire hose lines, water supplies and other auxiliary fire equipment should be maintained at the site in such numbers and sizes as required by the FSFP.

169. Adequate, unobstructed and safe access for fire-fighting services and their withdrawal, free of pegs, ropes and cables, must be maintained.

170. Tents should not be sited among vegetation prone to fire, and proper clearing should be provided. Combustible vegetation must be removed from the area occupied by a tent and from areas within 10 m of such structures.

171. The floor surface inside tents and within a 10 m perimeter shall be kept clear of combustible materials and waste, which shall be stored in approved containers until removed from the premises.

II. Living accommodation

172. Living accommodation presents higher risks to occupants because of high occupancy loads and because people may be asleep when a fire breaks out. The provision of living accommodation by United Nations entities or missions tends to be in less developed areas where automated fire fighting systems (i.e., sprinklers) are not an option due to lack of infrastructure and the temporary nature of accommodation.

173. Fire protection measures must be sufficient to mitigate the risk to an acceptable level.

174. Fire safety/prevention measures for living accommodation should include:

a) Smoking inside the buildings must not be permitted. Smoking must be restricted to designated areas;

b) Cooking should not be permitted in living accommodation other than in designated areas;

c) Portable heaters are a fire hazard and their use should be minimized. Where used, the manufacturer's instructions should be followed, particularly regarding flue pipes and refueling. Safe distances to combustible items must be maintained at all times;

d) Hanging clothing above fuel-fired or electrical heaters should not be allowed;

e) Bedding, curtains and furnishing fabrics should be resistant to ignition and flame retarded and be certified as such by a reputable (accredited) entity;

f) Portable fire extinguishers should be located:

(i) So that they are easily identified and accessible;

(ii) So that the travel distance from any point in the building to an extinguisher does not exceed 23 meters, and;

(iii) At least one extinguisher should be located near each entrance and exit door;

g) Smoke alarms should be installed in each sleeping room and in corridors of a single-storey building. Two or more storey buildings should be equipped with at least a system of interconnected smoke alarms and preferably with a monitored fire detection and alarm system;

h) At least two exits must be provided on each floor. The exits must be remote from each other to provide alternative means of escape, and:

(i) The travel distance from a door of a room to an exit from the building (along the corridor) should not be more than 30 m;

(ii) Any dead-end corridor should be no longer than 10 m;

i) Single storey prefabricated units should be spaced at least 6 m from each other;[10]

j) Two-storey storey prefabricated units should be spaced at least 10 m from each other;

k) Stores of flammable liquids and gases, rubber, and ammunition and explosives must be located at safe distances from living accommodation. The safe distance should be established based on the amount of the stored material and guidelines for this type of storage.

175. Additional provisions must be made for accommodation which is provided for persons requiring assistance to evacuate (e.g. patients in health-care facilities) or persons whose movement is restricted (e.g. detained persons). These provisions must involve emergency procedures for staff actions and assistance. Large facilities of this type, such as hospitals, need to be designed, equipped and maintained according to building and fire codes; alternative solutions may be acceptable if substantiated by a performance-based design performed by reputable experts and approved by a reputable certified fire safety entity and the FSFP.

176. Measures must also be taken to limit the probability that more than one building is lost in case of fire. This can be achieved by adequate spatial separation and keeping spaces between buildings free of combustibles. Large buildings shall be divided into fire compartments by means of certified fire-walls and fire doors.

[10] Where individual containers are combined they may be categorized as a single unit.

JJ. Clubs, messes and bars

177. Clubs, messes and bars can pose higher risk levels because of periods when a large number of people are present, alcohol is being consumed and there are potential ignition sources due to smoking and special lighting. Fire may develop rapidly if there are combustible decorations or finishes and they catch fire. Exposed foamed plastic, including decorations, have been proven to be a fire hazard in this type of premises. A large number of people trying to exit at the same time may choke the exits and prevent people from avoiding the fire.

178. The risks associated with such facilities should be controlled by the following measures:

a) The limit for the number of persons permitted to be present must be established and enforced. Where the host country does not establish maximum occupancy levels, the maximum occupancy level should be determined by allowing for 1.5 m^2 of floor area per person, provided that sufficient fire exits are available;

b) Smoking should be prohibited within the facility and designated smoking areas established outside the premises;

c) In typical premises, at least two exits, located remotely from each other, should be provided. One exit may be sufficient in exceptionally small premises, with a low occupancy level subject to approval by the FSFP;

d) Exit doors should be at least 1.1 m wide;

e) The exits must be indicated by signs clearly visible from every location in the room and signs must be illuminated;

f) The exits must not be blocked or obstructed by any objects;

g) No exit may be locked while people are present on the premises;

h) Combustible decorations attached to or suspended below the ceiling must not exceed 10 per cent of the ceiling area, and must not be hung above the exit or along walkways, passages or escape routes;

i) Combustible decorations must be kept at least 0.5 m from light fixtures;

j) Emergency lighting should be provided. As a minimum a battery powered torch must be available to staff and other emergency lighting which is connected to the power grid for automatic re-charging and automatic actuation upon power interruption must be mounted next to each exit;

k) Class A (water) fire extinguishers should be located at every exit, and Class B (CO^2) fire extinguishers should be readily available for the use by staff;

l) Fire action notices should be posted in prominent locations. Staff must have

printed fire action instructions on the premises and be familiar with the content;

m) The premises should be inspected regularly during hours of operation and be closed if found unsafe.

KK. Cooking and eating facilities

179. Cooking is potentially a fire hazard and should not be permitted outside designated cooking/kitchen areas. It is particularly important that cooking does not take place in warehouses, workshops or in living accommodation outside designated areas.

180. Kitchen appliances should be installed and maintained in accordance with the manufacturers' instructions.

181. Kitchens should be equipped with an appropriate fire extinguisher suitable for cooking oils and fats (United States Class K or European/Australian Class F classification). Further, extinguishing blankets of appropriate size are to be installed in sufficient numbers (e.g. 1 per stove/broiler);

182. Combined cooking and eating facilities must be designed, equipped and maintained to control a significant fire risk coming from the potential fire sources.

183. Smoke alarms or smoke detectors of an automatic alarm system should be located far enough away from the cooking area so that smoke or steam generated from cooking does not result in repeated alarm activations, or rate-of-rise heat detectors should be used.

184. Eating areas should have exits of sufficient capacity and number, corresponding to the anticipated number of people present. Except for very small facilities, at least two separately located exits should be provided, none of them leading through a kitchen.

LL. Workshops and repair garages

185. Workshops and repair garages pose significant fire risks because of the presence of ignition sources and combustible and flammable materials.

186. Work involving ignition sources such as hot works and machine tools producing heat and sparks, should be limited to specified areas equipped with fire extinguishers and other fire protection equipment.

187. Smoking in or near workshops and repair garages should not be permitted except in designated areas.

188. Electrical wiring and outlet boxes must not be tampered with. Only qualified electricians should be allowed to modify the electrical distribution system. Use of extension cables should be minimized, and cables should be protected from damage. The electrical equipment should be disconnected from the power supply when not in use.

189. Paints, solvents and other flammable liquids should not be stored on site in quantities larger than required for the immediate use. Small amounts of those liquids may be kept on site, if in proper containers and in dedicated cabinets.

190. Waste motor oil should be stored in closed containers suitable for oil storage and disposed of regularly and properly. Care must be taken to avoid contamination of the ground and the environment in general with the oil. Garage floor drains should be equipped with oil separators or traps. The separators and traps should be emptied regularly to prevent the contaminants from being carried into the sewer.

191. Oily rags and waste should be stored in closed metal containers and disposed of regularly and properly.

192. The use of acetylene requires particular attention to fire safety. Acetylene cylinders must be stored and used in a vertical position and be physically protected from toppling over as well as from any severe mechanical impact. Any disturbed cylinder should be left unused for at least 24 hours during which its temperature is to be monitored. Any cylinder exposed to and/or emitting high temperature should be treated as potentially explosive. Only those persons who have been trained and certified in the use and safe handling of acetylene shall be permitted to use it. The quantity of acetylene kept inside any structure must be kept to the absolute minimum required and adequate ventilation is to be provided.

MM. Storage buildings and facilities

193. Properly designed general storage facilities do not pose a high risk to people working there due to relatively low occupant load, but are prone to material losses. The risk to life increases if the storage is combined with other uses, such as offices or workshops. Common in warehouses are mezzanines used as office space. In such an arrangement, it is critical that the occupants of the mezzanine are aware of fire safety hazards associated with the storage space, and the occupants are provided with sufficient exit facilities with short travel distances. The travel distance from a mezzanine to an emergency exit must not exceed 20 m, provided no potentially hazardous materials or substances are kept in store (then the maximum distance shall not exceed 10 m). In some instances this may necessitate the provision of a direct emergency exit from a mezzanine to the outside of the building.

194. Maximum travel distances should be established considering occupant density in particular areas and ease of access to the exits (evacuation routes). In the general storage area, with wide and unobstructed aisles (minimum width equal to the width of the largest goods stored and/or the maximum width of lifting/transporting devices plus 50 cm at each side (100 cm total), this can be as much as 40 meters. Areas of higher population, such as offices, lunch rooms or packaging areas, should be located so that the travel distance is not more than 20 m.

195. Staff should be provided with fire safety training. Effective housekeeping and compliance with smoking regulations must be strictly complied with.

196. Fire protection features depend on the size and the structure of the warehouse, as

well as on the type (risk classification/fire load) of the stored goods. Normally facilities up to 250 m^2 should be fitted with a monitored fire detection and alarm system. Larger facilities should have an automatic fire extinguishing system, or combination of fire detection/control and smoke control systems installed (e.g. fire doors closing off compartments upon activation of the fire detection and alarm system). Some of these measures may be difficult or impractical to maintain in field environments. If this is the case, a decision on alternative mitigation measures must be based on the Fire Safety Risk Assessment on the basis of consequences of the potential loss of the assets, the impact of loss on operations, and the cost and resources needed to mitigate such loss.

197. One solution that may be used to mitigate risks is having a number of smaller warehouses, separated spatially or by firewalls, rather than one large warehouse.

198. In the risk analysis, the fire-fighting capabilities of the office or mission must be taken into account. Spatial separations given by building and fire codes are based on certain assumptions with respect to fire-fighting capabilities, in terms of the response time and the "extinguishing power". The separating distances have to be increased substantially if an effective fire fighting effort cannot be commenced within 15 minutes of discovering a fire.

199. Regardless of the warehouse size, it should be equipped with the basic, first line of defence fire protection equipment such as fire extinguishers, fire blankets and other items that may be required for the specific hazards present in the warehouse. Class A extinguishers should be located near the exit doors and in other locations (e.g. on columns), so that the travel distance from any point within the warehouse does not exceed 23 m. In locations where there is a hazard of possible spill of liquid fuel or other flammable liquid, a Class B handheld extinguisher should be located not more than 9 m, or a wheeled extinguisher not more than 15 m away.

200. Attention should be paid to the potential damage to the environment due to fire or fire fighting actions. A fire in a warehouse storing hazardous materials may release toxic or otherwise harmful substances due to damage caused by the fire; these substances may also be spread with the effluents of contaminated fire fighting water if spill basins and dedicated drainage do not meet requirements. Large amounts of harmful effluents may be generated by fire in storage of rubber tires. It is important to limit the size of individual piles, so that a fire can be isolated and prevented from involving large quantities of the tires.

201. Outdoor storage facilities of ordinary goods do not pose a direct fire risk to loss of life or injury, but a fire may threaten adjacent assets and cause environmental damage. It is important to limit the size of stacks of combustible material and separate the stacks to provide access for fire fighting activities.

202. Storage areas of waste and disposed equipment and material carry significant fire and environmental risks. Those areas may contain large quantities of used motor oil, plastics and other materials that are highly combustible and which, when involved in a fire, release substances harmful to people and the environment. Potentially

hazardous or harmful materials and substances are to be stored in qualified dedicated areas meeting the same requirements as those areas recommended by, for example, an MSDS for storage of unused materials/substances of the same kind and nature. It is critical that the size of piles and other groupings are limited, with ample separation and access for fire fighting activities.

NN. Storage of liquid fuels and lubricants and fuel dispensing facilities

a. General

203. Large storage facilities for liquid fuels and lubricants and fuel dispensing facilities must be designed, built and equipped following building and fire codes. The following section is provided as a general guide. For detailed guidance refer to the DPKO/DFS Fuel Operations Manual, "Fuel Operations for Peacekeeping Missions", Section 5, UN Constructed Field Sites.[11]

204. Liquid fuels are a serious fire hazard because of their proliferation and ease of ignition. They also characteristically produce very high temperatures and harmful gases and particles when burning.

205. Liquid fuels do not burn as liquids; it is their vapours that burn. For a liquid fuel to burn, it has to be converted to vapour (by temperature) and the vapour has to mix with air to build a combustive mixture ratio. An ignition source must usually be present in the form of a spark or flame. The combustible mixture may ignite spontaneously (without an ignition source) if the temperature of the mixture is high enough as, for example, in a diesel engine.

206. The ability of a liquid fuel to convert to vapour and to create the combustible mixture with air varies widely among fuels and lubricants. That ability is characterized by the "flash point" or the temperature at which, in a standard apparatus, the vapours above the liquid can be ignited by a small ignition source. Based on the flash point, liquid fuels and lubricants are classified in the following three classes indicating their fire hazard with respect to their safe storage:

a) **Europe**

(i) Class A: flammable liquids which themselves and/or their burning components cannot be mixed with water at a temperature of 15oC. These are divided into different sub-classifications:

- Hazard Class A I: liquids with a flash point below 21^{o}C
- Hazard Class A II: liquids with a flash point between 21^{o}C and 55^{o}C
- Hazard Class A III: liquids with a flash point between 55^{o}C and 100^{o}C

[11] http://intranet.dpko.un.org/dpko/pages/DocumentDetails.aspx?DocId=3204#.

(ii) Class B: combustible liquids which themselves and/or the burning components of which can be mixed with water at a temperature of 15oC These are divided into different sub-classifications:

- Hazard class B I: liquids with a flash point below 21^{o}C
- Hazard class B II: liquids with a flash point between 21^{o}C and 55^{o}C

b) **North America**

(i) Flammable Liquids: Any liquid having a flashpoint below 100oF except a mixture having components with flashpoints of 100oF, or higher, the total of which make up 99 per cent or more of the total volume of the mixture. Flammable liquids are divided into three classes as follows:

- Class IA includes liquids having flashpoints below 73^{o}F and having a boiling point below 100^{o}F
- Class IB includes liquids having flashpoints below 73^{o}F and having boiling points at or above 100^{o}F
- Class IC includes liquids having flashpoints at or above 73^{o}F and having boiling points below 100^{o}F

(ii) Combustible liquids: Any liquid having a flashpoint at or above 100oF. Combustibles are divided into two classes as follows:

- Class II liquids include those with flashpoints at or above 100^{o}F and below 140^{o}F or higher, except any mixture having components with flashpoints of 200^{o}F or higher, the volume of which make up 99 per cent or more of the total volume of the mixture
- Class III (A) liquids include those with flashpoints at or above 140^{o}F and below 200^{o}F, except any mixture having components with flashpoints of 200^{o}F or higher, the total volume of which make up 99 per cent or more of the total volume of the mixture
- Class III (B) liquids include those with flashpoints at or above 200^{o}F

207. As indicated in the classification, there are important distinctions between the classes themselves and their accessory hazard classes.

208. Hazard Class I liquids (e.g. gasoline) create enough vapours to form a combustible or explosive mixture with air at ambient temperatures and under regular pressure, so their storage and handling require special attention.

209. Hazard Class II liquids (kerosene) do not create enough vapours to form a combustible or explosive mixture with air at moderate ambient temperatures and under regular pressure, however in a hot climate they may do so.

210. Hazard Class III liquids (diesel and other heavier oils) are not very easily ignitable, but they may contribute to the amount of heat produced when involved in a fire.

b. Fire prevention for liquid fuels and lubricants

211. Precautions must be taken to prevent the emission, accumulation and ignition of flammable vapours produced by the stored flammable and/or combustible liquids. The following are the most likely sources of ignition:

a) Smoking must not be permitted in or near the storage site and access to the site must be limited to authorized qualified personnel;

b) Static electricity - all metallic equipment such as tanks, machinery and piping where the potential exists for an ignitable mixture to be present must be bonded and grounded. All components of storage containments, as well as means of transportation (pipes, valves, pumps), must meet explosion protection classification. The same applies to all energized appliances in the close vicinity, including electrical wiring, lights and sockets. Electrically isolated sections of piping and other equipment should be grounded and bonded together. Non-metallic components and containers should be certified as safe for their intended use;

c) Electric sparks - these are likely to be produced by faulty or non explosion-proof equipment;

d) Hot works - welding, cutting and applying waterproofing membranes using open flame are obvious ignition sources that must be stringently controlled;

e) Frictional heat or sparks may be produced by grinding, or by seized bearings or other malfunction of mechanical devices;

f) Bushfire control has to be enforced in and around the storage and dispensing facilities. The controlled area for low vegetation (grass) should be within at least 20 m off the perimeter, tanks and equipment. Taller bushes may need to be cleared at far longer distances;

g) Lightning protection must be provided.

c. Selection and location of fire extinguishers

212. Fire extinguishers for Class B fires involving flammable liquids of an appropriate size (e.g. min. 50 kg dry powder, 50 l foam, 25 kg CO^2) should be selected for the areas where a spill of liquid fuel or other combustible liquids may happen. As fire extinguishers are intended to combat an incipient fire, at its earliest stage when the fire is small, they may prove ineffective against a fire which has developed and which involves significant amounts of combustible or flammable liquids.

213. The rating of extinguishers for protection of certain area depends on the estimated size of a potential spill. For example, an extinguisher rated 40-B is meant to handle

a 40 ft^2 (approximately 3.5 m^2) spill of combustible liquid.

214. Where a spill of a flammable liquid (e.g. gasoline) may happen, the required rating should be doubled.

215. The fire extinguishers should be located near the location of the potential spill, at a travel distance allowing for their quick utilization but, at the same time, at a safe distance (minimum 10 m) from the central hazard area.

d. Protection of the environment

216. Where fuel is stored at United Nations facilities, provision must be made for protection of the environment during normal use of the facilities and in the event of a fuel spill or fire.

217. Bund walls should be installed around storage tanks, where applicable, to contain spillage of liquid fuels, either due to damage to the tanks or piping, or run-off of the contaminated fire fighting water. "Bunding" or "bund walls" are terms used to describe liquid containment walls surrounding storage tanks. One of the most common designs for large tanks is a concrete or masonry wall around the tank with a concrete floor designed to withstand the liquid (special coating) to prevent contamination of the soil. The outside of the wall may be reinforced with an earth berm. Large tanks should have proper bunding, capable of containing at least 110 per cent of the tank's maximum volumetric capacity. Depending on the liquids' vapour pressure (at a temperature of 20^{o} C, in accordance with MSDS), it may be advisable not to fill the tanks to the maximum.

218. Attention must be paid to the integrity of the bund walls as quite often these are penetrated during modifications of the connecting piping and the openings are left unprotected.

e. Flammable compressed gases

i. General

219. Flammable compressed gases, such as propane or butane for cooking or heating, pose a fire hazard because of the ease of ignition and ability to create an explosive mixture with air. Precautions must be taken when these gases are transported, stored and used. Particular attention must be paid to locally supplied cylinders that may be damaged or of lower standard for maintenance and inspection. Any questionable cylinders must be rejected.

ii. Transportation of flammable compressed gases

220. Flammable gases are transported in pressurized cylinders and any damage could result in a leak with disastrous results. The risk should be reduced by:

a) Securing all cylinders being transported;

b) Transporting all cylinders in an upright position;

c) Ensuring that protective caps are in place and secure;

d) Ensuring that the vehicles are properly marked to identify the materials being transported;

e) Ensuring that enclosed vehicles are vented to the exterior to allow the dissipation of escaping vapours;

f) Equipping the vehicles with an appropriate serviceable fire extinguisher;

g) Not carrying combustible materials with flammable gases on the same vehicle.

iii. Storage of flammable compressed gases

221. During many field deployments, satisfactory holding areas, as prescribed in fire and building codes, may not be feasible. However, the following guidelines should be followed:

a) Locate the storage area for flammable gases a minimum of 7.5 m from any tent or structure or behind a solid wall, and at least 3 m from any designated pedestrian or vehicular route;

b) Liquid Petroleum Gases (LPG), such as propane or butane, are heavier than air and any leaked gas tends to flow into a low place. Anticipate where the leaked gas may flow and avoid locations from which the gas would migrate under a building, into below-ground installations, tents, containers, sheds, or towards an ignition source;

c) Locate storage areas down from the prevailing wind from structures and ignition sources;

d) Select a firm, level area for a steadier base for cylinders;

e) Shade cylinders from direct sunlight to avoid pressure increase;

f) Secure cylinders firmly to ensure they remain upright;

g) Ensure flammable liquids are stored a minimum of 6 m from flammable gases and a fire-resistant separator is installed in between;

h) Cylinder valves should be closed and protective caps in place;

i) Cylinders should not be disguised by painting or altering their appearance in any way;

j) Different types of compressed gases must be kept at least 6 m apart from each other;

k) Flammable compressed gases must be protected from unauthorized access by adequate mechanical/structural means and both access and manipulation restrictions together with smoking/open light prohibition signage must to be posted.

iv. Use of flammable compressed gases

222. Using flammable gases for cooking and heating combines an ignition source with the potential for an accidental release of gas, which could result in an explosion or intense fire. The following are a few rules that reduce the risk:

a) Cylinders should be installed outside, not less than 3 m from any tent or structure, or separated from them by a solid wall.

b) Cylinders should be protected against damage by traffic or other causes.

c) The gas line connecting the cylinder with the appliance should be protected against damage by traffic, environmental effects and/or other causes, including contact with the walls and partitions through which the line is passing;

d) Cylinders should be not less than 3 m from any auxiliary equipment or other ignition source;

e) Cylinders must be secured in an upright position by strapping in a rack or by securing to a sturdy object.

f) Damaged cylinders should be immediately removed from service;

g) Hydrostatic tests and life span of cylinders must be respected;

h) For kitchen use, the maximum number of cylinders at or below 45 kg capacity should be restricted to 2 per appliance (1 connected and 1 spare);

i) Only approved appliances may be used indoors or under cover;

j) Flammable gases should be transferred to the appliance by flexible hose, certified for that purpose and the hose should not be buried or concealed;

k) All flammable gas cylinders exceeding 9 kg capacity should be equipped with an excess flow valve;

l) All flammable gas installations in a tent should have an in-line shut-off valve inside the tent that is quickly accessible by tent occupants and is independent of the cooking appliance;

m) Flammable gas appliances must not be located in a path of egress;

n) All personnel who operate flammable gas systems must be familiar with the appropriate fire safety and emergency procedures.

OO. Magazines for ammunition and explosives

223. Magazines for storage of explosives and large quantities of ammunition are most commonly found within United Nations peacekeeping missions. The FSFP in these missions must liaise closely with the person within the mission with overall command and control of these storage facilities to ensure appropriate fire mitigation measures are in place.

224. Even a small fire involving ammunition or explosives may quickly lead to an explosion. There are three main causes of injury, death or property damage from an explosion. The most common cause is a pressure wave expanding from an explosion. Another hazard is flying fragments of the exploding products and the surrounding structure. The third source of damage is thermal radiation from the fireball. Any of those hazards can start another explosion and/or fire by affecting adjacent other explosives, fuel tanks, vehicles or other objects.

225. The Fire Safety Plan should specifically deal with procedures in the event of fire affecting ammunition and explosives magazines, including evacuation and safe distances for evacuation.

226. The common characteristic of explosion hazards is that the effect of them decreases with distance, thus establishing safe distances in locating magazines is important. Because the safe distance requirements increase as the quantity of the ammunition explosive increases, the designers of the storage facilities should establish the maximum storage capacity for each facility.

227. The magazine storage facility for ammunition and explosives must to be equipped with fire extinguishers and other fire protection equipment, if necessary, depending on the circumstances (e.g. means for fighting grass fire).

228. In the event of a fire threatening a magazine for ammunition or explosives the fire fighting response should be vigorous, using all the immediately available resources. However, as soon as a fire presents an imminent threat of an explosion all personnel must be withdrawn to a safe area. Explosive safety standards provide safe distances for withdrawal depending on the amount and classification of the explosives. These must be specified in the Fire Safety Plan and standard operating procedures. When precise information is not available during the fire emergency, but it is known that there is a substantial amount of explosives stored, withdrawal to a distance of 1 km is recommended in a location with flat terrain. The distance can be much shorter if there are natural protective features of the terrain or suitable man-made shelters.

229. Because of the need to ensure effective fire fighting capacity in the vicinity of a magazine, redundancy with respect to the available fire extinguishers is recommended. Having more than one extinguisher of each required type will mean that if one extinguisher malfunctions or is depleted, there should be another one ready to be used. The number and capacity of fire extinguishers depends on the size of the magazine, but a substantial magazine should be equipped with not less than two wheeled and four hand extinguishers, of the type and capacity appropriate for

the hazards in and near the magazine.

230. Other components of fire safety of storage facilities for ammunition and explosives are:

a) Comprehensive standard operating procedures;

b) Fire prevention training;

c) Frequent inspections.

231. The following mitigation measures should be applied:

a) Strictly regulate and control smoking in areas where ammunition and/or explosives are kept. If smoking can be regulated safely, designate specific locations approved by the officer in charge of the facility and the FSFP and equip these areas with proper receptacles for butts or smoking residue. Do not allow smoking in vehicles passing through these areas;

b) Locate the smoking area at least 15 m from the area containing ammunition and explosives. Ensure that at least one serviceable fire extinguisher is placed in the area;

c) Do not permit use of matches or other flame, heat or spark producing devices in or around any magazine area or field storage facility. The only exceptions will be by written authority of the commander of the facility or the FSFP;

d) The highest possible level of housekeeping must be maintained in ammunition and explosives storage areas;

e) All non-essential electrical equipment/lighting must be switched off when buildings are not occupied;

f) Use only flashlights or storage battery lamps approved by a recognized authority in structures that contain ammunition or explosives;

g) Locate overhead transmission and power lines no closer to the storage location than the height of the pole or 15 m, whichever is greater;

h) Locate parking areas no closer than 30 m away from storage areas. Control these areas to reduce fire hazards and provide easy access to firefighters;

i) Check areas on a daily basis for combustible materials left over from operations. Stack and/or properly dispose of these materials;

j) Control vegetation or undergrowth within 15 m with weed killers or by mowing or plowing. Remove all cut vegetation and undergrowth;

k) Carefully consider controlled burning to eliminate vegetation and undergrowth. Allow no burns within 60 m of any explosive location. Fire watch with fire-

fighting equipment should be standing by during these operations;

l) Ensure that clearly written fire instructions are given to the personnel;

m) Ensure that the personnel understand the importance of quick action to extinguish a fire and rapid withdrawal if the action proves unsuccessful.

PP. Aviation fire safety

232. United Nations missions operate civilian and military aircraft in an array of challenging environments, which often lack the infrastructure required in support of international standards and recommended practices. Subject to specific local limitations United Nations organizations conducting aviation operations should apply International Civil Aviation Organization Standards and Recommended Practices (ICAO SARPS) specific to fire to mitigate fire safety risks associated with their aviation operations. See also DPKO and DFS Policy - Aviation Safety (2009)[12] and Aviation Standards for Peacekeeping operations and Humanitarian Air Transport Operations (2003).[13]

233. In some field locations it may be impossible to apply regular fire safety measures, as they are required by the ICAO SARPS and / or building and fire codes thus other mitigation must be provided. For example, in many instances, in established permanent aircraft facilities fixed foam fire suppression system is used as a typical basic measure. However, in the field deployment such a measure may not be feasible or practical. Alternative solutions, such as a properly equipped fire truck standing by during hazardous operations, may have to be developed to provide acceptable levels of fire safety.

QQ. Aircraft hangars

234. A hangar is a building with a space where one or more aircraft may be parked, and any adjacent area not separated from that space by a rated fire separation. That adjacent area may be used for servicing or repair or any other associated use.

235. The fire risks within an aircraft hangar are a function of hangar operation. Activities in the hangar during the normal work routine have historically resulted in the greatest incidence of fires or potential fire situations. During working hours having personnel effectively trained in initial fire fighting response enables rapid initial action to bring any fire outbreak under control. The risk of an accidental fire outbreak is low during stand-down hours, but the damage risk is increased considerably because of the delay in detection and suppression.

236. The greatest potential fire risk within a hangar is a large fuel spill, which if ignited could rapidly engulf an aircraft. Sabotage or arson can be equally devastating and appropriate security measures should be incorporated during the design stage of any hangar facility.

[12] http://intranet.dpko.un.org/dpko/pages/DocumentDetails.aspx?DocId=3428#.
[13] http://intranet.dpko.un.org/dpko/pages/DocumentDetails.aspx?DocId=825#

237. Hangars housing aircraft containing fuel require far more stringent fire safety measures than those housing de-fuelled aircraft. Hangars housing more than one aircraft that contain fuel should have fire containment separations between each aircraft. Ideally, such hangars should be equipped with a fixed fire suppression system. Because of the complexity of the fixed fire suppression systems and their operational requirements, using separate hangars or dividing a large one with firewalls, may be a more practical option.

238. There should be an adequate floor drainage system provided to reduce spilled fuel pool and potential size of the fire. The drainage system should be equipped with flame arrestors. A flame arrestor functions by forcing a flame front through channels too narrow to permit the continuance of a flame.

239. Parked aircraft (de-fuelled) should be separated by a distance permitting extraction of a burning aircraft and limiting the damage by radiant heat to the adjacent aircraft. The separating distances should be established based on the size of the aircraft and other factors, but generally they should be not less than four meters.

240. Exits from aircraft areas should be provided along the perimeter of the hangar at distances not more than 60 meters. Those distances may have to be shortened in the case of a very wide hangar to provide access to exit with a travel distance not more than 40 meters.

241. Early fire detection is critical and an automatic fire alarm system should be installed. The fastest type of fire detector used in such systems is a flame detector, which has an advantage over a smoke detector of fewer false alarms caused by fumes released by repair works. Heat detectors are usually the slowest and may not be suitable for this purpose.

242. In the absence of a fixed fire suppression system, fire points equipped with hand held and wheeled fire extinguishers, located in critical areas are essential. Usually they are located on the walls, close (within 4 meters) to the exits. In locations where there is a hazard of possible spill of liquid fuel or other flammable liquid, Class B hand held extinguisher should be located not more than 9 meters, or a wheeled extinguisher not more than 15 meters away.

243. A high standard of housekeeping is essential in the overall hangar fire protection measures. Typical housekeeping measures include:

    a) Minimizing the storage of flammable and combustible goods in the hangar;

    b) Maintaining clear egress paths to exits;

    c) Ensuring fire equipment is correctly maintained;

    d) Maintaining aircraft separation distances;

    e) Ensuring that only approved electrical equipment is used in the hazardous areas.

RR. Health Care Facilities

244. Health care facilities may be provided by some United Nations organizations. Fire safety in these facilities must be carefully assessed in order to provide adequate safeguards for life safety because of the high occupant load and the characteristics of the occupants. The occupants or patients, undergoing medical treatment generally need physical assistance to evacuate the building a fire emergency. That, and the ratio of occupants to staff, requires earliest possible warning in the event of a fire and ample exit facilities to provide enough time for evacuation.

245. Early warning is best provided by an automatic fire detection and alarm system. Smoke detectors should be used as the initiating devices in these areas, with the exception of areas where they may cause false alarms (e.g. cooking and steam generating activities). In those areas rate of rise heat detectors should be used.

246. Emergency voice communications systems should be installed in all facilities except very small ones. Discreet tones or coded messages may be used instead of the standard tones.

247. Smoke and heat are the most serious hazards in these facilities and smoke / heat management should be carefully evaluated.

248. Large facilities should be equipped with an automatic sprinkler system, with fast response residential sprinklers used for the protection of people rather than the material assets.

249. Interior walls and ceilings should be finished with fire resistant materials. Exposed foamed plastic should not be permitted.

250. Egress facilities should be adequate for the actual number of occupants and assisting staff, taking into consideration the requirement to accommodate wheeled stretchers, wheelchairs, evacuation chairs and other means of in-house transportation. Fire extinguishers should be located near every exit, staff work area and along corridors so that the travel distance to an extinguisher is not more than 23 meters.

SS. Bushfire mitigation

251. Bushfire, also called wildfire, is an uncontrolled fire burning in grassland or other vegetation. Controlling the risk of a bushfire depends on the reduction of fuel available to the fire, measures to eliminate the ignition sources, and having the resources ready to fight the fire.

252. Reduction of fuel requires cutting and removing excessive vegetation within a protection zone surrounding the facility. The width of the protection zone depends on the type of vegetation, local climatic conditions, type of the protected asset and may vary from 3 m for grass near tents to 100 m for high bush and forest in bushfire prone areas. Since the protection zone may extend beyond the area managed by the UN organization, cooperation and support of host country authorities may be necessary to ensure that a suitable fire break is established around the perimeter.

253. Typical ignition sources for bushfires, other than natural causes such as lightning strike, are sparks from vehicles and other machinery, careless disposal of smoking materials, burning trash and disposing of other combustibles in open fires, and solar ignition due to discarded glass. Hence preventive measures include:

    a) Ensuring that vehicles, generators and other machinery powered by combustion engine do not emit sparks, and where necessary, are equipped with proper spark arrestors;

    b) Enforcing the rules for smoking;

    c) Not permitting unauthorized fires;

    d) Good housekeeping, including proper disposal of glass.

254. Fighting a bushfire requires large manpower resources and special, even though often rather simple equipment. Since a bushfire may develop quickly, planning for the action and mobilizing the resources have to be done ahead of the dry season.

255. Cooperation with the local authorities and fire services is often necessary because the bushfire hazard may be outside the facility's perimeter but pose a threat to United Nations staff, facilities and operations.

256. Where bushfires pose a threat to United Nations facilities, mitigation must be provided for in the Fire Safety Plan.

Annex I

Record of Fire Safety Risk Assessment

Organization:			
Site location:			
Name of Fire Safety Focal Point who completed the assessment:			
Signature		**Date of assessment**	

Step 1 Identify fire hazards			
Note: All action required should be recorded at step 4			
Fire hazards	**Comments**		
Sources of ignition			
Sources of fuel			
Sources of oxygen			
	Action required (please tick) If yes, record action required at step 4	Yes	No

Step 2 Identify people at risk
List all persons potentially at risk from fire, including employees, residents, visitors and contractors

Step 3 Evaluate adequacy of existing fire safety measures and risk					
Note: All action required should be recorded at step 4					
Provision and protection of escape routes and emergency exits					
Lighting and signage					
Lightning protection					
Fire detection and fire warning					
Fire fighting equipment					
Staff training and fire drills					
Management and fire safety policy					
Cooperation and coordination with building owners/other occupiers					
Fire fighting capacity – internal (including fire and emergency services access, material support [water, extinguishing agents etc])					
Fire fighting capacity – external (host country) including alarm communications and response time					
Risk analysis					
	Likelihood	**Consequences**	**Risk**		
Likelihood, consequences and risk of fire starting					
	Action required (please tick) If yes, record action required at step 4			Yes	No

Mitigation measures are to be prioritized following the ratings below based on the level of risk.

Note: Where implementation of recommendations will be unavoidably delayed (e.g. owing to procurement delays), alternative interim mitigations measures should be implemented.

Priority ratings

Low – within 6 months	Medium – within three months	High – as soon as possible
Should be actioned as soon as possible but within 6 months.	**Should be actioned as soon as possible but within 3 months.**	**Must be actioned forthwith to reduce risk**

Step 4 Recommended mitigation measures			
Recommendations	**Priority**	**Person responsible**	**Date for completion**

Review the risk assessment if it is out of date, there have been significant changes at the location that indicate a review is necessary or at least every 12 months

Step 5 Assessment review			
Review date		Reviewed by	
Reason for review			
Results of review			

Annex II
Fire Safety Inspection Form

Organization name		Date of inspection	
Structure location / address		Name of inspector	
Country		Job title	
Structure name / designation		Maximum occupancy	
Number of levels or estimated height		Structure area in square metres	
Underground areas? (basement, etc.) Yes/No		Number of underground areas	
Describe the area where the structure is located:			
Comments:			

Construction type					
	Reinforced concrete		Heavy timber		Open area covered (specify material):
	Stone/masonry/brick		Mud and straw / thatch		Prefabricated (specify material):
	Wood frame		Open area uncovered		Tent (specify material):
	Metal frame				Other (specify):

Main activities carried out within the building / structure					
	Office		Residential		Garage (parking)
	Public assembly		Assembly (not open to public)		Workshop (specify):
	Warehouse / storage		Food preparation		Other (specify):

Sources of ignition		
Question	**Response**	**Action required / comments**
Electrical		
Is the electrical system safety shut off / governed by circuit breakers or fuses?		
Is there a back-up generator connected to the electrical system?		
Are extension cords and multi-plug power strips used in a single outlet in lieu of necessary number of outlets?		
Are extension cords and multi-plug power strips unplugged at the end of each working day?		
Are extension cords and other temporary wiring run under carpeting?		
Are extensions that are run over flooring properly covered with ramps that are affixed to the floor?		

Are all electrical appliances and equipment plugged in with approved plugs?		
Are transformers being used to power any equipment or appliances?		
Are all electrical appliances and devices (coffee pots etc,) utilized on non-combustible surfaces?		
Heating		
Is the facility heated by a central heating plant or system?		
Is the heater inspected annually by a reputable technician and are the results of the inspection documented?		
Is the heating unit kept in a separate structure or outdoors?		
Is the heating unit kept in a fire resistant room (boiler room) with a fire resistant door?		
On what floor of the building is the heating unit/boiler room located? (ground floor shall be considered the floor at grade level)		
Are NO other items kept in the boiler room?		
Is there a fire extinguisher mounted on the wall at the entrance to the boiler room?		
If central heating is not used is some other form of heating used? (If yes, state type.)		
Electric heaters (yes/no)		
Are combustible materials kept an adequate distance from electric heaters?		
Are the heaters equipped with safety devices (overload and overheating protection)?		
Are the heaters inspected and cleaned at regular intervals?		
Do electrical accessories (cabling/wiring, connections, safety fuses) meet requirements as per manufacturer?		
Gas fired burner (yes/no)		Methane (natural / city gas) _____, LPG _____, LNG _____.
What is the volume of tanks (if applicable)		
Where are gas cylinders located?		
Have both burners and cylinders been inspected prior to use and are they inspected regularly by an authorized entity?		
Do tubes run from the heater unit to the gas supply? (If yes, state type)		Rubber _____, copper _____
Are rubber tubes checked every 6 months for leaks with soapy water?		
Are they replaced with approved hoses every 3 years?		
Is the air circulation rate in the room sufficient to allow for gas fired burners?		
Are the heaters inspected and cleaned at regular intervals?		
Oil fired burner (yes/no)		

What is the volume of the tank? (in cubic metres or litres)		
Where is the tank kept?		
Have both burners and tanks been inspected prior to use and are they inspected regularly by an authorized entity?		
Is the air circulation rate in the room sufficient to allow for oil fired burners?		
Are the heaters inspected and cleaned at regular intervals?		
Coal fired burner (yes/no)		
Pellet fired burner (yes/no)		
Wood stoves / fire places (yes/no)		
Are the stoves kept on a non-combustible surface?		
Is the wood stored a good distance from the stoves/fireplaces and is the quantity limited to that required for daily use?		
Are the areas in front of and around the stoves/fireplaces free and clear of all combustible materials, including carpets?		
Do fireplaces have spark screens?		
Are all fires put out before leaving the premises at the end of the day?		
Are the chimneys and flues inspected and cleaned at least annually?		
Other heating Describe.		
Open flame (yes/no)		
Are all uses of open flame (welding, cooking, heating, etc.) confined to an approved area with no combustible material in the vicinity?		
While open flame is in use (including while cooking), is someone physically present at all times?		
Where applicable is a hot works permit and fire safety briefing required prior to commencing work?		
Are there adequate fire extinguishers and personal protection equipment present while open flame is being used?		
Are hoods and ducts over stoves cleaned regularly in food preparation areas?		
Does the organization have a no smoking policy applicable to the structure?		
If a no smoking policy is in place, is it complied with and enforced?		
Are safety instructions regulating the use of candles, incendiaries, etc. in place?		
Lightning		
Is the structure protected against lightning?		
General		

Are archive and record rooms free of **all** heat producing devices, including electric heaters?		
Is there a minimum distance of 45cm from the ceiling of all materials kept in archives and storerooms?		
Were other sources of ignition identified during the inspection? (If yes, list and comment)		

Sources of fuel		
Question	**Response**	**Action required / comments**
Is fuel in any quantity kept on the premises?		
What type of fuel is being stored?		(Check all that apply): Gasoline/petrol _____, diesel _____, kerosene _____, LPG _____, LNG _____, wood _____, coal _____, other _____
What is the quantity of fuel being stored?		In litres, cubic metres or kilograms:
Is the fuel being stored in appropriate containers?		
Are appropriate fire extinguishers present in the immediate vicinity of the fuel storage?		
Where is the fuel being stored?		
Is the fuel being stored in an area protected from direct sunlight and well ventilated?		
Is the no smoking regulation strictly enforced in the area of fuel storage and are red and white pictogram signs in evidence to note the regulation?		
Are storerooms and “hidden” areas that tend to become ad hoc storage areas kept neat and orderly and are combustible materials kept to a strict minimum?		
Garages / parking		
Is the no smoking regulation strictly enforced in garage areas and are red and white pictogram signs in evidence to note the regulation?		
Does the garage have an automatic sprinkler system?		
Does the garage have fire detection and alarm coverage?		
Is there an adequate number of fire extinguishers provided throughout the garage area?		
If parking garage is at grade level and above, is it open to the outside at ground level around the perimeter of the garage?		
Are garage areas used exclusively for parking motor vehicles?		
If garage is attached directly to areas used for other type occupancies, are the access points equipped with self closing fire doors?		
Are there any areas designated as garages that are below grade level?		

If yes, are there strict controls forbidding the entry of vehicles that run on LPG and are there red and white pictogram signs in place at the entrance of the garage noting the regulation?		
Are below grade garage facilities equipped with a CO2 detection and alarm system?		
Other		
Were other sources of fuel identified during the inspection? (If yes, list and comment)		

Sources of oxygen		
Question	**Response**	**Action required / comments**
Can the heating, ventilation and air conditioning system be entirely or partially shut down at short notice in case of emergency?		
Is the system controlled by an automatic system to compartmentalize the system in case of an emergency?		
Are there automatic self-closing dampers on any vents opening into stairwells?		
Are the structure and areas such as places of public assembly, stairwells, kitchens, boiler rooms, attached garages etc., compartmentalized with self closing fire doors?		Doors activated by (check all that apply): smoke detectors _____, heat detectors _____, fire alarm _____
Were other sources of oxygen identified during the inspection? (oxidizing agents, medical oxygen etc)? If yes, list and comment		

Evacuation / escape		
Question	**Response**	**Action required / comments**
How many exits to the outside of the structure are there?		
Do all exit doors open in the direction of egress (outwards)?		
What are the widths of the exits?		
Are fire exit doors in good working order?		
Can all fire exit doors be opened easily and immediately if there is an emergency?		
Are all paths to exits and exits themselves kept clear of obstacles?		
Are all floor surfaces and stairs on escape routes free from tripping and slipping hazards?		
Do escape paths provide adequately for the needs of disabled people?		
Are all paths for fire exits adequate with respect to width, height and fire resistance?		
Lighting and signage		

Question	Response	Action required / comments
Are all exit paths and exit doors illuminated with emergency lighting?		
Does emergency lighting provide sufficient light to safely use exit paths and emergency exits?		
Does emergency lighting have back-up power supplies (min 2 hours)?		
Is emergency lighting fully functional and properly maintained?		
Are all exit doors indicated by green and white pictogram signs above the doors?		
Are all paths to exits indicated by green and white pictogram signs indicating the direction to the exit?		
Are the locations of fire fighting equipment indicated by red and white pictogram signs that are clearly visible?		
Are notices posted on emergency exit door providing instructions on how to open the doors and directing that the doors must be kept shut?		
Are notices reading "EMERGENCY EXIT – KEEP CLEAR" posted on the outside of such doors?		
Are red and white no smoking pictogram signs displayed in fuel storage areas and other areas containing inflammable substances?		
Are elevators marked with red and white pictogram signs indicating "Do Not Use In Case of Fire"?		

Fire detection and fire warning		
Question	**Response**	**Action required / comments**
Does the facility have technical equipment to detect fire installed throughout the site?		
Does the facility have the means to warn people if a fire is detected?		
Does the facility have smoke detectors installed throughout the site?		
Are smoke detectors hard-wired or battery operated?		
What warning system does the smoke detectors generate?		Local alarm ____, alarm signal at security / control centre ____, alarm signal at local fire service _____
Does the activation of a smoke detector activate any self closing fire doors, duct flaps, deventilation flaps etc?		
Does the facility have manual fire alarm pull or break-glass stations?		
Can the alarm warning system be clearly heard and understood by everyone throughout the facility when initiated from a single point?		
If not, are there provisions for people or locations where the alarm cannot be heard?		
If the fire detection and warning system is electronically powered does it have a back-up power supply with minimum redundancy – 6 hours?		
Is the fire alarm and warning system tested on a weekly basis?		
Is the fire alarm system, including detectors and connected fire safety device, tested and inspected on a regular basis by a reputable certified entity?		

Fire fighting equipment and fire suppression systems		
Question	**Response**	**Action required / comments**
Fire extinguishers		
Does the facility have fire extinguishers situated at suitable locations throughout the site?		
Are all fire extinguishers serviced at least annually by a reputable certified entity?		
Is inspection documented on extinguishers with a service tag or label?		
Are fire extinguishers and extinguishing blankets physically inspected by a qualified person at least once per week?		
What type of extinguishers are used?		ABC dry chemical powder ____, CO2 foam (specify type) ____, pressurized water ____, buckets of sand ____, buckets of water _____
Are extinguishers of the correct type for the fire risk identified?		
Are fire extinguishers located in every corridor?		
Are fire extinguishers located in every vehicle?		
Are the locations of the above clearly marked and the access routes free of obstruction?		
Fire fighting equipment		
Is there any fire fighting equipment on hand at this facility?		
Hoses?		Number of hoses _____, length ____, diameter in mm _____
Nozzles?		Size in mm (diameter) _____, type and number of each: Straight stream _____, adjustable fog _____
Pumps?		Quantity and type of each (check all that apply): Vehicle mounted _____, fixed _____, centrifugal _____, diaphragm _____, rotary gear _____
Ladders?		Quantity, type and length:
Fire fighting foam?		Quantity (in litres) _____ Type: Protein, _____, AFFF _____, high expansion _____ Percentage of concentrate: _____
Self-contained breathing apparatus (SCBA) including masks?		Quantity:
Fire helmets including lamps?		Quantity:
Fire coats / pants?		Quantity:
Fire gloves?		Quantity:
Fire boots?		Quantity:
Crash axes?		Quantity:
Fixed line rescue devices?		Quantity:
Forcible entry tools?		Quantity:

Fire apparatus? What type?		Engine (capacity of pump): Tanker (capacity of tank and pump): Rescue vehicle: aerial ladder / platform
Other? (specify)		
Fire suppression systems		
Does the facility have any fire suppression systems? (If yes, indicate all systems that the facility has)		
Do all such systems emitting potentially harmful agents provide for safe evacuation prior to release (also when activated manually [push button])?		
Are the systems monitored and supervised centrally, connected to the fire detection and alarm system and tested/inspected at regular intervals?		
Automatic sprinkler system		
Is it a wet or dry system?		
Does the system have its own water reservoir and pump?		
If so, what is the capacity of the tank in litres?		
How is the pump generated (diesel, electric, etc.)?		
Is the pump engaged automatically?		
Is there a back-up pump?		
If so, how is the back-up pump run?		
Standpipe system (yes/no)		
Is it a wet or dry system?		
Are there hoses and nozzles on each floor?		
Does the system have its own water reservoir and pump?		
If so, what is the capacity of the tank in litres?		
How is the pump generated (diesel, electric, etc.)?		
Is the pump engaged automatically?		
Is there a back-up pump?		
If so, how is the back-up pump run?		
Are the pumps (incl. backup) tested at regular intervals?		
Are standpipes, hoses and nozzles physically inspected by a qualified person at least once per week?		
Are the locations of the above clearly marked and the access routes free of obstruction?		
Hydrant system (yes/no)		
Is it a local / private system or part of the public system?		

If local / private, is it the property / responsibility of the United Nations organization?		
Is it a ring or a line system and what is its volumetric capacity (diameter)?		
Does the system have its own water reservoir and pump?		
If so, what is the capacity of the tank in litres?		
How is the pump generated (diesel, electric, etc.)?		
Is the pump engaged automatically?		
Is there a back-up pump?		
If so, how is the back-up pump run?		
Are the pumps (incl. backup) tested at regular intervals?		
Is the system subject to regular physical inspection and testing?		
Are fire hose connections compatible with local fire services / UN Fire Unit connections?		
Dry chemical powder system (yes/no)		
Is the system activated automatically?		
Is the system serviced at least annually by a certified entity?		
Is the servicing documented with a tag / label on the system cylinders and main board as well as by detailed inspection report signed by the entity		
Inert gas suppression system (yes/no)		
Is the system activated automatically?		
If yes, does the system have an early warning system prior to discharge?		
Does the system have a manual override?		
CO2 system (yes/no)		
Is the system activated automatically?		
Does the system provide for safe evacuation (visible and audible alarm and a pre-determined time frame) prior to release?		
Is the system serviced at least annually by a reputable fire systems company?		
Is the servicing documented with a tag/label on the system cylinders and main board, as well as by a detailed inspection report signed by the entity?		
Foam system (yes/no)		
Is the system activated automatically?		
Is the system serviced at least annually by a reputable fire systems company?		
Is the servicing documented with a tag/label on the system cylinders and main board, as well as by a detailed inspection report signed by the entity?		

Staff training and fire drills		
Question	**Response**	**Action required / comments**
Have staff received fire safety training?		
Are fire wardens provided proper training and annual refresher training?		
If potentially hazardous items including explosive substances are stored at the facility, have staff received appropriate training?		
Are staff aware of the required action in the event of a fire?		
Are fire drills conducted at least every six months?		
Are combined fire drills conducted for multi-occupied buildings?		
Are assembly points easily accessible, clearly marked and known to all staff?		
Have secondary assembly points been identified to remove staff and visitors from the vicinity in the event of a bomb threat or other hazard.		
Are emergency drills conducted with external responders (fire service, ambulance, etc.) annually?		

Management and fire safety plans		
Question	**Response**	**Action required / comments**
Does the organization have a Fire Safety Focal Point?		
Are fire wardens appointed on each floor?		
Are names of wardens posted on each floor and clearly visible to staff?		
Does the organization have a Fire Safety Plan for the facility?		
Is there an Evacuation Plan for the facility?		
Are copies of the fire evacuation plan posted throughout the facility?		
Are there satisfactory procedures in place to prevent the accumulation of combustible materials, such as excessive quantities of waste paper in photocopying rooms, overflow of stationery from stores and desks piled up with files that should be in cabinets?		

Cooperation and coordination with building owners / other occupiers		
Question	**Response**	**Action required / comments**
Is there a clear understanding of what are the building owner's responsibilities for fire safety and maintenance of equipment and systems and what are the United Nations organization's responsibilities?		
Is this understanding/agreement documented in written form as part of or attachment to the lease contract?		

Are fire safety issues resolved with building owners in a timely manner?		
Are fire safety arrangements coordinated with other building occupants? If yes, are those documented and agreed upon by all parties?		

Fire fighting capacity - internal		
Question	**Response**	**Action required / comments**
Are staff trained to use fire extinguishers and extinguishing blankets?		
Does the organization have a specialized fire safety unit with fire fighting skills? (If yes, state how many officers, type of skills, etc)		
Is there adequate fire and emergency services access?		

Fire fighting capacity - external		
Question	**Response**	**Action required / comments**
Is there a local fire service that can be called to respond in the event of an emergency? Type?		Check all that apply: Public _____, private _____, professional _____, volunteer _____, industrial _____, marine/port _____, airport _____, military _____
Does the fire service have ladder capacity sufficient to reach the highest floor of the facility?		
Does the fire service have sufficient pump and hose capacity to reach the highest floor of the facility with water?		
For cold areas – does the fire services have heated garages for fire trucks to prevent freezing of water storage?		
Does this service appear to be well trained and equipped?		
Do the fire fighters have proper uniforms and personal protection equipment?		
What is the estimated response time?		
Are procedures and response plans thoroughly known to and accepted/adhered to by them?		

Annex III

Fire Safety Plan Template

FIRE SAFETY PLAN

Fire Safety Plan
Approval

Fire Safety Plan for:	
Organization:	
Site Name:	
Address:	

Approval				
Action	**Name**	**Position**	**Signature**	**Date**
Prepared by:				
Approved by:				

Plan Annual Review		
Review by:	**Date of Review**	**Changes made?**

1. INTRODUCTION

1.1 Objectives

The Fire Safety Plan is designed to minimize the possibility of fires through effective fire prevention practices and utilization of fire safety features of the facility and, in the event of a fire, provides the most effective means of ensuring occupant safety.

This will be achieved through:

- Control of fire hazards
- Monitoring and maintenance of fire protection systems
- Emergency response and evacuation

1.2 Control of fire hazards

Fire hazards identified during a fire safety risk assessment and routine fire safety inspections are controlled through administrative procedures, physical controls, routine maintenance, inspection and monitoring as outlined in this Plan.

1.3 Monitoring and maintenance of fire protection systems

Fire protection systems installed at this facility are essential to ensure early detection if a fire occurs and minimize the impact in the event of a fire. This Plan details the fire protection systems installed at the site and the individuals responsible for inspection, maintenance and testing of these vital systems.

1.4 Emergency response and evacuation

Trained staff can be of great value in directing and assisting the orderly movement of people in the event of a fire, and performing fire control until the fire department/fire fighting unit and other responders arrive.

Evacuation procedures are kept simple. However all staff, and especially those with specific responsibilities under this Plan, require continuous training and frequent drills and must be conversant with the Fire Safety Plan and the Evacuation Plan.

During an emergency, an alarm will sound, and all occupants will exit the building via a safe exit. All occupants will move to the assembly area.

The plan includes procedures for persons with disabilities who are unable to use stairs without assistance.

The instructions for occupants “In Case of Fire or Emergency”, and plans showing evacuation routes and assembly areas, are posted prominently on each floor area, providing information that can be read quickly on procedures to follow in the event of a fire. Use of this concept should

ensure a systematic method of safe and orderly evacuation of the building in the event of fire or other emergency requiring evacuation.

2. DEFINITIONS

Delete any definitions not applicable to the facility / add definitions for any items not included but which apply to the facility. ***NOTE:*** *ensure that the definitions used apply to the host country – terms used by the host country may be different to those listed below.*

Automatic heat tape

Electric wire is wrapped around water-filled piping located in unheated areas. The wire is generally located underneath an insulating layer of fibreglass, and automatically keeps the water in the pipe from freezing.

Class A fire

A fire involving solid combustible materials such as wood, cloth and paper.

Class B fire

A fire involving flammable or combustible liquids, fat or grease.

Fire closure

A device or assembly for adequately closing an opening through a fire separation (such as a door), and includes all components such as hardware, closing devices, frames and anchors.

Combustible liquid

Any liquid, commonly referred to as flammable and/or highly flammable liquid, having a flash point at or above:

21^{o} C and below 100^{o} C and a vapour pressure of not more than 3 bar at 50^{o} C (EU).

37.8^{o} C and below 93.3^{o} C (US and UK).

Dry automatic sprinkler system

A fire sprinkler system which has sprinkler supply piping containing air. Such a system can be installed in areas subjected to freezing conditions as water does not enter the sprinkler piping until a sprinkler activates.

Emergency exit

That part of a means of egress that leads from the floor area it serves, including any doorway leading directly from a floor area, to an open public thoroughfare or to an exterior open space protected from fire exposure from the building and having access to an open public thoroughfare.

Fire Safety Plan

A plan which provides information to occupants on control of fire hazards, maintenance of fire protection systems and evacuation procedures for the building/facility.

Fire protection systems

A general term which includes sprinkler and fire alarm systems, hose stations, portable fire extinguishers, fire dampers, emergency lights, exit signs, fire doors, smoke control equipment and voice communication systems.

Fire stop flap

A device intended for use in horizontal and/or vertical assemblies required to have a fire resistance rating and incorporating protective ceiling membranes, which operates to close off a duct opening through the membrane in the event of a fire.

Flammable liquid

Any liquid, commonly referred to as “extremely flammable liquid”, having a flash point below:

21^{o} C (EU)
37.8^{o} C and having a vapour pressure not exceeding 275.8 kPa (absolute) at 37.8^{o} C. (US and UK)

Flash point

The lowest temperature at which vapours of a volatile combustible substance form a combustible mixture and ignite in air when exposed to energy (flames, sparks, friction, etc).

Flue

An enclosed passageway for conveying flue gases.

Flue pipe

The pipe connecting the flue collar of an appliance to a chimney.

Fire dampers

A device intended for use in horizontal assemblies required to have a fire-resistance rating and incorporating protective ceiling membranes, which operates to close off a duct opening through the membrane in the event of a fire.

Means of egress

A continuous path of travel provided by a doorway, hallway, corridor, exterior passageway, balcony, lobby, stair, ramp or other egress facility or combination thereof, for the escape of persons from any point in a building, room or contained open space to a public thoroughfare or other acceptable open space (means of egress includes exits and access to exits).

Qualified contractor

A specific service agency, trained industrial safety personnel or maintenance personnel. Generally any trained and certified person with proper equipment.

Smoke alarm

A combined smoke detector and audible alarm device designed to sound an alarm within the room or suite in which it is located upon the detection of smoke within the room or suite.

Standpipe system

An arrangement of piping, valves, hose connections and allied equipment installed in a building with the hose connections located in such a manner that water can be discharged in streams or spray patterns through attached hoses and nozzles, for the purpose of extinguishing a fire and so protecting a building and its contents in addition to protecting occupants. This is accomplished by connections to water supply systems or by pumps, and other equipment necessary to provide an adequate supply of water to the hose connections.

Supervisory staff

Those occupants of a building who have been appointed to take responsibility for some aspect of the Fire Safety Plan (Fire Safety Focal Point, Fire Wardens and Building Fire Wardens, Medical staff).

Wet sprinkler system

A fire sprinkler system which has sprinkler supply piping containing water under pressure. Such a system cannot be installed in areas subject to freezing conditions as water is always in the sprinkler piping.

3. GENERAL INFORMATION

Building Information	
Building Name:	
Building Address:	
Building Owner:	
Owner Address:	
Owner Phone Number:	
Email :	
Building Managers:	
Address:	
Phone Number:	
Email:	
Facility description	- *Building height and approximate size (number of floors, how many square meters);* - *Construction type (steel, brick, concrete block, reinforcement concrete, timber, etc);* - *Type of roof, protection from lightning. fire/smoke protection doors. Fire protection closures (in walls or lift shafts), compartmentation, means of venting basements;* - *Type of occupancy (office, warehouse, residential, etc).*
Describe occupation type	- *List all occupation types applicable for the facility (e.g. office, residential, warehouse, accommodation, workshops, etc).*
Facility core hours	- *What are the core hours? Include any parts of the facility that operate outside core hours, their hours of operation etc.*
Fire protection equipment	- *List the fire protection equipment installed at the facility e.g.:* - *Fire detection and alarm system* - *Smoke/flame/heat detectors* - *Sprinkler system* - *Fixed fire suppression systems*

Fire fighting equipment	*List the fire fighting equipment at the facility e.g.:* - *Standpipe and hose cabinets* - *Fire extinguishers (water, CO2, powder, foam)* - *Fire blankets*
Evacuation equipment	*List all equipment / fittings at the site for safe evacuation e.g.:* - *Emergency lighting* - *Exit signs* - *Voice communication systems* - *Public address system (include location)* - *Megaphones (include location/s)* - *Traffic control signs, vests and flashlights* - *Maps and floor plans* - *Fire warden equipment (hard hats/caps/vests)* - *First aid kits* - *Wheelchair, evac-chairs, etc.*

3.1 Fire department

Department name, address, contact phone number/emergency number, other means of alarm, communication/transmission.
Name and contact details of officer(s) in charge.
Estimated time to respond to fire (verified/tested under various conditions).
Location where the fire department is to be met on arrival and required devices are to be handed over (keys, plans, etc.).
Any requirements under local fire codes.

3.2 United Nations Fire Safety Unit

Officer in Charge - Name and contact details.
Staffing, hours of operation, type of equipment and capacity to fight fires and respond to other emergencies.

3.3 Emergency evacuation drills

List the frequency and type (a minimum of two emergency evacuation drills should be held each year, preferably unannounced).

Who should be notified during pre-planning of drills? List those who must be notified (e.g. Fire Department, Security Focal Point, Organization Representative, building owners/managers, etc.)

3.4 Training requirements

(a) Occupant training

State the minimum training and information which must be provided to all occupants e.g.:

New arrivals are to receive training on the following during induction/checking in, then annually, covering:

- The procedure to follow in an emergency
- The location of emergency exits
- The paths of safe travel to exits
- The location of fire fighting and first aid equipment
- The method of raising the alarm if smoke alarms do not activate or are not installed
- The location of the assembly area
- All internal emergency contact numbers/call signs, etc.

(b) Fire/Building Fire Warden Training

List the mandatory training to be provided to Building Fire Wardens and Fire Wardens.

4. Control of fire hazards

4.1 Major hazards, maintenance and housekeeping

List the major hazards applicable to the site including measures to manage and control the hazards. The list below is generic only and may be adapted if applicable.

General

In reality, smoke and toxic gases are the main causes of fatalities during fire. Smoke moves fast obscuring all light and can become so thick that orientation, even in familiar surroundings, becomes impossible. Combustion-generated and emitted vapours, gases and floating particles can be toxic, corrosive, harmful and/or irritating. Carbon-monoxide (generated during insufficient combustion) is odorless and invisible but highly toxic.

Staff should be aware of major fire hazards in the workplace and that combustible items near potential fire sources are serious hazards.

The following sections address the major workplace fire hazards at (Facility name/location) and the procedures for controlling the hazards.

Electrical fire hazards
Electrical system failures and the misuse and manipulation of electrical equipment are leading causes of workplace fires. Fires can result from loose ground connections, wiring with frayed insulation, or overloaded fuses, circuits, motors, or outlets. Only authorized employees or contractors may work on electrical wiring or electrical equipment.

To prevent electrical fires, employees shall:

(a) Make sure that worn wires and cabling are replaced;
(b) Use only appropriately rated fuses and refrain from overloading circuits and/or sub-circuits by attaching too many devices;
(c) Never use extension cords as substitutes for wiring improvements;
(d) Use only approved extension cords. This also applies to sockets, plugs and cords accommodating multiple outlets;
(e) Check wiring in hazardous locations where the risk of fire is especially high;
(f) Check electrical equipment to ensure that it is either properly grounded or double insulated;
(g) Ensure adequate spacing while performing maintenance;
(h) Refrain from tampering with and/or opening any electrically powered device;
(i) Only use approved devices and appliances;
(j) Use such devices in strict conformity with the manufacturers' instructions;
(k) Initiate the installation of adequate cable ducts (for walls, floors and desks);
(l) Report any unsafe condition and/or request qualified assistance if not sure about electrical safety.

Protection from lightning

Lightning associated with thunderstorms and bad weather generates a variety of fire hazards. The massive power of lightning's electrical charge and intense heat can induce destructive power surges through building electrical systems, burn holes in gas piping, explode brick and roofing materials and ignite combustible/flammable substances and cause building fires.

[Responsible Person] will ensure that:

(a) Lightning protection systems are professionally installed;
(b) All persons designing, installing, testing, modifying, repairing or maintaining lightning protection system are licensed;
(c) Lightning protection systems are regularly inspected and maintained and tested.

To prevent electrical fires from lightning, occupants shall:

(a) Not tamper with, cover, obstruct, or alter professionally installed lightning protection systems;
(b) Promptly report any damage to lightning protection systems to *[Responsible Person]*.

Portable heaters

All portable heaters shall be approved by *[Responsible Person]*. Portable electric heaters shall have tip-over protection that automatically shuts off the unit when it is tipped over. There shall be adequate clearance between the heater and combustible furnishings or other materials at all times.

Office fire hazards

To prevent office fires, occupants shall:

(a) Avoid overloading circuits with office equipment;
(b) Turn off non-essential electrical equipment at the end of each workday;
(c) Keep storage areas clear of rubbish;
(d) Ensure that extension cords are not placed under carpets;
(e) Ensure that trash and paper set aside for recycling is not allowed to accumulate.

Cutting, welding and open flame work

[Responsible Person] will ensure the following:

(a) All necessary hot work permits have been obtained prior to work beginning;
(b) Cutting and welding are done by authorized personnel in designated cutting and welding areas whenever possible;
(c) Adequate ventilation is provided;
(d) Torches, regulators, pressure-reducing valves and manifolds are UL listed or FM approved;
(e) Oxygen-fuel gas systems are equipped with listed and/or approved backflow valves and pressure-relief devices;
(f) Cutters, welders and helpers are wearing eye protection and protective clothing as appropriate;
(g) Cutting or welding is prohibited in areas covered by sprinklers while sprinkler protection is out of service;
(h) Cutting or welding is prohibited in areas where explosive atmospheres of gases, vapors or dusts could develop from residues or accumulations in confined spaces;
(i) Cutting or welding is prohibited on metal walls, ceilings or roofs built of combustible sandwich-type panel construction or having combustible covering;
(j) Confined spaces such as tanks are tested to ensure that the atmosphere is not over 10 per cent of the lower flammable limit before cutting or welding in or on the tank;
(k) Small tanks, piping or containers that cannot be entered are cleaned, purged and tested before cutting or welding on them begins;
(l) Fire watch has been established.

Flammable and combustible materials

[Responsible Person] shall regularly evaluate the presence of combustible materials. Certain types of substances can ignite at relatively low temperatures or pose a risk of catastrophic explosion if ignited. Such substances obviously require special care and handling.

Class A combustibles

These include common combustible materials (wood, paper, cloth, rubber and plastics - North America), (solid, non-melting combustible substances - EU) that can act as fuel and are found in non-specialized areas such as offices.

To handle Class A combustibles safely:

(a) Dispose of waste daily;
(b) Keep trash in metal-lined receptacles with tight-fitting covers (metal wastebaskets that are emptied every day do not need to be covered);
(c) Keep work areas clean and free of fuel paths that could allow a fire to spread;
(d) Keep combustibles away from accidental ignition sources, such as hot plates, soldering irons or other heat- or spark-producing devices;
(e) Store paper stock in metal cabinets;
(f) Store rags in metal bins with self-closing lids;
(g) Do not order excessive amounts of combustibles;
(h) Make frequent inspections to anticipate fires before they start.

Water, multi-purpose dry chemical (ABC) and foam (AFFF) are approved fire extinguishing agents for Class A combustibles.

Class B combustibles

These include flammable and combustible liquids (oils, greases, tars, oil-based paints, and lacquers – EU), and additionally flammable gases and flammable aerosols (North America).

To handle Class B combustibles safely:

(a) Use only approved pumps, taking suction from the top, to dispense liquids from tanks, drums, barrels, or similar containers (or use approved self-closing valves or faucets);
(b) Do not dispense Class B flammable liquids into containers unless the nozzle and container are electrically interconnected by contact or by a bonding wire. Either the tank or the container must be grounded;
(c) Store, handle and use Class B combustibles only in approved locations where vapours are prevented from reaching ignition sources such as heating or electric equipment, open flames, or mechanical or electric sparks;
(d) Do not use a flammable liquid as a cleaning agent inside a building (the only exception is in a closed machine approved for cleaning with flammable liquids);
(e) Do not use, handle or store Class B combustibles near exits, stairs or any other areas normally used as exits;
(f) Do not weld, cut, grind or use unsafe electrical appliances or equipment near Class B combustibles;
(g) Do not generate heat, allow an open flame or smoke near Class B combustibles.
(h) Know the location of and how to use the nearest portable fire extinguisher rated for Class B fires.

Water should not be used to extinguish Class B fires caused by flammable liquids. Water can cause the burning liquid to spread, making the fire worse. To extinguish a fire caused by flammable liquids, exclude the air around the burning liquid.

Carbon dioxide, multi-purpose dry chemical (ABC) and foam extinguishers are approved for Class B combustibles.

*(**NOTE:** Halon may still be in use in some locations. Halon has been determined to be an ozone-depleting substance and is no longer being manufactured. Existing systems using Halon may remain in service until the next release or as per host country legislation).*

Smoking

Smoking is prohibited in all United Nations organization buildings. Certain outdoor areas may also be designated as no smoking areas:

(a) The areas in which smoking is prohibited outdoors are identified by NO SMOKING signs;
(b) Sufficient and suitably placed ashtrays or bins are to be provided in smoking areas and emptied regularly. Ashtrays and bins should not be emptied into containers which can be easily ignited or with general rubbish;
(c) Authorized open smoking areas should be inspected at regular intervals to ensure that safety measures are not breached.

4.2 Hazard monitoring and maintenance

List each of the hazards and who is responsible for the monitoring and control of those hazards.

Hazard management		
Hazard	**Monitoring and control by**	**Comments**

5. Monitoring and maintenance of fire protection systems

5.1 Fire safety systems and equipment maintenance

List all fire prevention, life safety and fire control systems including make and model (where applicable) and provide the name of the person or company responsible for maintenance and contact details.

Fire safety systems and equipment maintenance		
System / equipment Specify make and model where applicable	**Inspection frequency**	**Service firm/person** (name and contact details)
Fire alarm system		
Smoke detectors		
Fire hydrant and hose reel system		
Fire sprinkler system		
Emergency warning and evacuation system		
Emergency warning intercom system		
Fixed and portable fire extinguishers		
Fire doors and frames		
Emergency lighting		
Gas suppression systems		
Pump sets (diesel and electric)		
Water storage		
Backup generator		
Smoke and heat extraction system		
Fire fighting and rescue equipment (SCBA, tools, etc)		

6. Emergency response and evacuation

6.1 Overview

In the event of a fire, fire alarm or other emergency which requires a total or partial evacuation of the facility, the Evacuation Plan will be activated. In addition to fire, the following emergencies may also require an emergency evacuation of the facility:

(a) Explosion;
(b) Bomb threats;
(c) Release of hazardous chemical substances which threaten human health;
(d) Building air contamination;
(e) Severe weather;
(f) Compromised structural integrity;
(g) Hostile activities;
(h) Medical reasons (epidemic viruses, etc.).

The following are authorized to order an emergency evacuation of the facility:

List those authorized to order evacuation of the facility by function, not name.

This section details the emergency response and evacuation procedures established under the Evacuation Plan including:

(a) The Fire Emergency Organization (FEO);
(b) Procedures for reporting a fire or other emergency;
(c) Evacuation procedures;
(d) Site plan showing assembly point(s), hydrants, etc. and routes for fire service access;
(e) Floor plans showing exits, evacuation routes, safe rooms, extinguishers, fire hoses and manual alarm boxes.

All staff have responsibilities under the Evacuation Plan as listed below.

All staff must

(a) Be familiar with the facility Fire Safety Plan and Emergency Evacuation Plan;
(b) Be prepared for fire and other emergencies at all times;
(c) Not panic and stay calm during an emergency;
(d) Cooperate with Fire Wardens – follow instructions;
(e) Know the location of fire alarm manual break glass units and fire fighting equipment;
(f) Know location of emergency exits and assembly points;
(g) Know the emergency contact numbers;
(h) Treat every alarm as an emergency;
(i) Not attempt to remain in, or return to, an evacuated area;
(j) Not use the elevator during an evacuation;
(k) Proceed directly to the assembly area and remain there until instructions are given;
(l) Inform Medical Unit of trauma or medical cases.

6.2 Fire emergency organization

For the purposes of this plan, Fire Emergency Organization (FEO) personnel and their alternates are regular staff who have been selected and trained to ensure that building evacuation is carried out as planned.

Provide an organization chart as below listing those with key roles and their contact details.

Fire emergency organization – key functions			
Role	**Name**	**Phone No.**	**Email**
Fire Safety Focal Point			
Deputy Fire Safety Focal Point			
Building Fire Warden			
Deputy Building Fire Warden			
Fire Warden level 1			
Deputy Fire Warden level 1			

Outline the details, duties and responsibilities of those who have responsibilities in the event of a fire/fire alarm. Key functions are outlined below.

A list of the names, contact details and photographs of the Fire Wardens responsible for a floor/area are to be posted on that floor/area in a prominent location.

Fire emergency organization - duties	
Personnel	**Duties**
Fire Safety Focal Point	- Coordinating fire safety issues with facilities managers/owners, host country authorities and organization management. - Coordinating fire safety inspections, fire safety risk assessments and recommending remedial fire safety measures. - Preparing the Fire Safety Plan and Emergency Evacuation Plan. - Nominating and training fire wardens as part of the Fire Safety Plan. - Ensuring that a competent certified entity conducts periodic maintenance of fire safety and fire fighting systems, where available. - Rehearsing the building evacuation plans through regular drills as required by United Nations Minimum Operating Security Standards. - Briefing and training personnel on fire safety. - Monitoring adherence to fire safety policy.

	- Advising management on all aspects of fire safety. - In the event of a fire or an emergency evacuation, providing supervision and coordination in accordance with the Fire Safety Plan and Emergency Evacuation Plan. In the event of a fire: - Ensure that the fire department/fire unit has been notified of the fire/fire alarm - Maintain a presence at the designated fire control centre - Coordinate evacuation in accordance with the Evacuation Plan - Provides the fire department/fire unit a situation report (SITREP) on their arrival
Fire Wardens	- Each floor shall be under the direction of a team of Fire Wardens who are designated for the evacuation of occupants in the event of fire or other emergencies - Each Fire Warden shall be familiar with the Fire Safety Plan, the location of exits and the location and operation of the fire alarm manual break glass units - When an alarm sounds the Wardens shall put on their red cap/helmet (or item of clothing issued to identify them as wardens) and begin to direct occupants to the nearest emergency exits, inform them on the location of the assembly point and direct them go there once they have vacated the premises - If the Fire Safety Plan has provisions for partial evacuation, then evacuation from other floors shall be carried out when instructions are received from the Fire Safety Focal Point (or delegate as provided for in the Evacuation Plan) or when conditions dictate such action - The Fire Wardens shall be the last persons to evacuate their area making a quick check of rest rooms and closing doors as they proceed to the exits - If the event of an occupant refusing to evacuate the Fire Wardens should not attempt to forcibly remove anyone but report this to the Building Fire Warden - Fire Wardens shall have available details of occupants on their floor with disabilities who cannot use fire stairs unaided. When evacuating the floor arrangements must be made to assist persons with disabilities to evacuate to a safe location - Once clear of the building the Fire Warden must report to the Building Fire Warden at the assembly point stating that the floor is clear, or provide details of any persons refusing to evacuate

Building Fire Warden	- The Building Fire Warden shall be fully conversant with the Fire Safety Plan - When an alarm sounds the Building Fire Warden shall put on a white cap/helmet or article of clothing which clearly identifies him or her as the Building Fire Warden, evacuate the building and move to the assembly area - The Building Fire Warden shall receive and note reports from successive Fire Wardens as they arrive at the assembly area - Once all floors/areas have been accounted for, the Building Fire Warden shall report those findings to the Fire Safety Focal Point
[Other – specify]	*List applicable duties*

6.3 Procedure for reporting a fire

If you discover a fire:

(a) Activate a fire alarm emergency pull/break glass station (or applicable procedure to raise the alarm);
(b) Phone [number] to report the fire (detail the local procedure for reporting the fire);
(c) Warn/alert other persons in the vicinity;
(d) Evacuate persons in need, injured or in imminent danger;
(e) Fight the fire only if it is small and you are not alone;
(f) Evacuate to the nearest safe exit. Do not use the elevator;
(g) Assist persons requiring assistance;
(h) Proceed to the designated assembly area/point and report to the Fire Warden, Building Fire Warden or the Fire Safety Focal Point.

Emergency phone numbers		
Contact	**Phone**	**Notes**
Security		
Fire service		
Police		
Ambulance		
Fire Safety Focal Point		
Electricity		

Gas		
Water		

6.4 Emergency evacuation procedures

The following may be adapted to meet the specific organization requirements:

When the fire alarm sounds or on being instructed to evacuate the building in response to an emergency:

(a) Do not panic;
(b) Do not ignore the alarm;
(c) Follow the instructions of Fire Wardens;
(d) Leave the building immediately, in an orderly fashion;
(e) Close doors on the way out;
(f) Do not use elevators;
(g) Follow the quickest evacuation route from where you are (see posted floor evacuation diagram/map);
(h) Do not go back to your office/work area for any reason;
(i) Proceed to the designated emergency assembly point for your area. If the designated assembly point/area is unsafe or blocked due to the emergency, proceed to the alternate assembly point;
(j) Report to your Fire Warden at the assembly point;
(k) Return to the building only after emergency officials or building monitors give the all-clear signal. Silencing the alarm does not mean the emergency is over.

Notes and precautions

Small fires can be extinguished only if you are trained to use a fire extinguisher. However, an immediate readiness to evacuate is essential.

All fires, even those that have been extinguished, must be reported to [number].

Never enter a room that is smoke filled. Never enter a room if the door is warm to touch.

Remember the acronym **"R A C E":**

R Remove people from immediate danger.
A Alarm. Sound the alarm and alert the Fire department by calling [number].
C Confine fire and smoke. Close doors and windows if safe to do so.
E Evacuate. Evacuate to the assembly area.

Method of operation of fire fighting equipment

Fire extinguishers

(a) Select appropriate extinguisher for the type of fire;
(b) Pull pin from squeeze handle, activator button or external control wheel;
(c) Activate propellant of extinguisher if and as required by either pushing/hitting the activator or turning the control wheel (external propellant);
(d) Test extinguisher by squeezing handles briefly;
(e) Approach fire, aiming nozzle at base of fire;
(f) Squeeze handles and operate extinguisher in a sweeping motion.

Hose reels

(a) Hose reels are used on fires containing wood, paper and textiles (solid, non-melting combustible substances) only, they are not to be used on live electrical appliances exceeding a voltage of 230 V (safety distance min. 1.5 m – spray only) or flammable liquids;
(b) To release the hose reel, turn the valve on and this will charge the hose and release the nozzle (if fitted with a nozzle release lock);
(c) The hose can then be pulled out to the fire, the nozzle operates like a garden hose in most cases by twisting the nozzle, and the nozzle can be adjusted to give a spray pattern or a straight jet;
(d) Subparagraphs (b) and (c) above apply to hose reels equipped with non-collapsible hoses only. With collapsible/foldable hoses, ensure that the hose is pulled out at full length prior to opening the water supply valve.

6.5 Site plans

Include site plans showing:

(a) Occupancy assembly point;
(b) Locations of fire hydrants;
(c) The normal routes of fire department vehicle access.

6.6 Floor plans

Show floor plans identifying the locations of the following:

(a) *Exits;*
(b) *Primary evacuation routes;*
(c) *Secondary evacuation routes;*
(d) *Accessible egress routes;*
(e) *Areas of refuge;*
(f) *Manual fire alarm boxes;*
(g) *Portable fire extinguishers;*
(h) *Occupant-use hose stations;*
(i) *Fire alarm annunciators and controls.*

Fire Safety Plan
Annex A: "In Case of Fire" notice

IN CASE OF FIRE

UPON DISCOVERY OF A FIRE

- Activate a fire alarm emergency pull/break glass station (or applicable procedure to raise the alarm)
- Phone [number) to report the fire (detail the local procedure for reporting the fire).
- Warn/alert other persons in the vicinity.
- Evacuate persons in need, injured or in imminent danger.
- Fight the fire only if it is small, you are not alone and safe escape is guaranteed.
- Evacuate to the nearest safe exit.
- Do not use the elevator.
- Proceed to the designated assembly area/point and report to the Fire Warden, Building Fire Warden or the Fire and Safety Officer.

DO NOT USE ELEVATORS

UPON HEARING FIRE ALARM

- Ensure that nearby occupants are aware of the emergency.
- Shut off all electrical equipment.
- Leave the building immediately, in an orderly fashion using the nearest evacuation route.
- Close doors on the way out.
- Go to the assembly point and wait for further instructions from the Fire Warden.

CAUTION

- Never enter a room that is smoke filled. Never enter a room if the door is warm to touch.

- Small fires can be extinguished only if you are trained to use a fire extinguisher. All fires, including those that have been extinguished, must be reported to [number].

Remember "R A C E"

R - **REMOVE** people from immediate danger.
A - **ALARM**. Sound the alarm and alert the Fire Department by calling [number].
C - **CONFINE** fire and smoke. Close doors and windows if safe to do so.
E - **EVACUATE**. Evacuate to the Assembly Area.

Annex IV

Evacuation Plan Template

EMERGENCY EVACUATION PLAN

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Emergency Evacuation Plan Approval

Emergency Evacuation Plan for:	
Organization:	
Site Name:	
Address:	

Approval				
Action	**Name**	**Position**	**Signature**	**Date**
Prepared by:				
Approved by:				

Plan Annual Review		
Review by:	**Date of Review**	**Changes made?**

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] ***[INSERT ORGANIZATION NAME HERE]***

1. INTRODUCTION

This plan has been prepared to ensure orderly and complete evacuation of [insert facility name] whenever an emergency occurs or the fire alarm sounds.

The primary objectives of this evacuation plan are to ensure that:

(a) Everyone leaves the building safely;
(b) A procedure to safely evacuate individuals who cannot negotiate stairs is in place;
(c) Building occupants are accounted for after an emergency evacuation;
(d) Personnel are selected among building occupants and assigned functions to ensure Plan objectives are met.

For the purpose of this Plan, the following are emergencies for which a total or partial evacuation of a building is necessary.

(a) Explosion;
(b) Bomb threats;
(c) Release of hazardous chemical substances which threaten human health;
(d) Building air contamination;
(e) Severe weather;
(f) Compromised structural integrity;
(g) Hostile activities;
(h) Medical reasons (epidemic viruses, etc.).

The Plan will be updated and exercised by conducting evacuation drills at least twice annually.

2. EVACUATION PROCEDURE

2.1 Overview

Occupants will be notified of the requirement to evacuate by activation of the fire alarm system (describe the alarm occupants will hear and accompanying public address system announcements, if another system is used to describe the system).

At the sound of the fire alarm or on being given instructions to evacuate, it is the responsibility of all building occupants to evacuate immediately and proceed to predetermined assembly points, away from the building.

Building occupants are also responsible for ensuring that their visitors/customers follow the evacuation procedure described herein, and leave the building along with all other occupants.

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Contract workers will be made familiar with the procedures outlined herein and are expected to leave the building when the alarm sounds.

2.2 Evacuation instructions

(The following may be adapted to meet the specific organization requirements)

When the fire alarm sounds or an instruction is given to evacuate the building in response to an emergency:

(a) Do not panic;
(b) Do not ignore the alarm;
(c) Follow the instructions of the Fire Wardens;
(d) Leave the building immediately, in an orderly fashion using the nearest evacuation route;
(e) Close doors on the way out;
(f) Shut off all electrical equipment;
(g) Do not use elevators;
(h) Do not go back to your office/work area for any reason;
(i) Proceed to the designated emergency assembly point for your area. If the designated assembly point/area is unsafe or blocked due to the emergency, proceed to the alternate assembly point;
(j) Report to your Fire Warden at the assembly point;
(k) Return to the building only after emergency officials or building monitors give the all-clear signal. Silencing the alarm does not mean the emergency is over.

2.3 Notes and precautions

Small fires can be extinguished only if you are trained to use a fire extinguisher. However, an immediate readiness to evacuate is essential.

All fires, even those that have been extinguished, must be reported to [number] .

Never enter a room that is smoke filled. Never enter a room if the door is warm to touch.

Remember the simple acronym "RACE"!

R Remove people from immediate danger.
A Alarm. Sound the alarm and alert the Fire department by calling [number]
C Confine fire and smoke. Close doors and windows if safe to do so.
E Evacuate. Evacuate to the Assembly Area.

2.4 Evacuation routes and assembly area(s)

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Evacuation routes and fire exits are marked in the floor plans (annex A.) Assembly areas are marked on the site plan and listed below (annex B).

2.5 Procedure for persons needing assistance to evacuate

Add the procedure applicable to the facility (see example below). If "safe rooms" are designated then they must be checked by the Fire Wardens during the evacuation.

Any person unable to use stairs or needing assistance to evacuate should proceed to the nearest designated "safe room". Fire Wardens will check "safe rooms", and ensure emergency response and rescue personnel are notified if someone has taken refuge there.

3. RESPONSIBILITIES

All staff have responsibilities under the Evacuation Plan as listed below.

For the purpose of this plan, Fire Emergency Organization personnel and their alternates are regular staff who have been selected to ensure that building evacuation is carried out as planned. Evacuated building occupants are directed to assigned assembly points where they will be accounted for, and persons needing assistance to evacuate are attended to.

Fire Emergency Organization personnel are selected from among building occupants, and are appointed on a voluntary basis. Those who play key roles in the Fire Emergency Organization are listed in annex C and their corresponding duties are listed below:

Personnel	Duties
Staff	- Be familiar with the building Fire Safety Plan and the Emergency Evacuation Plan - Be prepared for fire and other emergencies at all times - Stay calm and do not panic during an emergency - Cooperate with Fire Wardens – follow instruction - Know the location of fire alarm manual break glass units and fire fighting equipment - Know location of emergency exits and assembly points - Know the emergency contact numbers - Treat every alarm as an emergency - Do not attempt to remain in, or return to, an evacuated area

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Personnel	Duties
	- Do not use the elevator - Proceed directly to the assembly area and remain their until instructions are given - Inform Medical Unit of trauma or medical cases
Fire Safety Focal Point	- Coordinating fire safety issues with facilities managers/owners, host country authorities and organization management. - Coordinating fire safety inspections, fire safety risk assessments and recommending remedial fire safety measures. - Preparing the Fire Safety Plan and Emergency Evacuation Plan. - Nominating and training fire wardens as part of the Fire Safety Plan. - Ensuring that a competent certified entity conducts periodic maintenance of fire safety and fire fighting systems, where available. - Rehearsing the building evacuation plans through regular drills as required by United Nations Minimum Operating Security Standards. - Briefing and training personnel on fire safety. - Monitoring adherence to fire safety policy. - Advising management on all aspects of fire safety. - In the event of a fire or an emergency evacuation, providing supervision and coordination in accordance with the Fire Safety Plan and Emergency Evacuation Plan. In the event of a fire: - Ensure that the fire department/fire unit has been notified of the fire/fire alarm - Maintain a presence at the designated fire control centre - Coordinate evacuation in accordance with the evacuation plan - Provide the fire department/fire unit a situation report (SITREP) on arrival

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Personnel	Duties
Fire Wardens	- Each floor shall be under the direction of a team of Floor Wardens that are designated for the evacuation of occupants in the event of fire or other emergencies - Each Floor Warden shall be familiar with the Fire Safety Plan, the location of exits and the location and operation of the fire alarm manual break-glass units - When an alarm sounds the Fire Wardens shall to put on their red cap/helmet (or item of clothing issued to identify them as Wardens) and begin to direct occupants to the nearest emergency exits, inform them of the location of the assembly point and direct them to go there once they have vacated the premises - If the Fire Safety Plan has provisions for partial evacuation, then evacuation from other floors shall be carried out when instructions are received from the Fire Safety Focal Point (or delegate as provided for in the Evacuation Plan) or when conditions dictate such action - The Fire Wardens shall be the last persons to evacuate their area making a quick check of rest rooms and closing doors as they proceed to the exits - In the event of an occupant's refusal to evacuate, the Fire Wardens should not attempt to remove anyone forcibly. The Fire Wardens shall report this to the Building Fire Warden - Fire Wardens shall have available details of occupants on their floor with disabilities who cannot use fire stairs unaided. When evacuating the floor, arrangements must be made to assist persons with disabilities to evacuate the premises or bring them to two or more levels below the floor where the fire is located - Once clear of the building, the Fire Warden must report to the Building Fire Warden at the assembly point stating that the floor is clear, or provide details of any persons refusing to evacuate
Building Fire Warden	- The Building Fire Warden shall be fully conversant with the Fire Safety Plan - When an alarm sounds the Building Fire Warden shall put on a white cap/helmet, evacuate the building and move to the assembly area

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Personnel	Duties
	- The Building Fire Warden shall receive and note reports from successive Fire Wardens as they arrive at the assembly area - Once all floors/areas have been accounted for the Building Fire Warden shall report those findings to the Fire Safety Focal Point
[Other – specify]	*List applicable duties*

4. BUILDING SPECIFIC INFORMATION

Building Name: [Insert building name here]

4.1 Safe rooms

Reasonably "safe rooms", unless otherwise specified, are regular rooms that are easily accessible to individuals with limited mobility, have closeable doors, are preferably equipped with a telephone and windows to the outside, and will be checked by Fire Wardens.

Two rooms per floor have been designated as "safe rooms". These rooms are for use as a refuge by individuals who cannot negotiate stairs during evacuation, until Floor Wardens can arrange assistance for safe evacuation (if circumstances warrant).

When choosing safe rooms consider all types of emergencies including severe weather.

The following are designated "safe rooms":

Floor No.	*Safe Rooms*

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

4.2 Evacuation assembly points

When the alarm sounds, all occupants within the building must evacuate and report to an assigned evacuation assembly point. The evacuation assembly points for the [Insert building name here] building are designated by floor as listed below:

Floor #	Evacuation assembly point
First	
Second	
Third	
Fourth	
Fifth	

See attached site plan at annex B, showing the location of all assigned assembly points.

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Annex A

Floor plans

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Annex B

Site plan

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Annex C

Fire emergency organization – key functions			
Role	**Name**	**Phone No.**	**Email**
Fire Safety Focal Point			
Deputy Fire Safety Focal Point			
Building Fire Warden			
Deputy Building Fire Warden			
Fire Warden level 1			
Deputy Fire Warden level 1			
[List all Fire Wardens]			

Emergency Evacuation Plan

[INSERT BUILDING NAME HERE] *[INSERT ORGANIZATION NAME HERE]*

Annex D

EMERGENCY CONTACT NUMBERS

Emergency phone numbers		
Contact	**Phone**	**Notes**
Security		
Fire service		
Police		
Ambulance		
Fire Safety Focal Point		
Electricity		
Gas		
Water		

Annex V

Fire Prevention Inspection Checklist

The fire safety maintenance checklist is for routine monitoring and maintenance of fire safety at the site. This list is not intended be comprehensive and should not be used as a substitute for a Fire Safety Risk Assessment. *Items should be changed, added or deleted to ensure that the checklist is site specific.*

	Yes	No	N/A	Comments
Daily checks				
Escape routes				
Can all fire exits be opened immediately and easily?				
Are fire exit doors clear of obstructions?				
Are escape routes clear?				
Fire detection and alarm systems				
Is the fire indicator panel showing “normal”?				
Are whistles, gongs, bells or other warning systems in place, connected and free of visible damage?				
Escape and emergency lighting				
Are exit signs in good condition and undamaged?				
Is emergency lighting and sign lighting working properly?				
Firefighting equipment				
Are all fire extinguishers in place and in good condition?				
Are fire extinguishers clearly visible and easily accessible?				
Are vehicles/objects blocking fire hydrants or access to them?				
Weekly checks				
Escape routes				
Do all emergency fastening devices to fire exits (push bars and pads, etc) work correctly and are they easily accessible?				

	Yes	No	N/A	Comments
Are external routes clear and safe?				
Fire detection and alarm systems				
Does testing a manual call point (fire pull, break-glass etc.) activate a signal to the fire indicator panel? (Disconnect link before testing if alarm is monitored externally or advise them of the testing)				*This is not required for fire detection and alarm systems providing for automated self-testing and continuous component monitoring – recommended standard. However, regular system testing is a requirement.*
Did the alarm system work correctly when tested?				
Did staff and others hear the alarm?				
Did any linked fire protection systems operate correctly? (e.g. magnetic door release, smoke curtains drop)				
Did all visual alarms and/or vibrating means of alarm/communications function correctly?				
Do emergency voice communications / public address systems and messaging work correctly? Was the message understood?				*This is not required for systems providing for automated self-testing and continuous component monitoring – recommended standard. However, such systems shall be tested at least annually (outside regular working hours), especially after structural modifications of the facility/building.*
Escape and emergency lighting				
Are charging indicators (if present) working correctly?				
Are illumination devices mounted properly, undamaged and unobstructed?				
Fire fighting equipment				
Is all equipment in good condition?				
Monthly checks				
Escape routes				
Do all self closing doors fit and operate correctly?				
Do all electronic release mechanisms on escape doors work correctly?				
Do all electronically controlled doors with “fail secure” mechanisms have a functional emergency over-ride?				
Are fire door seals and self-closing devices working correctly?				
Are escape routes and exit doors free of obstructions?				
Are external fire stairs safe?				
Do all internal self-closing doors work correctly?				

	Yes	No	N/A	Comments
Are photoluminescent route and exit markings (as in windowless rooms/areas) clearly visible?				
Escape and emergency lighting				
Do all egress pathways have emergency lighting?				
Are exit signs in good condition and undamaged?				
Have all emergency lighting units been tested for at least 30 minutes in the past 30 days?				
Are all corridor nightlights and orientation signs lit at night and/or during periods of poor illumination?				
If power failure occurred with in the past 30 days did all emergency lighting and indication devices come on ?				
Electrical				
Have all emergency generators been tested under load within the past 30 days? (Normally run for one hour)				
Does each emergency generator have at least a 24 hour fuel supply?				
Are emergency generators maintained on a regular basis?				
Are extension cords run under carpets/rugs or across doorways?				
Are all cords and plugs in good condition?				
Are all electrical boxes equipped with an undamaged cover plate?				
Are any electrical switches, switch plates or receptacles cracked, broken, or have exposed contacts?				
Are all electric panels locked and equipped with warning/hazard signage, and do they have surrounding 3 ft (1 m) of clear space?				
Are electrical circuit panels breakers identified?				
Fire detection and alarm systems				
Is the fire detection and alarm system tested weekly (if required, depending on system capabilities)?				
Are the safety systems (e.g. gas-detectors) checked, tested and well maintained?				
Have all components of either system been tested within the last twelve months?				
Are manual fire alarm pull stations/break-glass stations accessible and operating correctly?				
Is the alarm system link to the alarm monitoring centre functioning?				
Is an operator on duty at all times at the fire alarm monitoring centre.				

	Yes	No	N/A	Comments
Fire and emergency response equipment				
Are seals and tamper pins of fire suppression devices/systems intact?				
Do pressure gauges indicate sufficient pressure - ready for use status?				
Are they in good condition? This is a daily check as above – no need to duplicate				
Have extinguishers/hose-reels, etc., been inspected by a certified person within the past 12 months?				
Are all new staff members trained to use extinguishers and other means of first line fire-suppression?				
Is other fire fighting equipment in good repair and operational?				
Are adequate means for the evacuation of disabled persons available, properly distributed and in good working condition?				
Are first aid provisions in place and are their seals intact?				
Are special substances and tools required for the response to HAZMAT spills, etc., available in sufficient quantities and are they more than 3 months from their expiration date?				
Fire suppression systems (sprinkler, inert gas, etc.)				
Have the systems installed been inspected and serviced by a certified contractor in the past 12 months?				
Are the systems operational and in good repair?				
Are the systems free of obstruction/material that would hinder their effectiveness?				
Are associated warning devices (e.g. beacon, lights) fully functional to guarantee safe escape of the area?				
Emergency plans				
Are the Fire Safety Plan and the Emergency Evacuation Plan current?				
Is a copy of the Evacuation Plan/“In Case of Fire” posted on each floor and work area where it is clearly visible?				
Are the details of Fire Wardens posted on each floor and up to date?				
Does the local fire service have a copy of the Fire Safety Plan and Emergency Evacuation Plan?				
Has the local fire service visited the facility and reviewed the Fire Safety Plan and Emergency Evacuation Plan within the past 12 months?				
Are fire drills being conducted at least every 6 months?				
Hazardous materials				
Is a list maintained of hazardous materials with relevant material safety data sheets?				

	Yes	No	N/A	Comments
Are material safety data sheets readily available to staff in the areas where hazardous materials are stored and/or used?				
Are users of the hazardous materials aware of the dangers involved and have they been briefed on those as well as on first aid measures?				
Are flammable liquids and other potentially hazardous materials stored in proper containers?				
Is personal protective equipment available to staff handling and/or using chemicals and other hazardous material?				
Are flammable materials stored in vented flammable storage cabinets?				
Are spill basins sufficient in capacity and substance-resistance and are they intact?				
General				
Are any emergency water tanks/tankers/ponds at their normal capacity and are pipes and pumps in good operational condition?	`			
Are vehicles/objects blocking fire hydrants, exits, routes for emergency responders, etc. or access to them?				
Are non smoking policies complied with?				
Are no smoking signs posted?				
Are designated smoking areas clean and free of fire hazards?				
Are safety regulations in force and fully adhered to?				
Are hazardous materials/substances kept to a minimum at places outside designated storage areas?				
Are rubbish/waste containers emptied on a daily basis?				
Are alcoves adjacent to main corridors free from combustible materials (boxes, rubbish, etc) at all times?				

Annex VI

Evacuation Drill Report Template

Organization				Name and location of building					
Drill Date				Time					
Weather conditions									
Clear		Cloudy		Rain		Comments:			
Fog		Windy		Snow					
Type of Drill									
Planned		False alarm		Unannounced		Unobstructed		Obstructed	
Host country participation									
Police		Fire		Civil defense		Ambulance		Other	
Remarks									
United Nations participants (approx number, agencies , funds and programmes)									
Other participants (specify)									
Scenario or special circumstances									

Alarm and response	Yes	No
Was the audible alarm heard throughout the building?		
Were alarm indicator lights visible throughout the building?		
Was alarm message heard throughout the building?		
Did all parts of the alarm/emergency warning system operate correctly?		
If no, note the locations:		
Did all occupants evacuate the building?		
If no, note the room numbers and names of occupants:		
Did occupants assemble in designated areas?		
Evacuation drill CCTV record available?		
Evacuation drill photos available?		

Problems encountered (check all that apply)			
Congestion in hallways and stairs		Radio communications problems	
Staff unsure what to do		Fire wardens unsure of responsibilities	
Difficulties with evacuation of disabled		Long time to evacuate building	
Doors or exits blocked/not operating		Weather related problems	
Staff not serious about drill		Confusion	
Occupant/s injured during the drill?		Other (please explain below)	

Results			
Time required to evacuate the building			
Time required for all occupants to arrive at the designated assembly area			
Time “All Clear” given		Alarm system reset by:	

Overall effectiveness of the drill			
	Good	Fair	Poor
Speed of evacuation			
Action by Wardens			
Effectiveness of procedures			
Communications during drill			
Recommendations for improvement			

Annex VII

Technical Fire Investigations

The following checklist is intended to help in conducting a systematic investigation and establishing the origin and the cause of a fire.

CHECKLIST

A. Basic information

Date of incident _____

Location _____

Entity involved _____

Incident type _____

Timeline of events _____

_____

_____

_____

Actions taken and their efficiency _____

_____

_____

_____

Use of fire protection equipment and resources

Fire extinguishers _____

Fire department_____

_____

Fire engine and other heavy equipment _____

_____

Casualties

None _____

Deaths _____

Injuries _____

Estimated loses

Property _____

Contents _____

Hazardous materials release

Establish and state briefly whether or not any hazardous materials were released. If yes, detailed information to be provided below. Include release of flammable gases, gasoline, kerosene, diesel and other liquid fuels.

_____

_____

B. Structure fire details

This section pertains to fires in buildings or facilities. Skip if investigating/reporting wildland fire (grass, brush, bush, etc.).

First item ignited _____

Cause of ignition _____

_____

Human factors contributing to ignition _____

_____

Equipment involved

Make and model _____

Portability _____

Power supply _____

History of installation, use, maintenance and inspections _____

_____

_____

Structure type (building, facility) _____

Structure status (in use, under construction/renovation)

Fire origin and spread _____

_____

_____

Materials contributing to fire spread _____

_____

Presence of fire detectors _____

Detector type and power supply _____

Detector operation and efficiency _____

_____

Presence of automatic extinguishing systems _____

Operation and efficiency of automatic extinguishing systems _____

_____

_____

Injuries

Cause of injury _____

_____

Human factors contributing to injury _____

_____

Activity when injury occurred _____

Protective equipment used and its efficiency _____

_____

C. Hazardous materials released

HazMat ID or chemical name _____

Container type _____

Cause of release _____

_____

Factors contributing to release _____

_____

D. Bush fire

Cause of bush fire

Natural source _____

Equipment _____

Smoking _____

Outdoor fire _____

Vegetation burn _____

Exposure to structure fire _____

Incendiary _____

Other _____

Annex VIII

Fire Codes and Standards

Fire codes and standards are subject to ongoing development and review hence reference to specific codes is not provided. General reference is provided below to code and standard sets commonly used internationally.

BSI British Standards

Ref: **http://www.bsigroup.com/**

BSI is the National Standards Body of the United Kingdom. Independent of Government, BSI is a non-profit distributing organization. It is globally recognized as an independent and impartial body serving both the private and public sectors, working with manufacturing and service industries, businesses and Governments to facilitate the production of British, European and international standards. It develops and sells standards and standardization solutions to meet the needs of business and society.

European codes and standards

The EN Euro codes are a series of 10 European codes encompassing European standards providing a common approach for the design of buildings and other civil engineering works and construction products.

Ref: **http://eurocodes.jrc.ec.europa.eu/**

International Code Council

Ref: **http://www.iccsafe.org**

The International Code Council (ICC) is a membership association dedicated to building safety and fire prevention. ICC develops the codes and standards used to construct residential and commercial buildings, including homes and schools.

The International Codes, or I-Codes, published by ICC, provide minimum safeguards for people at home, at school and in the workplace. The I-Codes are a complete set of comprehensive, coordinated building safety and fire prevention codes. Building codes benefit public safety and support the industry's need for one set of codes without regional limitations.

National Fire Prevention Association

Ref: **http://www.nfpa.org/**

NFPA develops, publishes and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. Virtually every building, process, service, design and installation in society today is affected by NFPA documents.