EUROPEAN FIRE SPRINKLER NETWORK

A European Fire Safety Coalition

Comments on the Draft Update to the Technical Guidelines for Recommendation 86/666/EEC Fire Safety in Existing Hotels

19 September 2003

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Executive Summary

In 1986 the European Commission published Recommendation 86/666/EEC on fire safety in existing hotels. This document gave prescriptive measures to be followed for hotels to reach a minimum level of fire safety. Aside from organisational measures and the provision of certain equipment for staff and guests to fight fire, the Recommendation defined certain structural requirements to assure the ability of occupants to escape from the building. Existing hotels that did not comply with these structural requirements would have had to make major structural alterations, such as building additional staircases. This would be very expensive. The Recommendation was therefore not applied to existing hotels, although that was its stated purpose.

Under its commitment to Safety of Services, the European Commission reviewed hotel fire safety in 2001 and decided in 2002 to update the 1986 Recommendation. It employed a consultant to make a proposal and has published this proposal on its web site. The proposal is editorial in nature, including European technical product standards for items such as fire doors that were not available in 1986. The essential difficulty for hotel owners to comply with the structural measures in the Recommendation has not been addressed.

The European Fire Sprinkler Network brings together those in Europe who believe that fire safety will be improved through the wider use of fire sprinklers. It has members in nine European countries, including manufacturers and installers of fire sprinklers; fire product and fire protection system test laboratories; and fire safety consultants. It also enjoys close links with insurance associations and fire services. As such it represents the views of thousands of Europe's fire safety professionals.

The European Fire Sprinkler Network believes that fire sprinkler systems are the best technology to assure fire safety in existing hotels. Fire sprinkler systems have been retrofitted into thousands of existing hotels outside Europe. In Europe major international hotel chains have voluntarily retrofitted fire sprinklers in hundreds of their hotels so as to offer their guests a consistent, high standard of fire safety.

Many countries, including some in Europe, already require fire sprinkler systems to be fitted in large new hotels. One reason for this requirement is that a fire sprinkler system is the only tool that improves the survival chances of those trapped in the room where the fire starts. In existing hotels these countries recognise the important contribution that fire sprinklers make to fire safety by permitting a relaxation of structural requirements, such as the maximum length of dead-end corridors, if fire sprinkler systems are fitted. In this way a fire sprinkler system becomes the economic choice to achieve a minimum level of fire safety in an existing hotel.

This report summarises the evidence to support the fitting of fire sprinkler systems in hotels and proposes specific text to include fire sprinkler systems in the Recommendation. By an appropriate use of fire sprinkler systems, Europe will be most economically able to achieve a minimum level of fire safety in existing hotels.

London
19th September 2003

Introduction

This report offers the contribution of the European Fire Sprinkler Network to the draft proposals to update and improve the technical guidelines for Recommendation 86/666/EEC "on fire safety in existing hotels". It has been written in response to the invitation on the European Commission web site for "all concerned parties, organised at a European level, to provide comments and contributions based on the rapporteur's conclusions". As a body organised at a European level, representing thousands of fire safety professionals from many European countries, the European Fire Sprinkler Network believes that it is well qualified to make a contribution.

Background

The "Council Recommendation of 22 December 1986 on fire safety in existing hotels (86/666/EEC)" was an important milestone in the advancement of hotel fire safety in Europe. For the first time there were some specific technical recommendations to which authorities in all European countries could refer when seeking to establish a reasonable level of hotel fire safety. The technical recommendations covered many important areas that could contribute to hotel fire safety, including:

- The provision of means of escape
- A guarantee of structural stability until escape had been effected
- The limitation of highly flammable materials in wall, ceiling or floor coverings and interior decorations
- Safe operation of all technical equipment and appliances
- The provision of working and maintained systems to alert the occupants
- Safety instructions and plans for an escape route in each room
- The provision of working and maintained fire-fighting equipment
- Suitable instruction and training of staff

One major tool to assure fire safety has been omitted: the fitting of active, water-based extinguishing systems, such as fire sprinkler systems. Although fire sprinklers have been widely used in industry for over 140 years, when the Recommendation was written in 1986 it was still relatively uncommon to fit them in hotels. In the following seventeen years this has changed and many countries now have requirements to fit fire sprinklers in hotels in certain circumstances (see International Requirements for Fire Sprinklers in Hotels). Specific proposals from the European Fire Sprinkler Network to include fire sprinkler systems in the update to the 1986 EC Recommendation are in the Appendix.

Practical Difficulties to Implement the 1986 Recommendation

The European Fire Sprinkler Network notes that the 1986 Recommendation was on fire safety in **existing** hotels. Many of the technical guidelines in the Annex are almost impossible to apply retrospectively to an existing hotel, such as:
1.3.3.1.the length of blind passages must not exceed 10 metres,
1.3.4.An existing hotel in a building of more than three levels above the ground should generally be provided with at least two staircases.

1.3.5.The maximum lengths of 10 metres for blind passages and 35 metres for the distance to be covered to reach a staircase must be observed in all cases.

Clearly if a hotel has a blind passage of 12m it cannot easily shorten it. Similarly it would be difficult and expensive to build an extra staircase in an existing building.

In 1986 the Recommendation already acknowledged that it may be difficult to apply some of the measures but made a provision to apply alternative measures, "Member States may use different or more stringent measures than those specified in the Annex, if they achieve at least an equivalent result." However the lack of any guidelines as to what other measures would be regarded as equivalent made it difficult for Member States to enforce the full implementation of the Recommendation.

The 1986 Recommendation was therefore not enforced, as was recognised in the 2001 report by the Commission, "Half the Community countries have not accepted measures with retroactive effect." Under its commitment to safety of services the Commission determined in 2002 that it should review the 1986 Recommendation and provide "more precise provisions for alternative solutions when the recommended technical guidelines in the 86/666/EEC Recommendation cannot be applied".

Fire sprinkler systems are well-adapted to retrofit. Thousands of hotels around the world have retrofitted fire sprinklers with minimal disruption and at modest cost, so as to comply with raised fire safety standards. It is much faster and cheaper to retrofit an existing hotel with a fire sprinkler system than to build in additional staircases.

Specific proposals by the European Fire Sprinkler Network to incorporate fire sprinkler systems in the update to the 1986 EC Recommendation are in the Appendix.

The Fire Safety Performance of Fire Sprinklers in Hotels

Fire sprinklers operate when they are heated above a set temperature, usually 68˚C. They then open to release water onto a fire below, controlling its spread and in many cases extinguishing the fire. Decades of statistics from many countries have shown that properly designed and maintained fire sprinkler systems successfully control or extinguish fires in over 98% of cases.[1] In Europe there has never been a case of multiple loss of life in a building protected by a fire sprinkler system.

Benefits in the Room of Origin

Fire sprinklers are very sensitive to heat and so respond quickly if there is a fire, usually well before conditions in the room become life-threatening. They prevent fire growth, so reducing the production of toxic gases, and keep the room temperature at a survivable level. In many cases they extinguish the fire. Fire sprinkler systems are therefore often able to save people trapped in the room in which a fire begins. Only an active extinguishing system can offer this level of fire safety.

[1] Reports and data available from Canadian Fire Sprinkler Association, Centre National de Prévention et de Protection of France, Fire Protection Association of U.K., Nationaal Centrum voor Preventie of The Netherlands, National Fire Protection Association of USA, Scottsdale Metro Fire Department of USA, Sprinklerfrämjandet of Sweden, Verband der Schadenversicherer of Germany and many others.

Ease of Escape
Fire sprinklers greatly ease escape from a building. By attacking a fire while it is still small they prevent its growth and so reduce the amount of smoke released. People are thus more easily able to find their way out of the hotel. Fire sprinkler systems can also include an alarm to the fire brigade when they operate, so that fire-fighters are swiftly on the scene and can assist with evacuation.

Flashover
Flashover occurs when gases released by the heat of the fire reach the point of auto-ignition. Access to oxygen, when a door is opened or a window breaks, leads to spontaneous combustion with a fireball and shockwave. Fire sprinklers prevent flashover by cooling fire gases, so contributing to the safety of those leaving the building and the fire-fighters entering it.

Reduced Damage
While not a primary concern of the present Recommendation, fire sprinklers also reduce the damage suffered by a hotel in a fire. Through early response to the fire, well before the arrival of the fire brigade, fire sprinkler systems keep the fire small. A small fire needs much less water to be brought under control. Many years of statistics have shown that in most cases only one or two fire sprinklers operate to control a fire, releasing much less water than a single fire hose. Fire sprinklers are also very reliable, so that it is extremely rare for a fire sprinkler to operate without a fire.

An Economic Solution
Most countries that include fire sprinkler systems in their building codes allow them to be fitted as an alternative to other fire safety measures. As a result the building architect may often find that it is more economic to fit fire sprinklers than more traditional fire safety measures. Similarly fire safety practitioners in Sweden, which does not have prescriptive fire codes but follows a performance-based approach to fire safety, routinely call for fire sprinklers to be fitted as part of their fire safety concept.

Not only can fire sprinkler systems be the most economic solution at the time of construction, but their low maintenance costs mean that over the lifetime of the building they remain an economical solution. By including fire sprinkler systems in the Recommendation both as an option for new construction and as an alternative solution in existing hotels, the Commission would reduce the cost of compliance with the Recommendation while achieving an equivalent and probably improved level of fire safety.

International Requirements for Fire Sprinklers in Hotels

Fire sprinkler systems are widely fitted in hotels in many countries around the world. This followed a number of disastrous hotel fires in the 1980s with serious loss of life. Fire sprinklers have an outstanding track record, with no case of multiple loss of life recorded in Europe in a building fitted with a properly designed and maintained fire sprinkler system. Furthermore many years of records show that fire sprinklers successfully control or extinguish fires in over 98% of cases and that in more than 50% of cases only one or two fire sprinklers operate, releasing far less water than used by a single fire hose.

Europe

Italy requires fire sprinklers to be fitted [2] in hotels with more than 1000 beds. In practice there are few hotels with so many beds.

Norway requires fire sprinklers to be fitted in "Premises with open connection over several storeys and a gross area of more than 200m^2 in places for overnight accommodation."[3] The code continues, "If the area of such premises does not exceed 800m^2 they may, however, be constructed without a sprinkler system provided that the premises are separated from bedrooms and the escape routes by building components of at least A 60." In practice this is interpreted to mean that smaller hotels are not required to fit fire sprinkler systems but that all other hotels must do so.

Poland requires fire sprinklers to be fitted in all buildings over 55m in height and in places of assembly with assembly rooms that can accommodate more than 600. This can include the largest hotels.

Spain limits fire compartments in hotels to 2500m^2 but allows this to be doubled to 5000m^2 if a fire sprinkler system is installed.[4] Spain also requires fire sprinklers to be installed in hotels and hostels if their highest evacuation point exceeds 28m.[5] In practice this includes many medium and large hotels.

Sweden does not have any prescriptive building codes but has performance-based codes. To meet them many fire engineers call for fire sprinkler systems to be installed as part of their fire safety concept.

The United Kingdom requires fire sprinkler systems to be fitted in hotels with a floor over 30m above ground level if the building "is designed on the basis of phased evacuation"[6]. In practice this requires few hotels to fit fire sprinkler systems.

North America

Canada requires fire sprinkler systems to be fitted in all hotels with four or more floors.[7] Hotels with three or less floors require fire sprinklers if their area exceeds certain values. The maximum area of the un-sprinklered building decreases as the number of floors increases from one to three. It is also reduced depending on whether the building accesses the street on three, two or one sides, and on whether the construction is entirely or partially of non-combustible materials. Hotels above six floors not only require fire sprinkler systems but fire separations between floors with a fire-resistance rating of 2 hours instead of 1 hour.

In the United States building codes are controlled by the individual States, who usually adopt the voluntary codes of the National Fire Protection Association, NFPA, so making them law in those States. These codes require fire sprinkler systems to be fitted in all new hotels of four or more floors accommodating 16 or more people and

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[2] DECRETO MINISTERIALE 9 aprile 1994 (G.U. n. 95 del 26/4/1994)

[3] Regulations of 5 July 1990 No. 546 relating to fire-preventive measures and fire inspection. Amended by No. 1174 of 7 December 1993 and No. 657 of 27 June 1997.

[4] nbe-cpi-96, section 4.1

[5] nbe-cpi-96, section R.20.4.e).

[6] Approved Document B 2000, section 5.20.

[7] Canadian National Building Code, page 59, Group C Classification.

in all new hotels with one to three floors if each room does not have an exit opening directly to an external fire exit.[8] All existing hotels for which the top floor is more than 23m above ground level must be protected by a fire sprinkler system[9].

Under NFPA codes if a fire sprinkler system is fitted:

- hotels of up to four floors may have one exit per floor rather than two, as long as the travel distance from a room to the exit does not exceed 10.7m[10]
- dead-end (blind) corridors may be 15m rather than 10.7m in length[11]
- the maximum travel distance to an exit is 60m rather than 30m[12]
- shops and storage rooms no longer need a 1-hour fire-rated separation[13]
- walls and floors of exit corridors and guest rooms may have a ½-hour rather than 1-hour fire resistance rating[14]
- spaces may be unlimited in area and open to the corridor[15]

In addition the boiler room, laundry, maintenance and waste collection areas must be protected by fire sprinklers.[16]

Australia

In Australia buildings of more than 25m in height, including hotels, must be fitted with fire sprinklers.[17] Aside from this specific provision, the Building Code of Australia is a performance-based code and so fire sprinkler systems are often included by fire engineers in their fire safety concept instead of other, structural measures.

Asia

Most countries in Asia are reported to have codes requiring fire sprinkler systems in hotels, although in some countries enforcement is variable. In Singapore and Hong Kong hotels of more than four floors require fire sprinkler systems. Korea and Japan also have circumstances, dependent on the number of floors and hotel area, where fire sprinkler systems must be installed. In practice most new large hotels in Asia are required to be fitted with fire sprinklers, either by the local building code, the fire service or the international policy of the hotel owner.

South America

Mexico and Puerto Rico are reported to require fire sprinkler systems in high rise hotels. In other countries building codes often vary from city to city. The major cities usually have the most modern fire codes and so fire sprinkler systems are required in high rise hotels in Sao Paolo, Rio de Janeiro, Buenos Aires, Santiago and Panama City. As in Asia, enforcement of the building code is variable.

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[8] NFPA 5000, 24.3.5 plus NFPA 101 28.3.5 for new build; NFPA 101 29.3

[9] NFPA 5000, 3.3.58.9 and 33.2.2.1 plus NFPA 101, 11.8.2 and 28.4.1 for new build; NFPA 101, 29.3.5.1 for existing hotels

[10] NFPA 5000, 24.2..4.2 plus NFPA 101, 28.2.4.2 for new build; NFPA 101 29.2.4.2 for existing hotels

[11] NFPA 5000, 24.2.5 and NFPA 101, 28.2.5 for new build

[12] NFPA 5000, 24.2.6 and NFPA 101, 28.2.6 for new build; NFPA 101 29.2.6 for existing hotels

[13] NFPA 5000, Table 24.3.2.3 and NFPA 101, Table 28.3.2.2.2 for new build; NFPA 101, Table 29.3.2.2.2 (also boiler room and laundry) for existing hotels

[14] NFPA 5000, 24.3.6 and 24.3.7

[15] NFPA 5000, 24.3.6.5

[16] NFPA 5000, Table 24.3.2.3 for new build and NFPA 101, Table 29.3.2.2.2 (only the waste collection area) for existing hotels

[17] Building Code of Australia 1996 - Volume One, E1.5

Major International Hotel Groups
Following serious fires, a number of international hotel groups now have a policy to fit fire sprinkler systems in all their hotels, including Four Seasons, Hilton, Marriott, Sheraton and Centerparcs. These hotel groups have retrofitted fire sprinkler systems in hundreds of their European hotels.

Major Fires

Certain fires have had a big influence on the direction of hotel fire safety legislation. In the United States the MGM Grand Hotel in Las Vegas suffered a fire on 21st November 1980 in which 84 people died and about 700 were injured. Two weeks later on 4th December 1980 26 people died in Stouffer's Inn in New York and two months after that on 10th February 1981 a fire in the Las Vegas Hilton caused 8 deaths and 252 injuries. This series of fires and the inquiries into their causes gradually lead to changes in the building codes and laws in the United States, so that most new hotels were required to fit fire sprinkler systems. The fire on New Year's Eve, 31st December 1986 at the San Juan Dupont Plaza Hotel in Puerto Rico caused 97 more deaths and lead to a payment in damages of $220 million. This settlement caused a number of hotels to voluntarily fit fire sprinkler systems. The next stimulus came from the United States Hotel and Motel Fire Safety Act of 1990, which mandated that federal employees on travel must stay in accommodation that was fitted with an automatic fire sprinkler system if the building had more than three stories[18].

The next big stimulus to the fitting of fire sprinklers in hotels came with the Sheraton Hotel fire in Cairo, Egypt where 18 people died and 70 were injured. It emerged that Sheraton and other hotel chains had a policy to fit fire sprinkler systems only in hotels in the United States. Sheraton and many other North American hotel chains now have a policy to fit fire sprinkler systems in all their hotels. The United States has not had a fatal hotel fire since 1993.

Norway suffered a fatal fire in the Hotel Caledonian, Kristiansand, on 5th September 1986, in which 14 people died and 50 were injured. This lead in 1990 to the requirement for fire sprinkler systems to be fitted in medium and large hotels in Norway[19].

Europe does not compile information on hotel fires. However they certainly occur. France recently suffered a serious fire in a hotel in the La Plaine district of Marseilles on 15th May 2003, in which 11 people died and 18 were injured. The European Fire Sprinkler Network believes that had this hotel been fitted with a fire sprinkler system this loss of life would not have occurred. There are many examples of fire sprinkler systems saving people and property from fire in hotels: most recently during the power cut in New York the five-star Soho House Hotel provided its rooms with candles. An unattended candle fell over and started a fire. One fire sprinkler operated and put out the fire with minimal damage and disruption. This was at a time when the fire service was greatly stretched and the city was without electricity[20].

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[18] Hotel and Motel Fire Safety Act of 1990, United States Public Law 101-391, 25 September 1990.
[19] Regulations of 5 July 1990 No. 546 relating to fire-preventive measures and fire inspection. Amended by No. 1174 of 7 December 1993 and No. 657 of 27 June 1997.
[20] 14 August 2003 Soho House Hotel, 9th Avenue, NY, NY.

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The European Fire Sprinkler Network

Set up in 2002, the European Fire Sprinkler Network www.eurosprinkler.org is open to membership by all those with an interest in improving fire safety through encouraging the fitting of fire sprinkler systems. The founding members were Eurofeu www.eurofeu.org, whose members include the national fire sprinkler installer trade associations in Europe, and the International Fire Sprinkler Association www.sprinklerworld.org, whose members include all the major manufacturers of fire sprinklers and related components.

Since its inception the main laboratories in Europe which certify fire protection products and systems (BRE of the U.K., CNPP of France, SP of Sweden, TÜV of Germany and VdS of Germany) have also joined the European Fire Sprinkler Network, as have a number of consulting companies. Many of the above laboratories were originally set up by insurance associations. Although now independent they retain strong insurance links. The Network also has links to the fire services in many countries and our Council Chairman is Hans Jochen Blätte, Fire Chief of Wuppertal.

The current membership is drawn from Belgium, Denmark, Finland, France, Germany, Italy, Spain, Sweden, Switzerland and the U.K. It represents thousands of fire safety professionals across Europe.

Appendix Proposed Modifications to Recommendation 86/666/EEC

Edit 1.3.2

1.3.2 If the criterion used is the number of persons, hotels with two or more levels above the ground which can accommodate a total of more than 50 persons must have at least two staircases. In an existing hotel with up to four levels above the ground which can accommodate a total of more than 50 persons a single staircase is permitted if the hotel is fitted with a fire sprinkler system in accordance with EN 12845. In this case the maximum length of dead-end or blind corridors is 15 metres as in 1.3.3.1.

Justification: A fire sprinkler system greatly reduces the evolution of heat and smoke, so that people in the hotel are more easily able to see to escape. The fire sprinkler system also prevents the build-up of toxic gases to a life-threatening level, so that people have more time to escape. In many cases the fire sprinkler system will not only control the fire but extinguish it. The requirement for a second staircase to reduce crowding during evacuation is then less critical. Many existing hotels in cities are unable to construct a second external staircase, either due to aesthetic planning restrictions, security issues or a lack of outside space. Construction of a second internal staircase would mean major remodelling of the hotel with the loss of some guest rooms and their potential future revenue. This proposal enables medium-sized hotels to comply with the Recommendation in a more economic way. Fire safety is not compromised and is improved because a fire sprinkler system greatly increases the probability of survival for people in the room of origin of the fire. The limit of four floors ensures that existing large hotels with greater numbers of people to evacuate are still required to have at least two staircases. This proposal is in line with practices common in other parts of the world.

Edit 1.3.3.1

1.3.3.1 The length of passages where travel is only possible in one direction (dead-end conditions or blind passages) must not exceed 10 metres, unless a fire sprinkler system in accordance with EN 12845 is fitted, in which case the maximum length of such passages is 15 metres;

Justification: A fire sprinkler system greatly reduces the evolution of heat and smoke, so that people in the hotel are more easily able to see to escape. The fire sprinkler system also prevents the build-up of toxic gases to a life-threatening level, so that people have more time to escape. In many cases the fire sprinkler system will not only control the fire but extinguish it. The probability of a guest becoming trapped at the end of a blind corridor is therefore so reduced that the maximum length of these corridors may be increased. An existing hotel would require major remodelling to shorten the length of a blind corridor. This proposal enables existing hotels with blind corridors of more than 10 metres to comply with the Recommendation in a more economic way. Fire safety is not compromised and is improved because a fire sprinkler system greatly increases the probability of survival for people in the room of origin of the fire. For a new hotel this proposal would give the architect more design freedom, again without any compromise of fire safety. This proposal is in line with practices common in other parts of the world.

Edit 1.3.3.2

1.3.3.2 When the hotel has two or more stair cases the distance to be covered from any point on an escape route to reach one of them must not exceed 35 metres, unless a fire sprinkler system in accordance with EN 12845 is fitted, in which case this maximum distance is 60 metres.

Justification: A fire sprinkler system greatly reduces the evolution of heat and smoke, so that people in the hotel are more easily able to see to escape. The fire sprinkler system also prevents the build-up of toxic gases to a life-threatening level, so that people have more time to escape. In many cases the fire sprinkler system will not only control the fire but extinguish it. The probability of a guest being unable to find his way to an exit is therefore so reduced that the maximum travel distance to an exit may be increased. An existing hotel would require major remodelling to shorten travel distances, including the construction of additional internal staircases with the loss of guest rooms and future revenue. This proposal enables existing hotels with travel distances of more than 35 metres to comply with the Recommendation in a more economic way. Fire safety is not compromised and is improved because a fire sprinkler system greatly increases the probability of survival for people in the room of origin of the fire. For a new hotel this proposal would give the architect more design freedom, again without any compromise of fire safety. This proposal is in line with practices common in other parts of the world.

Edit 1.3.5

1.3.5 The maximum lengths of 10 metres for passages where travel is possible in only one direction (dead-end conditions or blind passages) and 35 metres for the distance to be covered to reach a staircase must be observed in all cases, unless a fire sprinkler system in accordance with EN 12845 is fitted, in which case the maximum length for blind passages is 15 metres and the maximum distance to reach a staircase is 60 metres.

Justification: Consistency with changes to 1.3.2, 1.3.3.1 and 1.3.3.2.

Edit 2.1.2

2.1.2 The compartmentation provides a barrier to the spread of fire and smoke adequate to keep the escape routes accessible and usable for a sufficient length of time. The building must be designed and built in such a way that in the event of an outbreak of fire, the generation and spread of fire and smoke within the building is limited. Active fire suppression systems, such as fire sprinkler systems in accordance with EN 12845, may be part of the measures to achieve this goal.

Justification: A fire sprinkler system greatly reduces the generation of fire and smoke, so limiting their spread within a building. In many cases a fire sprinkler system will extinguish the fire, ending the production of smoke, heat and toxic gases. This proposal affords the hotel architect and fire safety engineer an extra tool to design fire safety into the building. The availability of this tool may enable designers to create more economical fire safety solutions. At the same time fire safety is not compromised and is improved because a fire sprinkler system greatly increases the probability of survival for people in the room of origin of the fire.

Insert 2.2.3

2.2.3 Buildings of four or more floors above the ground must be fitted with a fire sprinkler system, in accordance with EN 12845.

Justification: The existing Recommendation allows a hotel with 300 guests on 7 floors to expect guests to find their own way to the exits and down the staircases to safety. Many hotel guests are young or elderly. At night many others are impaired by alcohol. These guests are unlikely to be able to evacuate such a building unaided, nor are there likely to be sufficient staff present to assist them with timely evacuation. Flashover in a hotel room is estimated by experts to occur between 3 to 5 minutes after ignition of the fire. The fire service is unable to reach all the rooms in this short time so anyone trapped in the room of origin will die. Not only that but once flashover occurs the fire can extend rapidly to other rooms and other floors. It soon becomes too dangerous for the fire services to enter the building and look for those trapped inside. This was the situation at a recent fire in a five floor hotel in Marseilles, France, which claimed 11 lives[21]. A fire sprinkler system is the only solution that prevents flashover and rapid escalation of a large hotel fire. Australia, Canada, Hong Kong, Japan, Korea, Norway, Spain, the United States and many other countries recognise this danger and require fire sprinklers to be fitted in high rise hotels.

Edit 2.3.2

2.3.2 In buildings having more than three levels above the ground, the fire resistance (REI) of the floors must be at least 60 minutes (REI 60), according to the Commission Decision 2000/367/EC. Where a fire sprinkler system is fitted, the fire resistance of the floors may be 30 minutes (REI 30).

Justification: Fire sprinkler systems control a fire, in many cases extinguishing it. This action greatly reduces the evolution of heat and smoke, so that the floors are exposed to much less stress by the fire. The fire resistance of the floors can therefore be 30 minutes instead of one hour. Fire safety is not compromised by this proposal and is improved because a fire sprinkler system greatly increases the probability of survival for people in the room of origin of the fire. This proposal offers an alternative solution for some existing hotels to comply with the Recommendation.

[21] Fire on 15 May 2003 in La Plaine district of Marseilles. 11 deaths and 18 injuries.