The Netherlands

Fireworks

In The Netherlands under the 2002 *Vuurwerkbesluit* (Fireworks Regulation) fire sprinklers must be installed in all places where fireworks are stored or sold. Details of the requirements are published in Memorandum 60, which is due to be replaced in 2016 by new guidance from a government-funded body, CCV, called *Brandbeveiliging Consumentenvuurwerk* (Fire Protection of Consumer Fireworks)

High rise buildings

The Dutch building code (Bouwbesluit 2012) covers all buildings. However, it states, *"Hoewel geen verbod is opgenomen op het toepassen van die voorschriften op een bouwwerk waarin een vloer van een gebruiksgebied hoger dan 70 m boven of lager dan 8 m onder het meetniveau ligt, zijn niet al die voorschriften volledig geschikt voor dergelijke hoge of ondergrondse bouwwerken. Om die reden is in deze afdeling bepaald dat dergelijke bouwwerken altijd ten minste het zelfde veiligheidsniveau moeten hebben als beoogd met die voorschriften."*

Unofficial translation
While no ban has been included on the application of those requirements to a building with a floor higher than 70 m above or 8 m below the reference level, not all these requirements are completely suitable for such high or underground structures. For this reason, it is determined in this section that such structures should always have at least the same level of security as envisaged by those rules.

For buildings above 70 m there is a widely-accepted code of practice, published by SBR in 2005 and updated in 2014, *Brandveiligheid in hoge gebouwen; Handreiking brandveiligheid hoge gebouwen* (Fire safety in high-rise buildings; guidance for fire safety in high-rise buildings) which among other measures calls for sprinklers.

Sprinklers to extend compartment size

The Dutch building code (Bouwbesluit 2012) has functional requirements which in most cases are clarified through prescriptive requirements. All the functional requirements can be realised in alternative ways, as stated in Article 1.3.1. This is the basis upon which most sprinkler systems are installed in The Netherlands.

Often, sprinklers are installed to permit larger fire compartments than the limits in the building code. There is no regulatory guidance to which the local fire brigade, which approves building fire safety designs, can refer. Instead there is guidance on how to accept an increase in the total fire load in a compartment. The guidance is given in Dutch standard NEN 6060 *Brandveiligheid van grote brandcompartimenten* (Fire safety of large compartments). With sprinklers the fire load can be at least 10 times higher, which in practice means the compartment may be 10-30 times larger. For most types of occupancy the maximum fire compartment size is 1,000 m^2; for light industrial

buildings and warehouses it is 2,500 m^2. Guidance in NEN 7079, which also has large compartments as its scope, explains how to use fire engineering principles and a probabilistic analytical approach to determine maximum compartment size.

Sprinklers as an equivalent solution

Sprinklers have also been approved on a project basis to extend escape travel distances and to reduce structural fire resistance, fire resistance of compartments and measures to prevent spread of fire between buildings.

Sprinkler System Certification

To be approved as a compensatory measure the sprinkler system must obtain an inspection certificate. In the building planning application it must be shown how the equivalent solution (with sprinklers) satisfies the functional requirements. For this, a certified consultancy must be hired, which will assess whether the measures in the fire protection plan meet the requirements. Specifications for the sprinkler system are a part of that assessment. All systems must be inspected by an accredited inspection company and a certificate supplied. This inspection is less extensive for certificated sprinkler installers. The inspection and certification schemes are approved and supervised by the *Raad van Accreditatie* (Accreditation Council).

Sprinklers as a compensation for fewer staff in the case of emergency

The Dutch building code (Bouwbesluit 2012) only makes one reference to sprinklers and that is in Article 7.11a as a means to reduce the number of staff needed to ensure timely evacuation, *"Op welke wijze deze functionele eis wordt ingevuld wordt overgelaten aan de eigenaar of gebruiker van een bouwwerk. Benadrukt wordt dat door extra technische maatregelen (zoals sprinklers) het aantal personen dat nodig is voor hulpverlening kan worden beperkt."*

Unofficial translation:
How these functional requirements are met is left to the owner or occupier of a building. It is stressed that through additional technical measures (such as sprinklers), the number of people required for emergency assistance can be reduced.

Residential Sprinklers

There have been several cases where residential sprinklers have been accepted as a compensatory measure, either where the escape route was too long, a second escape route was not available or the fire brigade access was unacceptable. A decision on a government website ruled that sprinklers were an acceptable means to compensate for the escape route from a house. Such decisions are published on www.adviescommissiebrand.nl

In 2009, before the Bouwbesluit 2012 was published, another regulatory guidance document, *Handreiking Gelijkwaardige Oplossingen* (Guidance on Equivalent Solutions) gave guidance on the application of equivalent solutions, including with sprinklers.