

Sprinkler Statistics 2009



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INTRODUCTION

Until 1998, the Nationaal Centrum voor Preventie (*'National Centre for Prevention'*) has published the 'Sprinkler Statistics'. Annually every June, details about the operation of certified sprinkler systems in the Netherlands were compiled based on figures from the fire sprinkler industry and the insurance industry. As of 2008, data has been collected again to further build these statistics. Currently, LPCB Nederland collects this data and compiles the 'Sprinkler Statistics'. LPCB Nederland has carefully compiled the sprinkler statistics however depends on the data provided. Data is provided by sprinkler contractors (approved by LPCB Nederland) and by inspection bodies that have signed a license with LPCB Nederland.

This is the Sprinkler Statistics for 2009. This year the Sprinkler Statistics show once again the benefits of a certified sprinkler system. Certification is a guarantee that the sprinkler system operates as expected. 24 hours a day, 7 days a week a certified sprinkler system is ready to keep a fire under control or to extinguish a fire in its early stage.

Fire Safety

Fire in large, sometimes very risky, properties can, apart from a threat to life, entail enormous damage: direct fire and water damage to goods, machinery and building, but also consequential loss that puts continuity of business at risk. Think of trading losses by not being able to deliver goods on time, business delays (revenue loss), forced dismissal by downsizing of the workforce, etc.. Prevention of fire or minimizing the effects of fire is of utmost importance for each business. A certified sprinkler system is one of the best solutions for fire protection and fire safety.

Minimising loss

The Verbond van Verzekeraars (*'Association of Insurers'*) provides an inventory of big fires with a loss of € 1 million or more in their quarterly publication *'Brandbrief'*. The direct loss from the 105 fires in 2009 amounts to € 369 million. That is an average loss of more than € 3.5 million. The average loss from fires in sprinklered properties in 2009 is less than € 370,000 (this average is very high due to one fire in an expensive machine).

This statistics comprise a comparison with these large fires to show the loss minimizing effect of certified automatic sprinkler systems. After all, installation of a certified automatic sprinkler system would have been appropriate in these properties. This comparison shows that the average (known) loss from fire in 7 sprinklered properties in 2009 is approximately 10 percent of the loss in non-sprinklered buildings.

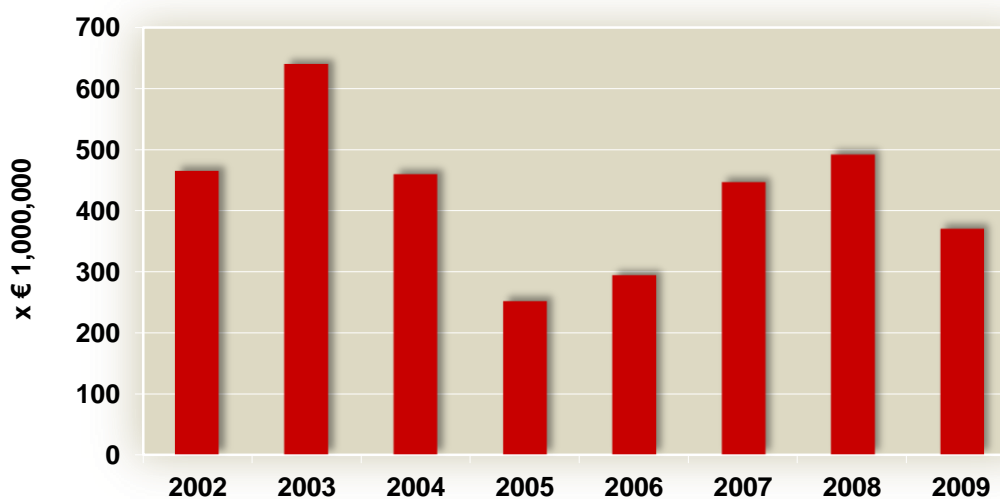
A summary of fires that occurred in 2009 in properties with a certified sprinkler system is also presented in this report.

Fire loss in properties, whether or not sprinklered

An overview of losses from € 1,000,000 in the period 2002 to 2009 follows below.
(Source: 'Brandbrief', Verbond van Verzekeraars)

Year	Total fire loss x € 1,000,000	Number of fires	Average loss x € 1,000,000
2002	462.600	96	4.82
2003	636.785	129	4.94
2004	458.200	84	5.45
2005	251.182	73	3.44
2006	293.234	79	3.71
2007	445.923	108	4.13
2008	490.659	96	5.11
2009	369.115	105	3.51

Table 1: Fire loss (losses greater than € 1,000,000.--) in properties, whether or not sprinklered.



Graph 1: Total fire loss (losses greater than € 1,000,000.--) in properties, whether or not sprinklered.

Fire loss in sprinklered properties

7 fires in sprinklered properties were reported to LPCB Nederland in 2009. No losses have been reported for 5 of those fires, hence it is assumed that loss has been negligible; as stated by the Verbond van Verzekeraars in three fires only one sprinkler was activated, in one fire two sprinklers were activated and in another one fire a total of three sprinklers were activated. Further, for one fire it was reported that loss was 'minimal' (one sprinkler activated) and one fire reportedly caused a loss of € 2.600.000, --. A press release stated that this particularly high loss occurred because the fire started in a very expensive machine.

Table and graph below provide an overview of all fire losses in 2008 and 2009 in **sprinklered** properties, where the sprinkler system extinguished the fire. Only since 2008 data has been recorded again, hence no data can be presented from previous years. Manually extinguished fires, fires that are extinguished by the fire brigade and fires for which fire loss is significant however unknown, are disregarded. It is assumed that fire loss is negligible for fires where 3 or less sprinklers are activated and no loss is reported.

Year	Total fire loss x € 1,000,000	Number of fires (where fire loss is known)	Average loss x € 1,000,000
2009	2.6	7	0.37
2008	0.15	12	0.01
2007	No data	No data	No data
2006	No data	No data	No data
2005	No data	No data	No data
2004	No data	No data	No data

Table 2: Fire loss in sprinklered properties.



Graph 2: Total fire loss in sprinklered properties.

Overview of 2009 fires in sprinklered properties

Date/Time	Property type	System type	Activated sprinklers	Estimation of loss (€)	Cause/Comment
04-01 10:53 hour	Industrial	Dry pipe	1	Low	Compressor overheating
24-02 Time unknown	Shopping centre	Wet pipe	1	Unknown	An act of vandalism has activated a sprinkler. Sprinkler activation has triggered the sprinkler alarm system, which has alarmed the fire brigade. The sprinkler system had already extinguished the fire upon arrival of the fire brigade.
17-04 13:30 hour	Food outlet in stadium	Dry pipe	2	Unknown	Hot plate has caused fire
30-05 Time unknown	Industrial	Unknown	1	Unknown	A high pressure cleaner in the cleaner room caught fire from unknown causes. This has actuated a sprinkler in the range hood, which has extinguished the fire. The fire brigade arrived, but did not have to conduct fire-fighting duties. The sprinkler system and sprinkler alarm system functioned as expected and in accordance with its design objectives.
15-10 11:40 hour	Industrial	Wet pipe	20	2,600,000.-- 'Brandbrief' 2009-4	Unknown
14-12 13:30 hour	Industrial	Wet pipe	3	Unknown	Welding in one of the spray booths has caused a fire in the exhaust system. During work sparks ended up in the filter cloth. The filter cloth was pulled away in staff fire-fighting actions causing the fire to intensify. At that time, 3 sprinklers were activated which have extinguished the fire. Within a short time the fire brigade was present and conducted cleaning up operations.
30-12 Time unknown	Shopping centre	Wet pipe	1	Unknown	A short circuit started a small fire, which activated 1 sprinkler.

Table 3: Overview of 2009 fires in sprinklered properties.

Leaks in sprinkler systems

77 leaks in sprinkler systems were reported to LPCB Nederland in 2009. The leaks can be categorized as follows.

Cause of leak	Leaks		
	Number 2009	Percentage 2009	Percentage 2008+2009
Corrosion	43	56%	49%
Frost	9	12%	7 %
Mechanical damage	18	24%	28%
High system pressure	1	1%	1%
Installation and/or material defects	1	1%	3%
Overheating	1	1%	1%
Vandalism	0	0%	0%
Unknown causes	4	5%	11%
Total	77	100%	100%

Table 4: Leaks in sprinkler systems in 2009.

Based on 10 million sprinklers installed in the Netherlands, the chance of a leak is less than 1 in 100 000 (10^{-5}) per installed sprinkler per annum.

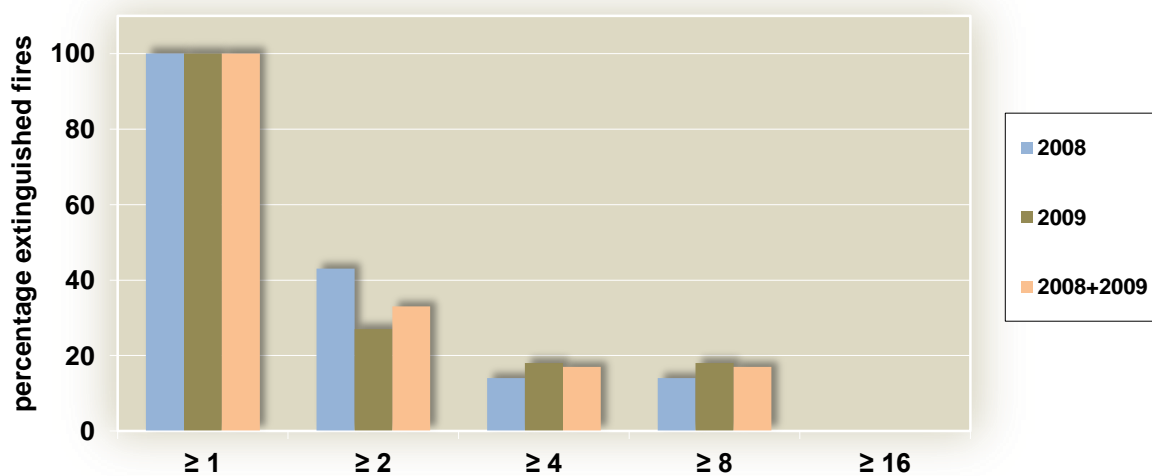
Effectiveness of sprinklers in 2009

All 7 fires in registered sprinklered properties in 2009 have been extinguished by activation of the sprinkler system.

Graph 3 and Table 3 below show the effectiveness of sprinkler systems in 2008 and 2009.

Number of sprinklers	Percentage 2008	Percentage 2009	Percentage 2008 + 2009
≥ 1	100 %	100 %	100 %
≥ 2	43 %	27 %	33 %
≥ 4	14 %	18 %	17 %
≥ 8	14 %	18 %	17 %
≥ 16	0 %	0 %	0 %

Table 5: Number of activated sprinklers as a percentage of the total number of fires by LPCB Nederland/VIVB registered sprinkler systems in 2008 and 2009.



Graph 3: Number of activated sprinklers as a percentage of the total number of fires by LPCB Nederland / VIVB registered sprinkler systems in 2008 and 2009.

Overview of installed sprinklers by accredited sprinkler contractors in the Netherlands in the period 2004 to 2009

478,716 sprinklers have been installed in the Netherlands in 2009 (both new builds and renovations) by accredited sprinkler contractors.

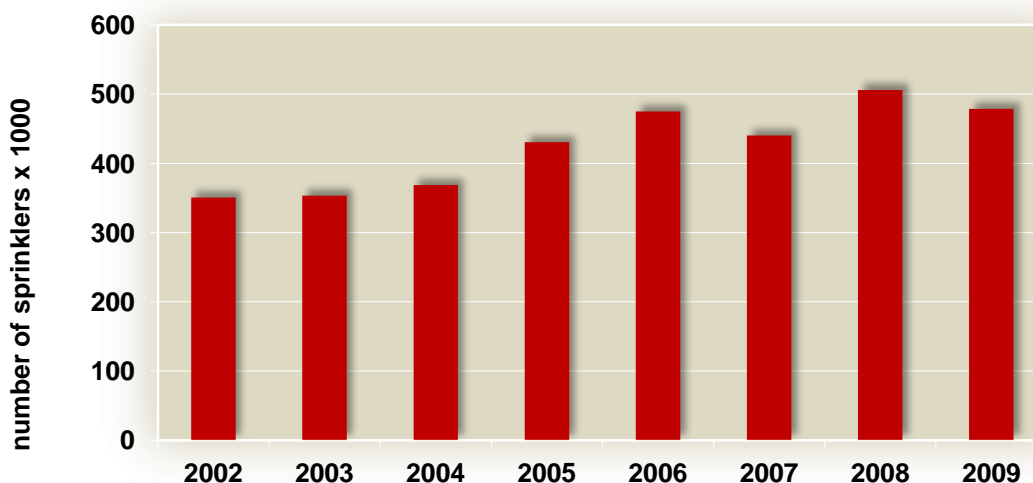
The decrease in the number of sprinklers installed in 2009 (478,716) compared to 2008 (506,426) is approximately 5%.

The total sprinklered area has increased by more than 4.8 million square meters in 2009 when assumed that a sprinkler has an area of protection of approximately 10 m².

Table and Graph 5 give an overview of the number of sprinklers installed in the period from 2002 to 2009.

Year	Number of sprinklers installed
2002	351,046
2003	353,778
2004	369,069
2005	430,673
2006	475,213
2007	440,418
2008	506,426
2009	478,716

Table 6: Number of sprinklers installed in the Netherlands (2002 to 2009).



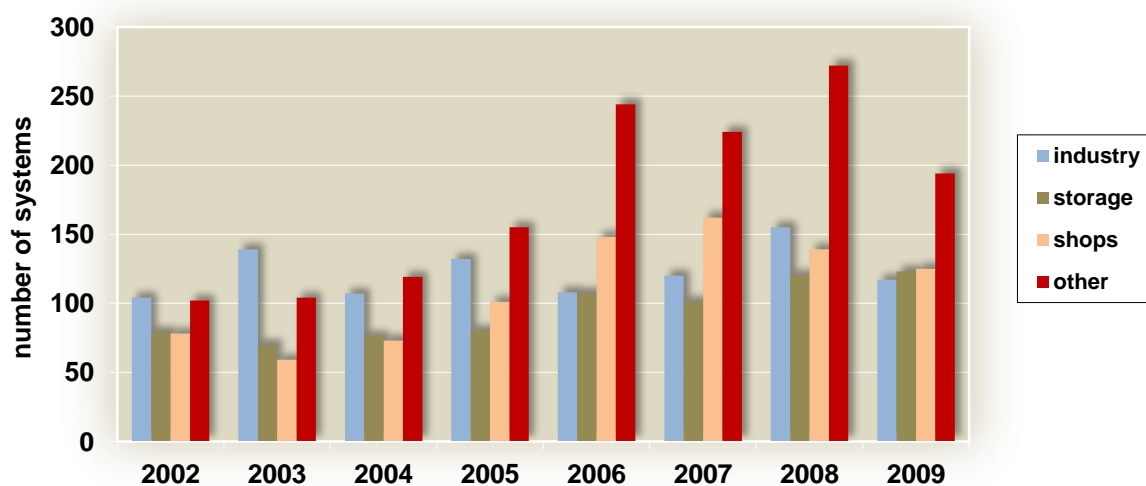
Graph 5: Number of sprinklers installed in the Netherlands (2002 to 2009).

Breakdown of sprinkler systems installed in 2009 in four categories

A breakdown of the number of installed sprinkler systems in 2009 in the Netherlands, in four categories follows below.

Category	Number of systems	Percentage
Industry	117	21 %
Storage buildings	123	22 %
Shops and shopping centres	125	22 %
Other (office buildings, hotels, and the like)	194	35 %

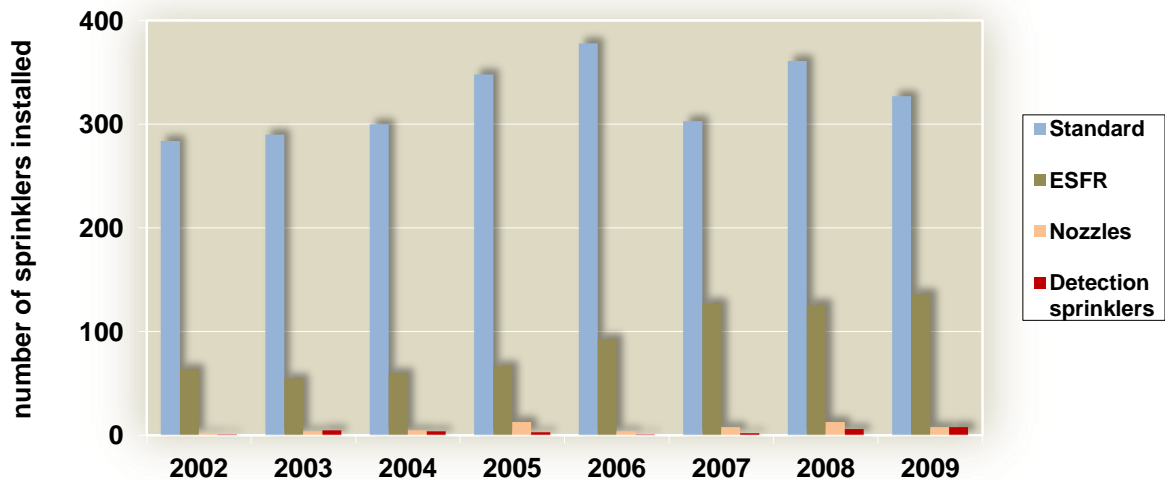
Table 7: Breakdown of the number of sprinklers installed per category (2009)



Graph 6: Breakdown of the number of sprinklers installed per category (2002 to 2009)

Sprinkler types

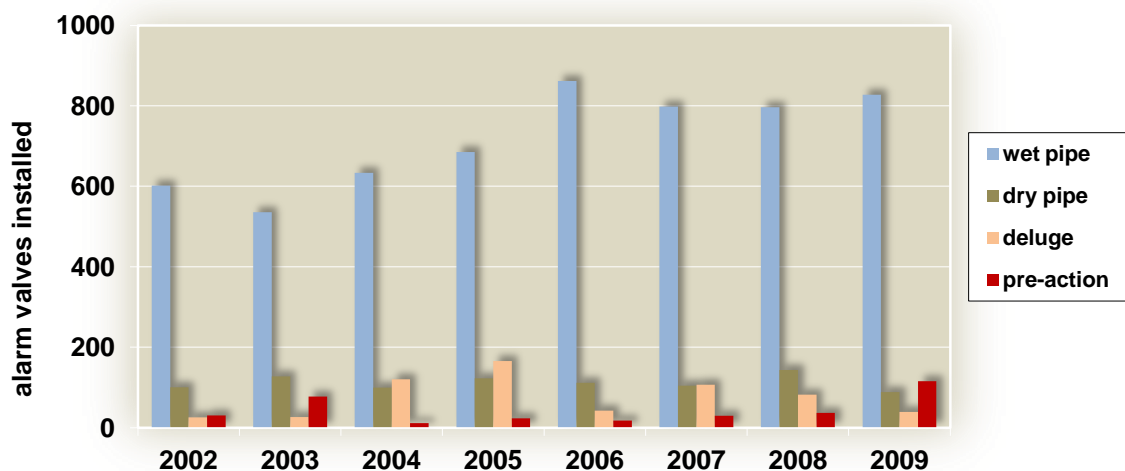
Sprinkler systems can comprise different sprinkler types. Sprinklers installed are categorized as standard (not ESFR) sprinklers, ESFR sprinklers, nozzles and detection sprinklers. Graph 7 shows the breakdown of the number of newly installed sprinklers per sprinkler type.



Graph 7: Breakdown of sprinklers installed per sprinkler type (2002 to 2009)

Sprinkler system types

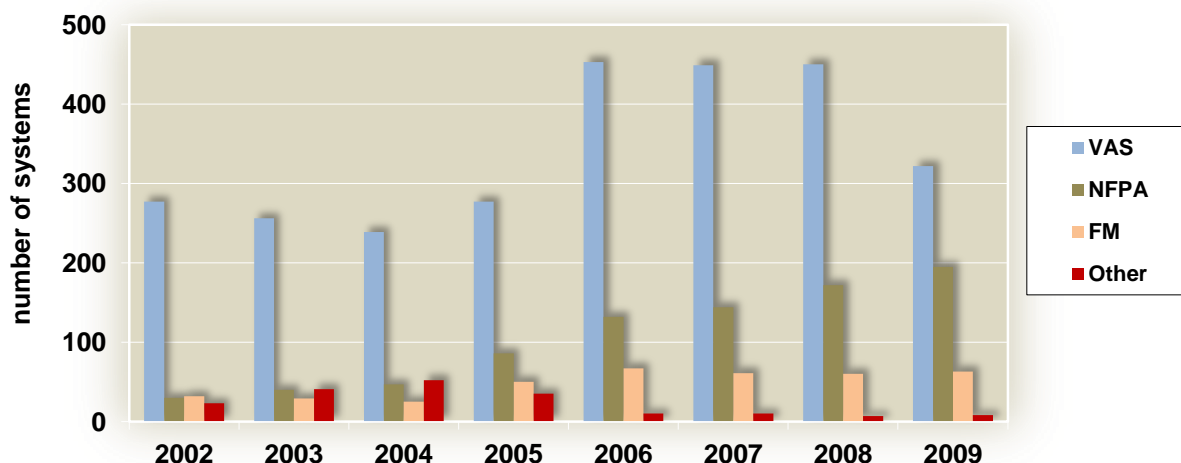
Most sprinklers are installed in wet pipe sprinkler systems. Graph 8 shows the breakdown per sprinkler system type in the period from 2002 to 2009.



Graph 8: Breakdown per sprinkler system type

Applied sprinkler standards

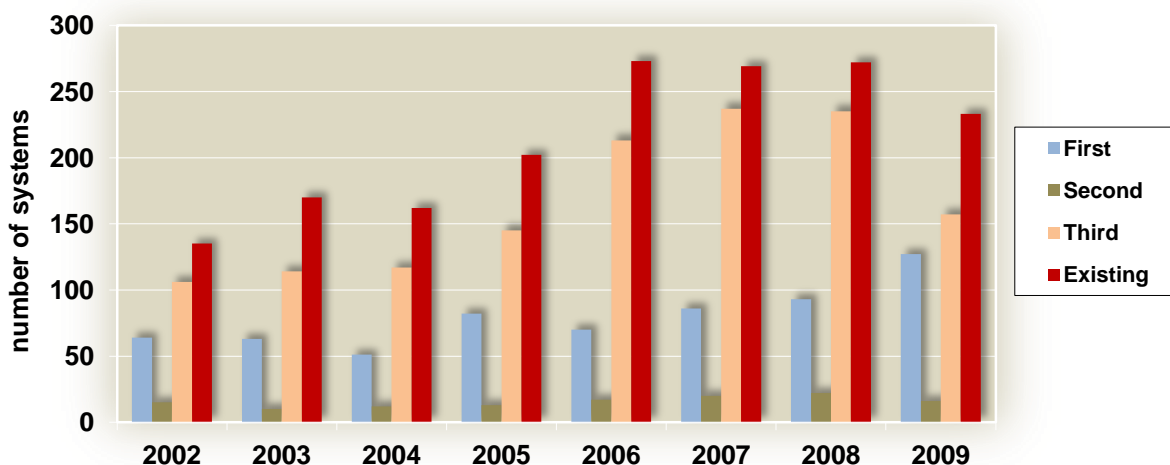
Dutch sprinkler standards (VAS) or international sprinkler standards (NFPA / FM, etc.) are applied as a starting point for design, installation, management and maintenance. Graph 9 shows the breakdown of the number of sprinkler systems in the Netherlands per standard.



Graph 9: Applied sprinkler standards in the Netherlands.

Sprinkler system grade

Sprinkler systems can be designed as a first, second or third grade sprinkler system in accordance with the VAS standards. A third grade sprinkler system has a single water supply. A first grade sprinkler system has a dual water supply and therefore has the highest reliability. Graph 10 shows the breakdown of the number of newly installed sprinkler system water supplies in the Netherlands per grade. The breakdown also includes sprinkler systems installed in accordance to NFPA or FM standards where the grade has been determined in accordance with the VAS standards for the purpose of this Statistic.



Graph 10: Sprinkler system grade for newly installed water supplies in the Netherlands.