
ARSON CONTROL FORUM

Research Bulletin no. **10**

Survey of school fires

Foreword

Nearly half of all the secondary schools contacted during this survey have experienced a fire serious enough to call the Fire and Rescue Service in the past three years. Many of these fires were considered to be deliberate. The cost and disruption from school fires is significant with insured property losses running at around £80m a year. School fires can also lead to the loss of valuable work by pupils and teachers and it is estimated that the education of around 90,000 children is disrupted each year.

This survey shows that risk is not evenly spread among our communities. Secondary schools in rural areas and those where educational attainment is high tend to be at less risk than inner-city schools and those with poor exam results. Fire can therefore have a double impact on some of the most vulnerable members of society – not only are they more likely to suffer an arson attack in their own school but there are likely to be less resources and capacity in the local area to accommodate those pupils affected in neighbouring schools. Moreover, schools now play a more central part in communities beyond school hours as adult education centres and the focal point for many other community activities. The loss of such a valuable asset is therefore felt all the harder by the whole community.

continued overleaf



The Fire and Rescue Service already provides an extensive programme of visits to schools to provide fire safety education and to give advice on fire prevention, risk assessment, evacuation and anti-arson measures. The Government has also recently produced an education pack providing materials on fire safety for Key Stages 1-4 but there is much more that can be done to protect our schools.

The Department for Education and Skills has published for public consultation Building Bulletin 100 (BB100) – *Designing and Managing Against the Risk of Fire in Schools* which covers not only the health and safety aspects of fire safety in schools but also property protection and other related issues that are currently outside the scope of the Building Regulations. Amongst other issues such as building layout and design and ongoing management and control, BB100 also addresses the case for sprinklers on a risk assessment basis.

With the *Building Schools for the Future* programme and improved IT provision in schools, public investment in school infrastructure is growing substantially. The financial and social impact on communities must also increase as extended schools become more widespread. I believe that we should be working together more closely to promote better fire risk assessment for all schools, especially those which this survey shows are more at risk (principally secondary schools in urban areas) and those where substantial investment is in place or planned (new or substantially altered schools, and those with substantial new IT facilities).

This report provides a valuable insight into the true scale of the problem of school fires and I commend it to all those with an interest in making our schools safer.

ANGELA E SMITH
Parliamentary Under Secretary of State
Department for Communities and Local Government

Executive Summary

Background

Each year the Fire and Rescue Service (FRS) in England and Wales attend around 1,200 school fires. Although numerically fewer than other types of fires, school fires tend to be more costly. School fires also affect pupil and teacher morale and school performance. In addition, even relatively minor school fires, often not reported to the local FRS, can act as an 'early warning', alerting schools to the possibility of more serious incidents. The issue of school fires is an important one, to parents, pupils and teaching staff as well as the wider community and this has been recognised by recent media interest in school fires.

The risks to pupils and staff are obvious yet there is a lack of information around the incidence of school fires. As a result the (then) Office of the Deputy Prime Minister (ODPM) commissioned the British Market Research Bureau (BMRB) to undertake a survey of school fires and school fire safety.

Aims and objectives

The aims of the research were to provide additional data (in addition to the recorded school fires attended by the FRS and reported to the DCLG) on the nature and extent (including costs) of fire-related problems in maintained schools; and to provide information on schools' knowledge and experience of fire safety education and advice they may have received from the FRS, central government, LEAs and private sector bodies.

Ultimately the information from the survey would be used to help improve the safety of pupils and staff, prevent disruption to education and help ensure resources are used for educational purposes rather than dealing with the aftermath of fire.

Specifically the research was to cover:

Schools' recent history of fires

- Number of fires
- Any related anti-social behaviour
- Time and location of fires, seasonal or daily patterns
- Number of fires considered suspicious or deliberate
- Any patterns (e.g. seasonal or time of day) for low-level incidents that may not have been reported to the local FRS
- Whether a fire resulted in a call to the local FRS and their attendance
- Estimated economic value of losses and of fire prevention precautions
- Any noticeable short-term impact on school performance including disruption to lessons and temporary closure
- Preventative actions taken by the schools before and after an incident, cost of measures, perceived effectiveness

Fire safety education

- Whether fire safety education was taught in schools
- Experience of, and views on, fire safety campaigns and initiatives run by local or national private or public sector bodies
- Schools' views on how fire safety messages could be more effectively targeted

Methodology

Having reviewed the possible alternatives it was decided to adopt a telephone approach as the main research method using Computer Assisted Telephone Interviewing (CATI) technology.

Telephone interviewing is more cost-effective for researching professional groups such as teachers than face-to-face data collection, and achieves a better quality of response than self completion methods (postal or internet surveys). CATI is particularly useful as the survey required complex routing (different questions would be asked of those schools which have experienced fires), which is a standard feature of CATI.

Sample

To ensure that the numbers of schools that had experienced a fire were maximised in the final sample, a disproportionate sample was drawn. This meant that schools in Fire and Rescue Authorities where school fires were more prevalent were more likely to be selected to take part.

Using data supplied by the (then) Office of the Deputy Prime Minister, the Fire and Rescue Authorities (and the Local Education Authorities within them) were divided into three groups based on the likelihood of schools having experienced a fire (calculated as the number of school fires in the FRS area divided by the number of schools in that area). This was done for all schools. Schools were then over-sampled from areas more likely to have reported a school fire and under-sampled from areas least likely to have reported a fire. Design weights were then applied to the final data to correct for this disproportionate approach.

Questionnaire

The questionnaire used for the survey was developed by BMRB in conjunction with colleagues from the (then) ODPM and the project steering group.

It was felt that a single questionnaire should be developed to cover all the issues that needed to be addressed. To design a survey that included two separate questionnaires (one questionnaire asked of all schools about fire safety and a separate follow up with schools that have had fires) would create unnecessary complications and would prove more of a burden to schools than using just the one interview.

It was decided the questionnaire should focus on asking schools about their fire history within the last three years. It was felt that recall of school fires and any related information – whether there was any anti social behaviour leading up to it, what costs were incurred etc. – would decline with time and that asking for details of fires that happened over three years ago may result in flawed or inaccurate information being given. A longer time frame would have also increased the chances of staff changes having occurred between the fire and the interview.

Pilot stage

A pilot survey was held in January 2005 to test the questionnaire. A combination of randomly selected schools plus some schools known to have had a fire was used. As well as testing the questions, the pilot allowed researchers to assess the length of the questionnaire and test the contact procedures, as well as providing the opportunity to check who would be the most suitable people at the school to interview about the subject.

Main fieldwork

Once findings from the pilot had been considered the approach for the main stage was then finalised. The fieldwork began on 14th February 2006 and finished on 22nd March 2006. In total 1,243 interviews were conducted – 938 interviews with secondary schools and 305 interviews with primary schools.

Final response rates were as follows:

- 80% for primary schools
- 63% for secondary schools

The extremely high response rate amongst schools invited to take part in the survey demonstrated the importance that schools attach to fire safety. The high level of response rate was consistent across the different types of schools.

Who we talked to

Interviews were conducted with the member of staff who had overall responsibility for fire safety and fire safety education at the school. In practice this meant most interviews were conducted with either a head or another senior teacher or, where directed, the facilities or operations manager.

The head teacher of each school was the main initial contact and the advance materials were addressed to him or her. It was felt that head teachers should either be able to answer the questions about recent fires, or would be able to refer the interviewer to the most appropriate person. They were also most likely to know about the cost implications. Initial desk research showed that establishments such as schools were instructed to have a Fire Safety Manager to ensure there is no doubt as to where the responsibility for fire safety rests, and to enable consistency of approach. According to the DfES publication "*Report on designing and managing against the risk of fire in Schools*", the fire safety manager should be a senior appointment, ideally at Head or Deputy Head level¹. However, following the pilot and the initial responses from schools to the advance materials sent out, it became clear that other staff such as finance or operations managers were in fact just as likely to be responsible (particularly amongst larger secondary schools). In such cases interviews were carried out with these post holders. The tables below show who the interview was carried out with:

Respondent's job title (secondary schools)					
	Size of school (pupil numbers)				
	All schools	<700 pupils	701-1000 pupils	1001-1300 pupils	1300+ pupils
Unweighted base	938	186	305	255	192
	%	%	%	%	%
Head-teacher + teaching staff	51	61	50	46	50
Business / Finance Manager	24	19	23	27	25
Facilities Manager	23	18	26	25	23
Other staff	2	2	1	2	2

Base: All secondary schools (938)

¹ BB100 Designing and managing against the risk of fire in schools – DfES online document July 2005 [note: this is a draft document issued for consultation]

Interviews with primary schools were much more likely to be held with teaching staff.

Respondent's job title (primary schools)	
Job title	All schools %
Head-teacher + teaching staff	90
Business / Finance Manager	4
Facilities Manager	6
Other staff	–

Base: All primary schools (305)

Final sample profiles

Data were weighted to correct for the disproportionate design of the sample. We compared the final profile of the interviewed schools (after the design weighting had been applied) to the profile of all schools (for the key variables such as region and size).

The final secondary school profile matched the overall profile.

Secondary	Population %	Achieved %
Rural	16	16
Urban	84	84
NE	6	7
NW	14	14
Yorks & Humberside	10	10
E Midlands	9	8
W Midlands	12	11
E England	13	13
London	12	11
SE	15	16
SW	10	11
School size		
700 or fewer pupils	23	23
701-1000	32	31
1001-1300	26	26
1301+	20	20

Base: All secondary schools (938)

The primary school profile included slightly more schools with over 300 pupils but given the small base and the fact the sample matched the other characteristics further weighting was deemed unnecessary.

Primary	Population %	Achieved %
Rural	71	71
Urban	29	29
NE	5	6
NW	15	13
Yorks & Humberside	11	12
E Midlands	10	10
W Midlands	11	12
E England	12	12
London	10	11
SE	15	16
SW	11	9
School size		
200 or fewer pupils	47	39
201-300	30	30
301-400	15	18
401+	9	13

Base: All secondary schools (938)

Key Findings – secondary schools

In total 938 secondary schools were included in the survey. All data are shown as weighted.

Prevalence of school fires

- Secondary schools were asked whether they had experienced any fires on the school grounds in the previous three years. Of the 938 schools who took part, over two in five (43%) said they had had at least one fire in the previous three years.
- 56% of schools said they had not had a fire in the previous three years. However 23% said they had had one fire and 19% – nearly one school in five – said they had had two or more fires
- The size of the school had an association with incidence of fires, as the table below shows. The larger the school (in terms of pupil numbers) the more likely it is to have experienced a fire in the last three years.

Whether school had a fire in the previous three years					
	Number of pupils				
	All (n=938) %	<700 (n=186) %	701-1000 (n=305) %	1001-1300 (n=255) %	1300+ (n=192) %
Yes	43	28	42	49	56
No	56	72	57	50	44

- School attainment (measured by GCSE pass rates) also appears to be a factor when assessing whether a school is likely to have experienced a fire. Looking at the GCSE pass rate grades A – C, results showed that schools with a higher A to C pass rate (76-100%) were much less likely to have experienced a fire (31%) when compared to schools with a lower (0-50%) A to C pass rate (52%).

Costs of school fires

- Those schools that reported having had a fire in the previous three years were asked whether a request for any sort of financial assistance (including any insurance claim) was made as a result of their most recent fire. Over a quarter (28%) of secondary schools that reported having had a fire said their most recent fire led to a claim for financial assistance being made.
- Schools were also asked to estimate the cost of damages caused by the fire. A wide range of costs were given, driven by the fact the most recent fire varied, ranging from large building fires to small scale wastepaper bin fires. The survey of secondary school fires included six fires with over £1 million worth of damage. The inclusion of these very expensive fires means that the mean cost for secondary school fires in the survey is artificially high. An alternative assessment of the average cost in damages of a school fire can be drawn by looking at the mode and median cost of damages.
- The **median** value of the damage caused by school fires was **£20** excluding those fires where the cost was unknown. Excluding those fires with no financial costs arising from damages, the median cost was **£300**.
- In terms of the **mode** cost of damages, taking all the fires together the most frequent cost was actually **£0** (138 fires). However perhaps a more meaningful way of calculating the mode was to use banded costs. The cost data was grouped in bands of £500. The cost band with the largest number of fires was **£1- £500** band.

Reporting of school fires

- In almost half of cases the most recent fire at secondary schools was reported to the FRS (48%). In 51% of cases the fire was not reported and in 2% of cases the respondent did not know. This suggests there is a high level of non-reporting of school fires. Size of fire (as measured by the total cost of damage) was strongly associated with whether the Fire and Rescue Service was called out.
- It is interesting to note the number of school fires with relatively high costs not actually attended by the fire service. A significant proportion of fires costing between £101 and £500 worth of damage were not reported to the FRS (36%). Such fires are not recorded in official statistics and yet cause hundreds of pounds worth of damage – not to mention other potential impacts there may be such as a loss of morale amongst staff and pupils, loss of teaching notes etc.

Causes of school fires

- It is clear from the data that school fires are more likely to be started in suspicious or deliberate circumstances. Out of the total of 424 secondary schools that had a fire, 78% said their most recent fire was considered suspicious or deliberate. 20% said their most recent fire was considered an accident and 2% said their fire was too recent to tell or did not know.

- Fires considered suspicious or deliberate at secondary schools were most likely to involve setting fire to a bin (17%); toilet roll or toilet paper (12%); paper (8%); rubbish or litter (6%) or a toilet roll holder or dispenser (6%).
- The most common causes of accidental fires at secondary schools in the survey were electrical equipment or wiring (18%), careless disposal of cigarettes or cigars (16%) and accidents with matches or cigarette lighters (14%).
- Schools were also asked about the wider impacts their most recent fire had. Looking at secondary schools that reported having had a fire, 17% said their most recent fire had led to the loss of morale amongst staff and 6% said their fire had led to the loss of morale amongst pupils. 7% said their fire had resulted in negative publicity for the school. Three quarters of secondary schools experiencing a fire in the previous three years said their most recent school fire had had no wider impact.

Location of school fires

- Nearly three-quarters (72%) of secondary schools that reported having had a fire said their most recent fire had been located within the school building, with the remaining 28% saying their most recent fire had been external to the school.

Impact of school fires

- Schools that had experienced a fire were asked about the short term impacts of their most recent fire. In secondary schools, 36% said their most recent fire had led to the temporary closure of at least one school facility; 33% said their fire had led to disruption to lessons; 10% said their fire resulted in the loss of teaching notes and 5% said their fire had resulted in a temporary closure of the whole school. Over half (51%) of secondary schools experiencing a fire in the previous three years said their most recent fire had had no short term impacts.

- Of secondary schools asked about their most recent fire, 62% said they had taken some precautions as a result. The most popular precautions taken as a result of a fire were new or updated fire safety checks (32%); new or updated CCTV (22%) and new or improved fencing (13%).

School Policies on fire safety

- Over a quarter (27%) of all secondary schools in the survey said they had a specific anti-arson policy at the school.
- 62% of secondary schools said they had a service recovery plan in the event of a major fire.
- 86% of secondary schools said that fire and safety were made part of the agenda of staff and governors' meetings.
- 58% of secondary schools said they had had a fire risk assessment by the Fire and Rescue Service in the last 12 months.
- 71% of secondary schools said they had provided training for staff in security and fire related matters.

Fire safety education

- Overall 64% of secondary schools said that they taught fire safety education, 23% said they did not teach fire safety and 13% did not know. The high percentage of “don’t knows” to this question was mainly a result of the interviews conducted with non-teaching staff (who were not always aware of teaching in the school). In order to try and minimise the impact of this, the results were analysed taking into account only interviews where people were able to give a definitive answer. Once the “don’t knows” had been removed 74% of schools said they taught fire safety (based on 820 respondents).

Support wanted

- The most popular form of support secondary schools would like to see to help raise fire safety awareness was “more visits by the Fire and Rescue Service to schools” (32%). 15% of schools said better materials were needed, including guidelines or models to work from. 14% of schools mentioned a need for guidance for teachers to link fire safety to the curriculum.

Key Findings – primary schools

In total 305 primary schools were surveyed. This small base size should be borne in mind when assessing the results. All data are shown as weighted.

Prevalence of school fires

- Primary schools were asked whether they had experienced any fires on the school grounds in the last three years. Of the 305 primary school respondents interviewed, only 14% of primary schools reported they had had a fire in this period.

- 86% of primary schools said they had not had a fire in the previous three years. 9% said they had one fire and only 5% said they had two or more fires.
- Given the majority of primary schools did not have a fire, just 44 schools in the survey said they had had a fire in the previous three years. This low number prevents meaningful analysis of primary school fires. The small base size should be borne in mind when assessing the results that follow.

Reporting of school fires

- Of 44 primary schools who said they had a fire, the most recent fire was reported to the FRS in half of all cases. In the other half of cases the fire was not reported.

Costs of school fires

- Schools were asked whether a request for any sort of financial assistance – including any insurance claim – was made as a result of their most recent fire. Amongst the 44 primary school fires in the survey, a claim was made in nearly a quarter of them (24%).
- Schools were also asked to estimate the cost of damages caused by the fire. A wide range of costs were given, driven by the fact the most recent fire varied, ranging from large building fires to small scale waste paper bin fires.
- The **median** cost of damages of primary school fires was **£6.50** excluding those fires where the cost was unknown. Excluding those fires that did not cost anything in terms of damages, the median cost was **£130**.

- In terms of the **mode** cost, taking all the 44 primary school fires together the most frequent value was actually **£0**. However a more meaningful way of calculating the mode would be to use banded costs. The cost data were grouped in bands of £500. The cost band with the largest number of fires was the **£1-£500** band.

Location of school fires

- Schools were then asked where their most recent fire started. 57% of fires had started within the school building with the remaining 43% discovered externally. Classrooms and offices were the most likely locations internally.

Causes of school fires

- Out of the total of 44 primary schools that were asked about their most recent fire, 64% said their most recent fire was considered suspicious or deliberate. However, 36% said their fire was considered an accident.
- The main causes of accidental fires amongst primary schools in the survey were electrical equipment or wiring (7 fires) followed by careless disposal of cigarettes or cigars (2 fires), cooking appliances (2 fires), candles (2 fires) and heating appliances (2 fires).
- The most likely cause of deliberate or suspicious fires amongst primary schools in the survey was a wastepaper bin (5 fires), paper (4 fires), wood (3 fires), rubbish (3 fires) or litter (3 fires).

Impacts of school fires

Schools were asked a series of questions about the impacts, both short-term and long term, of their most recent fire.

- For the 44 primary school fires included in the survey the most likely short-term impact was disruption to lessons (32%) followed by the temporary closure of at least one school facility (25%) and the loss of teaching equipment or notes (22%). Twenty-six of the 44 schools (59%) who said they had had more than one fire reported no short term impact resulted from their most recent one.
- The most likely wider impacts of the 44 primary school fires were loss of morale amongst staff (31%) and loss of morale amongst pupils (10%). However, twenty nine of the 44 schools who reported having a fire (66%) said that their most recent fire had had no wider impacts.

Precautions taken as a result of fires

- Of primary schools interviewed, only 25 of the 44 fires included in the survey resulted in additional precautions being taken. The most frequent precautions taken were new or updated fire safety checks (six schools); new or improved fencing (six schools) and new or updated fire safety training for staff (two schools).

School Policies on fire safety

- All 305 primary schools were asked whether they had a specific anti-arson policy; only 19% said they had such a policy. The majority of schools (77%) reported they had no such policy in place.
- Over half of all primary schools in the survey (54%) reported that they had a recovery plan in the event of fire; 45% said they had no recovery plan (and 1% didn't know).
- Over half (55%) of primary schools said they had had a fire risk assessment by the Fire and Rescue Service in the last 12 months; 43% said they had no assessment (and 2% said they didn't know).

- All schools were asked whether they provided training for staff in security and fire related matters. Two-thirds (67%) of primary schools reported providing training for staff in matters of security and fire safety; 32% said they didn't provide training (and 1% didn't know).
- All schools were asked whether fire and security were made part of the agenda of staff and Governors' meetings. 84% reported that fire and security had been made part of the agenda; 15% reported it had not (and 1% didn't know).

Fire safety education

- The majority of primary schools interviewed in the survey said they taught fire safety in the school. 88% of schools said that they taught fire safety education; 9% said they didn't teach fire safety (and 3% didn't know).
- Nearly three quarters (71%) of schools reported having a visit from the Fire and Rescue Service to teach fire safety in the previous 12 months; 28% said they didn't have a visit (and 1% didn't know).

Support wanted

- All primary schools were asked what type of support they would like to see to raise fire safety awareness. 38% of respondents mentioned visits by the Fire and Rescue Service, 17% said they would like to see better teaching materials. 16% said that guidance to teachers to link to the curriculum was a way to raise awareness.

Future Developments

The Fire and Rescue Service already provides an extensive programme of visits to schools to provide fire safety education and to give advice on fire prevention, risk assessment, evacuation and anti-arson measures. In addition the National Community Fire Safety Centre has recently produced an education pack providing materials on fire safety for Foundation and Key Stages 1-4.

In terms of property protection measures the Department for Education and Skills has published for public consultation Building Bulletin 100 (BB100) – *Designing and Managing Against the Risk of Fire in Schools* which covers not only the health and safety aspects of fire safety in schools but also property protection and other related issues that are currently outside the scope of the Building Regulations. Amongst other issues such as building layout and design and ongoing management and control, BB100 also addresses the case for sprinklers on a risk assessment basis.

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