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**FIRES IN SCHOOLS IN ENGLAND AND WALES
1962 AND 1963**

by

JANE M. HOGG AND S. E. CHANDLER

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SUMMARY

This note is concerned with fires in Local Education Authority maintained schools, Direct Grant and independent schools, excluding special and approved schools.

The analyses have been carried out with 1-in-2 samples of all reports of fires attended by fire brigades during 1962 and 1963.

The note is a continuation of a series of notes which commenced in 1951.

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Introduction

To ensure the adequacy of fire protection arrangements in educational establishments up-to-date statistics are periodically required. This note is primarily concerned with the fire hazards at local authority educational establishments. These are nursery, primary and secondary schools, other than special or approved schools.

The statistics of fires have been obtained from 1-in-2 samples of reports received from fire brigades in England and Wales during 1962 and 1963.

Reports on fires (obtained from the same samples) which occurred in Direct Grant and independent schools have also been examined since they could provide additional useful information. Special schools have, again, been excluded.

This note is a continuation of a series of notes on fires in educational establishments which commenced in 1951. (1)(2)(3)(4)(5).

Risk of exposure to fire

The numbers of children attending these schools in England and Wales⁽⁶⁾ are:

L.E.A. maintained primary	4,145 thousand
" " secondary.....	2,781 thousand
" " nursery	123 thousand
Total - L.E.A. maintained schools	6,950 thousand
Direct Grant	115 thousand
Independent recognised	305 thousand
Independent others	180 thousand
Total - non-maintained schools	600 thousand

The 1-in-2 samples of reports received from brigades in England & Wales for the years 1962 and 1963 contained respectively 253 and 254 reports of fires in local education authority maintained schools and 63 and 62 reports of fires in non-maintained schools. There were also 17 reports in 1962 and 8 in 1963 of fires in the residential areas of boarding schools, but these have not been included in the analyses since there are few boarding schools amongst the maintained schools.

The estimated numbers of fires which were attended by the fire brigades in England and Wales in 1962 and 1963 were:

L.E.A. maintained schools	2 (253 + 254) = 1014
Non-maintained schools	2 (63 + 62) = 250

Thus four times as many fires were reported in L.E.A. schools as in non-maintained schools, but there were more than 10 times as many children at risk in the former than in the latter. On the face of it a child appears to be exposed to a greater risk of fire in a non-maintained school than in a L.E.A. school.

Table 1 gives fires at the two types of school classified according to whether or not they occurred in school hours (defined as 8 a.m. to 5 p.m. inclusive).

Table 1
The frequency of fire in relation to
the time of day

Time of day	L.E.A. schools	Other schools	Total
School hours	317	59	376
Out-of-school hours	190	66	256
Total	507	125	632

It is possible that a child at a non-maintained school may spend more time on the school premises in out-of-school hours than a child at a L.E.A. school, which would increase his risk of exposure to fire on the premises. Nevertheless, his risk of exposure in school hours alone appears to be twice as high in a non-maintained school as in a L.E.A. school.

Possible reasons for the apparently higher risk of exposure to fire in non-maintained schools could be:-

- (i) A greater preparedness to call the fire brigade. This would increase the number of brigade attendances and hence the apparent frequency of fire.
- (ii) A greater chance of fires spreading once they had started so that more fires would achieve dimensions such that brigade assistance was necessary.

Considerable attention is given to fire drills and fire procedure in L.E.A. schools and a greater readiness to notify a fire brigade in non-L.E.A. schools would not be expected. On the other hand a tendency towards more rapid spread in the non-L.E.A. schools might be expected from the fact that many of them are in converted mansions and similar accommodation not built as schools⁽⁷⁾.

In considering the risk of exposure to fire the most important factor is the ease with which escape and rescue operations could be achieved. In this connexion it is worthy of note that the proportion of fires in buildings of more than 2 storeys (see Table 2) was considerably smaller in the L.E.A. schools than in the direct grant and independent schools.

Table 2
The number of storeys in school buildings
where fires occurred

Number of storeys	L.E.A. schools	Other schools	Total
One or two	434	85	519
More than two	70	40	110
Not stated	3	-	3
Total	507	125	626

Causes of fire

The main causes of fire in school premises are shown in Table 3.

Table 3

The major causes of fire

Cause of fire	L.E.A. schools	Other schools	Total	%
Heating appliances - solid fuel (including chimney)	76	14	90	14.2
- other	22	14	36	5.7
Cooking appliances	38	6	44	7.0
Wire and cable	29	7	36	5.7
Malicious ignition - by children 11 yr or younger	5	-	5	0.8
- by older children	12	2	14	2.2
- by other or unknown people	30	4	34	5.4
Matches (children with)	38	8	46	7.3
Smokers materials, tapers, etc.	58	17	75	11.9
Miscellaneous	106	27	133	21.0
Unknown	93	26	119	18.8
Total	507	125	632	100.0

One-third of the fires in schools were caused by heating appliances, cooking appliances and wire and cable; heating appliances accounting for two-thirds of the fires in this group. A further third of the fires appear to have been caused by the careless disposal of matches and smoking materials and by playing with fire, with or without malicious intent.

Fires caused by malicious ignition and children playing with fire appear to constitute a higher proportion of fires in the L.E.A. schools than in the non-maintained schools. Apart from this there do not, in general, appear to be any differences between the relative frequencies of causes of fire in the different types of school. Fires caused by heating appliances, however, appear to be more likely to arise from solid fuel appliances in the L.E.A. schools than in the non-maintained schools.

Table 4 lists the main causes of fire in both types of school according to whether or not they occurred in school hours.

Table 4

Cause of fire in relation to time of day

Cause of fire	L.E.A. schools		Other schools	
	School hours	Other hours	School hours	Other hours
Heating appliances - solid fuel (including chimney)	61	15	6	8
- other	17	5	7	7
Cooking appliances	30	8	4	2
Wire and cable	23	6	3	4
Malicious ignition - by children 11 yr or younger	-	5	-	-
- by older children	2	10	1	1
- by other or unknown people	2	28	1	3
Matches (children with)	27	11	4	4
Smoker's materials, tapers, etc.	39	19	9	8
Miscellaneous	72	34	15	12
Unknown	44	49	9	17
Total	317	190	59	66

From this table it can be seen that, in L.E.A. schools, fires due to most causes occurred more often during school hours than at other times. Malicious ignition, however, was most frequently encountered outside school hours. In non-maintained schools this difference between school hours and out of school hours is not apparent, possibly because there is more continuous activity in many of the schools in this category or because the schools are in less accessible locations.

Firefighting

The amount of fire fighting by both types of school appears to have been very similar, about one-half of the fires being tackled before the arrival of the fire brigade (Table 5).

Table 5

Fire fighting before the arrival of the brigade

Fire fighting by school	L.E.A. schools	Other schools	Total
No fire fighting	267	61	328
Some fire fighting	240	64	304
Total	507	125	632

The amount of fire fighting required from the brigades, on the other hand, appears to vary with the type of school, a higher proportion of the

fires in non-maintained schools requiring the use of hose reel jets and power pumps by the brigades (Table 6).

Table 6

Method of extinction by the brigade

Method of extinction by brigade	L.E.A. schools	Other schools	Total
No fire fighting & small means	248	43	291
Hose reel jets and power pumps	259	82	341
Total	507	125	632

A possible explanation is given by Tables 7 and 8. When there had been no fire fighting on the part of the schools before the arrival of the brigade the amount of fire fighting by the brigades in both types of school was similar; the proportion of fires requiring the use of hose reel jets and power pumps being approximately two-thirds of the total in both cases. (Table 7)

Table 7

No fire fighting before arrival of brigade,
method used by brigade

Method of extinction by brigade	L.E.A. schools	Other schools	Total
No fire fighting & small means	81	13	94
Hose reel jets and power pumps	186	48	234
Total	267	61	328

When there had been some fire fighting by the schools before the arrival of the fire brigade, (Table 8), not only was the overall proportion of fires requiring extinction by the use of hose reel jets and power pumps reduced, but the reduction was greater for the L.E.A. schools (from two-thirds to one-third) than for the non-maintained schools (from two-thirds to one-half).

Table 8

Some fire fighting before arrival of brigade,
method used by brigade

Method of extinction by brigade	L.E.A. schools	Other schools	Total
No fire fighting & small means	167	30	197
Hose reel jets and power pumps	73	34	107
Total	240	64	304

It would therefore appear that the fire fighting carried out by the L.E.A. schools was more effective than that carried out by the non-maintained schools or the buildings rendered this more profitable.

Casualties

There were no fatal casualties in the samples of reports used for this analysis.

Twenty-three non-fatal casualties were, however, reported in the 1-in-2 samples of all fire reports in the two year period, twenty-two of which occurred in L.E.A. schools. There were seventeen pupils among the non-fatal casualties in L.E.A. schools.

Table 9

Non-fatal casualties in relation to the place in which fire originated

Category of casualty	L.E.A. schools		Other schools		Total
	Laboratory	Other	Laboratory	Other	
Pupil	16	1	-	-	17
Other	1	4	-	1	6
Total	17	5	-	1	23

Sixteen of the seventeen pupils were injured in science or domestic science laboratories; seven being injured on one occasion, when there was an explosion in a chemistry laboratory due to a reaction of heated red phosphorus with sugar.

Conclusions

There were no fatal casualties, and only 23 non-fatal casualties, in the 1-in-2 samples of all reports. Seventeen pupils were among the non-fatal casualties, sixteen of whom were injured in science or domestic science laboratories.

Children attending L.E.A. schools appear to be less exposed to the danger of fire than children at non-maintained schools.

One-third of all fires in schools were caused by heating appliances, cooking appliances and wire and cable; heating appliances accounting for the majority of fires in this group. A further third of the fires appear to have been caused by smoking materials, matches (including children with), taper, naked light and malicious ignition. The fires caused by malicious ignition and children playing with fire, with or without malicious intent, appear to constitute a higher proportion of the fires in L.E.A. schools than in non-maintained schools. While fires caused by heating appliances are not associated with either type of school, they appear to be more likely to have been caused by solid fuel appliances in the L.E.A. schools than in the non-maintained schools.

The fire fighting carried out by the L.E.A. schools appears to be more effective than that carried out by the non-maintained schools.

- (1) FRY, J. F. and HINTON, Mrs. J. E. L. Fires in schools. An analysis of incidents attended by Fire Brigades in England and Wales during 1951. Joint Fire Research Organization F.R. Note No.64/1953.
- (2) HINTON, Mrs. J. E. L. Fires in schools. An analysis of reports of incidents attended by Fire Brigades in England and Wales during 1952. Joint Fire Research Organization F.R. Note No.97/1954.
- (3) HINTON, Mrs. J. E. L. Fires in schools. An analysis of all reports of incidents attended by Fire Brigades in England and Wales during 1953. Joint Fire Research Organization F.R. Note No.137/1954.
- (4) HINTON, Mrs. J. E. L. Fires in schools. Reports of incidents attended by Fire Brigades in England and Wales during 1954. Joint Fire Research Organization F.R. Note No.235/1956.
- (5) FIRTH, J. M. and FRY, J. F. Fires in educational establishments in the United Kingdom 1957. Joint Fire Research Organization F. R. Note No.509/1962.
- (6) Dept. of Education and Science (private communication).
- (7) BAKER, E. A. Boarding school hazards. Fire, April 1960 Vol 52, p.656.

