

APPENDIX C

REPORT COMPILED BY, THE SOLID FUEL ASSOCIATION

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SOLID FUEL ASSOCIATION

ANNEX A

INDEX OF KNOWN FATALITIES SEPTEMBER 1995 – MARCH 1999

Compiled by, The Solid Fuel Association

25/08/99

INDEX OF KNOWN FATALITIES

27 SEPTEMBER 1995 – 31 MARCH 1996

DECEASED	FATALITY			APPLIANCE	
AGE	DATE	LOCATION	CAUSE	TYPE	FUEL
	27-9-95	Llanelli, Dyfed	Chimney cond	IB	Anthracite
	27-9-95	Llanelli, Dyfed	Chimney cond	IB	Anthracite
83	28-10-95	Ammanford, Dyfed	Chimney blockage	O/F & R/H	Not recognised
82	28-10-95	Ammanford, Dyfed	Chimney blockage	O/F & R/H	Not recognised
22	8-11-95	Ammanford, Dyfed	Chimney blockage	R/H	Coal/Anthracite
22	8-11-95	Ammanford, Dyfed	Chimney blockage	R/H	Coal/Anthracite
OAP	10-11-95	Ottery St Mary, Devon	Ventilation/install.	Cooker	Smokeless
71	14-12-95	Treorchy, Mid Glam	Blocked throat plate	R/H	Anthracite
87	1-1-96	Wingerworth, Derby	Blocked flue pipe	Cooker	Phurnacite
83	1-1-96	Thorne, Doncaster	Ventilation/use	R/H	Coalite
50	14-1-96	Praze-an-Beeble, Cornwall	Chimney blockage	Cooker	Phurnacite
45	14-1-96	Praze-an-Beeble, Cornwall	Chimney blockage	Cooker	Phurnacite
73	24-2-96	Dorking, Surrey	Blocked flue	IB	Taybrite
70	25-2-96	Foxhole, Cornwall	Ventilation	R/H	Anth small nuts
74	26-3-96	Bourne, Lincs	Appliance condition	IB	Anth Grains
	26-3-96	Scausby, Doncaster	Blocked throat plate	R/H	Phurnacite
	26-3-96	Scausby, Doncaster	Blocked throat plate	R/H	Phurnacite

INDEX OF KNOWN FATALITIES

1 APRIL 1996 – 31 MARCH 1997

DECEASED AGE	FATALITY			APPLIANCE	
	DATE	LOCATION	CAUSE	TYPE	FUEL
78	20-05-96	Brynamman, Dyfed	Misuse	R/H	Blend smokeless
93	04-10-96	Helston, Cornwall	Blocked Flue Pipe	Cooker	Not known
70	08-10-96	Meonstoke, Hampshire	Possible ventilation Not conclusive	IB	Anthracite
?	11-11-96	Crediton, Devon	Chimney condition & ventilation	Cooker	?
73	12-11-96	Claxton, Norfolk	Blocked throat plate	R/H	Extracite
58	13-11-96	Graig 'Y' Rhacca, Gwent	Blocked throat plate/off take ventilation	R/H	Smokeless fuel
74	25-11-96	Selston, Notts	Flue pipe & chimney blockage	IB	Phurnacite
70	02-12-96	Pontyates, Llanelli, Dyfed	Installation & chimney construction	Cooker	Anthracite
56	?-12-96	Martham, Norfolk	Not known	IB	Anthracite
68	12-12-96	Llanrhidian, West Glamorgan	Blocked throat plate	R/H	Anthracite
41	17-12-96	Normanton, Wakefield, West Yorks	Chimney blockage/chimney construction	IB	Anthracite

DECEASED	FATALITY			APPLIANCE	
AGE	DATE	LOCATION	CAUSE	TYPE	FUEL
53	22-12-96	Doncaster, South Yorkshire	Maint & blocked throat plate	R/H	Mix smokeless
76 & 74	27-12-96	Doncaster, S Yorks	Maint & blocked throat plate	R/H	Phurnacite
75	20-01-97	Deddington, Oxfordshire	Blocked throat plate	R/H	Not known
81	24-01-97	Freiston, Lincs	Chimney blocked Throat Plate/ventilation	R/H	Anthracite
75	06-01-97	Penzance, Cornwall	Blocked flue	R/H	Anthracite
62	19-2-97	Lutterworth, Leics	Chimney condition & flue blockage	Cooker	Coalite nuts

INDEX OF KNOWN FATALITIES

1 APRIL 1997 – 31 MARCH 1998

DECEASED AGE	FATALITY			APPLIANCE	
	DATE	LOCATION	CAUSE	TYPE	FUEL
86	26-6-97	Cornwall	Chimney condition	Cooker	Housecoal
74	27-8-97	Stoke on Trent	Throat Plate blocked and chimney condition	R/H	Ancite
85	12-9-97	Rowlands Gill, Tyne & Wear	Blocked throat plate	R/H	Coke
50	14-9-97	Morpeth, Northumberland	Ventilation	R/H	Housecoal
68 & 69	29-9-97	Abergavenny, Gwent	Blocked flue & chimney	Cooker	Anthracite
71	30-9-97	Pontypool, Gwent	Ventilation & appliance installation	R/H	Anthracite
?	11-10-97	Denaby, Doncaster	Blocked throat plate & flue	R/H	Phurnacite
81	31-10-97	Ballater, Aberdeenshire	Chimney & appliance condition	Cooker	Housecoal
76	19-11-97	Maidstone, Kent	Flue blockage	FSB	?
72	8-12-97	Aston, Sheffield	Partial blockage	R/H	Housecoal
69	28-1-97	Shirebrook, Nottinghamshire	Chimney condition tenant use	R/H	Housecoal

DECEASED	FATALITY			APPLIANCE	
AGE	DATE	LOCATION	CAUSE	TYPE	FUEL
77	2-2-98	Stoke on Trent, Staffordshire	Blocked throat plate and ventilation	R/H	Ancit
82	4-2-98	Gorslas, Llanelli	Chimney condition – and obstructed throat plate	R/H	?
60	26-2-98	St Helens	Blocked flue	IB	Anthracite
50	5-3-98	Tylors Town, Rhondda	Blocked chimney	R/H	?
62	11-3-98	Wigan, Lancs	Blocked chimney	IB	Anthracite
85	25-3-98	Stoke on Trent	Blocked chimney & ventilation	Open fire	Housecoal
71 & 60	27-3-98	Wakefield, West Yorkshire	Blocked throat plate	R/H	Phurnacite

INDEX OF KNOWN FATALITIES

1 APRIL 1998 – 31 MARCH 1999

DECEASED	FATALITY			APPLIANCE	
	AGE	DATE	LOCATION	CAUSE	TYPE
80	4-4-98	Barnet London	Chimney condition	FSB	?
?	25-4-98	Shwt, Bettws, Bridgend	Blocked flue & ventilation	R/H	?
46	20-5-98	Rotherham, South Yorkshire	Chimney condition & lack of maintenance	FSB	Anthracite
94 & 67	28-5-98	Trowbridge, Wiltshire	Chimney condition & blocked flue	R/H	Ancit
94	4-6-98	Chesterfield, Derbyshire	Chimney condition & blocked flue	R/H	Phurnacite
3	8-7-98	Rothbury, Northumberland	Chimney construction & blocked flue	R/H	Anthracite
82	21-8-98	Newbold, Chesterfield, Derbys		R/H	Phurnacite
76	24-8-98	Clay Cross, Derbyshire	Blocked flue	R/H	Phurnacite
?	13-9-98	Denaby, Doncaster	Blocked flue	R/H	Phurnacite
55	20-10-98	Pontardawe, Swansea	Blocked flue	R/H	Anthracite
70+	26-10-98	Treherbert, Rhondda	Blocked flue & chimney condition	R/H	?
75	28-10-98	Trallwn, Swansea	Blocked flue	R/H	Anthracite
75	5-11-98	Rochford, Essex		R/H	
74	8-12-98	Llanfyhange, Carmarthern	Blocked flue & chimney condition	O/F Cooker	Homefire

DECEASED	FATALITY			APPLIANCE	
AGE	DATE	LOCATION	CAUSE	TYPE	FUEL
44	11-1-99	South Normanton, Derbyshire	Chimney condition & ventilation	R/H	Coal, Petcoke & Phurnacite
45	8-1-99	Ludlow, Shropshire	Blocked flue	R/H	Anthracite
73	23-1-99	Milford Haven, Pembrokeshire	Lack of maintenance & blocked flue	R/H	Anthracite
84	25-1-99	Basingstoke, Hants	Blocked flue	R/H	Anthracite
64	28-1-99	Hartlepool, Cleveland	Blocked flue	R/H	Pet Coke/Coke mix

INDEX OF KNOWN FATALITIES - 27 SEPTEMBER 1995 - 31 MARCH 1999							
DECEASED	FATALITY			APPLIANCE			OCCUPANCY
AGE	DATE	LOCATION	CAUSE	TYPE	MODEL	FLUE	
84	25.01.99	Basingstoke, Hants	Blocked Flue	R/H	Parkray 111G	Anthracite	P
64	28.01.99	Hartlepool, Cleveland	Blocked Flue	R/H	Parkray 88G	Pet Coke/Coke Mix	L/A

SOLID FUEL ASSOCIATION

ANNEX B

FATALITY ANALYSIS

APRIL 1995 – MARCH 1999

Compiled by, The Solid Fuel Association

25/08/99

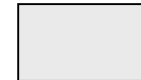
FATALITY ANALYSIS

Appliance Type	Flue Construction			Flue Condition		Blockage Detail				Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Boiler	Prefabricated	/	?	?	Sweeping access missing at base of flue	y	?	?	1/2 way up flue	Boiler flues blocked
Open Fire	Brick	?	Unlined	poor	leakage to roof space	y	Birds nest	?	?	Void above fire
Roomheater	Brick	?	Unlined	?	no leakage	y	soot	1 1/2 buckets	11ft from top	Appliance OK
Cooker	Brick	9" x 9"	Pargetted	Condensate Present	Horizontal flue off cooker, poor draught	n				Inadequate Ventilation
Roomheater	Brick	?	Unlined	OK		y	Fly ash/soot	2lb.	Throat plate	Additional 10lb of soot from Chimney
Cooker	Brick	185mm	clay		Soot door missing	y	Soot	6-7 litre volume	Base of Chimney	
Roomheater	Brick	?	?	OK	Good	n				Lack of ventilation
Cooker	Stone	?	?	OK	One pot serving two flues	y	Birds nest	?	4ft from top	Soot and flyash present in flue box
Boiler	Brick	?	?	OK		y	Flyash	?	In flue pipe	Poor maintenance and lack of ventilation
Roomheater	Prefabricated	?	Stainless Steel	OK		n				Lack of ventilation
Boiler	Brick	?	?	OK		n				Boiler in poor condition



Attributed primarily to chimney condition

C11



Chimney condition considered a contributory factory

FATALITY ANALYSIS

Appliance Type	Flue Construction			Flue Condition		Blockage Detail				Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick	?	?	OK		y	Flyash	?	Throat plate	Lack of ventilation
Roomheater	Brick	?	Partially lined with ceramic liner		Leaked when tested	n				Burning fuel placed on hearth in a bowl
Cooker	?	?	?	?	?	N				Lack of maintenance and ventilation
Boiler	Brick	9" x 9"	?	OK	Flue construction design	n				Flue restricted 9ft from bottom, inconclusive
Cooker	Brick	150mm	Clay for 75% of length	OK	Incorrect terminal and soot door leaking	n				Lack of ventilation
Roomheater	Brick	?	?	OK		y	Flyash	2lb 10oz	Throat plate	
Roomheater	Brick	?	?	OK		y	Flyash	?	Throat plate	Lack of ventilation
Boiler	Brick	?	?	Poor leaking joints		y	Soot/carbon	Bucket full	Base of chimney	Lack of maintenance
Cooker	Single skin metal	?	V.E. Steel	Poor	Contravenes regulations	y	Soot	?	Base of Chimney	Not insulated, too small a diameter too short, leaking
Roomheater	Brick	?	?	OK		y	Flyash & soot	?	Throat plate blocked	
Boiler	?	?	?	Liner erode		y	Soot flyash & flue liner	?	5m from top	Boiler flue ways also blocked
Roomheater	Brick	?	?	OK		y	Flyash	?	Throat plate	
Roomheater	Brick	?	?	OK		y	Flyash	?	Throat plate	

FATALITY ANALYSIS

Appliance Type	Flue Construction			Flue Condition		Blockage Detail				Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick	?	Unlined	OK		y	Flyash sand & mortar	?	Throat plate	Poor maintenance
Roomheater	Brick	?	Unlined	Poor	Brickwork cracked	y	Soot, chimney pot & masonry	?	?	Appliance offtake, and throat plate blocked
Roomheater	Brick	?	?	OK		y	Soot & twigs, possible nest	?	Base of chimney & throat plate	
Cooker	?	Unlined	Poor	Hole in pot		y	Soot	2.2lb	Flue box	Rebuild chimney top & replace pot
Cooker	Brick	9" x 9"	Unlined	Poor	Leaking joints	n				Damaged soot door & condensation
Roomheater	Brick	?	Unlined	Poor	Leaking joints at top	y	Soot/flyash	3lb	Throat plate and spigot pipe	
Roomheater	Brick	9" x 9"	Unlined	Good		y	Damp sand deposits (pargetting)		Throat plate and spigot type	
Roomheater	Brick	9" x 9"	Unlined	Good		n				Lack of ventilation
Cooker	Brick	?	Unlined	?		y	Flyash, soot & pargetting	?	4m up chimney + sootbox/offtake	
Roomheater	Brick	?	Unlined	OK	Incorrect terminal fitted	n				Bonnet insert, lack of ventilation, void above offtake

FATALITY ANALYSIS

Appliance Type	Flue Construction			Flue Condition		Blockage Detail				Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick	?	?	Good		y	Soot/flyash	?	Throat plate / spigot pipe	
Cooker	Brick	15" x 15"	Unlined	?		pos.				Previously advised to get flue swept
Boiler	Brick	9" x 9"	Unlined	Good		n				Blockage may have been removed before investigation
Roomheater	Brick	?	Unlined	Poor	Smoke leakage across midfeathers	y	Soot	?	Boiler damper and offtake pipe	This incident followed a chimney fire
Roomheater	Brick	9" x 9"	Unlined	Fair	Smoke leakage into cavities	n				Using incorrect fuel
Roomheater	Brick	?	?	Leaking at terminal		y	Flyash		Throat plate	Chimney restricted at offset
Roomheater	Brick	?	Unlined	Leakage in terminal brickwork		N				Lack of ventilation
Boiler	Prefabricated	125MM	Stainless Steel	OK	Chimney diameter to small	y	Soot		Boiler flues	
Roomheater	Brick	?	Pot lined	Good		y	Soot	5kg	Spigot pipe	Lack of ventilation
Boiler	Asbestos	?	?	Poor	Only part insulated	y	Soot	?	Where not insulated	Flue ways part blocked and condensation in flue

FATALITY ANALYSIS

Appliance Type	Flue Construction			Flue Condition		Blockage Detail				Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Open Fire	Brick	?	Unlined	?	?	y	Soot	2 bin liners	In chimney	Large void above fire, lack of ventilation
Roomheater	Brick	?	Unlined	Fair		y	Soot / flyash	?	Throat plate & spigot	Lack of ventilation
Boiler	Brick	9" x 9"	Unlined	Fair	Air ingress through soot door	n				Soot door missing
Roomheater	Brick	?	?	?		y	Soot, flyash & twig's, possible nest	?	Throat plate & spigot pipe	Lack of ventilation
Boiler	Brick	?	?	Poor	Brickwork leaking & condensation	y	Soot	Only partial	Flueways	Lack of ventilation
Roomheater	Brick	?	Unlined	Poor, leakage	Breach between this flue and bedroom	y	Birds nest & birds, soot		Throat plate	Lack of ventilation
Roomheater	Brick	9" x 9"	Unlined	poor	Smoke leakage	y	Soot		Throat plate & spigot	
Stove	Single skin steel	115mm		Poor	Uninsulated, too small & leaking	y	Soot	4 sugar bags volume	Fluepipe	Incorrect terminal fitted
Roomheater	Brick	9" x 9"	Unlined	Poor	Mortar joints leaking	y	Pargetting	?	Partial of spigot	CO not proven

FATALITY ANALYSIS

Appliance Type	Flue Construction			Flue Condition		Blockage Detail				Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick	?	?	?	?	y	ash	?	Partial boiler flue way	Damper set to water and appliance used with door open
Roomheater	Brick	?	Unlined	Poor	Flue collapsed	y	Soot & brick debris	?	Throat plate, spigot pipe and base of chimney	
Roomheater	Brick	?	Unlined	Poor	Extensive smoke leakage	y	Soot / flyash	10kg	Throat plate spigot pipe & chimney	Void above appliance
Roomheater	Brick	?	Unlined	Poor	Smoke leakage into roofspace and airing cupboard	y	Brown from like deposits	?	Spigot pipe	Void above appliance. Foam possible solidified boiled tar condensate
Open Fire / Roomheater	Brick - 4 flues	?	Unlined	Poor	Smoke transfer between flues	y	Soot / birds nest	?	All 4 flues	Rain hoods fitted
Roomheater	Brick	150mm	Pumped concrete	Poor	Leakage into adjacent flues & next door bedroom	y	Soot	?	Rear boiler flue	Poor flashing on chimney stack, chimney fire the previous day
Roomheater	Brick	9" x 9"	3 liners at top only	?	?	y	Soot	?	At ceiling level & throat plate /spigot pipe	Lack of ventilation

FATALITY ANALYSIS

Appliance Type	Flue Construction			Flue Condition		Blockage Detail				Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick	?	?	OK		y	Soot & carbon		Rear flueway, throat plate & chimney	Lack of ventilation. Appliance needs servicing
Roomheater	Brick	?	Unlined	Poor	Top section needs rebuilding	y	Flyash & soot		Throat plate & spigot	Lack of ventilation
Roomheater	Brick	9" x 9"	Unlined	OK		y	Soot / flyash	?	Throat plate & spigot pipe	
Roomheater	Brick	?	Unlined	?	Chimney needs repointing	y	Soot / flyash	?	Throat plate, spigot, boiler damper and flueway	Appliance in poor condition

Fatality Analysis

Summary of causes of fatalities

Cause	Number of***
Chimney (primary)*	22
Chimney (contributory)**	15
Lack of ventilation (primary)	4
Lack of ventilation (contributory)	10
Installation (primary)	0
Installation (contributory)	5

* Was the primary cause of the incident

** Contributed to the incident

*** Some incidences have many contributory factors

This analysis shows that in 35% of the incidents the chimney is considered to be the primary cause of the fatality, in 58% of fatalities the chimney is considered to be a primary or contributory factor in the incident.

Analysis of chimney types involved in fatalities

Flue type	Number of
Lined flues	5
Prefabricated flues	6
Unlined brick stack	29
Brick stack with no type of inner recorded	23

Analysis of appliance types involved in fatalities

Appliance type	Number of
Open fire	3
Room heater*	39
Stove**	1
Cooker	10
Independent boiler	11

* Closed appliances with throat plates

** Closed appliances without throat plate

Location of blockages found in fatality investigations

Location	Number of incidents*
Chimney	17
Flue/spigot pipe	20
Throat plate/soot box	29
Internal boiler flues	9

*On some occasions the blockage will be in more than one location

Analysis of material causing the blockage

Blockage material	Number of
Nest etc.*	6
Chimney material**	7
Soot/flyash	32

*Where twigs etc. are included in the blockage

**Where chimney material e.g. sand, masonry or liner are included in the blockage

SOLID FUEL ASSOCIATION

ANNEX C

NEAR MISS ANALYSIS

APRIL 1995 – MARCH 1999

Compiled by, The Solid Fuel Association

25/08/99

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Cooker	Prefabricated	125	Single skin	Poor	Uninsulated	y	Soot & tar		Most of pipe	Partial blockage down to 50mm
Stove / Coal	Brick			Poor	Leaking above roof and into adjoining flue	n				Flue needs lining
Cooker / Coal & Wood	Brick		Pot Liners		Soot door leaks 100 mm oftake not 150mm as required	n				Tar condensate internally and leaking from soot door
Roomheater	Brick			Poor	Leakage from Chimney stack, incorrect terminal	y	Soot and flyash		Throat plate	Appliance needs service
Cooker	Brick		Unlined	Very poor	Cracked chimney, internal condensate, poor fitting soot door	n				Very low flue draught

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick			Poor		n				Appliance fitted into a void and not infilled
Open fire	Brick		Unlined	Very poor	Leakage into roof space and wall cavity	n				Smoke from 3 pellets lost inside 3 mins
Roomheater						n				Poor appliance condition
Cooker	Brick		Unlined	OK		n				Appliance installed in a dangerous manner
Boiler						y	Soot / carbon		Appliance flues	Appliance not regularly cleaned
Open fire Coal	Brick			Poor	Leakage into bedroom and loft when evacuation test carried out	n				Lack of ventilation and poor installation
Roomheater	Brick	9" x 9"	Unlined	OK		y	Soot / flyash		Throat plate	Lack of ventilation and poor installation
Roomheater	Brick			Poor	Leakage around terminal and into adjoining flues	n				Lack of ventilation, lack of backfill around oftake pipe
Open Fire /Coal	Brick	9" x 9"	Unlined		Old roomheater oftake pipe left in situ when fire open up	y	Tar deposits		Chimney terminal	Partial blockage and void over fireback

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Stove / Wood	Brick			OK		n				Flue pipe not connected or sealed to flue, rests on top of appliance
Roomheater /Coal	Brick			OK		n				Chimney pot encrusted and considerable soot deposits removed from flue, lack of ventilation
Stove	Prefabricated	125mm	Asbestos	Poor	Uninsulated flue pipe passes through outside wall	n				4 offsets in flue and rain cap terminal. Chimney size of small.
Boiler	Brick			Not known	Tar deposits leaking around outside of flue pipe	n				Restriction in flue pipe due to tar deposits, poor seal between flue pipe and chimney
Roomheater	Brick		Unlined	Poor		y	Brick	1	Over oftake pipe	Fallen from chimney breast wall
Boiler	Brick	150	Concrete sectional	Poor	Leaked into bedroom, loft & from stack	y	Damp soot / flyash		Appliance flues, flue pipe & base of flue	Violent rain storm during the night, appliance otherwise in good order, lack of ventilation
Open fire	Brick		Pump concrete lined			y	Birds nest		Above fire throat	Lack of ventilation

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick	13" x 13"	Unlined	Poor	Leakage from stack and into adjoining flue, larger than max recommended for appliance	n				Distorted throat plat and lack of ventilation
Roomheater	Brick		Unlined	Poor	Effective smoke test not possible due to state of stack	y	Appliance oftake dislodged to form blockage		Above appliance outlet	Lack of ventilation
Cooker /Coal	Prefabricated	125mm	Stainless Steel	Poor	Tar deposits leaking from lower section, to short, top section not correct match for lower section	y	Solidified tar		Boiler spigot	Flue too small, no ventilation
Stove /Coal	Slate		Unlined	Good		n				Tar deposits on inside of flue pipe, long horizontal section of flue pipe
	Roomheater /coal	Brick		OK	Smoke emitted from base of pot	n				Restriction due to tar crusting in the pot
Stove	Brick		Unlined	OK	Flue large for size of stove, poor connection to chimney	n				Used for long periods on low output

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Cooker /Coal	Brick	200mm	Ceramic	Good		y	Soot		Soot box and flue pipe	
Roomheater	Brick			Poor	Leaking on external wall and into property	n				Appliance requires a service
Cooker	Prefabricated	125mm	Ceramic	Good	Chimney cleaning plug is loose	n				Plug fell out on the day of the incident
Roomheater	Brick			Poor	Leaking into roof space and adjoining flue	n				
Boiler	Brick			OK		y	Soot / flyash		Boiler flues, flue pipe & chimney	Chimney swept only 4 months ago
Roomheater	Brick			Poor	Leakage into bedroom, roofspace, around flashing and terminal	n				Lack of ventilation
Cooker	Brick					y	Soot / flyash		Boiler flueways	Lack of ventilation

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick			Poor	Leakage from stack and adjoining flue	n				Advised to have stack rebuilt
Roomheater	Brick	185mm	Cast in situ concrete	Good		n				Flue in turbulent area, lack of ventilation
Roomheater	Brick			Good		n				Incorrect spigot, no chimney seal and no backfill to appliance
Roomheater	Brick			Poor	Requires relining	n				Lack of ventilation, poor appliance condition
Roomheater	Brick	9" x 9"	Unlined	OK	Very sharp offset in flue	n				Lack of ventilation
Roomheater	Brick			OK		y	Soot / flyash		Throat plate	
Cooker	Brick			OK		n				Flue pipe restricted by soot deposits on inner surfaces but not blocked, chimney terminates short and is in a turbulence area
Boiler	Prefabricated	125mm	Stainless Steel	OK	Short and has restrictive rain cap, 1.8m of single skin flue pipe between appliance and chimney, damp deposits	n				Flue pipe recently replaced due to corrosion, lack of ventilation

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick			OK		y	Soot / flyash		Throat plate, base of chimney	Appliance requires a service
Roomheater	Brick		Clay	Very poor	Lining collapsing, pieces being removed during sweeping	N				Lack of ventilation
Open fire /coal	Brick		Unlined	Poor	Leakage from stack and into bedroom via redundant flue	n				Lack of ventilation
Open fire	Brick	9" x 9"	Unlined	OK	Large void over fire	n				Lack of ventilation, very poor installation
Roomheater	Brick					n				Lack of ventilation, recent performance windows and doors fitted
Roomheater	Brick	180mm	Clay lined	Poor	New build property, leakage into adjoining flue, liners not fitted to top 600 mm of flue	n				Lack of ventilation, very poor seal between flue pipe and liners
Roomheater	Brick					y	Soot		Chimney	Chimney swept two months before by professional sweep, no receipt left, lack of ventilation, draught stripping

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Cooker /Coal & Wood	Prefabricated	150mm	Stainless Steel	Good	Terminal located in pressure zone	n				Long horizontal flue pipe
Roomheater	Brick			OK	Large voids over appliance	n				Insufficient infill round appliance, explosions have also occurred
Roomheater	Brick	185mm	Clay liners	OK		y	White deposit, very hard		Spigot and base of chimney	Restriction not total blockage
Roomheater	Brick			OK		y	Nesting material and flyash	2 buckets full	Chimney above spigot	
Roomheater	Brick					y	Soot / flyash		Throat plate	Appliance in poor state of repair
Cooker	Brick			OK		n				Severe lack of ventilation, new windows etc fitted very recently
Open fire	Brick			OK		n				Lack of ventilation, severe draught stripping
Cooker	Brick			OK	Incorrectly fitting internal soot door	y	Soot		Flue box	

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Prefabricated		Stainless steel / asbestos	Poor	Combined system fitted with 100mm outlet	y	Soot / flyash		Throat plate	Operator unaware of throat plate
Cooker	Stone		Unlined	Very poor	Cracked at various points, leaking in bedroom	y	Nesting material and flyash		Chimney terminal area	Flue professionally swept 6 months ago
Roomheater	Brick		Clay	Good	Terminates in turbulence area	n				Lack of ventilation
Roomheater	Brick		Unlined	Poor	Visual inspection alone showed missing joints is stack and roof space	n				Lack of ventilation
Open Fire	Brick		Unlined	Poor	Internal walls breaking down, leakage into attic	n				
Boiler	Prefabricated	125mm	Stainless steel		Illegally installed, short, 1.6m of single skin flue pipe present					Lack of ventilation, poor seal between flue pipe and chimney

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Stove	Stone		Unlined	Very poor	Smoke emits from two flues under evacuation test	n				Cracks in external walls of flue visible
Stove	Prefabricated	125mm	Stainless steel	Condition	This flue is to small, installed with 2 horizontal sections	n				No cleaning access provided, installed by professional engineer!
Roomheater	Brick		Unlined	Very poor	Leaking into all room adjacent to the chimney during chimney fire the previous weekend					Did not operate correctly prior to the chimney fire
Cooker	Brick		Unlined	Poor		n				Lack of ventilation
Roomheater	Brick		Unlined	OK	Very poor design of flue					Terminates to low in relation to roof
Open fire /coal	Brick		Partial cast in situ concrete lining	Poor	Leakage from stack, pot fitted on slates restricting size to 150 mm	n				Lack of ventilation
Roomheater	Brick	185mm	Cast in situ concrete	Installed days before	Appears to be deteriorating	y	A piece of chimney lining material	125 x 125mm	Top of spigot	
Boiler	Prefabricated then brick		Stainless steel then Unlined	Illegal installation		y	Soot		Appliance flues and lower section of chimney	Appliance serviced by heating engineer the previous week

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Stove	Prefabricated		Stainless steel	Illegal installation	Poor	n				House fire caused by incorrect flue installation
Stove	Brick		Unlined	Good	Poor seal between flue pipe and chimney, rockwool used	y	Twigs etc		Top of chimney	
Boiler	Brick		Liner type not known	Good	No cleaning access, had to remove flue pipe to sweep	y	Soot / flyash	Large amounts	4ft from top of flue	
Cooker /coal	Prefabricated	125mm	Stainless steel	Good / new	Incorrect size 175mm required, to short, 2.6m gas cowl fitted	n				Lack of ventilation
Roomheater	Brick	125mm	Cast in situ concrete	Good	Bends in flue but chimney breast not been opened up during lining	n				Leaking soot door, lack of ventilation and flue too small
Cooker /coal	Brick	Very large	Unlined		Incorrect restrictive terminal fitted	n				

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Boiler	Brick			OK	Loose fitting soot door	n				Poor seal between flue pipe and chimney, appliance in poor condition
Roomheater	Brick	150mm	Cast in situ concrete	Good		y	Soot	Throat plate and appliance flues		
Roomheater	Brick			Good	No cleaning access	y	Soot		Fluepipe	Lack of ventilation
Roomheater	Brick	9" x 9"	Unlined	Good	Large void over fire	n				Poor seal between flue pipe and registerplate, lack of ventilation
Roomheater	Prefabricated	100mm	Stainless steel	Poor		n				Lack of ventilation
Cooker	Brick				No cleaning access	y	Soot		Fluepipe	Not swept in 43 years, appliance in poor condition
Roomheater	Brick	9" x 9"	Unlined	Good		n				Appliance condition, lack of ventilation
Cooker	Brick	150mm	Clay lined	Good / new	Less than 4.5m high the flue pipe is only 75mm	n				Appliance second hand and needs a service
Cooker	Prefabricated		Stainless steel	Good	Very exposed flue	n				Terminates in a turbulence area
Roomheater	Brick			OK		n				Large void over spigot, incorrect spigot pipe, no backfill

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick			OK	Poor seal between flue pipe and chimney	n				Lack of ventilation
Open fire /coal	Brick		Unlined	OK	Throat is only 32mm	n				Void over throat
Boiler & open fire	Brick		Unlined	OK	The open fire had large throat	n				Air starvation means the open fire draws fumes from the boiler flue
Cooker	Brick	9" x 9"	Unlined	Good	Terminates in severe downdraught area and has a void above the flue pipe connection	n				Leaking soot door
Roomheater	Brick		Unlined	Very poor	Stack unstable with open joints	n				Weather very cold on day of incident
Roomheater	Brick		Cast in situ concrete	Very poor	Lining severely damaged when builder let new joists into the chimney break for support	n				One hole in the flue was large enough to put an arm through

NEAR MISS ANALYSIS

Appliance Type	Flue Construction			Flue Condition			Blockage Detail			Other Comments
	Type	Internal	Lining Type	Condition	Cont. Factors	y/n	Material	Quantity	Location	
Roomheater	Brick		Unlined	Good	Very poor seal between flue pipe and register plate, poor seal between plate and masonry	n				Lack of ventilation
Open fire	Brick		Unlined	Good		n				Lack of ventilation
Roomheater	Brick				Void over oftake pipe	y	Soot		Chimney	Lack of ventilation, appliance in poor condition
Roomheater /coal	Brick		Unlined	Good		y	Hard crusted tar deposits		Chimney bend	
Open fire /coal	Brick		Unlined	Poor	Transfer of smoke into adjoining flue	n				Lack of ventilation
Roomheater	Brick			Poor	Leakage to bedroom, roofspace and out of the stack	n				Lack of ventilation
Boiler /coal	Brick		Unlined	OK		y	Soot		Fluepipe and boiler flues	Lack of ventilation, single skin soot door fitted

NEAR MISS ANALYSIS

<i>Appliance Type</i>	<i>Flue Construction</i>			<i>Flue Condition</i>			<i>Blockage Detail</i>			<i>Other Comments</i>
	<i>Type</i>	<i>Internal</i>	<i>Lining Type</i>	<i>Condition</i>	<i>Cont. Factors</i>	<i>y/n</i>	<i>Material</i>	<i>Quantity</i>	<i>Location</i>	
Cooker	Brick		Unlined	Poor	Leakage from flue pipe and midfeathers	n				Excessive bends in flue pipe
Roomheater	Brick			Poor	Leakage into roof space and airing cupboard	n				Lack of infill

Near miss analysis

Analysis of primary and contributory causes of “near misses”

Cause	Number of***
Chimney (primary)*	34
Chimney (contributory)**	14
Lack of ventilation (primary)	6
Lack of ventilation (contributory)	25
Installation (primary)	21
Installation (contributory)	12

* Was the primary cause of the incident

** Contributed to the incident

*** Some incidences have many contributory factors

Analysis of chimney types involved in near misses

Flue Type	Number of
Lined flues	16
Prefabricated flues	13
Unlined brick stack	37
Brick stack with no type of inner recorded	37

Analysis of appliance types involved in near misses

Appliance type	Number of
Open fire	12
Roomheater*	50
Stove**	9
Cooker	19
Independent boiler	11

* Closed appliances with throat plates

** Closed appliances without throat plate

Location of blockages found in fatality investigations

Location	Number of incidents*
Chimney	14
Flue/spigot pipe	11
Throat plate/soot box	9
Internal boiler flues	7
Installation (primary)	21
Installation (contributory)	12

* On some occasions the blockage will be in more than one location

Analysis of material causing the blockage

Blockage material	Number of
Nest etc.*	4
Chimney material**	3
Soot/flyash	25

* Where twigs etc. are included in the blockage

** Where the chimney material e.g. sand, masonry or liner are included in the blockage