

HOME OFFICE
SCIENTIFIC ADVISORY BRANCH

MEMORANDUM 1/80

FIRE RESEARCH

1980 CHEMICAL INCIDENT SURVEY :
FIRST INTERIM REPORT

by

A D MACLEAN, S LECOMBER

and A WHITTEP

SUMMARY

A reporting system for all incidents involving dangerous chemicals and dealt with by the fire brigades has been set up to cover the twelve-month period beginning 1st January 1980. The results of the first three months suggest there are about 80 such incidents per month on average. An analysis of these results is presented.

Horseferry House
Dean Ryle Street
LONDON SW1P 2AW

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1. INTRODUCTION

In 1977, the Home Office Fire Department, at the request of the Joint Committee on Fire Brigade Operations, set up a survey of incidents arising from the conveyance of dangerous goods. The survey involved all fire brigades throughout England, Wales and Scotland, and ran for a twelve-month period beginning 1st February 1977.

The results of the first nine months of the survey were reported in August 1978.¹ (The final three months of the survey were omitted from the analysis because the Firemen's National Strike fell within the last three-month period and affected the number of returns for those months.)

Overall, a total of 304 incidents involving the conveyance of dangerous goods were recorded in the nine-month period 1 February to 31 October 1977. Of these, 250 (82 per cent) involved road transport, 18 (6 per cent) rail transport, 35 (12 per cent) were at ports and 1 incident occurred at an airport.

After considering the detailed results of the survey, the Joint Committee on Fire Brigade Operations concluded that the results were to some extent inconclusive because of the restricted timescale of the survey and also because there was no other information with which to compare the results. As a result, the Committee examined the possible need for conducting a further survey.

Following careful considerations by the Committee, it was decided to carry out a further, more detailed survey in 1980. Unlike its predecessor, the 1980 survey was designed to include all incidents involving dangerous chemicals to which the fire brigade was called, whether the chemicals were in conveyance or not. Further guided by the results of the earlier exercise, the 1980 survey sought to explore in more detail some of the aspects with clear and important implications for brigade operations.

The 1980 survey was organised jointly by the Home Office Scientific Advisory Branch (SAB) and the Fire Department. A detailed description of the procedures is given in Section 2 below, and the results in Section 3.

2. THE SURVEY

2.1 Questionnaire design

The survey was carried out by means of questionnaires, sent to every brigade in England, Wales and Scotland. The questionnaire structure and the analysis procedures were designed by SAB, in close consultation with Fire Department and the Operations Committee. From the outset, the form was designed to be simple in use and to permit analysis of the results by computer. For these reasons, as many of the questions as possible were designed in a multiple-choice format, requiring only a tick to be placed alongside the appropriate answer. Where the various options could not easily be determined in advance of the survey, or where it was felt that more information was required, space for full written answers was provided.

Largely because of the degree of detail being sought by the survey, the questionnaire form was quite large and detailed, although by the use of routing questions at appropriate points, the user is diverted around questions which are not relevant to his particular circumstances.

The questionnaire form used in the survey is shown in Appendix A.

Before the detailed design of the questionnaire form was finalised, copies were sent to London and Cheshire Fire Brigades for a short-term pilot survey. The pilot survey took place from 14 September to 9 October 1979, and during that time a total of 17 forms were completed by the fire brigades*. As a result of comments received from these user brigades during the pilot, a few minor amendments were made to the form.

2.2 Organisation of the survey

Questionnaire forms were sent to all brigades in Great Britain in November 1979, in time to commence the survey on 1 January 1980. Sufficient forms were sent in each case to permit the brigades to distribute copies to their divisions, and in many cases even to individual stations. The accompanying letter to brigades² requested that a separate questionnaire form should be submitted to the Home Office for each dangerous chemical incident dealt with by the brigade. The purpose of this request was to ensure that the reports forms were completed

* Two of the forms referred to incidents which occurred before the start of the pilot survey.

and sent off as soon as possible after the incident, so that any queries regarding the form could be clarified while the details were still fresh.

All forms from brigades were returned to Home Office Fire Service Inspectorate before being forwarded to SAB for coding and analysis. Any omissions or errors noted from the forms were followed up and rectified by the Inspectorate.

2.3 Coding

For computer analysis, the data contained in the questionnaire require to be transcribed, in a suitably coded form, onto a computer file. A detailed coding scheme for the data preparation was prepared in advance of the survey (Appendix B). However, in surveys of this type in which both multiple-choice and open format questions are used, the coding scheme inevitably undergoes minor changes as the survey progresses. It greatly facilitates the overall analysis if the replies to open-format questions can be classified into a number of standard responses, but in order to classify the replies the survey must be allowed to run for a sufficiently long period for the range of the replies to be examined and analysed. Thus in the coding scheme for question 2.5, for example, spare codes were allocated at the start of the survey for incidents whose description did not fit either of the two offered options. Those written in by hand on the coding scheme have been added after the commencement of the survey.

The data preparation in SAB was carried out in three distinct stages, to remove as far as possible, the risk of data errors.

1. On receipt of the forms, the information was transcribed by hand from the questionnaire to a computer coding sheet, using the coding scheme described above, and the data were then typed onto a computer keyboard by data preparation staff. The data, once typed, were stored on magnetic disks.

2. The data on the computer disks were then checked, both manually and by computer. The manual checking consisted of comparing the coded information with the original questionnaire forms (effectively reversing the coding procedure as a check that the information had been correctly coded in the first place), and correcting any discrepancies. For the computer checking procedures, a validation program was written which checked the internal consistency of the information for each reported incident. As an example, the program indicates an error if question 4.3 (fire-fighting medium used) was completed for an incident

which was not a fire (question 2.5). Errors detected by this procedure were either referred back to the reporting brigade through the Fire Service Inspectorate, or in minor cases, simply corrected without reference to the reporting brigade.

3. Finally the coding of open-format questions was revised manually at intervals to take into account any new categories arising from the survey forms. With this stage complete, the questionnaire forms were filed in date order by brigade, so that they could be accessed readily as required.

2.4 Analysis

In this, the first interim report of the survey, only a brief and simple analysis was undertaken. A computer program to summarise the responses to each of the questions in a one-way tabulation was prepared, although more detailed analysis will be undertaken later in the survey when more data are available.

One of the purposes of providing simple analyses of the interim results was to make available to the Operations Committee such information as is to hand so that feedback from the Committee could be obtained at an early stage in the survey and the form of final analysis could be closely tailored to the requirements of the Committee.

3. RESULTS

3.1 Basis of analysis

Appendices C and D to this report provide a computer printout of the results available to hand at 20 May 1980. The data appear to be complete for the months January and February, but only partially complete for March, April and May.

A total of 321 forms were available for analysis, including 7 reporting incidents involving only minor spillages of petrol from motor vehicles*. These seven forms will be excluded from later analyses since they do not fall within the survey definitions of incidents involving dangerous chemicals. Sixty-nine of the 321 reported incidents involved identified or unidentified chemicals which had been washed ashore. Of these, 53 were attributable to the sinking of a single vessel the "Aeolian Sky" off the Isle of Wight. As the characteristics of incidents involving chemicals washed ashore are likely to differ markedly from those for other chemical incidents, the two types of incident have been analysed separately. Appendix C presents the results relating to the 252 incidents which did not involve chemicals washed ashore, and Appendix D gives the results for the remainder.

3.2 Incidents involving chemicals other than those washed ashore (Appendix C)

Appendix C gives a detailed breakdown of the results relating to chemical incidents other than those involving chemicals washed ashore. Of the 252 reported incidents, 205 (81 per cent) were special service calls and the remainder were calls to fires. The numbers of incidents recorded varied markedly from one brigade area to another; Essex, for example, reported the greatest number of incidents (33), followed by Greater London (27) and West Yorkshire (17).

Most of the chemical incidents occurred during the hours of daylight. A total of 172 (70 per cent) of the 247 incidents for which the time was known occurred between 0600 hrs and 1800 hrs. Most incidents, too, involved only one dangerous substance; only 17 per cent recorded more than one dangerous material. In 51 per cent of the incidents, the dangerous properties associated with the chemical included flammability, in 59 per cent toxicity and in 35 per cent corrosiveness. Brigade chemical procedures were invoked in 144 cases.

* Over 100 other forms relating to minor spillages of petrol from motor vehicles were excluded from this present analysis.

The quantity of chemical involved in the reported incidents ranged from a fraction of a millilitre to 12000 tonnes, and covered a broad range between these limits. One hundred and thirty-three (60 per cent) of the incidents for which the quantity was known involved 210 litres or less of the substance (210 litres is approximately the volume of a standard oil drum), and 28 per cent involved more than 1000 litres.

Protective suits were worn at 118 of the 149 incidents for which details of protection were recorded, and were considered to perform satisfactorily in 94 per cent of the cases.

The duration of brigade involvement in dealing with the incidents averaged 150 minutes, but covered a broad range; 21 per cent were of 30 minutes or less, and 8 per cent lasted over three hours. The cross-tabulations at the end of both Appendices C and D shows that longer durations of involvement appear to be associated with larger quantities of chemicals.

In 44 (17 per cent) of the incidents, casualties were reported; one case involved a fatality. Only 11 of the incidents involving casualties resulted in in-patient hospital treatment.

One hundred and thirty-eight of the incidents were classified as being "static", that is, they did not involve chemicals in any form of conveyance. Of these, 63 per cent involved chemicals in buildings. One hundred and fourteen incidents involved transport in one form or another; 93 (82 per cent) involved road transport, 13 (11 per cent) rail transport and 8 (7 per cent) water transport. Of those involving road transport, the vehicle was known to be attended at the time of the incident in most cases (81 per cent) and to be on the highway (82 per cent). Fifteen (16 per cent) of the road transport incidents were associated with a road traffic accident.

In nearly all cases involving transport, either the vehicle or the containers were marked. The UKTHIS label was reported to be present in 24 cases, and in three of these the details on the label were incorrect. Specialist advice was obtained at most incidents, the main source being the chemical supplier (64 cases) a scientist at the premises concerned (53 cases) and London Fire Brigade (42 cases). In only 15 cases was Hazfile reported as used.

3.3 Incidents involving chemicals washed ashore

A total of 69 incidents were reported in which the chemicals involved had been washed ashore. The brigades involved in these incidents were Cornwall (1 incident), West Sussex (12 incidents), Devon (4 incidents) and Isle of Wight (52 incidents). The particularly high total for the Isle of Wight arose from the sinking of the vessel "Aeolian Sky" in the vicinity. The quantities of chemicals involved were generally lower than in the general category of chemical incidents (Section 3.2 above); all but one incident involved 210 litres or less of the dangerous chemical.

Only one incident involved any casualties, and all of those involved were released after examination at hospital.

Very few of the containers washed ashore were marked; only 7 of the 64 incidents for which the presence or otherwise of markings were noted reported marked containers. Specialist advice was obtained in most cases (58) from the local authority scientific adviser.

REFERENCES

1. Home Office 'Dear Chief Officer' letter, Number 51/1978
2. Home Office 'Dear Chief Officer' letter, Number 45/1979

APPENDIX A

Questionnaire form used in the survey.



Chemical Incidents Survey 1980

Please complete this questionnaire for any of the following types of incident attended by the fire brigade:

- special service calls in which dangerous chemicals are involved
- fires in which dangerous chemicals have a significant effect on fire-fighting operations
- fires in which dangerous chemicals are present and behave in an abnormal or unexpected manner
- fires in which dangerous chemicals are present and where members of the public or fire service receive medical treatment as a result of the effects of the chemicals.

For the purposes of this survey, the term "dangerous chemicals" includes those substances contained in the United Nations list of dangerous goods, and any other substances which have similar characteristics.

FOLD
←-----

If in doubt about a particular incident, please complete and return a form.

The period of the survey is from 1 January to 31 December 1980. When you have completed the questionnaire, please return it to:

Mr Clark
Home Office, Fire Service Inspectorate,
Room 904, 50 Queen Anne's Gate
LONDON SW1H 9AT

No stamp is necessary. Replacement forms will be sent to you automatically as necessary. Any queries concerning the survey or the questionnaire form should be directed to Mr Clark at the above address, or by telephoning 01-213 7249.

FOLD
←-----

1 To be completed in all cases

- 1.1 Name of brigade.....
- 1.2 Date of call to incident 1.3 Time of call to incident
- 1.4 Address or location of incident.....
- 1.5 Where applicable, FDR1 number for the call
- 1.6 For your own reference, and if you wish to do so, enter an incident serial number here. (This number will be used in any correspondence related to the incident.)

In Sections 2 to 10 below, please complete or tick answers as requested. If you have insufficient room, please use the back page of this form, marking any entries clearly with the question number.

2 Details of incident

2.1 **Nature of chemicals.** For each dangerous chemical or product present at the incident, fill in below as many identifying details as were available to you at the time of the incident.

	Principal substance	Any other substances
chemical name
trade name
UN number
manufacturer's name
other details
tick if no details	<input type="checkbox"/>	<input type="checkbox"/>

2.2 For each substance identified in question 2.1, please tick the box(es) below corresponding most closely with any characteristics which affected action by the brigade.

Characteristic	Principal substance	Any other substances
flammable	<input type="checkbox"/>	<input type="checkbox"/>
toxic	<input type="checkbox"/>	<input type="checkbox"/>
corrosive	<input type="checkbox"/>	<input type="checkbox"/>
explosive	<input type="checkbox"/>	<input type="checkbox"/>
radioactive	<input type="checkbox"/>	<input type="checkbox"/>

other hazard (please specify)

2.3 Were any of the substances identified above: (Tick as appropriate)

- directly involved in the incident? Yes No

- not directly involved but in danger of being so? Yes No

2.4 Were brigade chemical procedures involved? Yes No

2.6 In the space below, please give a brief description of the incident

.....

.....

.....

2.7 What was the approximate total quantity of chemicals involved? (State whether kilogrammes, litres etc)

2.5 Please tick the box(es) corresponding most closely to the descriptions of the incident as a whole:

fire spillage other

If 'other', please specify

.....

3 Protection

3.1 Indicate by ticking the appropriate box(es) whether chemical protection suits or gastight chemical protection suits were used by fire brigade personnel.

Gastight chemical protection suits worn

Chemical protection suits worn

3.2 Was the performance of the chemical protective clothing satisfactory? Yes No If "NO", please give details:

.....

3.3 Was BA used without chemical protective clothing? Yes No

3.4 Please describe any decontamination procedures for personnel and fire brigade equipment subsequently carried out. (Include whether a "wet" or "dry" process was used, and whether decontamination was carried out at or away from the incident.) If none, write "None"

.....

.....

.....

4 Brigade action & resources

4.1 What was the approximate duration of fire brigade involvement in dealing with the chemicals aspect of the incident? hrs

4.2 Was any fire brigade equipment discarded as a result of the incident? Yes No

If "Yes", please give details:

.....

4.3 What firefighting medium was used?

4.4 Were the chemical contained or diluted? (Please tick) Contained Diluted

5 Casualties

5.1 Please record here the numbers of all fatal and non-fatal casualties which were directly attributable to the chemicals at the incident. If necessary, please advise separately if symptoms are delayed until after the report has been made.

	Brigade personnel	Other
Fatal	<input type="text"/>	<input type="text"/>
Non Fatal	<input type="text"/>	<input type="text"/>

5.2 Of these, how many were:

- taken to hospital but released?
- treated as hospital outpatients?
- treated as hospital inpatients?

6 Static/transport incidents

6.1 Did the incident involve chemicals in any form of transport (including during loading and unloading etc)? Yes No

If "Yes", go straight to Section 8. Otherwise continue with Section 7

7 Static incidents

7.1 Were the chemical in a building? Yes No

If "Yes", were they: (tick one answer)

being made? in storage? being used?

7.2 Were the premises under fumigation at the time of the incident?

Yes No

Now go straight to Section 9

8 Transport incidents

8.1 Please indicate the type of locality where the incident occurred. (Tick one answer.)

rural urban - industrial urban - residential

8.3 What was the nature of the load? (Tick one answer)

Bulk single tank load Packages - mixed load
 Bulk multi-compartment load Small packages (including individual drums or containers dropped from transport.)
 Packages - full load

8.2 Did the incident occur during loading or unloading operations?

Yes No

8.4 What was the mode of transport? (Tick one answer.) Road Rail Water Air

If "Road" continue with questions 8.5 to 8.7 otherwise go straight to question 8.8

8.5 (Road Transport Only) On what type of road did the incident occur? (Tick one answer.)

Motorway A class B class Other Not on road

8.6 (Road Transport Only) Did the incident involve a vehicle in a parking area?

Yes No Not known

Was the vehicle attended?

Yes No Not known

8.7 (Road Transport Only) Was the incident the result of a road traffic accident?

Yes No

If "No", indicate cause, if known,

8.8 (All Transport) Was the transport marked?

Yes No

8.9 Were the containers/packages marked?

Yes No Not applicable

8.10 If any marking to the transport or containers/packages was provided, tick the box(es) to indicate the information present

Product name Telephone number for specialist advice Hazard warning diamond
 Other (please specify)

8.11 If the vehicle was a tanker, was it carrying the UKTHIS label?

Yes No

If "No", please specify possible reason (eg exempt vehicle), if known,

If "Yes", were all the details correct?

Yes No

9 Specialist advice

9.1 What sources of specialist advice were contacted? (Tick one or more answers.)

Scientific adviser at the premises concerned Chemical company which supplied the product
 Harwell Another chemical company
 London Fire Brigade Other (please specify)

9.2 Was the Chemsafe Scheme invoked?

Yes

No

If "Yes", please give details

.....

9.3 If any sources of information proved inadequate, please indicate in what way

.....

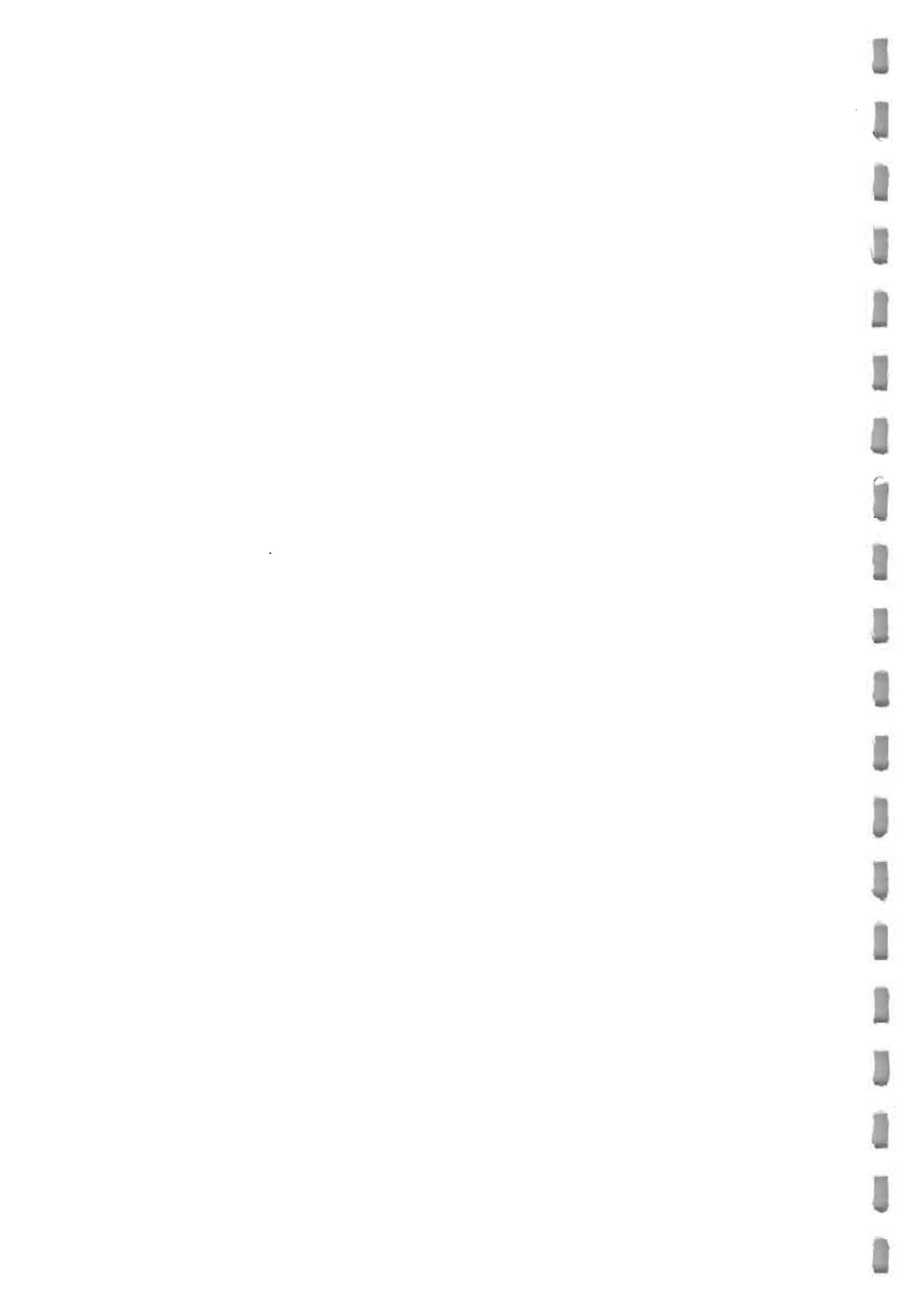
10 Additional details

In the space below, please provide any other relevant details concerning the incident (eg. pollution of water courses, etc.).

Signature _____ Rank _____ Date _____

APPENDIX B

Coding frame for 1980 chemical incidents survey.



CODING FRAME FOR 1980 CHEMICAL INCIDENTS SURVEY

Item	Columns	Questions	Information	Values
1	1	Intro- duction	Type of call.	1 = Special service calls. 2 = Fires in which chemicals effect. 3 = Fires in which chemicals behave unexpectedly/abnormally. 4 = Fires in which chemicals in fire affect public or fire officers. 0 = Not recorded.
2	2-3	1.1	Brigade	01 = Avon 02 = Bedfordshire (See attached list)
3	4-7	1.2	Date of call	Date as recorded D D M M eg 23 May = 2305
4	8-11	1.3	Time of call	Time - 24 hour clock 9999 = not recorded
5	12	1.5	FDR1	Enter 1 if an FDR1 was completed otherwise leave blank.
6	13-16	2.1	UN number of principal substance	Enter UN number of substance. 9999 = not known
7	17	2.1	Number of items of information	Enter number of items recorded in section 2.1 under heading "Principal Substance". 9 = VARIOUS QUANTITIES OF UNKNOWN CHEMICALS
8	18-23	2.2	Characteristic of principal substance and other substances	Col 18: Flammable) Col 19: Toxic) 0 = Neither Col 20: Corrosive) 1 = Principal Substance Col 21: Explosive) 2 = Other Substance Col 22: Radioactive) 3 = Both Col 23: Other) 9 = UNKNOWN
9	24	2.3	Directly involved?	1 = No 2 = Yes 0 = Not recorded
10	25	2.3	In danger of being directly involved?	1 = No 2 = Yes 0 = Not recorded

Item	Columns	Questions	Information	Values	
11	26	2.4	Brigade chemical procedures involved?	1 = No 2 = Yes 0 = Not recorded	
12	27	2.5 (Using 2.6 for reference)	Type of incident	1 = Fire 2 = Spillage 3 = Other 4 = LEAKAGE 5 = potential spillage (4-9 Spare codes for reclassifying other)	6 = WASHED UP ON BEACH/PICKED OUT OF SEA 7 = EXPLOSION 8 = VAPOUR / GAS ESCAPE 9 = LEAKAGE + VAPOUR 0 = Not recorded A = found
13	28-30	2.7	Quantity of chemicals	Enter quantity in Litres or Kilogrammes 999 = 999 or over 0 = Not recorded	1 = 1 LITRE / Kg OR LESS
14	31	3.1	Protection suits	1 = Gastight suits 2 = Chemical suits 3 = Mixture of both 0 = None 9 = Not recorded	
15	32	3.2	Suits satisfactory	1 = No 2 = Yes 0 = Not recorded	
16	33	3.3	BA used?	1 = No 2 = Yes 0 = Not recorded	
17	34	3.4	Decontamination	1 = None 2 = Wet process 3 = Dry process 0 = Not recorded	
18	35-37	4.1	Duration of involvement	Enter number of minutes 999 = 999 and over 0 = Not recorded	
19	38	4.2	Equipment discarded	1 = No 2 = Yes 0 = Not recorded	

Item	Columns	Questions	Information	Values
20	39	4.3	Fire-fighting medium	0 = Not recorded/NONE 1 = Water 2 = WATER & SAND 3 = Foam 4 = SAND/DRY MATERIALS (1-9 Spare codes) 5 = LEFT TO BURN OUT 6 = WATER FOAM & SODA ASH 7 = FIRE CUT ON REPLY 8 = ASBESTOS BLANKET 9 =
21	40	4.4	Chemicals contained or diluted	0 = Not recorded 1 = Contained 2 = Diluted 3 = CONTAINED & DILUTED 4 = VENTED
22	41-44	5.1	Casualties	Col 41: Fatal, brigade Col 42: Fatal, other Col 43: Non-fatal, brigade Col 44: Non-fatal, other Enter number of casualties 9 = 9 and over
23	45	5.2	Casualties taken to hospital but released	Enter number 9 = 9 and over
	46	5.2	Casualties treated as outpatients	Enter number 9 = 9 and over
	47	5.2	Casualties treated as inpatients	Enter number 9 = 9 and over
24	48	6.1	Transport incidents?	1 = No 2 = Yes 0 = Not recorded (if yes go straight to item Col 52)
25	49	7.1	In a building?	1 = No 2 = Yes 0 = Not recorded
26	50	7.1	Purpose?	1 = Being made 2 = In storage 3 = Being used 0 = Not recorded
27	51	7.2	Under fumigation	1 = No 2 = Yes 0 = Not recorded

Item	Columns	Questions	Information	Values
28	52	8.1	Locality of incident	1 = Rural 2 = Urban, industrial 3 = Urban, residential 0 = Not recorded (Skip to item 41 col 68 if items 25-27 were completed)
29	53	8.2	Loading/Unloading	1 = No 2 = Yes 0 = Not recorded
30	54	8.3	Nature of load	1 = Bulk single tank 2 = Bulk multi-compartment 3 = Packages, full load 4 = Packages, mixed load 5 = Small packages 0 = Not recorded
31	55	8.4	Mode of transport	1 = Road 2 = Rail 3 = Water 4 = Air 0 = Not recorded
32	56	8.5	Type of road	1 = Motorway 2 = A class 3 = B class 4 = Other 5 = Not on road 0 = Not recorded
33	57	8.6	Parking area?	1 = No 2 = Yes 0 = Not recorded 3 = Not known
34	58	8.6	Attended?	1 = No 2 = Yes 0 = Not recorded 3 = Not known
35	59	8.7	Traffic Accident?	1 = No 2 = Yes 0 = Not recorded

Item	Columns	Questions	Information	Values
36	60	8.8	Transport marked?	1 = No 2 = Yes 0 = Not recorded
37	61	8.9	Containers marked?	1 = No 3 = Not APPLICABLE 2 = Yes 0 = Not recorded
38	62-65	8.10	Markings	Col 62: Product name Col 63: Telephone number Col 64: Hazard diamond Col 65: Other In each case, 0 = Not ticked 1 = Ticked
39	66	8.11	UKEMS label?	1 = No 2 = Yes 0 = Not recorded
40	67	8.11	Details correct?	1 = No 2 = Yes 0 = Not recorded
41	68-73	9.1	Source of advice	Col 68: Scientific adviser at premises Col 69: Harwell Col 70: IEB. Col 71: Chemical supplier Col 72: Other chemical co. In cols 68-72 0 = Not ticked 1 = Ticked Col 73: Other 0 = Not ticked 1 = Ticked - no information 2 = Ticked - brigade control 3 = HAZFILE 4 = L.A.S.A. 5 = H.V.S.W. INFO. 6 = POLICE 7 = WORKS ENGINEER 8 = REF CARDS/LISTS ETC. 9 = VEHICLE DRIVER A = GOVT. ESTABS. B = WATER AUTHORITY

Item	Columns	Question	Information	Values
42	74	9.2	Chemsafe?	1 = No 2 = Yes 0 = Not recorded
43	75-78	1.5	FDR1 number	Enter number
44	79	-	Cause of Incident	1 = deliberate or vandalism 2 = negligence - overfilling 3 = negligence - mishandling 4 = negligence - insecure load or bad storage 5 = negligence - inadequate sealing 6 = defective or damaged containers 7 = leakage from pipework or flange, or defective plant 8 = chemical reaction or spontaneous ignition 9 = fire involving chemicals 0 = unknown A = DEFECTIVE VEHICLE B = ROAD/RAIL ACCIDENT C = WASHED ASHORE

ENGLAND

01 = AVON
 02 = BEDFORDSHIRE
 03 = BERKSHIRE
 04 = BUCKINGHAMSHIRE
 05 = CAMBRIDGESHIRE
 06 = CHESHIRE
 07 = CLEVELAND
 08 = CORNWALL
 09 = CUMBRIA
 10 = DERBYSHIRE
 11 = DEVON
 12 = DORSET
 13 = DURHAM
 14 = EAST SUSSEX
 15 = ESSEX
 16 = GLOUCESTERSHIRE
 17 = HAMPSHIRE
 18 = HEREFORD AND WORCESTER
 19 = HERTFORDSHIRE
 20 = HUMBERSIDE
 21 = ISLE OF WIGHT
 22 = KENT
 23 = LANCASHIRE
 24 = LEICESTERSHIRE
 25 = LINCOLNSHIRE

26 = NORFOLK
 27 = NORTH YORKSHIRE
 28 = NORTHAMPTONSHIRE
 29 = NORTHUMBERLAND
 30 = NOTTINGHAMSHIRE
 31 = OXFORDSHIRE
 32 = SALOP/SHROPSHIRE
 33 = SOMERSET
 34 = STAFFORDSHIRE
 35 = SUFFOLK
 36 = SURREY
 37 = WARWICKSHIRE
 38 = WEST SUSSEX
 39 = WILTSHIRE
 40 =
 41 =
 42 = GREATER MANCHESTER
 43 = MERSEYSIDE
 44 = SOUTH YORKSHIRE
 45 = TYNE AND WEAR
 46 = WEST MIDLANDS
 47 = WEST YORKSHIRE
 48 =
 49 =
 50 = GREATER LONDON

WALES

60 = CLWYD
 61 = DYFED
 62 = GWENT
 63 = GWYNEDD
 64 = MID GLAMORGAN
 65 = POWYS
 66 = SOUTH GLAMORGAN
 67 = WEST GLAMORGAN

SCOTLAND

80 = CENTRAL REGION
 81 = DUMFRIES AND GALLOWAY
 82 = FIFE
 83 = GRAMPIAN
 84 = LOTHIAN AND BORDERS
 85 = NORTHERN
 86 = STRATHCLYDE
 87 = TAYSIDE



APPENDIX C: INCIDENTS OTHER THAN THOSE
INVOLVING CHEMICALS WASHED ASHORE

Total number of incidents: 252

Note: throughout this appendix, the numbers quoted refer to the number of completed forms for which the stated answer was given.



TYPE OF CALL

SPECIAL
SERVICE
CALLS
205

FIRES
AFFECTED BY
CHEMICALS
27

FIRES WHERE
CHEMICALS
ABNORMAL
6

FIRES WITH
CASUALTIES
14

NOT
RECORDED
0

BRIGADE AREA (Q-1.1)

CODES: TOT=TOTAL
 F=FIRE INCIDENT
 NF=NON-FIRE INCIDENT
 T=TRANSPORT INCIDENT
 S=STATIC INCIDENT

ENGLAND

NON-METROPOLITAN COUNTIES

AVON	BEDFORDSHIRE	BERKSHIRE	BUCKINGHAM- SHIRE	CAMBRIDGE- SHIRE
TOT: 7	3	4	1	1
F: 1	0	0	0	0
NF: 6	3	4	1	1
T: 3	2	1	1	1
S: 4	1	3	0	0
CHESHIRE	CLEVELAND	CORNWALL	CUMBERIA	DERBYSHIRE
TOT: 4	5	1	2	2
F: 1	2	1	0	0
NF: 3	3	0	2	2
T: 2	1	0	2	0
S: 2	4	1	0	2
DEVON	DORSET	DURHAM	EAST SUSSEX	ESSEX
TOT: 5	2	1	1	33
F: 2	1	0	0	2
NF: 3	1	1	1	31
T: 1	0	1	1	22
S: 4	2	0	0	11
GLOUCESTER- SHIRE	HAMPSHIRE	HEREFORD AND WORCESTER	HERTFORDSHIRE	HUMBERSIDE
TOT: 0	3	4	8	5
F: 0	1	0	1	0
NF: 0	2	4	7	5
T: 0	1	4	5	4
S: 0	2	0	3	1

ISLE OF WIGHT	KENT	LANCASHIRE	LEICESTER-SHIRE	LINCOLN-SHIRE
TOT: 2	3	12	6	5
F: 0	0	6	1	1
NF: 2	3	6	5	4
T: 1	2	3	2	2
S: 1	1	9	4	3

NORFOLK	NORTH YORK-SHIRE	NORTHAMP-TON SHIRE	NORTH UMBERLAND	NOTTINGHAM-SHIRE
TOT: 5	3	5	0	0
F: 0	0	1	0	0
NF: 5	3	4	0	0
T: 4	2	1	0	0
S: 1	1	4	0	0

OXFORDSHIRE	SALOP/SAROPSHIRE	SOMERSET	STAFFORDSHIRE	SUFFOLK
TOT: 4	1	0	2	6
F: 2	1	0	2	0
NF: 2	0	0	0	6
T: 1	0	0	1	4
S: 3	1	0	1	2

SURREY	WARWICKSHIRE	WEST SUSSEX	WILTSHIRE
TOT: 3	3	11	1
F: 1	0	3	0
NF: 2	3	8	1
T: 2	1	1	0
S: 1	2	10	1

METROPOLITAN COUNTIES

MERSEYSIDE		SOUTH YORKSHIRE	TYNE AND WEAR	WEST MIDLANDS	WEST YORKSHIRE
TOT:	3	0	2	9	17
F:	0	0	0	2	2
NF:	3	0	2	7	15
I:	2	0	1	1	6
S:	1	0	1	8	11

GREATER MANCHESTER		GREATER LONDON
TOT:	6	27
F:	0	5
NF:	6	22
I:	2	10
S:	4	17

TOTAL FOR ENGLAND = 228

WALES					
CLYWD		DYFED	GWENT	GWYNEDD	MID GLAMORGAN
TOT:	2	1	1	0	1
F:	1	0	0	0	0
NF:	1	1	1	0	1
T:	0	0	0	0	1
S:	2	1	1	0	0

POWYS		SOUTH GLAMORGAN	WEST GLAMORGAN
TOT:	1	2	0
F:	0	0	0
NF:	1	2	0
T:	1	0	0
S:	0	2	0

TOTAL FOR WALES= 8

SCOTLAND

CENTRAL REGION		DUMFRIES AND GALLOWAY	FIFE	GRAMPIAN	LOTHIAN AND BORDERS
TOT:	0	6	0	1	2
F:	0	1	0	0	0
NF:	0	5	0	1	2
T:	0	6	0	0	2
S:	0	0	0	1	0

NORTHERN		STRATHCLYDE	TAYSIDE
TOT:	0	4	2
F:	0	2	0
NF:	0	2	2
T:	0	1	2
S:	0	3	0

TOTAL FOR SCOTLAND= 15

MONTH OF CALL (Q-1.2)

JAN 86	FEB 81	MAR 49	APR 31	MAY 5	JUN 0
JUL 0	AUG 0	SEP 0	OCT 0	NOV 0	DEC 0

NO. OF 'NOT RECORDED' = 0

TIME OF CALL (Q-1.3)

TIME OF DAY

0000-0600 20	0601-1200 83	1201-1800 89	1801-2400 55
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NO. OF 'NOT RECORDED' = 5

NO. OF ITEMS OF INFORMATION RECORDED UNDER 'PRINCIPAL SUBSTANCE' (Q-2.1)

NONE 2	ONE 210	TWO 36	THREE 2	FOUR 0
FIVE 0	SIX 0	SEVEN 0	EIGHT 0	

VARIOUS QUANTITIES OF UNKNOWN CHEMICALS 2

CHARACTERISTIC OF PRINCIPAL AND OTHER SUBSTANCES (Q-2.2)

	NEITHER SUBSTANCE	PRINCIPAL SUBSTANCE	OTHER SUBSTANCE	BOTH	UNKNOWN
FLAMMABLE	123	112	4	13	0
TOXIC	103	132	2	15	0
CORROSIVE	164	77	3	8	0
EXPLOSIVE	243	9	0	0	0
RAD. ACT	252	0	0	0	0
OTHER	221	29	1	1	0

CHEMICALS DIRECTLY INVOLVED? (Q-2.3)

NO	YES	NOT RECORDED
18	213	21

IN DANGER OF BEING DIRECTLY INVOLVED? (Q-2.3)

NO	YES	NOT RECORDED
8	7	3

BRIGADE CHEMICAL PROCEDURES INVOLVED (Q-2.4)

NO	YES	NOT RECORDED
80	144	28

TYPE OF INCIDENT (Q-2.5)

FIRE	43
SPILLAGE	118
OTHER	9
LEAKAGE	46
WASHED UP ON BEACH	0
EXPLOSION	5
VAPOUR/GAS ESCAPE	21
POTENTIAL SPILLAGE	4
LEAKAGE & VAPOUR	5
FOUND	1

NOT RECORDED= 0

Note: in later analyses, a further classification according to the cause of the incident will be included to supplement the information obtained in this question.

QUANTITY OF CHEMICALS INVOLVED (Q-2.7)

QUANTITY ENTERED IN LITRES OR KILOGRAMS

1-10	11-50	51-100
37	57	16
101-210	211-500	501-998
23	18	11

999 OR OVER 61
 NOT RECORDED= 29

PROTECTION SUITS (Q-3.1)

GASLIGHT SUITS	CHEMICAL SUITS	MIXTURE OF BOTH	NONE	NOT RECORDED
26	84	8	31	105

SUITS SATISFACTORY (Q-3.2)

NO	YES	NOT RECORDED
7	109	2

BREATHING APPARATUS USED? (Q-3.3)

NO	YES	NOT RECORDED
130	73	49

DECONTAMINATION (Q-3.4)

NONE	WET PROCESS	DRY PROCESS	NOT RECORDED
138	85	1	30

DURATION OF INVOLVEMENT (Q-4.1)

NUMBER OF MINUTES

1-30	31-60	61-180	181-360	361-998	999 & OVER
50	68	78	21	17	2

NOT RECORDED= 16

EQUIPMENT DISCARDED? (Q-4.2)

NO	YES	NOT RECORDED
251	16	5

FIRE-FIGHTING MEDIUM - TOTAL NO. OF FIRE & EXPLOSION INCIDENTS: 48
(Q-4.3)

WATER	29
WATER AND SAND	0
FOAM	3
SAND/DRY MATERIALS	6
ALLOWED TO BURN OUT	2
WATER FOG & SODA ASH	1
FIRE OUT ON ARRIVAL	4
ASBESTOS BLANKET	1

NOT RECORDED= 2

CHEMICALS CONTAINED, OR DILUTED (Q-4.4)

CONTAINED	DILUTED	BOTH	VENTED
100	102	8	5

NOT RECORDED= 37

CASUALTY SECTION (Q-5)

NUMBER OF CASES WHERE CASUALTIES OCCURRED= 44

FATAL BRIGADE

FATAL OTHER
NONE ONE TWO 3 OR MORE NONE ONE TWO 3 OR MORE
252 0 0 0 251 1 0 0

NON-FATAL BRIGADE

NON-FATAL OTHER
NONE ONE TWO 3 OR MORE NONE ONE TWO 3 OR MORE
236 5 0 11 220 18 0 14

CASUALTIES TAKEN TO HOSPITAL BUT RELEASED

NONE ONE TWO 3 OR MORE
227 12 0 13

CASUALTIES TREATED AS OUTPATIENTS

NONE ONE TWO 3 OR MORE
243 4 0 5

CASUALTIES TREATED AS INPATIENTS

NONE ONE TWO 3 OR MORE
241 8 0 3

TRANSPORT INCIDENT? (Q-6.1)

NO	YES	NOT RECORDED
138	114	0

STATIC INCIDENTS - TOTAL NUMBER: 138

IN A BUILDING? (Q-7.1)

NO	YES	NOT RECORDED
51	87	0

PURPOSE? (Q-7.1)

BEING MADE	IN STORAGE	BEING USED	NOT RECORDED
11	36	43	48

UNDER FUMIGATION? (Q-7.2)

NO	YES	NOT RECORDED
117	2	19

TRANSPORT INCIDENTS - TOTAL NUMBER: 114

LOCALITY OF INCIDENT (Q-8.1)

RURAL	URBAN INDUSTRIAL	URBAN RESIDENTIAL	NOT RECORDED
39	39	36	3

LOADING/UNLOADING (Q-8.2)

NO	YES	NOT RECORDED
90	18	6

NATURE OF LOAD (Q-8.3)

BULK SINGLE TANK	BULK MULTI-COMPARTMENT	PACKAGES FULL LOAD	PACKAGES MIXED LOAD	SMALL PACKAGES	NOT RECORDED
28	9	11	15	44	7

MODE OF TRANSPORT (Q-8.4)

ROAD	RAIL	WATER	AIR	NOT RECORDED
93	13	8	0	0

TRANSPORT INCIDENTS - TOTAL NO. OF ROAD INCIDENTS: 93

TYPE OF ROAD (Q-8.5)

MOTORWAY	A CLASS	B CLASS	OTHER	NOI ON ROAD	NOI RECORDED
7	39	17	12	17	1

PARKING AREA? (Q-8.6)

NO	YES	NOI RECORDED
75	17	1

ATTENDED? (Q-8.6)

NO	YES	NOI RECORDED	NOI KNOWN
7	75	7	4

TRAFFIC ACCIDENT (Q-8.7)

NO	YES	NOI RECORDED
77	15	1

ALL TRANSPORT

TRANSPORT MARKED? (Q-8.8)

NO	YES	NOI RECORDED
51	50	13

CONTAINERS MARKED? (Q-8.9)

NO	YES	NOI APPLICABLE	NOI RECORDED
11	72	21	10

MARKINGS - MORE THAN ONE MAY BE INDICATED (Q-8.10)

PRODUCT NAME	TELEPHONE NUMBER	HAZARD DIAMOND	OTHER
77	47	59	27

ON THIS LABEL (Q-8.11)

NO	YES	NOT RECORDED
16	24	74

DETAILS CORRECT (Q-8.11)

NO	YES	NOT RECORDED
3	20	1

SOURCE OF ADVICE - MORE THAN ONE SOURCE MAY BE INDICATED (Q-9.1)

SCIENTIST AT PREMISES	HARWELL	LFB	CHEMICAL SUPPLIER	OTHER CREM COMPANY
53	14	42	64	27

'OTHER' SOURCE OF ADVICE

NO INFORMATION	3	
BRIGADE CONTROL	22	
HAZFILE	15	
LASA	22	(LASA : Local authority scientific adviser)
H & SA WORK INFOR.	1	
POLICE	0	
WORKS ENGINEER	3	
REF CARDS/LISTS ETC..	12	
VEHICLE DRIVER	2	
GOVT. ESTABS.	3	

CHEMSAFETY (Q-9.2)

NO	YES	NOT RECORDED
219	22	11

THE NUMBER OF RECORDS READ IS 321

	Duration of brigade involvement (mins)						Total
	1 -30	31 -60	61 -180	181 -360	361 -998	999 and over	
Quantity of chemicals involved (litres)							
1 -10	14	13	9	2	1	1	40
11 -50	9	16	16	2	0	1	44
51 -100	3	6	4	2	1	0	16
101 -210	2	5	9	4	0	0	20
211 -500	3	4	9	2	0	0	18
501 -998	3	1	6	0	1	0	11
999 and over	5	13	19	8	12	1	57
Total	37	58	72	20	15	2	204

APPENDIX D: INCIDENTS INVOLVING CHEMICALS
WASHED ASHORE

Total number of incidents: 69

Note: throughout this appendix, the numbers quoted refer to the number of completed forms for which the stated answer was given.



BRIGADE AREA (Q-1.1)

CODES: TOT=TOTAL
 F=FIRE INCIDENT
 NF=NON-FIRE INCIDENT
 T=TRANSPORT INCIDENT
 S=STATIC INCIDENT

ENGLAND

AVON	NON-METROPOLITAN COUNTIES			
	BEDFORDSHIRE	BERRSHIRE	BUCKINGHAM-SHIRE	CAMBRIDGE-SHIRE
TOT:	0	0	0	0
F:	0	0	0	0
NF:	0	0	0	0
T:	0	0	0	0
S:	0	0	0	0
<hr/>				
CHESHIRE	CLEVELAND	CORNWALL	CUMBRIA	DERBYSHIRE
TOT:	0	1	0	0
F:	0	0	0	0
NF:	0	1	0	0
T:	0	1	0	0
S:	0	0	0	0
<hr/>				
DEVON	DORSET	DURHAM	EAST SUSSEX	ESSEX
TOT:	4	0	0	0
F:	0	0	0	0
NF:	4	0	0	0
T:	3	0	0	0
S:	1	0	0	0
<hr/>				
GLoucester-SHIRE	HAMPSHIRE	HEREFORD AND WORCESTER	HERTFORDSHIRE	HUMBERSIDE
TOT:	0	0	0	0
F:	0	0	0	0
NF:	0	0	0	0
T:	0	0	0	0
S:	0	0	0	0

ISLE OF WIGHT	KENT	LANCASHIRE	LEICESTER-SHIRE	LINCOLN-SHIRE
TOT: 52	0	0	0	0
F: 0	0	0	0	0
NF: 52	0	0	0	0
T: 52	0	0	0	0
S: 0	0	0	0	0

NORFOLK	NORTH YORK-SHIRE	NORTHAMP-TON SHIRE	NORTH UMBERLAND	NOTTINGHAM-SHIRE
TOT: 0	0	0	0	0
F: 0	0	0	0	0
NF: 0	0	0	0	0
T: 0	0	0	0	0
S: 0	0	0	0	0

OXFORDSHIRE	SALOP/SHPKOPSHIRE	SOMERSET	STAFFORDSHIRE	SUF-FOLK
TOT: 0	0	0	0	0
F: 0	0	0	0	0
NF: 0	0	0	0	0
T: 0	0	0	0	0
S: 0	0	0	0	0

SURREY	WARWICKSHIRE	WEST SUSSEX	WILSHIRE
TOT: 0	0	12	0
F: 0	0	0	0
NF: 0	0	12	0
T: 0	0	5	0
S: 0	0	7	0

METROPOLITAN COUNTIES

MERSEYSIDE	SOUTH YORKSHIRE	TYNE AND WEAR	WEST MIDLANDS	WEST YORKSHIRE
TOT: 0	0	0	0	0
F: 0	0	0	0	0
NF: 0	0	0	0	0
T: 0	0	0	0	0
S: 0	0	0	0	0

GREATER MANCHESTER	GREATER LONDON
TOT: 0	0
F: 0	0
NF: 0	0
T: 0	0
S: 0	0

TOTAL FOR ENGLAND = 69

Total for Scotland = 0

Total for Wales = 0

MONTH OF CALL (Q-1.2)

JAN 11	FEB 44	MAR 9	APR 5	MAY 0	JUN 0
JUL 0	AUG 0	SEP 0	OCT 0	NOV 0	DEC 0

NO. OF 'NOT RECORDED' = 0

TIME OF CALL (Q-1.3)

TIME OF DAY

0000-0600 0	0601-1200 40	1201-1800 20	1801-2400 6
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NO. OF 'NOT RECORDED' = 3

NO. OF ITEMS OF INFORMATION RECORDED UNDER 'PRINCIPAL SUBSTANCE' (Q-2.1)

NONE 0	ONE 26	TWO 13	THREE 5	FOUR 7
FIVE 3	SIX 1	SEVEN 4	EIGHT 3	

VARIOUS QUANTITIES OF UNKNOWN CHEMICALS 7

BRIGADE CHEMICAL PROCEDURES INVOLVED (Q-2.4)

NO 3	YES 59	NOT RECORDED 7
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QUANTITY OF CHEMICALS INVOLVED (Q-2.7)

QUANTITY ENTERED IN LITRES OR KILOGRAMS

1-10	11-50	51-100
22	4	3
101-200	211-500	501-998
3	0	0

999 OR OVER 1
NOT RECORDED= 36

PROTECTION SUITS (Q-3.1)

GASTIGHT SUITS	CHEMICAL SUITS	MIXTURE OF BOTH	NONE	NOT RECORDED
53	2	8	1	5

SUITS SATISFACTORY (Q-3.2)

NO	YES	NOT RECORDED
1	62	0

BREATHING APPARATUS USED (Q-3.3)

NO	YES	NOT RECORDED
67	0	2

DECONTAMINATION (Q-3.4)

NONE	WET PROCESS	DRY PROCESS	NOT RECORDED
14	54	0	1

DURATION OF INVOLVEMENT (Q-4.1)

NUMBER OF MINUTES

1-30	31-60	61-180	181-360	361-998	999 & OVER
10	9	14	17	16	1

NOT RECORDED= 2

EQUIPMENT DISCARDED? (Q-4.2)

NO	YES	NOT RECORDED
67	1	1

CASUALTY SECTION (Q-5)

NUMBER OF CASES WHERE CASUALTIES OCCURRED= 1

FATAL BRIGADE

FATAL OTHER

NONE	ONE	TWO	3 OR MORE	NONE	ONE	TWO	3 OR MORE
69	0	0	0	69	0	0	0

NON-FATAL BRIGADE

NON-FATAL OTHER

NONE	ONE	TWO	3 OR MORE	NONE	ONE	TWO	3 OR MORE
69	0	0	0	68	0	0	1

CASUALTIES TAKEN TO HOSPITAL BUT RELEASED

NONE	ONE	TWO	3 OR MORE
68	0	0	1

CASUALTIES TREATED AS OUTPATIENTS

NONE	ONE	TWO	3 OR MORE
69	0	0	0

CASUALTIES TREATED AS INPATIENTS

NONE	ONE	TWO	3 OR MORE
69	0	0	0

CONTAINERS MARKED? (Q-8.9)

NO	YES	NOT APPLICABLE	NOT RECORDED
49	7	0	5

MARKINGS - MORE THAN ONE MAY BE INDICATED (Q-8.10)

PRODUCT NAME	TELEPHONE NUMBER	HAZARD DIAMOND	OTHER
4	0	4	3

SOURCE OF ADVICE - MORE THAN ONE SOURCE MAY BE INDICATED (Q-9.1)

SCIENTIST AT PREMISES	HARWELL	LFB	CHEMICAL SUPPLIER	OTHER CHEM COMPANY
3	3	1	1	2

'OTHER' SOURCE OF ADVICE

NO INFORMATION	1
BRIGADE CONTROL	1
HAZFILE	3
LASA	58
H & SA WORK INFOR.	0
POLICE	0
WORKS ENGINEER	0
REF CARDS/LISTS ETC..	1
VEHICLE DRIVER	0
GOVT. ESTABS.	2

CHEMSAFETY (Q-9.2)

NO	YES	NOT RECORDED
68	1	0

THE NUMBER OF RECORDS READ IS 321

		Duration of brigade involvement (mins)					Totals	
		1 -30	31 -60	61 -180	181 -360	361 -998		999 and over
Quantity of chemicals involved (litres)	1 10	8	6	5	1	1	0	21
	11 50	1	0	2	0	0	0	3
	51 100	0	0	0	3	0	0	3
	101 210	1	0	0	2	0	0	3
	211 500	0	0	0	0	0	0	0
	501 998	0	0	0	0	0	0	0
	999 and over	0	0	0	0	0	1	1
	Totals	10	6	7	6	1	1	31

