INFORMATION
FOR LOCAL
PEOPLE
ABOUT
EMERGENCY
PROCEDURES
AT
NUCLEAR
POWER
STATIONS

SCOTTISH CONSUMER COUNCIL
314 ST VINCENT STREET
GLASGOW G3 8XW

OCTOBER 1991
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CHAIRMAN'S PREFACE

Scotland has four nuclear power stations as well as other military installations and research reactors. An accident at any of these installations could affect many people living near the site. Their safety would largely depend on how well informed they were about what to do in the event of an emergency.

With this in mind the Scottish Consumer Council decided to find out what sort of information about emergency procedures is available to local people who live near each of the four nuclear power stations. This issue was raised as an area of concern by some of our Consumer Network volunteers. These volunteers come from all over Scotland and help us with research and also keep us informed of problems and concerns within their local areas.

We contacted the four power stations to find out what written information is available to members of the public; this includes handbooks for local residents and the Operator's Emergency Plans. We also sent out volunteers to see what information can be found in the public libraries close to the power stations. We then asked our volunteers to read the emergency information handbooks produced by each power station and answer a questionnaire designed to test if the handbooks were getting the right message across.

From the research we conclude that improvements are needed in terms of the presentation, clarity and distribution of information to members of the local community. At the end of the report we give detailed recommendations on how this can be done.

These recommendations will be of interest to all those involved in drafting and distributing this type of information to members of the public.

I hope you will find this report interesting.

Deirdre Hutton

October 1991
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CHAPTER 1: INTRODUCTION

Scotland has nuclear power stations at Chapelcross, Hunterston, Dounreay and Torness, plus military installations and other research reactors. Most people would concede that the risk of an accidental release of ionising radiation arising from an incident at any of these installations is relatively low, but that such a release could be extremely serious in its consequences.

In 1986 the Chernobyl reactor in the Soviet Union suffered a "meltdown" due to human error, causing widespread contamination within the Soviet Union and further afield in Northern Europe. Important lessons have been learned from the Chernobyl disaster as well as the incidents at Three Mile Island in the United States in 1979 and Windscale (Sellafield) in 1957.

Similarly, lessons were also learned from three earlier accidents which took place in North America, two in the US and one in Canada, in the years between 1952 and 1962. In each of these three accidents "operator error", while attempting to bring the situation under control, was identified as having contributed to the severity of the incidents.

The principal lesson from each of these major accidents, and from many other lesser incidents, is that the atmosphere is no respector of man-made boundaries. Contaminated materials released into the atmosphere can be carried for thousands of miles from the accident site and deposited almost anywhere, even in the opposite direction to the normal prevailing wind pattern, of which most plans take account.

Secondary lessons include the need for information and up-to-date plans to deal with emergency situations. This is particularly important in areas where there are nuclear installations and as a direct result a number of people at greater risk from an accident. As a result of the accident at Three Mile Island the importance of a well organised and well publicised emergency plan was so evident that, consequently, the USA now has some of the most stringently prepared and best publicised nuclear emergency plans in the world.

In the foreword to the Health and Safety Executive booklet, "Arrangements for responding to nuclear emergencies" published in 1990, it is acknowledged that the Chernobyl incident was the impetus which led to a review of emergency arrangements in the UK, and to the subsequent updating of the earlier booklet "Emergency plans for civil nuclear installations". The change of title suggests a recognition that the risks posed by a particular kind of radioactive material are invariable, irrespective of whether that material originates from a civil or military source in Great Britain or abroad. As Chernobyl demonstrated, the hazards can be international.
In the light of growing consumer concern regarding the risks faced by the general public in relation to nuclear accidents, it was the aim of this project to investigate the following questions as they relate to the civil nuclear installations at Dounreay, Chapelcross, Hunterston and Torness:

(i) What information has to be made available to the public?
(ii) Where should the information be available?
(iii) Is the above information actually available?
(iv) What form is the information presented in?
(v) Is the information which is available useful to the general public?

We have concentrated on written information, although we understand that information may also be delivered in other ways in consultation with Local Liaison Committees. At Torness, for example, arrangements have been made for local people to visit the station and meet station personnel and local police. Nevertheless, written information will be of most use to local people as their main reference source.

The first two questions listed above were answered by reference to what may be regarded as primary sources, i.e. Statutes, Regulations and Codes of Practice. The third question was dealt with by asking volunteers living in the area of nuclear installations to visit local libraries and check on the availability of information.

The fourth question was covered by examining the different types of information in terms of their content, design, layout and comprehensibility. Descriptions of the booklets are given in Chapter 4.

The fifth question was tackled by sending a questionnaire and a copy of the "Emergency Arrangements" booklet for either Torness, Dounreay or Chapelcross* to a number of volunteers. Responses to the questionnaire were then analysed to assess how effective the booklets were at conveying their message. These responses are summarised in Chapter 5 of this report.

* Despite repeated requests over a period of about a year to the South of Scotland Electricity Board and its successor Scottish Nuclear Ltd, at both Hunterston and their respective headquarters, the Hunterston Residents' Handbook was never made available to SCC. At the time of going to press we understand that the handbook is currently being rewritten.
A supplementary questionnaire was also enclosed asking the volunteers to evaluate the booklet which they received in terms of:

* how easy it was to understand;
* how informative it was;
* how straightforward the advice and instructions were;
* what other advice should be included.

The answers to this questionnaire are summarised in Chapter 6.
CHAPTER 2: LEGISLATION

2.1 UK LEGISLATION

The overall legislative picture relating to questions of radiation safety and information is a rather confusing one, consisting of Parliamentary Acts, Statutory Instruments, Regulations, Approved Codes of Practice and recommendations made as a result of Public Enquiries. Responsibilities are apportioned between various Government Departments, Agencies and Inspectorates, with no one person or body clearly identified as having overall responsibility regardless of the circumstances.

This confusion is exemplified by the fact that in the event of an emergency the Government Department responsible for advising on coordination depends on the circumstances:

* The Department of Energy for civil nuclear sites in England and Wales;
* The Scottish Office for civil nuclear sites in Scotland;
* The Ministry of Defence for its sites and military transport accidents anywhere in the UK;
* The Department of Transport for civil nuclear transport accidents;
* The Department of the Environment for overseas accidents which affect the UK.

This dispersal of responsibility is irrespective of the fact that the potential risks associated with a particular form of a radionuclide remain the same regardless of the source, for example, from a road accident in this country or from a power station fire abroad. This confusion could be considerably reduced or eliminated if the recommendations made by The Watt Committee on Energy (see para 2.2.2) were implemented.

Allocation of responsibility for coordination, at present, obscures the fact that in an emergency, no matter which department is responsible, the same local services will have to carry out the appropriate tasks. This is despite the fact that there is no legal requirement for local authorities to cooperate with the operators of nuclear installations on planning for emergencies. The preparation of Off-Site Emergency Plans by local authorities will shortly be the subject of a Health and Safety Commission consultation document.

With specific regard to the question of what information should be available to the public the "Nuclear Installations Act, 1965" contains the following provisions.
Under section 4 (1) (c), each station must have a licence from the Nuclear Installations Inspectorate (NII) of the Health and Safety Executive in order to operate, and under the terms of the licence the operator must have a "plan ... with respect to preparations for dealing with and measures to be taken on the happening of any accident or other emergency on the site".

Section 6 (1) refers to the provision of site plans for public inspection -

"The Minister (Secretary of State in Scotland) shall maintain a list showing every site in respect of which a nuclear site licence has been granted by him and including a map or maps showing the position and limits of each such site, and make arrangements for the list or copies thereof to be available for inspection by the public; and he shall cause notice of these arrangements to be made public in such a manner as may appear to him appropriate". This Act also makes provision for public enquiries and other special reports which can be commissioned by the Minister, the details of which are then released to the public at the Minister's discretion.

The "Ionising Radiations Regulations, 1985" are a Statutory Instrument enabled under the "Health and Safety at Work etc. Act 1974."

Regulation 25 requires that "An employer shall not carry on work with ionising radiation unless he has made an assessment which is adequate to identify the nature and magnitude of the radiation hazard to employees and other persons which is likely to arise from that work in the event of any reasonably foreseeable accident, occurrence or incident." While regulation 27 (1) states, "Where the assessment made in accordance with regulation 25 (1) shows that...employees or other persons are likely to receive a dose of ionising radiation which exceeds any relevant dose limit; or any area other than an area already designated as a controlled area would be required to be so designated...the employer shall prepare a contingency plan designed to secure...the health and safety of persons who may be affected by the accident."

The effective interpretation of this legislation, as summarised from "Arrangements for responding to nuclear emergencies", is as follows. Since the contingency plan of the 1985 Regulations and the emergency plan of the 1965 Act may be one and the same document, the operators of a nuclear installation must carry out a detailed safety analysis in which they identify potential accidents or accident sequences, for that plant, which could result in the release of radioactive materials. The likely amount of any such release is calculated and the possible consequences of that amount being released assessed. By this method a "maximum credible accident" is identified and used for the purposes of a "reference accident". In the case of older "Magnox" reactors in the UK the reference accident usually indicated that a detailed emergency planning zone of 1 to 1.5 miles radius around the plant was required.
For modern reactors the reference accident usually indicates that a detailed emergency planning zone would fall within the perimeter fence of the installation. Nonetheless a minimum zone of 1km radius is still specified around these plants as a result of the "desirability of having a foundation for responding to larger accidents."

Paragraph 20 of this document states that "...these distances correspond to a conservative estimate of the furthest extent at which the reference accident would require such countermeasures" (ie evacuation) "to be implemented."

Michael Barnes QC, the Inspector at the recent Hinkley Point Public Enquiries, commented in relation to the reference accident for the two, older, Magnox reactors at this site that:

"This accident could more accurately and appropriately be described as what it would be once the Magnox reactors at Hinkley Point had ceased to operate, ie a notional limited accident which formed the basis of emergency planning on site."

While the law has obviously considered the need to inform people likely to be affected by accidents at nuclear power stations it does not state clearly and precisely where, how, when and in which form this information should be made available. This is largely left to the discretion of the Nuclear Installations Inspectorate which, working to guidelines, is responsible for granting a site licence. If methods of informing the public were defined statutorily and a centralised approach taken to planning for nuclear accidents there would have been no need for the following recommendations to have been made. Some of these problems will shortly be addressed during implementation of EC Directive 89/618 Euratom (see section 2.3 below).

2.2 RECOMMENDATIONS BY UK COMMITTEES AND ENQUIRIES

2.2.1 Royal Commission on Environmental Pollution 1976

In 1976 the Royal Commission on Environmental Pollution, chaired by Sir Brian Flowers, published its sixth report on Nuclear Power and the Environment. The Commission recommended that the station's emergency plans, which were discussed with the station liaison committee, should also "be made available for inspection by interested members of the public who might be affected by them" (p. 201, section 530).
2.2.2 The Watt Committee on Energy, Report no 19, 1988

This Standing Committee, which is a limited company of charitable status, reported in 1988 on the Chernobyl accident and its implications for the UK. It recommended that there is a need for:

a) a central plan to ensure all necessary actions are covered and coordinated

b) a formal organisational structure with a senior Government Minister in charge to ensure that all instructions are from a single source (p. 94).

Both these recommendations were directed at central government. The Watt Committee also recommended the release of accurate and consistent information which is in a form that is useful to the public (page 94).

2.2.3 The Hinkley Point Public Enquiry 1990

In the Inspector's Conclusions and Recommendations for the Hinkley Point Public Enquiry it is recommended that "consideration should be given to clarifying the legal framework for emergency planning around civil nuclear installations, including the question of imposing specific obligations on the bodies and services involved in such planning" (Rec. 17). This recommendation was directed at the Department of Energy. An important specific recommendation arising from the Hinkley Point Enquiry was that emergency information booklets and action cards should be regularly redistributed to local residents (50.417). Provision of information was also mentioned as an essential area for detailed planning (50.449) including the publication of emergency plans.

2.3 EUROPEAN COMMUNITY DIRECTIVES

Several European Directives have already been incorporated into UK law by the 1985 Regulations. Another Directive (Euratom 89/618), which requires notification of emergency procedures to anybody who could be affected in the case of an emergency or emergency arrangements, both before and after the event, must be translated into British law by November 1991.

The implication of this is that local people who could be affected by an accident must be informed of the emergency plans and given information, in advance, about what to do in an emergency.
2.4 CONCLUSIONS

In view of the legislation and recommendations outlined above, SCC believes that the legal basis for dealing with nuclear emergencies should be reviewed with a view to formalising the arrangements under which local authorities and other public bodies are expected to contribute to any nuclear emergency. Their separate duties and responsibilities should be clearly defined in law.

The arrangements for the dissemination of information to the general public living and working in the vicinity of nuclear installations should also be formalised and standardised. Statutory definitions should be given regarding:

* the minimum radius within which such information should be made available;
* when the information should be provided or updated;
* what the content of such information should be;
* how it should be presented.

We hope that some of these points will be addressed during implementation of EC Directive 89/618 Euratom.

SCC also believes that a simplified chain of command should be devised and that the lead responsibility for coordination should be placed on one Government Department irrespective of the circumstances of the emergency.
CHAPTER 3: THE AVAILABILITY OF INFORMATION ABOUT EMERGENCY PROCEDURES

3.1 INTRODUCTION

In paragraph 29 of "Arrangements for responding to nuclear emergencies" it is stated: "Operators have placed copies of their approved schemes...in public libraries in the vicinity of the nuclear sites." The SCC tested this statement during the month of March 1991 by asking volunteers to visit libraries in the vicinity of each of the power stations at Chapelcross, Dounreay, Hunterston and Torness in order to locate copies of each of the following:

a) The local Residents' Handbook on emergency arrangements;
b) The Operators' Emergency Plan for the local nuclear station;
c) A map of the local area showing the emergency planning zone (EPZ).

The instructions to the volunteers were that they should initially try to locate these materials themselves in the catalogue and then on the shelves. They were told to ask the librarian for help only if they could not locate one or more of the publications.

Five libraries were visited and, courtesy of two librarians, telephone calls made to two others.

3.2 RESULTS OF THE SURVEY

3.2.1 Chapelcross power station is located approximately 15 miles from Dumfries as the crow flies. A copy of the Operators' Emergency Plan for Chapelcross was available at Dumfries library but it was kept in a back room and was not listed in the catalogue under any of the possible headings checked by our volunteer. As Dumfries library did not have copies of either the local Residents' Handbook or a map of the local area showing the emergency planning zone for Chapelcross, the librarian telephoned the public library at Annan and confirmed that copies of these publications were available there.

3.2.2 Dounreay power station is located just under ten miles from Thurso where our volunteer confirmed that all three documents were available on the shelves of the public library.

3.2.3 Fairlie library is only about three miles from Hunterston as the crow flies, yet none of the documents was available at this library. On behalf of our volunteer the librarian telephoned Ardrossan library, about six miles from the station, requesting that they should forward the three documents, if they had them. Six days later, when Fairlie was revisited, only the Operators'
Emergency Plan was available. The Dick Institute at Kilmarnock, about 20 miles from Hunterston, had none of these documents either, despite its function as a local lending and reference library.

3.2.4 Dunbar public library, five miles from Torness, had all three of the documents located on a Community Information reference shelf situated behind the librarian's desk. Again they were not catalogued, but a request to the librarian resulted in their speedy retrieval.

3.3 CONCLUSIONS

All four of the Operators' Emergency Plans were eventually found in public libraries in the area of the relevant stations. It appears, however, that a variety of policies are adopted towards the public's access to these documents. They are not necessarily found at the library closest to the station, nor are they necessarily found at the largest library in the area. None of the libraries listed them in their catalogues, and their location within libraries varied from back rooms to public shelves. The display and cataloguing of the emergency plans is obviously at the discretion of the librarian.

The Residents' Handbooks and maps of the EPZs were found only at Thurso and Dunbar libraries and confirmed by the librarian to be present at Annan. They were not found at Dumfries public library, despite Dumfries being the site of the Regional Council Headquarters, nor were they found in public libraries in the Hunterston area.

Given that some of the information which should be available to the public was not available at all the libraries, SCC recommends that a uniform policy, prescribed by statute, should be adopted towards the availability of information regarding nuclear emergencies. The statute should contain the following provisions:

i) the information should be made available at each of the libraries, or branch libraries, within a specified radius of a nuclear installation (for example within a ten mile radius) and

ii) other copies of this information should be made available at the main public reference library in each District and Region in which an installation is located.
CHAPTER 4: THE QUALITY OF THE INFORMATION AVAILABLE TO THE PUBLIC

4.1 RESIDENTS' HANDBOOKS

People living within the emergency planning zones of each of Scotland's nuclear power stations should have an "Emergency Arrangements" handbook from the operator of the station. The following analysis is based upon the handbooks obtained by SCC for Chapelcross, Dounreay and Torness nuclear power stations. As already recorded, a copy of the Hunterston booklet was not made available to SCC.

During the period that this project was being conducted transfer of ownership of the South of Scotland Electricity Board's (SSEB) nuclear power stations to Scottish Nuclear Ltd (SNL) was being effected prior to privatisation of the Scottish Electricity Companies. The handbook used for Torness was that produced by the SSEB.

The description below covers the information contained in the different sections and subsections of each of the following handbooks:

* "Dounreay Nuclear Establishment. Emergency arrangements information for local residents"
* "Torness Power Station. Emergency arrangements information for local residents"
* "Notice to local householders concerning Chapelcross emergency arrangements"

(Table 1 indicates which handbooks contain which information.)

4.1.1 Format

An A5 format was adopted by the UKAEA and the SSEB for the Dounreay and Torness booklets. This is a more convenient size than the A4 Chapelcross booklet. In addition, the covers are sturdy and the pages are stapled ensuring that they will not fall apart easily.

The front cover design of the Dounreay and Torness handbooks consists of photographs of the power stations and maps of the local area. This design is both relevant and attractive (Fig 1, page 52). The maps could be improved by including a scale bar and clearly labelling the power stations. The Chapelcross booklet has a dull, plain front cover with a box window showing the title.
### TABLE 1: SURVEY OF INFORMATION CONTAINED IN HANDBOOKS FOR RESIDENTS WHO LIVE NEAR SCOTLAND'S NUCLEAR POWER STATIONS

<table>
<thead>
<tr>
<th>Section title/feature</th>
<th>TOR</th>
<th>DOUN</th>
<th>CHAP</th>
<th>HUNT</th>
</tr>
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<tbody>
<tr>
<td>Introduction</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>na</td>
</tr>
<tr>
<td>Purpose of book</td>
<td>*</td>
<td>*</td>
<td></td>
<td>na</td>
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<tr>
<td>Site description</td>
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<td></td>
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<td>na</td>
</tr>
<tr>
<td>Site details</td>
<td></td>
<td></td>
<td></td>
<td>na</td>
</tr>
<tr>
<td>Emergency arrangements</td>
<td>*</td>
<td>*</td>
<td></td>
<td>na</td>
</tr>
<tr>
<td>Scope of scheme</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>na</td>
</tr>
<tr>
<td>Local Authority involvement</td>
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<tr>
<td>Site siren</td>
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<td></td>
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<td>na</td>
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<tr>
<td>Sheltering</td>
<td>*</td>
<td>*</td>
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<td>na</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
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<td>na</td>
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<tr>
<td>Preparation for evacuation</td>
<td>*</td>
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<td>na</td>
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<tr>
<td>Temporary evacuation</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>na</td>
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<tr>
<td>Stable iodine tablets</td>
<td>*</td>
<td>*</td>
<td></td>
<td>na</td>
</tr>
<tr>
<td>Decontamination</td>
<td></td>
<td></td>
<td></td>
<td>na</td>
</tr>
<tr>
<td>Farming implications</td>
<td>*</td>
<td>*</td>
<td></td>
<td>na</td>
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<tr>
<td>Returning home</td>
<td></td>
<td></td>
<td></td>
<td>na</td>
</tr>
<tr>
<td>Action after the event</td>
<td></td>
<td></td>
<td></td>
<td>na</td>
</tr>
<tr>
<td>Checklist</td>
<td></td>
<td></td>
<td></td>
<td>na</td>
</tr>
<tr>
<td>Maps of assembly centres</td>
<td></td>
<td></td>
<td></td>
<td>na</td>
</tr>
<tr>
<td>Date of handbook</td>
<td></td>
<td></td>
<td></td>
<td>05/87</td>
</tr>
<tr>
<td>Distribution radius</td>
<td></td>
<td></td>
<td></td>
<td>3km</td>
</tr>
</tbody>
</table>

12
On the back cover of the Torness and Dounreay handbooks are maps showing the location of the evacuation centres in nearby towns. Although the maps are clear, there is no indication of scale and no north point. The Torness booklet has two small maps showing the location of the centres in Dunbar and Eyemouth. These assembly points are labelled as "Rest and Refreshment Centres". This name may be misleading and the title of "Reception and Decontamination Centres" used by Dounreay is preferable.

The Chapelcross booklet does not give a map of the area or the address of the school that acts as the reception centre. Although most local residents will know where the school is, some may not. For this reason we recommend that all the handbooks should include a map of the local area with the power station clearly marked and another map showing the location of the reception centres.

4.1.2 Layout and Design

The Torness and Dounreay booklets have very similar layouts which involve the use of black text and single colour blocks on a white background (Fig 2, page 53). This layout is clear, and important headings are highlighted by the coloured blocks. In contrast, the Chapelcross booklet is much less clear and makes no use of colour (Fig 3, page 54). Although the design of the Torness and Dounreay booklets is satisfactory, there is room for improvement. For example, the inclusion of full colour coding, illustrations, cartoons, maps and graphs would greatly improve the clarity and impact of the information.

4.1.3 Language

The style of language used in the Dounreay handbook is the most clear and informative. The Plain English Campaign was consulted about the drafting of the text and they approved the final version of the handbook. This was an important and innovative step by the local liaison committee and provides a good example for others to follow.

The Chapelcross booklet contains some reassuring statements, such as: "it should be emphasised that it is very unlikely that any accident would have consequences as wide reaching as described here."

Unfortunately it also includes rather vague sections, such as the one on iodate tablets (page 4): "Special tablets are held by the Dumfries and Galloway Constabulary which, when taken in the prescribed dosage, lessen the effects of certain types of radioactive substances involved. These tablets will be issued by the police. The use of these tablets is endorsed by the Local Health Authority."

The vague content and language of this paragraph might serve to alarm the reader rather than to reassure. The similar section in the Dounreay handbook is more reassuring and informative:
"The Northern Constabulary and their assistants hold stocks of stable iodate tablets which may be issued to you following an emergency. The tablets act by "topping up" the thyroid gland with stable iodine, in order to prevent it from accumulating any radioactive iodine that might have been released into the environment. Only one dose is necessary and the tablets are safe to take for all ages. These tablets will not interfere with other medications. Instructions on dosage and how to take them will be supplied when the tablets are given out."

The text of the Torness booklet is sometimes unclear and convoluted, for example:

"The effect of these arrangements is that it is unlikely that a release from Torness Power Station of sufficient radioactive material to affect the general public will ever occur. But, as a further measure to protect the public an emergency scheme has been drawn up to ensure that the necessary organisation and response is available should this be required."

We suggest that all the Residents' Handbooks are written in clear, simple language. Help with this task can be obtained from the Plain English Campaign.

4.1.4 Content

The different types of information covered by each booklet are given in Table 1. In general, the Dounreay booklet contains more information than the other two. It includes several important sections such as local authority involvement and decontamination which the other handbooks avoid. The following account gives a brief description of the different types of information covered.

a) Introduction (All)

This section introduces the Local Liaison Committee and its members and explains the role of the Committee in creating the handbook.

We suggest that each handbook should give a contact address/telephone number for the Secretary of the Local Liaison Committee to enable local residents to convey their concerns and find out more about the Committee if desired.

b) The Purpose of This Booklet (Torness & Dounreay)

This is a useful explanatory paragraph, placing the information in the context of the major emergency plans of the area.
c) The Site (Dounreay)

This section briefly describes the power station and what happens at the site. The Dounreay handbook has an annex at the back with more details of the site and its functions.

We suggest that each handbook should have this section and a more informative annex for optional reading. A map of the layout of the site would also be useful.

d) Site Emergency Arrangements (Torness & Dounreay)

This section briefly explains the procedures which the Operator needs to follow in order to obtain a site licence to run the station. The significant role of emergency planning and the "safety in design" aspects of the plant, including the importance of safety drills, are stressed.

e) The Scope of the Emergency Plan (All)

This paragraph describes the emergency planning zone (EPZ) and the livestock monitoring zone (LMZ) for the station in question and states that the scheme is "flexible" and can be extended to a wider zone if necessary. A map of the local area with the EPZ and LMZ clearly marked would give local residents a clearer picture of the location of their home in relation to the power station and its various zones.

f) Local Authority Involvement (Dounreay)

This is an important paragraph which describes the personnel duties in various local organisations in the event of an emergency. It also includes information on what happens to school children and the elderly in such circumstances.

Each handbook should include this section along with a name and contact address/telephone number for further information about the local authorities' emergency plans. More information should be given in respect of the "special arrangements" for the care of the elderly and infirm, children and reuniting people. Information such as this could be included in outline within an appendix of further information at the back of each handbook.

g) The Site Emergency Siren (Torness & Dounreay)

This section explains the use of the site’s siren and gives details of the times and occasions when it is routinely sounded for testing. There is also some information on when the siren might be sounded outside the normal test time.
While it is appropriate that the site siren should be mentioned in each of the handbooks for the reassurance of the public, a revised form of wording which reduces the emphasis on the siren while increasing that on the police, as the means of warning the general public, should be adopted.

**h) Countermeasures (None)**

There are a number of steps, known as "countermeasures", which residents can take to reduce the risk of contamination in the event of a radiation release. Whilst each of the handbooks describes various countermeasures there is little explanation of the concept of "countermeasures" as such.

In general the public have a very scant knowledge of radiation, yet its effects are a cause of great concern and suspicion to many people. A few sentences on the nature, and most likely sources, of radiation following an accident and any simple countermeasures or precautionary decontamination steps which could be taken may be more reassuring to the public than the present information provided, particularly in the Chapelcross and Torness booklets. Such an explanation would prove a useful and reassuring introduction to the various sections on countermeasures and could be supplemented by additional information contained in an appendix.

**i) Sheltering (All)**

This section informs residents that the local police will give advice on this at the time. Some handbooks also contain point-by-point advice on precautionary measures such as:

- Closing doors, windows and ventilation systems
- Switching off fans
- Extinguishing fires and central heating
- Bringing pets indoors
- Which radio and television channels to tune to for information
- What to do if working on farmland at the time of the accident.

Residents should be informed about sheltering procedures in advance. Also all handbooks should include a point-by-point checklist detailing precautionary measures to be taken in the event of an accident and a contact name and address for further information and advice.

**j) School (Dounreay)**

This brief section informs parents of the procedures which are in place for children who are at school when an accident occurs. A similar section explaining in more detail the emergency and evacuation procedures for school children in the event of an accident should be included in all handbooks.
k) Preparation for Evacuation (Dounreay)

This section gives sound practical advice, with step-by-step instructions on how to prepare for leaving home in the event of an accident at the power station.

We suggest that this section should be included in all handbooks.

l) Temporary Evacuation (All)

This section gives advice on where to go and what to take with you if temporarily evacuated. The advice stresses that residents must report to the local assembly centre, to be accounted for before leaving the area.

We recommend that the number of an emergency advice and information line in the event of evacuation should be included in this section.

m) Stable Iodate Tablets (All)

The distribution of these tablets by the police in the event of an accident may cause some alarm amongst residents. This is particularly true if residents do not know what the tablets do and the recommended dosage. On the other hand, failure to distribute the tablets was cited as a significant alarm factor after the Three Mile Island incident.

Each handbook includes a section explaining the use of stable iodate tablets. However, some are more clear and easily understood than others (see Section 4.1.3 above).

n) Decontamination (Dounreay)

This is a potentially alarming word which ought to be explained. An explanation reassures residents that emergency plans are in place. Dounreay's handbook gives a concise description of what this process involves and under what circumstances it would take place.

We suggest that a section explaining "decontamination procedures" should be included in each handbook.

o) Farming Implications (All)

Since most nuclear plants are situated in rural locations this is an important section for both farmers and residents. It is worth emphasising that the Department of Agriculture and Fisheries for Scotland is responsible for emergency planning with regard to agriculture.
All handbooks should refer to specific emergency plans for agriculture along with an appropriate contact address/telephone number. This would enable those interested in the farming implications of an accident to obtain more detailed information. Advice to gardeners and allotment holders, separate from that for farmers, should also be provided.

p) Returning Home for Short Periods (Torness & Dounreay)

This paragraph explains when and under what conditions it may be possible to return home but the information is very vague.

More detailed information on the reasons for temporary evacuation should be given. It should be stressed that there must be a very pressing need for someone to be allowed into an exclusion zone.

q) Action After the Event (Dounreay)

This is basically a checklist of "do's" and "don'ts" on general household matters once residents have returned home. The list includes commonsense advice on domestic food, water and cleansing procedures. This section at present features only in the Dounreay handbook; it should be included in every handbook.

r) Information (Torness & Dounreay)

This concluding section gives details about how information will be provided to residents during the state of emergency. It also includes details on how to obtain more copies of the handbook (free of charge).

This section should be more forthcoming about extra information, not provided in the booklet. References to the various Regional Emergency plans and where to find them could be included, as could a list of the libraries which hold the stations full emergency plans. In addition, the fact that most stations have a visitors centre could be publicised here along with details of when and how the public may visit the site.

s) Checklist (Dounreay)

At present this section only appears in the Dounreay handbook. It is a useful tear-off section at the back of the handbook which provides a checklist of things to do in the event of an emergency. On the reverse of this checklist is an "Evacuation Form", for residents to complete and hand in to the local "Assembly Centre". This gives details of where the occupants of the household can be found, once the home has been evacuated. These sections would be much more useful if they were separate from each other. At present, once people have handed in their evacuation forms they are unable to refer to the checklist on the reverse.
All of the nuclear power station operators should follow the example of Dounreay and include a similar tear-off section in their own handbooks. It provides essential information which, in the event of an accident, would go some way towards allaying fear and panic amongst residents.

One or more checklists detailing the actions to be taken under each of the separate headings of Sheltering, Temporary Evacuation (to the "Rest and Reception" centre) and Returning Home (after the emergency) should be provided by each of the operators, possibly in the form of a card separate from the handbook. The information in relation to returning home should include a list of "do's" and "don't's" as well as the telephone numbers and addresses of who to contact for further information.

1) Further Observations

Given the unpredictable nature of Scottish wind directions it is possible that some people will have to pass into a zone of greater danger on their way from their home to the evacuation centre. Consideration should be given by each of the operators to the designation of a secondary evacuation centre, as at Torness, to be used in certain circumstances or when the primary evacuation centre is itself unavailable.

Only the Chapelcross booklet has a date on it. As it is important that people should be acting on current information we recommend that each handbook should carry a date of publication or last revision.

4.2 OPERATORS' EMERGENCY PLANS

We received copies of the Emergency plans from three of the four nuclear power stations - Torness, Dounreay and Chapelcross. It should be borne in mind that the Operators' Emergency Plans are designed to ensure a rapid response to an emergency by the various personnel involved and have not been written for the lay reader. The three plans vary considerably and therefore a direct comparison between them is difficult. However, it is possible to provide a brief assessment of each plan in terms of its design and content.

4.2.1 "Torness Power Station, Emergency Plan"

This 28 page, A4 sized book, published in May 1987, is clearly designed to accompany the handbook for local residents. It is sub-sectioned into chapters and paragraphs and these are listed at the front of the book (Appendix II). It is worth pointing out, however, that no page numbers are given and that this makes quick referencing difficult.
In general, the information contained in the book is detailed and comprehensive. For instance, the sections on the role of station staff and emergency teams in the event of an accident (B.3 and B.4) give precise and factual information. There is also a separate section (B.7) listing the station facilities, such as "The Medical Centre" and "The Health Physics Baseroom", to be used in the event of an emergency. However, there is no map to illustrate the location of these facilities. Another section (C.5) lists the responsibilities of external authorities, organisations and services. This is a well structured and informative section which describes who does what in the event of an emergency.

One particularly user-friendly feature of the book is the table charting the conditions for taking emergency action (page 13). Unfortunately, the paragraph introducing this table is not particularly easy to read or understand:

"In the event of this information indicating abnormal conditions the Shift Principal Engineer will carry out an immediate investigation and assessment. If the situation demands, the Shift Principal Engineer will initiate actions in accordance with the following table..."

Finally, the section "Exercising and Review of the Emergency Plan" (section D) is extremely brief and could quite easily be expanded to include more detailed information, particularly with regard to how the Emergency Plan is or might be reviewed.

An index of "Further Contacts" would be a welcome addition as would a section on suggested "Further Reading".

The design and layout of the book does not really encourage people to read it in any detail. As in the handbook, only one colour (green) is used. Given the extensive sub-sectioning of topics the book could benefit greatly from colour coding. Furthermore, apart from two "flow diagrams" to show the notification network for on-site and off-site emergencies there are no illustrations, diagrams, maps or graphs.

Despite these drawbacks the plan is fairly comprehensive and contains enough information to satisfy most people. Any queries not answered by the information in this book are probably of a specialised nature and would need to be directed to the information office at the station itself.

4.2.2 "Dounreay Emergency Plan"

This document is 21 pages long and was last updated in February 1990. We understand it will be updated again in 1992. The contents of the plan (Appendix III) indicate the information included.
Although the plan is arranged by numbered paragraphs (1 to 95) the information itself is organised in a somewhat haphazard manner. There are, however, sections on "Countermeasures" (2.2) and the "Activation of Emergency Arrangements" (3.2). In addition, the sections on "Exercises and Training" (6.0) are more informative than the corresponding paragraphs in the Torness plan.

As with the plan for Torness, an index of further contacts and a list of further reading would be helpful.

Although the language throughout the plan is relatively straightforward, if necessarily technical, it is less user-friendly than the plan for Torness. Also, as with the Torness plan, there are no illustrations, maps, graphs or colour. This is somewhat surprising given the good design of the Dounreay Residents' Handbook. In essence, whilst the content of the plan is informative and perfectly adequate, its presentation detracts from its overall usefulness in providing information to members of the public.

While we acknowledge that the plan is designed for use by station personnel in the event of an emergency and has to be submitted to the NII for approval under the licensing conditions, we believe that this should not prevent it from being clearly written and well structured. There will always be a problem in striking a balance between technical accuracy and plain language for lay readers. On this point we understand that Dounreay will be considering possible improvements in their 1992 revision.

4.2.3 Chapelcross "Emergency Scheme Manual" and "Outline of District Emergency Scheme"

Together, these two books provide the information which the Emergency Plans for Dounreay and Torness provide individually. The information in the two books is listed on their respective contents pages (Appendix IV) and it is worth pointing out that these are the only plans which actually indicate on which pages specific information can be found.

The books have basically the same format as the Residents' Handbook - A4 pages bound between thin blue cardboard covers. It is unlikely that they would stand up to much wear and tear from public use.

The "Manual" was last printed in December 1986 and the "Outline" in June 1989. We understand that both books are available at Annan public library near Chapelcross power station.
The "Manual" is split into two sections. Section 1 is well arranged, clearly written and generally more useful to the public than Section 2 which is somewhat complex and too detailed for general public consumption. Throughout the "Manual" there are several references to "CXPP". This means nothing to the uninformed reader and there is no explanation of it.

The "Outline", meanwhile, is arranged into numerous sections and sub-sections and is generally more straightforward and informative than the Residents' Handbook. Indeed, it contains some information that is included in the Residents' Handbooks of Scotland's other nuclear power stations but not the handbook for Chapelcross.

As with the Emergency Plans for the other stations there are no maps, photographs or illustrations in the books for Chapelcross, although the "Outline" does have a flowchart indicating the personnel to be informed at the 'standby' and 'alert' stages and the "Manual" has one illustrating the "Emergency Organisation Management". In addition, the "Manual" has several tables relating to "who is where" on site in the event of an emergency. This marks a move towards more effective use of graphics which help break up the text and render the information more digestible for the reader.

Taken together, the "Manual" and "Outline" represent an Emergency Plan which provides the general public with most of the information they may require. However, like the Chapelcross Handbook, both plans could benefit greatly from being updated, redesigned and reorganised.
CHAPTER 5: USEFULNESS OF THE RESIDENTS' HANDBOOKS

5.1 INTRODUCTION

An attempt was made to compare the usefulness of the Residents' Handbooks by sending copies for the installations at either Chapelcross, Dounreay or Torness to a number of volunteers along with a copy of the SCC questionnaire (Appendix V).

Each of the volunteers was asked to imagine that their family lived within the Emergency Planning Zone (EPZ) of the particular station to which the handbook related and consisted of themselves, their spouse, two five year old children, who were at school, and an elderly relative.

Based upon information contained within the handbook they had to decide what their course of action might be if there was an emergency at the reactor. The same questionnaire was used in all cases.

No Residents' Handbook was distributed for Hunterston Power Station because one was not made available to us.

5.2 HOW OUR VOLUNTEERS FARED

Seventeen completed questionnaires were returned for Chapelcross, 11 for Dounreay and 13 for Torness. The volunteers were all members of the SCC Consumer Network and live all over Scotland. Some of them do live close to nuclear installations, but the majority do not. For most of them, therefore, the only knowledge they had of the stations and procedures was contained within the Residents' Handbook.

The following tables give the breakdown of responses to the questionnaire. Responses are listed in the left column of each table while the figures indicate the number of respondents giving a particular answer. Some of those who responded gave more than one answer to a particular question; therefore the total number of answers listed in a column may exceed the number of respondents.
5.2.1 "How do you know that an emergency, e.g. a fire, has occurred at the reactor?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police alone*</td>
<td>12</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Sirens alone</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Police and sirens</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Radio and TV</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

* This includes any responses indicating that members of the community might also assist the police (at Dounreay only).

The Chapelcross handbook has obviously got the message across better than the others that any warnings to the public will be given by the police.

Several of our volunteers commented in relation to the Torness Residents' Handbook that it was incongruous that the first two paragraphs of page four should give so much detail in relation to the siren, whilst the third paragraph told the public to ignore it. Possibly this unnecessary emphasis has led to the attitude that if the siren sounds and it's not the test-day then there must be an emergency. Alternatively many may have "switched off" by the time they reached the third paragraph and simply did not notice the warning.

5.2.2 "Who advises you what you should do?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police alone</td>
<td>14</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Radio/TV alone</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Police or media</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

24
The message from Dounreay has reached all of our volunteers who received this booklet. The others may be taking a more realistic approach and assuming that by the time the police arrive at their doorstep advice will have already been given on radio or television. One of our volunteers, who lives near Torness, estimates that there are between 400 and 500 people living within three kilometres of the site and questions whether the local police would have the resources to do all that is expected of them.

### 5.2.3 "What could you be asked to do?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelter only</td>
<td>10</td>
<td>2</td>
<td>2(+1)</td>
</tr>
<tr>
<td>Evacuate only</td>
<td>2</td>
<td>1</td>
<td>(+1)</td>
</tr>
<tr>
<td>Either shelter or evacuate</td>
<td>4</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Take iodine tablets only</td>
<td>-</td>
<td>1</td>
<td>(+1)</td>
</tr>
<tr>
<td>Take iodine plus shelter or evacuate</td>
<td>4</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

(+1 = one person indicated that he or she would shelter OR take stable iodine tablets OR evacuate)

Perhaps the spread of responses has more to do with the open nature of the question rather than lack of guidance in the Residents' Handbooks. It is interesting to note, however, that more than half of our volunteers expected to shelter or evacuate and take stable iodate tablets after reading the Dounreay handbook, while only a quarter of those reading the Chapelcross handbook expected to take the same actions.
5.2.4 "If you are asked to shelter, what are you expected to do?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Go indoors only</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Go indoors, reduce air entry/circulation only</td>
<td>5</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Go indoors/reduce air flow/listen to radio/TV</td>
<td>10</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Leave the area</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Again Chapelcross appears to have failed to communicate as well as the other stations. Torness achieved the best response. The fact that two people would leave the area may indicate their fear of possible developments, or that more effort should be made to differentiate between sheltering and evacuation.
5.2.5 "If you are asked to leave your home,

a) What are you expected to do?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pack essentials (clothes/medicines)</td>
<td>-</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Use own/policet  transport</td>
<td>8</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Secure home</td>
<td>6</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Report to reception centre</td>
<td>15</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Will be advised at the time</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Notify relatives/take their phone nos with you</td>
<td>-</td>
<td>7</td>
<td>-</td>
</tr>
</tbody>
</table>

While an open question such as this can be expected to lead to a wide range of answers it is clear that many of those who received the Dounreay Residents' Handbook have referred to the checklist at the back of the booklet and this has formed the basis for their answers. The Torness handbook has caused the focus to fall on transport and reporting to the reception centre, while the Chapelcross handbook has laid the emphasis more on the reception centre.
b) "What should you take with you?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Nothing&quot; only</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>&quot;Don't Know&quot; only</td>
<td>11</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clothes</td>
<td>3</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Medicines</td>
<td>3</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>Special foods</td>
<td>-</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Valuables/documents/personal effects</td>
<td>-</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Toiletries</td>
<td>-</td>
<td>-</td>
<td>9</td>
</tr>
</tbody>
</table>

As in the first part of this question, the Dounreay checklist has formed the basis of the answers from each of the volunteers receiving this booklet. Significantly, 14 of the 17 who received the Chapelcross booklet had no idea what they should take with them, the remaining three mentioning both medicines and clothes.
c) "Where will you be asked to assemble?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newington School Annan</td>
<td>9</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Pennyland School</td>
<td>N/A</td>
<td>11</td>
<td>N/A</td>
</tr>
<tr>
<td>Countess Youth Club Dunbar or Community/Day Centre</td>
<td>N/A</td>
<td>N/A</td>
<td>7</td>
</tr>
<tr>
<td>Eyemouth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unspecified Reception Centre</td>
<td>7</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Will be advised</td>
<td>4</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Transport pick-up point</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Annandale &amp; Eskdale</td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>D C Chambers</td>
<td>1</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

There is no doubt in the minds of those who read the Dounreay handbook that Pennyland Primary School is the place to report to. More than half of those reading both the Chapelcross and Torness handbooks were able to name the relevant reception points while the remainder maintained a little doubt. This positiveness on the part of those who read the Dounreay handbook may be double-edged; there is absolutely no doubt about where they should go - but what if it is unavailable due to being affected by the accident itself, for example because it is directly downwind? The question is also raised that some people may have to pass through a zone of greater danger to reach the reception centre than if they went in the opposite direction. This would seem to be the principal advantage of Torness having designated two reception centres.
d) "How will you reach this assembly point?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own transport</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Police transport</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Both of the above</td>
<td>13</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Will be advised</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Don't know</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>By foot</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

Each of the handbooks seems to have made almost equal impact on this question in terms of informing people of the options.

A number of our volunteers were concerned, though, that people without cars making for a central point would be walking unprotected outdoors if sheltering was abandoned in favour of evacuation because of a worsening situation.
e) "How will your children be looked after?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arranged by:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School/Local Authority</td>
<td>2</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Health Authority</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Police</td>
<td>2</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Don't know/not specified</td>
<td>12</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Should be collected from school by parent</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Evidently Chapelcross and Torness have failed to convey their information as well as Dounreay has on this matter. Yet it is only a matter of wording, as the information provided is almost identical in all three booklets. The provision for children was one of the single largest causes of concern to our volunteers in that many of them wanted to know what the arrangements were likely to be. It was stated by several of them that they did not think they would evacuate without trying to collect the children from school while the arrangements were so vague.
f) "What care will be taken of your relative?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arranged by:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Police only</td>
<td>4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Health Authority only</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Police and Health Authority</td>
<td>7</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Don't know/ not specified</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

More than half of those reading the Dounreay booklet thought that the police alone would have responsibility for transporting their elderly relative despite a clear statement in the booklet that both the police and the Health Authority will be involved. The lack of impact of this information reinforces the suggestions made by many of our volunteers that some form of highlighting would be useful.

Many of them were also concerned about the special arrangements being made to collect the infirm. Would this mean that able-bodied persons would be expected to abandon the sick and elderly if their evacuation wasn't arranged for the same time?
g)(i) "Under what circumstances might you need to return home temporarily?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To feed family pets</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Look after farm animals</td>
<td>10</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Turn off gas/electricity/secure premises</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>To collect forgotten items eg clothes, toys, medicines</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Account for a missing relative</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Don't know/not clear</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

g)(ii) "What should you do?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact police</td>
<td>13</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Don't know</td>
<td>3</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Just go</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>
More than half of those reading the Chapelcross booklet expected to be allowed home to look after farm animals, while three-quarters of those reading this booklet knew that permission would be required from the police. Interestingly, more than a third of those reading the Torness booklet expected to be allowed back home to feed pets while less than a quarter of them mentioned farm livestock. About one-fifth of each group expected to be allowed back to turn off gas or electricity. Of those who would contact the police several implied in their answers that it was more a case of advising the police rather than seeking permission (one for Chapelcross, three for Dounreay and three for Torness).

Only the Chapelcross respondents consistently reported that permission would be necessary in order to return to the area.

---

**b) "What arrangements will be made for keeping your home safe and secure while unoccupied?"**

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None ie own responsibility</td>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Police responsibility/police patrols</td>
<td>2</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Don't know</td>
<td>8</td>
<td>-</td>
<td>11</td>
</tr>
</tbody>
</table>

The Dounreay booklet specifically states that the police will patrol the area to safeguard property while the Torness booklet makes no reference at all to this subject. It is stated in the Chapelcross booklet that persons wishing to re-enter the evacuation zone should contact the police. However, the earlier warning to householders in the Chapelcross booklet to secure their own property appears to have swung the perception of responsibility towards the household (seven respondents).
i) "What decontamination procedures might you have to undergo?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take iodate tablets</td>
<td>8</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Have a shower/bath</td>
<td>-</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Both of the above</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Change clothing</td>
<td>-</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Don't know</td>
<td>8</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Involvement of works medical centre</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Avoidance of certain foods</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Except for those who received the Dounreay booklet there appears to be virtually no appreciation that simple, but significant, decontamination procedures are within everyone's grasp by having a thorough shower and a change of clothes. This is probably due to the generally poor public perception of the nature of radiation and its effects. Just under half of those receiving the Chapelcross booklet and three-quarters of those receiving the Torness booklet thought that decontamination involved only taking stable iodate tablets. Just under half of those responding to the Chapelcross booklet and a quarter of those responding to the Torness booklet admitted to not knowing what was involved.
j) "When will you be reunited with the rest of your family?"

<table>
<thead>
<tr>
<th>Answers Received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't know</td>
<td>10</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>As soon as possible</td>
<td>4</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>After 2-3 days/when the worst is over</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>At reception centre</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Well over half of those answering from the Chapelcross booklet said that they did not know the answer to this question compared to only one answering from the Dounreay booklet and about a quarter of those answering from the Torness booklet. While none of the booklets actually gives an answer to this question, it seems that a more positive approach is encouraged by the way in which the information is conveyed in the Dounreay and Torness booklets, both of which deal with it in the context of the evacuation centre under the heading of "Temporary Evacuation" and use the phrase "as soon as possible".

As already noted many of the volunteers were unhappy at the lack of specificity about the arrangements for reuniting families and would like to have seen more information on both how this would be achieved and what would actually happen to their children.
k) "How soon will you be allowed to return home permanently?"

<table>
<thead>
<tr>
<th>Answers Received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't know</td>
<td>6</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>A few days</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A few weeks</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>After the alert is over (unspecified expectation of timescale)</td>
<td>8</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

None of the booklets actually deals with this issue as it is likely to vary according to the circumstances of the emergency. The answers have more to do with the perceptions of our volunteers than with any information in the booklets. It might be appropriate for the authors of the booklets to indicate more strongly that the end of the emergency at the station does not signal an end to the dangers from the emergency for those living and working in the area.
I) (i) "Once you are allowed home what are you advised to do?"

<table>
<thead>
<tr>
<th>Answers Received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain contact with the authorities/seek advice about local produce</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Take care with food</td>
<td>2</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>Listen to Radio/TV for further information</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Rewash any laundry</td>
<td>-</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>Bathe/shower</td>
<td>-</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Wash crockery/utensils</td>
<td>-</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Don't know</td>
<td>13</td>
<td>-</td>
<td>9</td>
</tr>
</tbody>
</table>

It appears that the Chapelcross and Torness booklets were the least helpful in advising residents on how they should proceed after the emergency as three-quarters of those answering from the Chapelcross booklet and two-thirds of those answering from the Torness booklet gave straight "Don't knows" to this question. Only two of those answering from the Chapelcross booklet and none of those answering from the Torness booklet considered that taking care with food was appropriate in this context. As can also be seen, only those with the Dounreay booklet considered washing themselves, crockery and utensils or re-washing any laundry. Several of our volunteers commented that there should be more information on what to do when returning home, such as considering which foods left in the house during the emergency could be kept or should be discarded.
I (ii) "Once you are allowed home what are you advised not to do?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drink milk</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Eat vegetables</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Consume locally produced crops unless safe</td>
<td>4</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Take more than one dose of iodine</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Don't know</td>
<td>12</td>
<td>-</td>
<td>8</td>
</tr>
</tbody>
</table>

Only about a third of those answering from the Chapelcross booklet made any connection between the information contained under the heading of "Farming Implications" and their own food supply, whether bought or home grown. Similarly, less than half of those answering from the Torness booklet made this connection with the vast majority of both groups stating that they didn't know. As before, an open question such as this could have drawn many answers, yet all of those who had read the Dounreay book gave the same answer.
m) "Who will you be able to contact for further information or advice?"

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Liaison Committee</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Information Centre</td>
<td>12</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Police</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Unspecified &quot;Authorities&quot;</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Don't know</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Atomic Energy Authority/Government Adviser</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

In each of the areas it seems that the vast majority of requests for further information will be directed at either the appropriate Information Centre/Local Liaison Committee or the police, with the various constabularies receiving about one quarter of these requests. This is not a surprising expectation given the involvement of the police in almost all other aspects of the emergency. It could prove to be quite a problem for any local police station given the increased volume of work they would already be expected to cope with as a result of the accident. One way of reducing this responsibility would be to reduce the prominence given to the police in the information sections of Dounreay and Torness booklets.

No one with the Chapelcross booklet made mention of the "special telephone number" for information which would be advertised.

Although only one person gave the Government Technical Adviser (GTA) as a possible source of information in this context, there is an expectation amongst those receiving the Dounreay booklet that he or she should be contactable, given the prominence of the GTA role in the Emergency Plan. This would suggest that the references to this person are misleading.
5.3 CONCLUSIONS

Based on the responses given to all of the above questions it is clear that the booklet produced by the Atomic Energy Authority for Dounreay was consistently the most successful at advising the respondents on how they should proceed. Proportionately more people knew the correct course of action more often after reading the Dounreay booklet than was the case for either of the other booklets. Although Torness and Chapelcross were successful on two or three occasions each, those who had read the Dounreay booklet were most consistent in identifying the correct course of action, or had the fewest "don't knows" on 12 out of the 17 questions, or parts of questions. With such a small sample size it would be dangerous to extrapolate this information and claim that it is definitive. However, the consistency of the responses for the Dounreay booklet suggests that it is more effective at getting the message across than the other two.
CHAPTER 6: OUR VOLUNTEERS' PERCEPTIONS OF THE RESIDENTS' HANDBOOKS

6.1 INTRODUCTION

After having used the Residents' Handbooks to answer the questionnaire about what to do in an emergency, our volunteers were asked to complete a supplementary questionnaire of five questions regarding their perceptions of the handbooks (Appendix VI). It should be pointed out that the volunteers who are members of SCC's Consumer Network are not a representative cross-section of the population.

The first three questions asked the volunteers to rate the booklets against predetermined options. Each of the questions, with a numerical breakdown of the responses received and a summary of the written comments, is listed below.

6.2 RESPONSES TO THE SUPPLEMENTARY QUESTIONNAIRE

---

a) How easy was it to understand the booklet?

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy</td>
<td>8</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Fairly easy/some difficulties</td>
<td>8</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Rather difficult</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Very difficult</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Mention below any items which you found difficult to read, noting subject-matter and page number.

Chapelcross

Comments received in relation to the Chapelcross booklet indicated that our volunteers were not happy with it more for its omissions than the information included. No one reported difficulties with any particular part of the booklet,
but they did comment on its lack of information and comprehensiveness. The layout of this booklet was also mentioned as was the need to underline or headline more important points.

**Dounreay**

Only the information on wrapped, covered and stored food on page 14 of the Dounreay booklet was specifically mentioned as having caused a problem. This was due to the ambiguity of the phrasing of this advice. Are tins of food stored in a cupboard acceptable or must they have been kept in a refrigerator? What about eggs? Other comments received suggested that the sentence structure was too complicated and that the introduction on page 1 could be simplified.

**Torness**

Only the Torness handbook came in for detailed criticism from our volunteers in response to this question. Two of them indicated that they had problems with the section about the emergency siren (page 4); "Why was all that detail given when it wasn't relevant to the public?". Two others identified pages 2 and 3 as being heavy going and long-winded while another two identified pages 6 (stable iodine tablets) and 8 (returning home) as being areas where more questions were raised than answered.

---

**b) How informative did you find the handbook?**

<table>
<thead>
<tr>
<th>Answers received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very informative</td>
<td>5</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Fairly informative, some uninformative bits</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Rather uninformative</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Very uninformative</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

*Mention below any items which you found uninformative*

43
Among the items consistently referred to as having been uninformative by our volunteers, in all three booklets, were the "special arrangements" for reuniting families, taking care of schoolchildren and taking care of the elderly. What to do about pets during an evacuation was also of considerable interest. They felt that the information given in the various booklets regarding chains of command, internal procedures and consultation processes were not particularly informative and that perhaps these parts could be relegated to a less prominent position in the Dounreay and Torness booklets with more vital information such as checklists occupying the first few pages.

As in the previous question the emergency siren information for Torness was regarded as being uninformative.

In relation to the Chapelcross booklet more information was requested on water contamination, sheltering, suitability of the iodate tablets for the elderly and the young and what to take (and not to take) to the reception centre in the event of evacuation.

Although the Dounreay booklet states that the Northern Constabulary holds stock of stable iodine tablets, neither the mechanism for, nor the circumstances of, their distribution is identified.

Our volunteers who received the Torness booklet identified the information on pages 4, 5, 6, 7 and 8, ie the emergency siren, arrangements for keeping homes safe, sheltering, temporary evacuation, stable iodine tablets, farming implications and getting information as less than informative. They also felt that information should have been provided in relation to decontamination, returning home permanently, possible contamination of food and how to seal up a house, including what to do about chimneys.
c) How straightforward did you find the advice or instructions to follow?

<table>
<thead>
<tr>
<th>Answers Received</th>
<th>Chapelcross (17)</th>
<th>Dounreay (11)</th>
<th>Torness (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very straightforward</td>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Fairly straightforward some difficulties</td>
<td>10</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Rather difficult to follow</td>
<td>-</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Very difficult to follow</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Mention below any advice or instructions you found difficult to follow, noting subject-matter and page number.

Concern was expressed that, although the instructions and advice were generally easy to understand, the practicalities of carrying out the instructions could lead to problems. It was observed, more than once, that those without cars going to the pick-up points may, by implication, have to be exposed to higher levels of radiation than if they stayed at home. Implementation of some of the instructions may be difficult due to their vagueness and omission of detail, particularly in relation to the housebound.

The role of the police was also a source of great concern. It seems from the booklets that they will be involved in the initial alerting of the public, evacuation of the public, evacuation of the infirm, issuing of iodine tablets, control of entry to the area and supplying of advice and information, as well as any other policing roles which might be expected to fill their normal working day. Concern was expressed that if the public waited for the police to do all that was expected of them a lot of time would be wasted.

Some of our volunteers used this question as an opportunity to query the accuracy of the information regarding radio and television broadcasts. Recent changes mean that some new stations have emerged since the publication of the booklets which we obtained and that the radio frequencies on which some other stations broadcast have changed.
The criteria for returning home were also questioned here. Some people indicated in their replies to the main questionnaire that they expected to be allowed home to switch off gas and electricity supplies, feed pets and collect medicines, clothes, toys, books and other forgotten items. This would suggest that, with the exception of the Chapelcross booklet, the message regarding restricted access to the area has not been adequately made.

d) "What additional advice would you like to see included in the handbook? Any other comments or suggestions in relation to the handbook or questionnaire?"

Most notable were the comments that the booklets could benefit from having more pictorial instructions, flow charts, diagrams or illustrations, especially the one produced for the Chapelcross area. In keeping with these suggestions one of our volunteers, who is a schoolteacher, suggested that the reading age of the Dounreay booklet is too high. If this is true it would apply to all three of the booklets. Others commented that banner headlines could be used to draw attention to important points while some suggested that important information could be summarised in the form of checklists at the beginning of the booklets.

The need for additional advice was identified in relation to home security, decontamination measures, reuniting families, and an outline of what to do once the emergency is over for both the Chapelcross and Torness booklets.

All three booklets were felt to be deficient in relation to pets, "special arrangements", signs of contamination and the hazards posed by radiation to the health of individuals, the reliance upon the police for so many tasks and the expectation that people would follow the instructions rather than make their own way out of the danger area without informing anyone.

One person reading the Dounreay booklet wanted no more advice at all while several others reading the Torness booklet wanted more advice in general but also specifically in relation to the effects of iodine and stable iodate tablets.

There was an unrealistic expectation from recipients of all three booklets that they should contain some information regarding the possible timescales of an accident.
CHAPTER 7: GENERAL CONCLUSIONS AND RECOMMENDATIONS

Information for people who are interested in the emergency arrangements for Scotland’s nuclear power stations is not always as easy to find as might be hoped.

Once located, the information, while undoubtedly satisfying the Nuclear Installations Inspectorate’s requirements, is of variable quality and presented in a variety of styles.

7.1 RESPONSIBILITY FOR EMERGENCY ARRANGEMENTS

Given the confused nature of the allocation of responsibility for emergency arrangements at present, SCC believes that the legal basis for dealing with emergencies should be reviewed.

Recommendation 1

A simplified chain of command should be devised with responsibility for advising on coordination placed with one Government Department irrespective of the circumstances of the emergency.

Recommendation 2

The arrangements under which local authorities and other public bodies are expected to contribute to any nuclear emergency should be formalised so that their duties and responsibilities are clearly defined in law.

7.2 PROVISION OF INFORMATION

The arrangements about the provision of information should also be reviewed. At present there are big differences in the quality and content of the information provided by the operators of Scotland’s nuclear power stations. Although station operators will need to give site specific information with regard to local topography, population distribution etc. there should be a common minimum standard of information provision.

Recommendation 3

There should be a common minimum standard of information provision so that people living near any of Scotland’s nuclear installations have equal access to clear, high-quality information.
At present, each nuclear power station has a different EPZ. Consequently people living near nuclear power stations do not have equal access to information. For example, someone who lives three kilometres from Torness will receive an information handbook whereas someone who lives three kilometres from Hunterston will not.

**Recommendation 4**

Information should be provided for all those living within a standard radius from the centre of each installation irrespective of the reference accident.

Information for members of the public should be kept under constant review and updated at regular intervals. A publication date should be given on all information so that everyone can be sure they are acting on the most recent advice.

**Recommendation 5**

Information should be updated at standardised regular intervals.

**7.3 AVAILABILITY OF INFORMATION**

A uniform policy, prescribed by statute, should be adopted towards the availability of information regarding nuclear emergencies.

** Recommendation 6**

The information should be made available at each of the libraries, or branch libraries, within a specified radius of a nuclear installation, (for example within a ten miles radius) and other copies of this information should be made available within the main public reference library of the District or Region in which the installation lies.

**7.4 RESIDENTS' HANDBOOKS**

**7.4.1 Language**

There is room for improvement in the style of language used in parts of the Residents' Handbooks where our volunteers had problems in interpreting the information.

**Recommendation 7**

All the information for members of the public should be written in plain language.
7.4.2 Design

All the booklets examined were largely bereft of illustrations. In view of the contribution which they could make in the explanation of unfamiliar issues and concepts to the reader it is regrettable that more use has not been made of graphics.

Given that certain other publications of the nuclear power industry, such as "Here be no dragons" (SSEB 1987), have had no expense spared on full colour production and artist's graphics it seems surprising that the same techniques were not also used for the Residents' Handbooks.

Recommendation 8

SCC recommends that operators should use good-quality, informative graphics and, where appropriate, full "attention-grabbing" colour should be used in the Residents' Handbooks.

7.4.3 Maps

Each of the handbooks should provide basic information regarding the location of the installation and evacuation centres on one or more maps which should be scaled.

A map of the local area with the EPZ and the LMZ clearly marked would give local residents a clearer picture of the location of their homes in relation to the plant and its various zones.

Recommendation 9

Scaled maps should be included in the Residents' Handbooks which show the location of the installation, the EPZ and LMZ, the evacuation centres and a site plan.

7.4.4 Content

Some of the topics covered in the Residents' Handbooks need to be expanded in terms of the information they contain. Additional information also needs to be covered under new headings. All the handbooks should include information about the following topics:

*the site of the installation, its layout and operating procedures. This should include a map of the site and an annex of more detailed information;
*the nature and sources of radiation following an accident;
*sheltering procedures;
*preparing for evacuation;
*countermeasures;
*the use of stable iodate tablets;
*decontamination procedures;
*emergency and advice information lines which can be contacted in the event of evacuation;
*the "special arrangements" for the care of children, the elderly, the infirm and how people will be reunited with each other;
*advice for farmers;
*advice for gardeners and allotment holders;
*what to do on returning home;
*the Regional Emergency Plans and where to find them;
*the Power Station Emergency Plan and where to find it;
*the Local Liaison Committee and how to contact them;
*the power station visitors centre.

Recommendation 10

The content of all the Residents' Handbooks should be reviewed. Operators should consider including new sections of information not already covered. A reference to the list of topics given above and Table 1 which compares the subjects covered by different Handbooks would provide a checklist of things to include.

7.4.5 Checklists

All of Scotland's nuclear power station operators should follow the example of Dounreay and include a similar tear-off checklist and evacuation form in their own handbooks. It provides essential information which, in the event of an accident, would go some way towards allaying fear and panic amongst residents.

Recommendation 11

One or more checklists detailing the actions to be taken under each of the separate headings of Sheltering, Temporary Evacuation (to the "Rest and Reception" Centre) and Returning Home (after the emergency) should be provided by each of the operators, possibly in the form of a card separate from the handbook. The information in relation to returning home should include a list of "do's" and "don'ts" as well as the telephone numbers and addresses of those to contact for further information.
7.5 OPERATORS' EMERGENCY PLANS

7.5.1 Language

There is room for improvement in the style of language used in parts of the Operators' Emergency Plans. Complicated passages should be rewritten in plain English which uses a minimum of technical jargon.

**Recommendation 12**

Operators' Emergency Plans should be written in plain language to ensure that they can be easily understood by members of the public.

7.5.2 Design

Given the complex nature of the information contained in the Operators' Emergency Plans an attractive design and clear layout is important. The use of colour and bold headings would improve the clarity of the layout. The use of diagrams, maps, illustrations and cartoons should also be considered.

**Recommendation 13**

A more attractive design that makes use of colour and appropriate graphics should be adopted for the Operators' Emergency Plans.

7.5.3 Structure

The information within the Operators' Emergency Plans is poorly organised in places. A logical step-by-step layout should be adopted. The information should be indexed by giving page numbers on the contents page.

**Recommendation 14**

The information within Operators' Emergency Plans should be reorganised to give them a clearer structure.

7.5.4 Content

The Operators' Emergency Plans all include a wide range of detailed information. Any other information required would probably be very specialised. The content of all the plans should, however, be standardised so that the provision of information is the same for each power station.

**Recommendation 15**

All the Operators' Emergency Plans should include information under standard headings or about standard topics.
Emergency Arrangements

Torness Power Station

Information for Local Residents

Figure 1: Front cover of Torness Residents' Handbook
School

If your children are at school, do not try to collect them unless you are told to do so. They will be looked after at school and the correct action taken.

Preparation for Evacuation

If you have been told to shelter indoors, you should make preparation for evacuation, although it may not be necessary. The preparation should include:

(a) Packing suitcases with the essentials for a one or two day absence from home including warm clothing if the weather is cold.
(b) Packing of valuables including money, jewellery and important personal and/or valuable papers and documents.
(c) Packing any special foods for invalids or babies.
(d) Packing any medicines in use.
(e) Notifying any relatives who may be concerned about you. Include in your papers telephone numbers or addresses of relatives who may need to be assured of your safety.

Temporary evacuation

The Northern Constabulary will contact you should you be in the area where temporary evacuation is advised. The Northern Constabulary hold details of the number of residents and the houses within the 3 mile area and update this information at 3 monthly intervals to ensure that it is kept as accurate as possible.

In these circumstances you should use your own transport wherever possible, but transport will be provided by the Northern Constabulary when necessary. The Northern Constabulary have identified transport pick-up points relative to groups of houses and these will be made known to you at the time by them or their assistants.

You will be asked to report to the Pennyland School, Thurso where the local authorities will make arrangements for providing food and accommodation for all persons who arrive.

(l) Paying attention to the general security of your home. Make sure all doors and windows are closed and locked.
(g) Before you leave, switch off gas and electric appliances and remove plugs unless they need to remain connected, as in the case of freezers and refrigerators.
Residents leaving their homes should leave them in a safe condition by turning off fires and other gas and electrical appliances.

Arrangements will be made to ensure that family members not present at the time of evacuation (e.g. school children) are re-united with their families.

Special arrangements will be made by the Police, working in conjunction with the Health Authority, for the care of the old or ill who have to be evacuated.

ISSUE OFIODATE TABLETS

Special tablets are held by the Dumfries and Galloway Constabulary which, when taken in the prescribed dosage, lessen the effects of certain types of radioactive substances involved. These tablets will be issued by the Police. The use of these tablets is endorsed by the Local Health Authority.

FARMING IMPLICATIONS

Restrictions may be placed on the consumption of milk produced within a radius of up to 25 miles from the Works. Announcements of the area within which milk restrictions are necessary will be made via BBC, ITV and Radio Cumbria.
REFERENCES

Royal Commission on Environmental Pollution, Sixth Report. Command Paper 6618. HMSO 1976

The Accident at Three Mile Island: Comments by the Health & Safety Executive. Health & Safety Executive, 1979.

Emergency plans for civil nuclear installations. Health & Safety Executive, HMSO 1982.


The Hinkley Point Public Enquiries; a report by Michael Barnes QC. HMSO, 1990.
APPENDIX I

SCOTLAND'S NUCLEAR POWER STATIONS

<table>
<thead>
<tr>
<th>Operator</th>
<th>TOR</th>
<th>HUN&quot;B&quot;</th>
<th>DOUN</th>
<th>CHAP</th>
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<tr>
<td>SNL</td>
<td>SNL</td>
<td>AEA</td>
<td>BNFL</td>
<td></td>
</tr>
<tr>
<td>SSEB</td>
<td>SSEB</td>
<td>UKAEA</td>
<td></td>
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</table>

<table>
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<th>PFR</th>
<th>Magnox</th>
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<td>Reprocessing</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPZ (km)</td>
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<td>2.4</td>
<td>4.8</td>
<td>1.6</td>
</tr>
<tr>
<td>LMZ(km)</td>
<td>20.0</td>
<td>?</td>
<td>48.3</td>
<td>40.3</td>
</tr>
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</table>

Key to Abbreviations:

SNL...... Scottish Nuclear Limited
AEA...... Atomic Energy Authority
BNFL..... British Nuclear Fuels plc
SSEB..... South of Scotland Electricity Board
UKAEA.... United Kingdom Atomic Energy Authority
AGR...... Advanced Gas Cooled Reactor
PFR...... Prototype Fast Breed Reactor
EPZ...... Emergency Planning Zone
LMZ...... Livestock Monitoring Zone

Stations:

TOR...... TORNES
DOUN..... DOUNREAY
HUNT "B". HUNTERSTON "B" AGR
CHAP...... CHAPELCROSS
APPENDIX II

CONTENTS OF TORNESS POWER STATION
EMERGENCY PLAN

A. GENERAL

A.1. Introduction

A.2. Consequences of a Nuclear Accident

A.3. Objectives of the Emergency Organisation

A.4. Definitions

A.5. Response to the Emergency Organisation
   A5.1 Stage 1
   A5.2 Stage 2
   A5.3 Stage 3

B. THE SITE EMERGENCY ORGANISATION

B.1. Conditions for Taking Emergency Action

B.2. Persons Empowered to Declare or Cancel a Site or Off-Site Emergency

B.3. Initial Action by Staff on the Declaration of an Emergency

B.4. Function of the Station Emergency Teams
   B4.1 Damage Control Teams
   B4.2 Fire Team
   B4.3 Fire Brigade Liaison Team
   B4.4 Off-Site Radiological Survey Teams
   B4.5 Site Radiological Survey Team
   B4.6 Damage Repair Teams
   B4.7 Forward Base Teams

B.5. Functions of Key Station Personnel
   B5.1 Shift Principal Engineer
   B5.2 Emergency Controller
   B5.3 Emergency Health Physicist
   B5.4 Emergency Liaison Officer
   B5.5 Emergency Operations Engineer
   B5.6 Damage Control Engineer
B5.7 Emergency Administration Officer
B5.8 Emergency Radiochemist
B5.9 Emergency Technical Engineer
B5.10 Emergency Maintenance Engineer
B5.11 Available Station Staff

B.6. Emergency Control Centres
B.7. Emergency Facilities
B.8. Monitoring Equipment
B.9. Equipment
B.10. Transport

C. THE OFF-SITE EMERGENCY ORGANISATION

C1 The Headquarters Emergency Centre
C2 Operational Support Centre
C3 Media Briefing Centre
C4 Rest and Refreshment Centre
C5 Summary of Responsibilities of External Authorities, Organisations and Services
  C5.1 Lothian and Borders Police
  C5.2 Fire and Ambulance Services
  C5.3 Health and Safety Executive
      - Nuclear Installations Inspectorate
  C5.4 Local Authorities
  C5.5 Department of Agriculture and Fisheries for Scotland
  C5.6 Area Health Boards
  C5.7 Scottish Milk Marketing Board
  C5.8 Meteorological Office
  C5.9 Her Majesty's Industrial Pollution Inspectorate for Scotland
  C5.10 National Radiological Protection Board
  C5.11 The Scottish Office
  C5.12 Other Nuclear Sites
  C5.13 Shipping
  C5.14 Rail Traffic
D. EXERCISING AND REVIEW OF THE EMERGENCY PLAN

D1 Training and Exercises
D2 Review

E. REFERENCES

F. FIGURES

Figure 1: Site Emergency - Notification Network

Figure 2: Off-Site Emergency Standby or Off-Site Emergency Notification Network
APPENDIX III

CONTENTS OF DOUNREAY EMERGENCY PLAN

1.0 THE AUTHORITY'S RESPONSIBILITIES

1.1 Corporate Responsibilities
1.2 Scope of the Emergency Plan

2.0 CONSEQUENCES OF AN ACCIDENT

2.1 Accident Analysis
2.2 Measures to Protect Employees and the Public

3.0 THE MAIN ELEMENTS OF THE SITE EMERGENCY ARRANGEMENTS

3.1 Objectives and Responsibilities
3.2 Activation of Emergency Arrangements
3.3 Site Emergency Organisation
3.4 Emergency Control Centres
3.5 Other Key Elements of the On-Site Emergency Arrangements
3.6 UKAEA HQ Organisation and Response

4.0 ARRANGEMENTS FOR DEALING WITH THE OFF-SITE ASPECTS OF AN EMERGENCY

4.1 General Responsibilities
4.2 Government Technical Adviser and Senior Government Liaison
4.3 Off-Site Centre / Press Briefing Centre
4.4 Responsibilities of External Organisations

5.0 EQUIPMENT FACILITIES AND SPECIALIST SERVICES FOR USE IN EMERGENCY PLAN

5.1 General Services
5.2 Specialist Services

6.0 EMERGENCY EXERCISES AND TRAINING

6.1 Exercises
6.2 Training
APPENDIX IV

CONTENTS OF CHAPELCROSS
"EMERGENCY SCHEME MANUAL" AND
"OUTLINE OF DISTRICT EMERGENCY SCHEME".

Emergency Scheme Manual

Section 1 - General Principles

1. Purpose
2. Legislation
3. Definitions
4. Notification / Warning of an Emergency Situation
5. Emergency Organisation
6. Control Centres
7. On-site Information Centres
8. Off-site Information Centres
9. Communications System
10. Transport
11. Medical Services.
12. Intersite Collaboration
13. Damage Location and Repair
14. Involvement of External Organisations

Figure 1 - Emergency Organisation Management

Section 2 - Site Emergency Procedures

No.1 Action To be Taken by All Site Personnel on Hearing the Site Emergency Alarm.
No.2 Composition, Location and Responsibilities of the "Emergency Team".

No.3 Composition of the "Technical Support Team".

No.4 Equipment held in the Site Emergency Control Room(s).

No.5 Building Control Points and Nominated Building Supervisors.

No.6 Emergency Roll Call Procedure.

No.7 "Silent Hours" Call Out Procedures.

Appendix II/1 - Composition of the Emergency Team

Appendix II/2 - Composition of the Technical Support Team

Outline of District Emergency Scheme

1. Introduction

2. Definition of a District Emergency

3. Consequences of a District Emergency at Chapelcross
   
   3.1 Inhalation Hazard Down-wind from the Works Due to the Presence of Radioactive Material in the Air.
   
   3.2 Contamination Problem Arising from the Deposition of Radioactivity on the Ground.

4. Declaration of a District Emergency

5. Actions Arising from the Declaration of the Standby Stage

6. Actions Arising from the Declaration of the Alert Stage

7. Emergency Monitoring Arrangements

8. Medical Services

9. Control of Domestic Supplies and Farm Animals
   
   9.1 Milk
   
   9.2 Water
   
   9.3 Growing Crops and Farm Animals
10. District Control Centre, Information and Press Centres

Appendix - Personnel to be Informed at the Standby and Alert Stages.
APPENDIX V

QUESTIONNAIRE

EMERGENCY PROCEDURE: IMAGINARY SCENARIO

We want you to imagine that you are living less than 3 miles away from the nuclear reactor at Dounreay.

You have two five-year-old children, your spouse and an infirm elderly relative living with you, but in all other respects your own home circumstances apply.

You are at home with your relative, your two children are at school, and your spouse is at work when there is an emergency at the reactor which may affect the public.

You turn to your copy of the enclosed handbook "Dounreay Nuclear Establishment. Emergency Arrangements Information For Local Residents".

Please read through the enclosed handbook from start to finish, then refer back to it to answer the following questions. If you cannot find the answer or are unsure of the answer, do not worry, simply write down "don't know", then move on to the next question. This is a test of the suitability of the handbook not of your abilities.

1. How do you know that an emergency, e.g. a fire, has occurred at the reactor?

2. Who advises you what you should do?

3. What could you be asked to do?

4. If you are asked to shelter, what are you expected to do?
5. If you are asked to leave your home,
   a) what are you expected to do?

   b) what should you take with you?

   c) where will you be asked to assemble?

   d) how will you reach this assembly point?

   e) how will your children be looked after?

   f) what care will be taken of your relative?

   g) under what circumstances might you need to return home temporarily?

   what should you do?

   h) what arrangements will be made for keeping your home safe and secure while unoccupied?

   i) what decontamination procedures might you have to undergo?
j) when will you be reunited with the rest of your family?

k) how soon will you be allowed to return home permanently?

l) once you have returned home, what are you advised to do?

what are you advised not to do?

m) who will you be able to contact for further information or advice?
APPENDIX VI

SUPPLEMENTARY QUESTIONNAIRE

Now we would like you to answer some general questions about the Handbook. There are no "correct" answers, we simply want your point of view. Fill in your answers with a tick and give as much additional detail as you want.

1. How easy was it to understand the booklet?
   very easy ( )
   fairly easy, some difficulties ( )
   rather difficult ( )
   very difficult ( )

Mention below any items which you found difficult to read, noting subject-matter and page number.

2. How informative did you find the handbook?
   very informative ( )
   fairly informative, some uninformative bits ( )
   rather uninformative ( )
   very uninformative ( )

Mention below any items which you found uninformative, noting subject-matter and page number.

3. How straightforward did you find the advice or instructions to follow?
   very straightforward ( )
   fairly straightforward, some difficulties ( )
   rather difficult to follow ( )
   very difficult to follow ( )
Mention below any advice or instructions you found difficult to follow, noting subject-matter and page number.

4. What additional advice or information would you like to see included in the handbook? Write down suggestions below.

5. Do you have any other comments or suggestions, in relation to the handbook or this questionnaire? Write these down below.

Thank you for your help in compiling this information.