WORKING PAPER 396

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June 1984 (first draft)

Introduction

The purpose of this paper is to report some initial findings of a recently undertaken survey of the attitudes towards Sellafield of West Cumbrian people. There were a number of reasons for undertaking the survey. First to provide a complement to recent intensive inquiry into radiation concentrations and consequent possible health risks in the area around Sellafield. While it would be unwarranted to suggest that the views and concerns of the local public are likely to be of over-riding political influence i the context of related debate, it would be to contravene a sense of natural justice to suggest that they should not be known or taken into account. Second, to provide an adequately reliable representation of local opinion: views of particular individuals are evident in the press, media and at public meetings, but these cannot be taken as representative of the views of a wider public. Given the interest that debate over Sellafield has generated, it is perhaps surprising to realise that there has been no other survey of the kind reported below. Third, to contribute to the 'science' of risk perception and to knowledge about coping with risk by providing and later analysing original field data on people's opinions, fears and preferences. In this country there can be few contemporary risk contexts as poignant as Sellafield, providing a telling alternative to the more artificial contexts in which knowledge of the social 'science' of risk assessment is often (unavoidably?) pursued.

The survey reported below was undertaken in April 1984. Its timing is significant. Some months earlier, in November 1983, a coincidence of events had brought potential health risks arising from discharges of radioactive waste from the British Nuclear Fuels waste reprocessing operations at Sellafield back to the attention of the public at large. These events were:

(i) activities of the environmental organisation "Greenpeace" in attempting

to block the outlet of the pipeline through which radioactive effluent is discharged into the sea;

(ii) a serious operational error in the waste reprocessing plant which led to a tank of radioactive effluent which should have been held for further reprocessing being discharged into the sea; radioactivity from this effluent was subsequently washed by the tides onto the beaches, as a consequence of which the Department of the Environment advised the public against unnecessary use of the beaches between St. Bees and Eskmeals (just South of Ravenglass), see Figure 1.

(iii) a highly publicised television programme (Windscale: the nuclear laundry, Yorkshire Television) suggesting a higher than average incidence of radiation-induced leukaemia amongst children in the Sellafield area. This programme had an arresting impact, prompting debate not only about its apparent findings and the propriety of its "scientific" basis, but also leading to a particularly important response by the Government in subsequently setting up a high-level and exhaustive inquiry under Sir Douglas Black into possible links between radiation-induced illness and discharges from Sellafield. The report of this inquiry is currently awaited.

Although some of the immediate impact of the November 1983 events had subsided somewhat by the time of the survey in April 1984, related issues were still very much 'live'. Continued press and media coverage maintained popular awareness and letters in the local newspapers were still predominantly occupied with views on Sellafield; the official advice about the beaches had not been withdrawn; fish sales locally were still very depressed and individuals involved with the local tourist trade were expressing concern at the prospects of a bad season in view of the detrimental image of the area. The adverse image was said also to be affecting the recruitment of potential incomers from elsewhere in the U.K. to local schools and industries. The survey should be able to indicate whether or not the fears reflected in these attitudes are widely held among the local public. Although the events of November 1983 did much to publicise an adverse image of Sellafield, the longer standing economic contribution of the complex should also be borne in mind when speculating about the findings to be expected from the survey undertaken: 6,000 permanent and 4,000 temporary jobs with much further spinoff in terms of service and other multiplier effects - a large industrial concern by most

standards and an exceptionally important component of the industrial base of West Cumbria.

Survey design and findings

Almost four hundred people in towns and villages near Sellafield were approached in undertaking the survey. The aim was to make the amount of surveying undertaken in each place roughly proportional to its size, and the places surveyed are those underlined in Figure 1. Survey interviews were undertaken at as representative a sample of house types in their allotted areas as those involved in undertaking the survey could reasonably judge. This was likely to yield a less representative sample than random selection from the electoral register since, for instance, the rural population would necessarily be omitted and the judgement used to select households inevitably more biased than a random number. However it was the best that could be achieved given the resource constraints of the survey.

Of the people approached, about one hundred and thirty declined to participate in the survey. People were generally not pressed for their reasons in this respect, though most mentioned some factor, as indicated in Table 1. Rather more than 6 initially mentioned reason 12, but some subsequently participated on further appreciation that there were no right or wrong answers to the type of questions being asked.

In the remainder of this section, preliminary findings from the 265 completed questionnaires, filled in in the presence of the interviewers, will be presented and discussed. This will be supplemented in the future with more thorough analysis and assessment of these and other findings and with the analysis of a further 170 completed questionnaires which were passed on by hand by some of the original respondents to other members of their families and to their friends, and subsequently returned by post.

Of the respondents, 60% were female and 40% male, and their distribution by age is given in Table 2. It is seen from Table 3 that approximately half (49%) of those who participated expressed a favourable opinion towards British Nuclear Fuels as a local company, either moderately (19%) or strongly (30%). Many had mixed feelings and a significant number were moderately or strongly

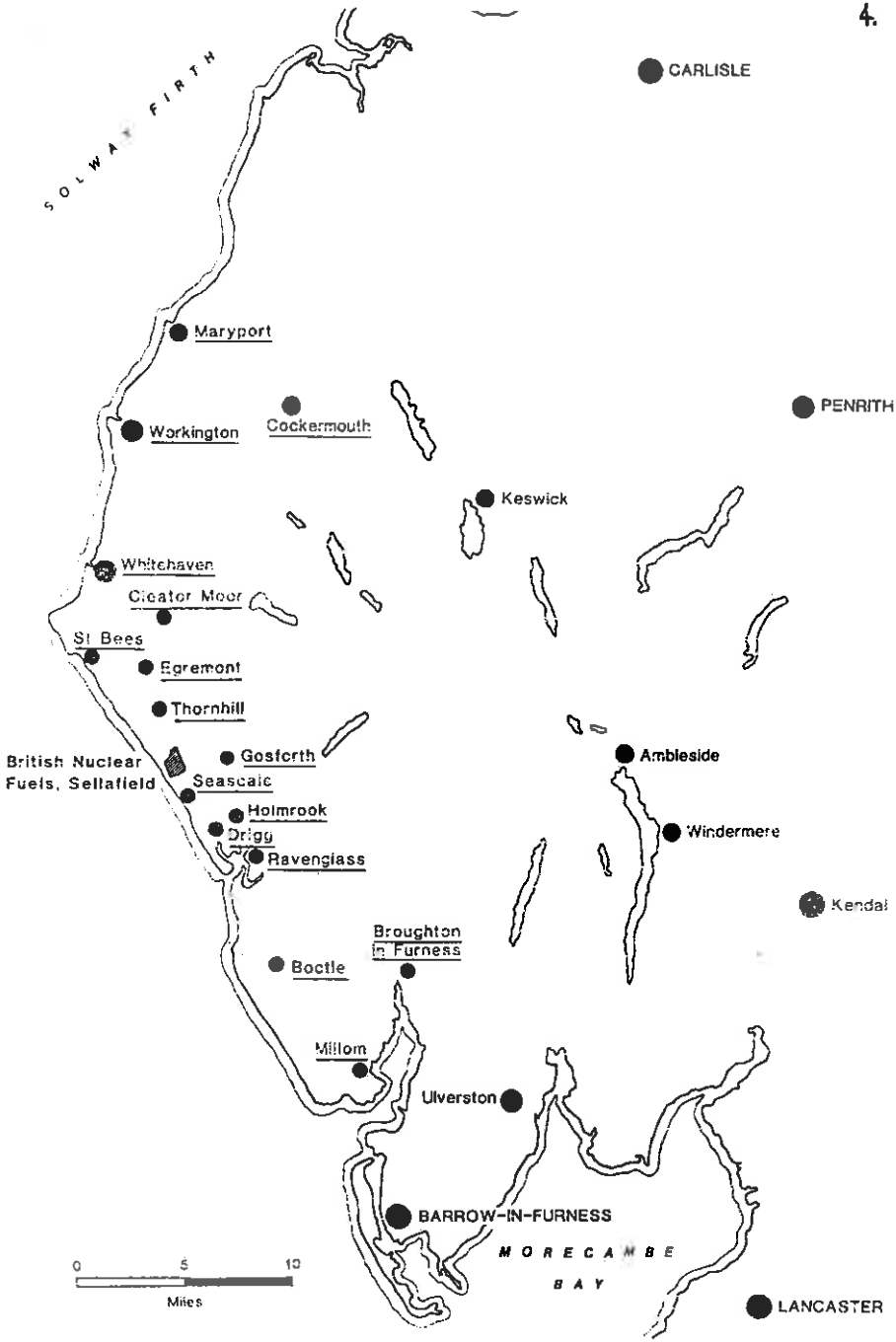

Figure 1. Sellafield and surrounding settlements

Table 1 Reasons for non-participation in the survey

	Reason given (in no particular order)	Number of times
1.	Did not want to talk about it.	6
2.	There's nothing wrong at Sellafield; there has been a fuss over nothing.	10
3.	Considered that it didn't concern them.	11
4.	Nothing to say.	4
5.	Thought it too controversial.	1
6.	Not interested in the survey.	16
7.	Inferred that they were "sick of it".	6
8.	No opinion on these matters.	6
9.	Wives of B.N.F. employees who thought that they ought not to answer these sorts of questions.	8
10.	B.N.F. employees who thought it better not to give their views.	13
11.	Too busy.	23
12.	Considered themselves insufficiently informed to express a view.	6
13.	Too frightened.	1
14.	Thought their husbands should fill in the survey.	2
15.	Did not want to talk to an environmental group.	1
	No reason given.	18

Table 2

THE RESPONDENTS

Male 40%

Female 60%

Age	16-25 years	18%
	26-35 years	22%
	36-45 years	21%
	46-55 years	12%
	56-65 years	11%
	Over 65	14%

Table 3 How do people currently feel towards BNF as a local company ?

% responses

Strongly in favour	Moderately in favour	Mixed feelings	Moderately against	Strongly against	Cannot say
30	19	29	8	9	5

against. 5% could not say. As with other questions, the pattern of responses showed some variation between different places, and an indication of this will be given later.

The responses in Table 3 represented a slight shift in the balance of opinion as between 'before' and 'after' the events of November 1983. Asked about their view six months earlier (October 1983), a higher proportion (about 23%) said they had been moderately in favour and there were correspondingly fewer with mixed feelings, a pattern that appears to have held for a number of years - in as far as people could say in response to questions on this.

The heart of the survey concerned people's perceptions of radiation risks. The responses elicited from the first of the questions on this issue are given in Table 4. The balance of people's concern (from 'not at all' to 'very' worried) as regards risks to themselves and to others is revealed in each row, and from a comparison between rows it is seen that, in as much as concern is expressed, people are least worried for themselves and most worried for local children, concern for relatives and other members of the public lying in between. The predominant view is that people are 'not at all worried', though significant numbers of people are 'moderately' and 'very' worried.

Since possible health risks from radiation from Sellafield may be attributed to a number of different sources a more specific question was included to take account of this. Responses are indicated in Table 5. This more detailed question elicited a greater extent of concern than had been expressed in Table 4: in the earlier Table 35% had expressed no worry at all, but in the subsequent table no more than 23% expressed no worry at all as regards concern over radiation on the beaches.

More generally, in as much as concern is expressed, it is most acute as regards radiation on the beaches, almost one third (31%) of the people surveyed stating that they were "very worried" though about one quarter (23%) stating that they were "not at all worried". Possible radiation concentrations in seafood ranked as the next highest source of concern, with 22% "very worried" and 44% "not at all worried". The distribution of concern, or lack of it, as regards radiation in other possible sources is readily seen in Table 5. It may be of additional interest to observe that the amount of concern expressed about seafood does not appear to be reflected in actual behaviour, for although as many as 44% suggested that they were "not at all worried",

Table 4 How worried are people about radiation levels in the areas around BNF's plant at Sellafield as regards health risks to the following people?

% responses	Not at all worried	Slightly worried	Moderately worried	Very worried	Cannot say
themselves	55	22	14	11	0
Close relatives	47	20	12	17	2
Local children	35	26	16	19	2
Other members of the public	45	23	14	14	3

Table 5 How worried are people about radiation levels-each of the following:

% responses	Not at all worried	Slightly worried	Mod. worried	Very worried	Cannot say
on the beaches	23	29	14	31	2
in house dust	60	12	9	15	4
in the air	50	20	13	17	1
in seafood	44	19	12	22	4
in milk	55	16	9	16	2

according to conversations with local fishmongers a much smaller proportion seemed actually to be buying local fish - falls in weekly sales of around 70% being suggested. If this is so there may be a difference between what people "expressing" and the behaviour they are "revealing" from day to day.*

In order to put concern about radiation levels into perspective, people were asked how their concern about radiation levels compared with their concern about other risks and problems: see Table 6. Although the form of this question may be criticised for being unwieldy and difficult to respond to, it nevertheless should serve adequately for the limited purpose for which it was designed.

Other questions in the survey were designed to elicit general views and perceptions about other issues related to the current debate about Sellafield. Monitoring of radiation concentrations is obviously crucial to an understanding of scientific knowledge on radiation risks, and it is of interest to compare people's views on the adequacy of monitoring with their concern, or lack of it, about radiation risks. It may, for example, reflect their trust in authorities to act appropriately in appreciating and ensuring "safe" levels. Since the events of November 1983 there has been a substantial increase in the amount of monitoring undertaken, including considerably more intensive monitoring on the beaches, and the first significant official sampling of house dust. Rather more than half of those interviewed (55%) considered that the amount of monitoring now undertaken was about right, though almost one third (31%) considered it still insufficient. The majority stated that they considered the lower extent of monitoring earlier to have been insufficient. (See Table 7) A significant 12% of those interviewed could not answer the question, perhaps reflecting an issue that was less a part of the way they may typically have thought about risk-related matters, or one that they could not formulate a quick view about.

It was clear that most people interviewed had an interest in the topic being discussed that extended far beyond simply being polite to the interviewer. This was evident from the abundance of additional points of view that were given on aspects not specifically or sufficiently extensively addressed in the

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* A number of people remarked, off the record, that they did not want to express concern about radiation because they were eager not to say anything that may damage the image of British Nuclear Fuels, a company they regarded as being "really needed round here".

Table 6 **Compared with the possible risks of radiation levels, do people on balance, worry more, less or the same, about the possibility of other risks and problems?**

	more	less	the same	cannot say
unemployment	64	19	8	7
injury from road accidents	52	25	10	8
the dangers of smoking	48	26	9	13
the risk of nuclear war	51	23	11	11
disease or illness	54	26	8	7
chemical pesticides and food additives	39	32	14	11
other enviromental pollution	43	27	17	9

% responses

Table 7 Peoples general view about the amount done to monitor radiation levels

% responses	About right	Not enough	Too much	Cannot say
Currently	55	31	2	12
In the past	26	60	0	12

survey questionnaire, and which will be more fully accounted for in future work. It was also evident in responses to a specific question on this issue - 90% expressing interest, and most of them a lot of interest, in articles, programmes and other sources of information - see Table 8.

The source of information that most people expressed the greatest confidence in was British Nuclear Fuels - 16% considering them completely reliable and 25% adequately so - see Table 9. The sources perceived as next most reliable were Government agencies - 10% considering them completely reliable and 27% adequately so; moreover Government agencies were considered unreliable by fewer people than was the case for British Nuclear Fuels; even so the general picture is by no means one of unalloyed confidence in Authority. The popular press were considered the most unreliable of the sources specified, though the most obscure of the sources specified was the local liaison committee, a committee established following the infamous Windscale inquiry of 1977 in order to improve relations and contact between British Nuclear Fuels and the local population, though for which 40% could not express an opinion as to its reliability. It is little more than a matter of common sense to appreciate that reliable and trusted information is likely to be very important in people's assessment of risk, and this was reflected in an often expressed sentiment when undertaking the survey, "It's not the risk its the cover-ups". The present position seems to fall far short of what would be a desirable position as regards information provision and recognition.

It is clear that there were few environmental activists among those interviewed (see Table 10), though nonetheless interesting to know whether those interviewed considered there to be sufficient opportunity for members of the public to express views and have notice taken by the authorities. Much dissatisfaction in this respect was expressed. Although 29% considered that the position for members of the public was "about right", rather more (35%) considered there to be insufficient opportunity, and a further 22% considered there to be sufficient opportunity for the public to express views but that not enough notice was taken of them. As regards opportunities for and influence of environmental groups, dissatisfaction was again expressed about opportunities available and notice taken, but quite a significant proportion (18%) considered that too much notice was taken of them. Although seemingly impossible to please everyone anyway, the position revealed in the survey in

Table 8

How much interest do people take, on the whole, in articles, programmes and other sources of information about the possible risks from radiation in areas around the Sellafield plant?

	a lot of interest	some interest	no interest	cannot say
% responses	57	33	9	0

Table 9 **The considered reliability of different sources of information :**

	completely reliable	adequately reliable	of variable reliability	unreliable	cannot say
British Nuclear Fuels	16	25	28	25	6
local liaison committee	6	20	22	9	40
government bodies	10	27	26	21	14
local newspapers	8	27	38	21	6
quality press	5	22	30	18	26
popular press	2	10	29	42	13
T.V.	8	18	37	29	5
enviromental groups	9	19	31	29	8

% responses

Table 10 The extent of peoples participation in or with each of the following

	not at all	a little	a moderate amount	often
meetings	81	12	5	2
enviromental groups	86	5	2	1
correspondence	88	6	3	0
petitions	81	9	3	2
questionnaires (except this one)	92	5	1	0
interviews	93	4	1	0

% responses

Table 11 What are peoples views on how much opportunity there is to express views and have notice taken by the authorities?

	about right	not enough opportunity	enough opportunity but not enough notice	too much notice	cannot say
for the local public	29	35	22	1	6
for enviromental groups	25	18	21	18	11

% responses

Table 12 How people would describe each of the following

	necessary	unnecessary	annoying
official warning against beaches	80	14	21
activities of Greenpeace	50	27	40
TV. reporters	64	13	34
newspaper coverage	80	10	17
delayed publicity about incidents at B.N.F.	23	51	45

% responses

general as regards opportunities for effective participation is, as with information provision, not very satisfactory.

As a final indication of local opinion about risk related issues, people were asked to indicate which of three broad descriptions best reflected their views towards five "activities" which have each been prominent features of the recent Sellafield debate: official warning about beaches; activities of Greenpeace; T.V. reporters; newspaper coverage; delayed publicity about incidents at B.N.F. Their responses are indicated in Table 12; respondents could indicate as many descriptions as they wished for each "activity". Examination of this table will be left to the reader.

Spatial variations

One of the most striking features when undertaking the survey, which is unlikely to be immediately apparent to most readers, was the different character of the different towns and villages within which interviews were undertaken. Some were built virtually entirely as settlements for workers at Sellafield, others had worker-estates as well as a mix of housing stock of different origin - private and public - and fitting to different income brackets. Some places had their own industrial base complementing the economic influence of Sellafield, and this ranged from iron and coal mining to tourism (coastal and Lake District National Park), the influence of these factors generating a contrast between different places that was very remarkable. Proximity to Sellafield, and the influence of Sellafield in the local economy of different places, can more generally be expected to have a bearing on the way the issues raised in the survey were perceived by local people.

Given these and other factors, it should not be surprising to find some variation in the pattern of responses to the questionnaire survey. In Table 13 are some general impressions gained from different places.

Table 13† Impressions from different places

Seascale (1 mile)* This is the nearest concentration of population to B.N.F.'s complex - a settlement of about 2,000 people.

It owes virtually its whole existence to B.N.F. and the majority of people interviewed here were strongly in favour of this company. Most were not at all worried about radiation levels, though a significant number were moderately or very worried.

Cleator Moor (6 miles) A bleak, one-time mining town (coal and iron ore) of about 7,000 people with strong Irish/Scottish traditions and now relatively high unemployment. A majority of those interviewed were dependent on B.N.F. for their livelihood - mostly blue collar workers. People seemed generally well informed about the issues being discussed and responsive to the survey, and a wide range of opinions and attitudes to B.N.F. and radiation risks were elicited: a majority strongly in favour of the company, and a majority very worried about radiation levels.

Whitehaven (9 miles) A large town with a population of about 26,410, many working at B.N.F. Many of those interviewed considered B.N.F. to have no effect on their livelihood, this despite heavy investment by the company in urban improvement schemes and the fundamental role of B.N.F.-based income in supporting the retail and service activities in Whitehaven. There was a general feeling in favour of the company but some concern about radiation risks, particularly to local children, and concern also for those living at Seascale.

Thornhill (4 miles) This is an estate with a population of about 1,400 built (mainly) in the 1950's for blue collar workers at Sellafield, more mixed housing stock added more recently. Pro B.N.F. feeling seemed to be quite high and concern about radiation levels low. Both here and in Whitehaven, people mentioned concern over the environmental effects of the Marchan Chemical Works in Whitehaven - to them a greater environmental problem than possible radiation risks from Sellafield.

Gosforth (2 miles) A village of about 1,200 people with a mixed housing stock just within the boundary of the Lake District National Park. There was quite a clearly defined pattern of response from people interviewed here: generally pro-B.N.F., generally not worried, and quite a number reticent towards the questionnaire, considering recent publicity about B.N.F. to have been unnecessary.

Cont'd ...

* distance from Sellafield

† table compiled jointly with Siân Phipps.

Table 13 (Cont'd)

Bootle/Hycemoor (11 miles) Quite a varied range of responses was forthcoming from here: no-one suggested they were very worried, but most indicated that there was serious cause for concern.

Drigg/Holmrook (3 miles) The employment links between these two small middle class villages and Sellafield appear quite strong and the majority were in favour of B.N.F. and only slightly worried over radiation levels.

Egremont (5 miles) With a population of 8,000, Egremont showed a variety of responses to the questionnaire, some people declined to answer because they felt they had nothing to say about the matter; others were apathetic when they did answer, others still were quite responsive. Employment links are quite strong and the majority of people are definitely in favour of B.N.F. and although the majority were not worried about radiation levels, a sizeable minority were.

St. Bees (7 miles) Employment links with B.N.F. were not as strong here, as the relative spatial proximity may suggest, St. Bees (1,400) having strong historical ties of different origins, and feelings towards the company more mixed. Tourism in this attractive seaside town had suffered from the adverse image of the area.

Ravenglass (6 miles) Not many people were interviewed here but amongst those who were, concern about radiation levels - as they may affect local children - was significant. By contrast a number of people who declined to participate in the survey gave "there's nothing to be concerned about" as their reason.

Broughton/The Hill (16 miles) A predominantly middle class area where people were obviously not so sensitised to the risk issue - "it doesn't affect us here". People were neither strongly in favour or strongly against B.N.F., nor were they very concerned about radiation levels in the plant's surrounding area, though there was concern about the knock-on effect of bad publicity about B.N.F. on West Cumbria (including Broughton).

Millom (17 miles) A town of almost 7,000 people, still well within the radius of economic and employment influence of Sellafield, many people with employment connections at the plant preferred not to give their views. A majority were in favour of the company and not worried about radiation levels, but a sizeable minority were set very much against Sellafield and its activities, and very concerned about radiation levels.

Cont'd ...

Table 13 (Cont'd)

Cockermouth (18 miles) Several people were reluctant to participate in the questionnaire and those who did were generally unresponsive to the survey. The employment influence appears to be weak here, with many alternative sources of livelihood and influence in the town. Most people interviewed had mixed feelings towards B.N.F. and expressed little concern as to the possible risks from radiation levels.

Maryport (21 miles) A large town with its own industrial base, where the majority of those questioned were not dependent on B.N.F. for their livelihood though most were in favour of the company. Many people declined to answer the questionnaire and the general impression was that people were not as informed nor as knowledgeable as in those settlements nearer the plant. There was an even division in the number of people found to be concerned and not concerned about radiation risks and there was a significant anti-B.N.F. faction among those interviewed.

Workington (16 miles) Again a larger settlement, where opinion was found to be diverse and people a little reticent towards the questionnaire. As many were "not at all worried" as "very worried". A number of people who were not in favour of B.N.F. feared not the risks from radiation but criticised instead what they considered to be the 'secrecy' of B.N.F.'s operations. At Seaton, outside Workington, local people were more concerned about a proposed local chemical plant.

Further comments

The survey data presented in this paper were collected mainly by final year undergraduate Geography students from the University of Leeds as part of a field course in West Cumbria, during which aspects of the social, economic and environmental impact of Sellafield in its surrounding area were being studied. Some findings to have emerged have been reported here as a contribution to the risk research field, representing data collected completely independently of organisations with commercial interests at stake.

There are inevitable reservations about the quality of the data - in the design of a sample that can be regarded as representative of a wide public, and in the design of questions free from ambiguity (a pilot survey was useful in identifying some pitfalls in this respect) and that can elicit people's true views on issues at stake, relating to their own agendae of concerns and not only to an agenda of external analysts. The swiftness with which views and opinions can change is a further tremendously complicating factor. Reservations about these matters must undoubtedly temper the use to which findings can be put, though fall far short from completely undermining their utility. The desire to enrich the data set further by including additional questions in the survey was moderated by the need to keep the questionnaire of manageable length.

Much more detailed analysis of findings will be undertaken in the future; it will be of interest to examine whether there are distinctive patterns in individual responses - are those who are "very worried" about radiation levels even more worried about other risks and problems? Are those who are "not at all worried" also those who consider British Nuclear Fuels and government agencies "completely reliable" as sources of information? Is worry more acute among the young or the old? What about more detailed spatial patternings, and patternings with type and place of work? Clearly there are many other cross tabulations conceivably of interest. This work will form part of a wider programme of work by a research student and the author. Further interview and survey work is also planned.

People's views and perceptions about radiation risks and related issues may well be "inaccurate" when compared to "scientific knowledge" on these matters. People are living with their own minds, and not typically with

the first hand knowledge of a technically trained scientist — their current opinions being shaped by a long and largely unknown array of influences. If there are many people who are currently displaying manifestly 'inaccurate' perceptions about risk, then better appreciation of reliable and trustworthy information would seem desirable - and the awaited Black report may be very important here. However, in a field not noted for an unquestioned scientific consensus, and in which an immense array of additional connotations can be associated, then bland and insensitive suggestions that people hold irrational or illegitimate views about risk and related issues may simply be a display of unwarranted naivity.

Acknowledgements

Thanks to Sian Phipps, Paul Forte, David Snowball, Alan Barnes, Jon Felton, Chris Haskins, Mike Higginson, Daniel Jones, David McDonough, Katherine O'Leary, Jill Palmer, Tim Pouncey, Richard Ryall, Andrew Comber, Ros Tague, Dave White, Steve Williams, Bill and Linda Sharrod, Sheila Milner.

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