

How to communicate safety? Some reflections from European project studies

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1. Introduction

Efforts over the last 25 years to develop geological disposal facilities for radioactive wastes have repeatedly failed owing to intense public opposition. This opposition has generally manifested itself in terms of the classic NIMBY (*Not In My Back Yard*) syndrome. Investigation of the reasons behind this tendency has illustrated the fears and concerns of lay audiences regarding the effects of radiation, and a frequent unwillingness to accept the assurances of long-term safety provided by both developers and regulators.

As well as concern over safety, public opposition has in many cases also arisen owing to lack of involvement in decision-making as part of the siting process. Early efforts were characterised by a ‘*Decide-Announce-Defend*’ approach, where decisions were made centrally by scientists or politicians, with little public involvement in the development of screening criteria and selection procedures. Experience over the last 10-15 years has supported a move away from this approach, and seen the introduction of processes based on openness, transparency and increasing public involvement in siting decisions. A series of European Commission (EC)-supported projects has explored ways of developing public participation in the siting of geological disposal facilities, and examined various aspects of governance and decision-making, with the aim of increasing public confidence both in radioactive waste management in general and in the results of long-term safety assessments in particular.

Recent work carried out by Galson Sciences Ltd (GSL) as part of these projects has explored public concerns and investigated ways in which they might be addressed more successfully. Although the work is still ongoing, results to date point towards ways in which the communication process might be grounded so as to develop confidence in the communication of long-term safety assessment approaches and outcomes.

2. The EC Projects in Question

PAMINA (Performance Assessment Methodologies in Application to Guide the Development of the Safety Case)

There are 26 partner organisations in PAMINA. The project began in October 2006 and ends in September 2009, and is co-ordinated by GRS, Germany. The aim is to develop a common understanding of integrated performance assessment (PA) methodologies for the disposal of spent fuel and other long-lived radioactive wastes in different geological environments. GSL is responsible for co-ordinating and undertaking work designed to develop a better understanding of the treatment of uncertainty in PA and the safety case. Work carried out in this area includes an evaluation of approaches for communicating about confidence and uncertainty in PA.

ARGONA (Arenas for Risk Governance).

ARGONA aims to demonstrate how transparency and public participation can be achieved in radioactive waste management programmes as part of the process of effective risk governance. The project began in November 2006 and ends in October 2009. It is co-ordinated by the Swedish Radiation Safety Authority (SSM). Project partners are drawn from Belgium, the Czech Republic, Finland, the Netherlands, Slovakia, Slovenia, Sweden and the United Kingdom, and include regulators, developers, academics, research institutes, and consulting organisations. GSL is involved in work investigating approaches to risk communication in the UK and other partner countries, as well as examining the use of novel stakeholder involvement techniques and community benefit packages.

CIP (Cowam in Practice)

The objectives of CIP are to assist participating countries to make progress in the national governance of radioactive waste management, and to increase societal awareness of and accountability for radioactive waste management. The project has analysed five innovative national processes with the objectives of supporting stakeholders, particularly local communities, in their engagement with the national programme - and of capturing the learning from that experience. Project partners are drawn from Belgium, France, Romania, Slovenia, Spain and the United Kingdom, and include developers, research institutes and consulting organisations. In addition, National Stakeholder Groups (NSGs) have been established in all partner countries except Belgium. The project began in January 2007 and ends in December 2009. It is co-ordinated by Mutadis Consulting, France. GSL is a member of the 'Methodological Task Force', which prepares research briefs on issues identified by the NSGs.

3. Issues to be Addressed

Before introducing the approaches adopted by these three projects and discussing their applicability and benefit, it is helpful to identify the main questions that need to be addressed with relevance to safety-related issues and public communication in the context of radioactive waste management.

- *Is the concept of risk itself misleading?* There is a view amongst certain groups that the main purpose of safety assessment is to legitimise risks that otherwise

might be considered unacceptable. If the regulator approves an assessment, but most members of the public are unable to understand the process that has been applied, the tendency is not to trust the result. If the organisations involved are also not trusted, then the legitimacy of the whole process will be called into question and the public will object out of fear that the real risks are not being addressed.

- *How should risk be communicated?* If there is this perception that safety assessments are not addressing the real risks and concerns, then what are these, and how should they be addressed? Allied to this are the questions of how the process of safety assessment can be best communicated, and how the inherent uncertainties that must be managed can be explained in a way that will engender public confidence.
- *How can trust be developed?* If it is accepted that much of the concern expressed by stakeholders and the general public concerning the safety of radioactive waste management is associated with a lack of trust in both the technology and the organisations involved, acceptance for any facility is going to be extremely difficult to achieve. It is therefore necessary to explore why this lack of trust exists and look for ways in which it may be overcome.
- *What should be communicated?* In order to develop trust in both the safety assessment process and the organisations involved in it, the development of legitimacy and confidence is vital. However, this cannot be achieved by top-down information dissemination if this does not actively engage with the real concerns and fears of the public and interested stakeholders. It is important that dialogue on safety-related issues first determines what these concerns are and then responds to them, however trivial some of them may be perceived to be by involved experts. However, this is only the start. Communication of complex issues in understandable and transparent language is essential to gaining public involvement and, ultimately, acceptance of the proposed facilities.

4. The Approaches Used in the Three Projects

The three EC projects have used different approaches to address these questions. The approaches have included involvement of stakeholders in workshops intended to explore ways to communicate issues associated with safety (PAMINA), examination of national and cultural influences on the trust placed in institutions (ARGONA), and research addressing specific issues and concerns raised by National Stakeholder Groups (CIP).

Communication of safety (PAMINA)

GSL organised a stakeholder workshop in Manchester in October 2007 with assistance and support from the UK Nuclear Decommissioning Authority (NDA). At the workshop, several different media (video, posters, and presentations) were used to communicate aspects of geological disposal safety cases and to gather information from participants about their concerns regarding the safety of a

geological disposal facility (Hooker and Greulich-Smith, 2008). The workshop participants felt that key safety issues, uncertainties and knowledge gaps in considering facility performance over hundreds of thousands of years should be better communicated, in addition to basic technical information. Issues of particular interest included the impacts associated with future climate change, the long-term performance of both the engineered barrier system and the surrounding geology, and the potential for inadvertent intrusion into the disposal facility by an unknowing public in the far future.

As a follow-up to the workshop, a set of six illustrated brochures was developed by GSL to cover some of the concerns raised at the workshop and to explain how uncertainties regarding long-term safety are being addressed by those involved in developing safety cases for geological disposal of radioactive waste. A primary aim of this follow-up exercise was to test whether the information presented in the brochures would result in a feeling of reassurance or confidence that a facility would be safe. In order to achieve this aim, the brochures were circulated to a wide range of individuals in the UK and in a number of other countries (translated into the national language), who were asked to read them and respond to a questionnaire.

Final results from this exercise are still being collated, but it is clear that traditional presentations of the technical issues surrounding the safety of geological disposal do not address the needs of all stakeholders. The requirement for regulatory approval based on dose and/or risk assessments does not lead to easily understood outputs for the purpose of wider communication of safety assessments, and further work is needed to develop more widely understandable ways of presenting this information. This will need to include the use of novel techniques more suited to the needs of the lay public, in particular young people, who will be the decision-makers of the future when facilities now under development approach licensing decisions and closure. [Note that some work on this topic is also being done within ARGONA.]

Developing trust (ARGONA)

Work carried out as part of the ARGONA project is exploring the background to the levels of trust and confidence that exist in three of the participating countries - Slovakia, Sweden and the United Kingdom.

In the first year of the project, interviews were held with individuals from a range of implementing, regulatory and advisory organisations, in particular individuals responsible for the management and public communication of safety-related information concerning radioactive waste management. In Sweden, interviews were also held with representatives of non-governmental organisations (NGOs). The intention was to gain an understanding of the roles played by these organisations in involving and reassuring the public regarding safety-related issues. Interviews followed a standard set of questions covering all aspects of risk communication.

In the second year, several of those interviewed were invited to take part in focus group discussions concerning issues that had been identified from examination of

the responses across all countries. These included the potential influence of different organisations on existing and planned processes and how trust in the relevant groups and organisations was influenced by national history and cultural setting. The intention was to gain further insight into how the various organisations perceived their roles within the national waste management programme – specifically with regard to the identified issues - and to explore their views on how risk communication processes might be improved in order to increase trust and understanding amongst the public. In Slovakia, NGOs were also involved in these discussions, and were able to express concerns not communicated in the initial interviews.

It is clear from the interviews and focus group discussions that the context, the organisational structure, the history, and the experiences related to risk communication in radioactive waste management differ widely across the three countries (Drottz Sjöberg *et al.*, 2008). Also, there are significant differences in the trust placed in national institutions, which can be considered a measure of public confidence. For example, in Sweden, trust in the nuclear regulators tends to be high owing to a long tradition in Scandinavia of open and transparent communication and involvement in these issues in affected communities. In contrast, in the UK, trust in the nuclear industry, including the regulators, is still relatively low, owing in large part to the historical association of the civilian programme with the nuclear weapons programme and the accompanying level of secrecy. Finally, in Slovakia, as elsewhere in the former Soviet bloc, historical issues associated with the former communist regime have greatly hampered the development of trust and confidence in national institutions up to the present day.

Participants in these focus groups emphasised the value of face-to-face dialogue involving experts and members of the public in building both trust in regulatory involvement and improving stakeholder understanding of issues of concern. Such dialogue should be conducted alongside traditional consultation as currently practiced with regard to formal planning and licensing processes.

An added-value outcome was that the meetings helped to develop trust between participating organisations where this may not have existed previously, particularly in Slovakia.

Involving stakeholders in designing research (CIP)

In order to explore ways of developing trust amongst stakeholders in the institutions involved in decision making and in understanding of the issues of concern, CIP has pioneered the stakeholder-led development of research requirements and subsequent discussion of research results with stakeholders. The forum for developing the project outcomes is a National Stakeholder Group (NSG) designed to involve a wide range of organisations in five of the participating countries.

While particular technical issues concerning specific national programmes have been identified as requiring further research by each NSG (e.g., in France, the role of retrievability in the decision-making process), there has been a uniformity between NSGs with regard to many socio-economic issues identified for further

research. The socio-economic issues include the questions of what form(s) of community benefit could be available to encourage participation in siting processes, and how an “affected community” can be defined (i.e., the areal extent of the population that should benefit from any compensation scheme) (see Schneider *et al.*, 2008).

Work in CIP has identified the following dichotomy:

- On the one hand, public concerns expressed regarding radioactive waste disposal tend to dwell on issues related to the environmental impacts of a facility, and the long-term performance of the disposal system and risks to future generations.
- On the other hand, many of the issues identified for further examination by the NSGs actually concerned social factors and issues affecting the current generation in the vicinity of a proposed disposal site.

In particular, community benefit schemes tend to focus on the welfare of the current generation close to the proposed facility, whereas the risk associated with a disposal facility will be borne by many generations of society possibly removed in space (as well as time) from the communities most affected by the development project itself.

The CIP methodology, with the involvement of stakeholders in both the identification of research areas and in discussions following the presentation of results, appears to have been well received, with feedback to date suggesting that concerns and issues previously not addressed now have been. In addition, as for dialogue undertaken within ARGONA, in some countries CIP has acted as a process for dialogue where one had previously been unavailable.

6. Conclusions

Attempts to site geological disposal facilities for radioactive waste - and associated public reactions - indicate that communicating safety and demonstrating safety are very different things. The three different approaches to stakeholder engagement undertaken in the context of the PAMINA, ARGONA and CIP projects have provided valuable insights into how risk communication processes and tools can be improved. The approaches used in these projects all involve the participation of interested stakeholders in identifying concerns and issues, which are then examined in a co-operative fashion between stakeholders and developers acting in partnership. Such approaches offer avenues for dialogue and confidence building where such channels were previously not well developed,

Full results from the projects will be available in late 2009 for PAMINA and ARGONA and in early 2010 for CIP. The comments and interim insights outlined here will be developed further and incorporated in the overall project outputs, and help inform developing European policy in this area. It is already clear, however, that the approaches used in these projects offer great promise in helping to develop the trust in the institutions and organisations involved that is essential in gaining

support and acceptance for the waste management activities now underway across Europe.

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