HOW STAKEHOLDERS VIEW THE USE OF ANALOGUES IN SAFETY CASES: PAMINA

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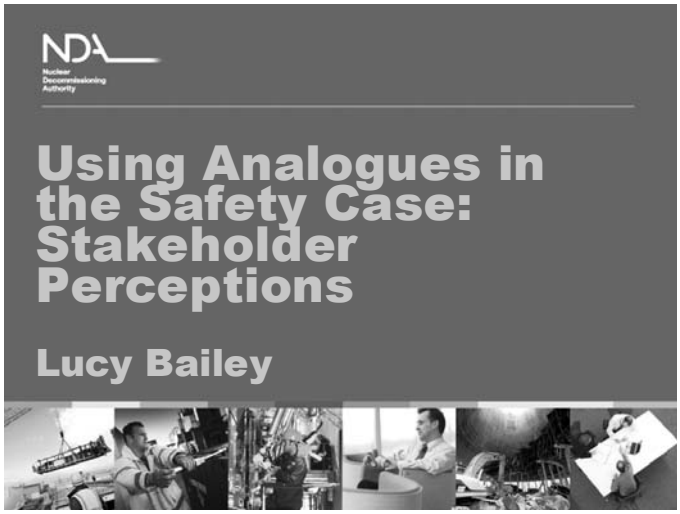
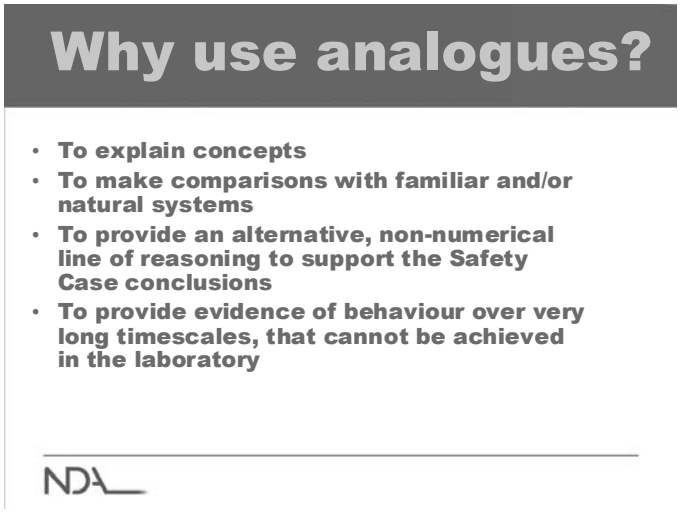
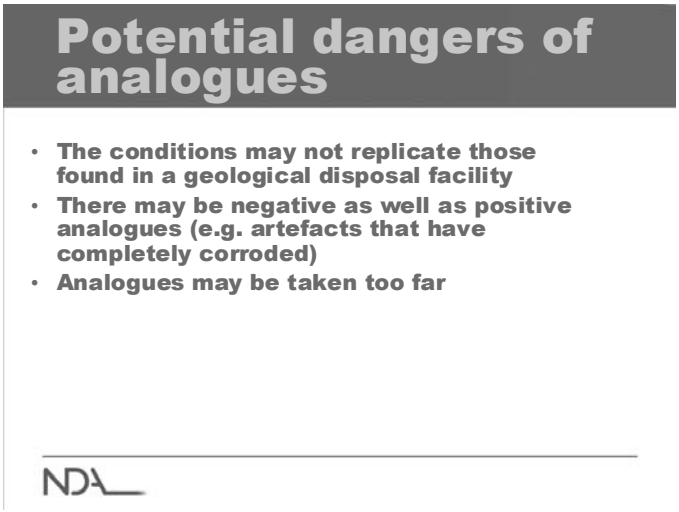


The aim of this presentation is to provide an overview of some research that has been undertaken in the UK to investigate stakeholders' views of analogues.



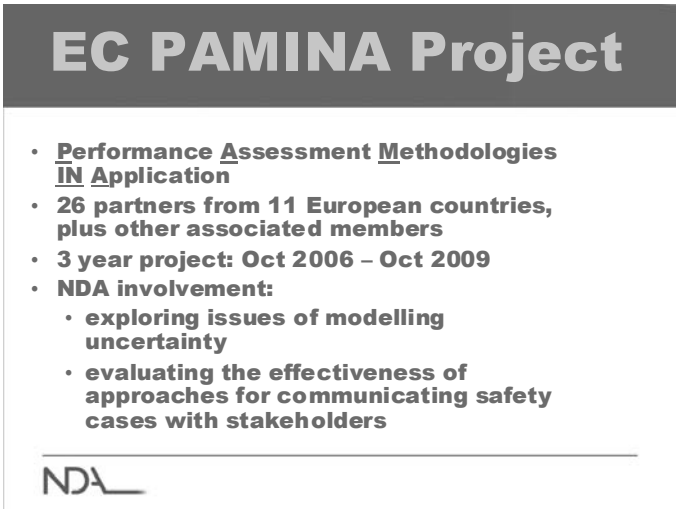
There are various reasons for using analogues including:

- To try and explain difficult concepts
- To compare disposal facility features with familiar and/or natural systems
- To provide an alternative, non-numerical line of reasoning to support the Safety Case conclusions
- To provide evidence of behaviour over very long timescales, that cannot be achieved in the laboratory



There are some dangers when using analogues that people should be aware of.

- The analogue conditions may not be the same as those found in a disposal facility, so the analogue may have limited application.
- Some analogues may have negative implications, for example artefacts that have corroded.
- Analogues can be taken too far and used in inappropriate ways to try and support an assumption.
- So it is important to find out how stakeholders view the use of analogues in a safety case.

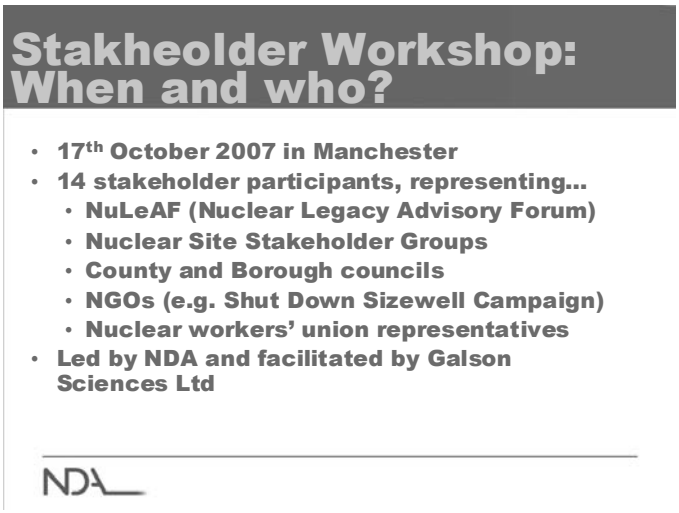


NDA is involved in an EC funded project called Pamina. Pamina stands for Performance Assessment Methodologies IN Application.

The project involves 26 partners from 11 European countries, plus other associated members and runs for 3 years from October 2006 to October 2009.

The NDA is involved in several parts of the project.

- Exploring issues of modelling uncertainty
- Evaluating effectiveness of approaches for communicating safety cases with stakeholders.

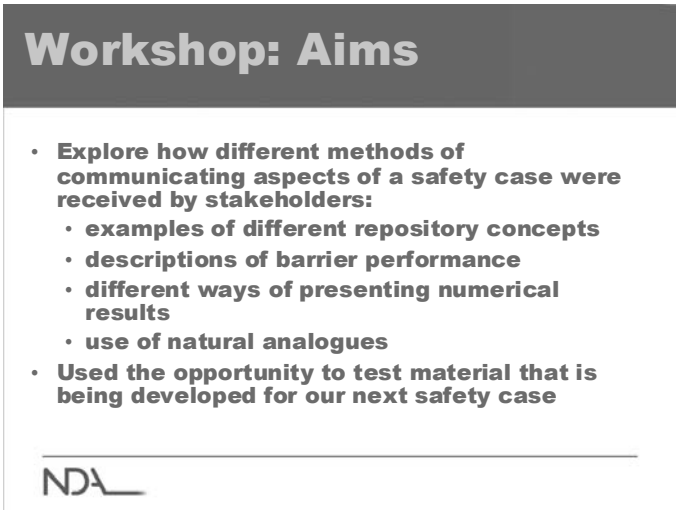


NDA ran a workshop in October 2007 in Manchester.

The workshop involved.

- 14 stakeholder participants, representing:
  - NuLeAF (Nuclear Legacy Advisory Forum)
  - Nuclear Site Stakeholder Groups
  - County and Borough councils
  - NGOs (e.g. Shut Down Sizewell Campaign)
  - Nuclear workers' union representatives

The workshop was led by the NDA and facilitated by Galson Sciences ltd.



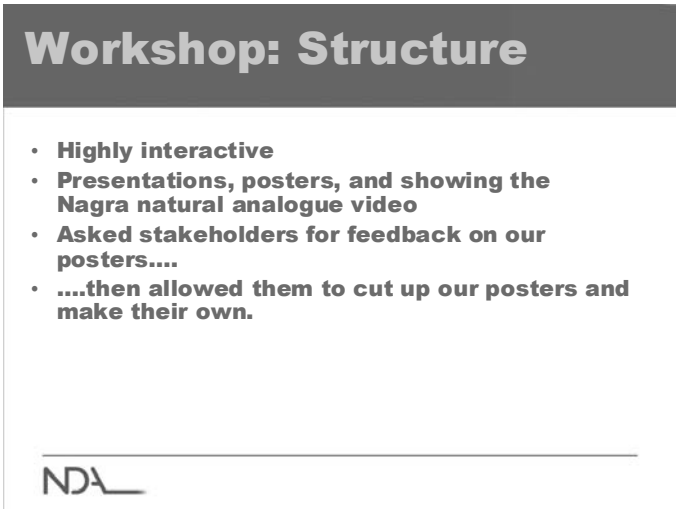
The aims of the workshop were to:

- Explore how different methods of communicating aspects of a safety case were received by stakeholders.

The workshop presented stakeholders with:

- Examples of different repository concepts.
- Descriptions of barrier performance.
- Different ways of presenting numerical results.
- Use of natural analogues.

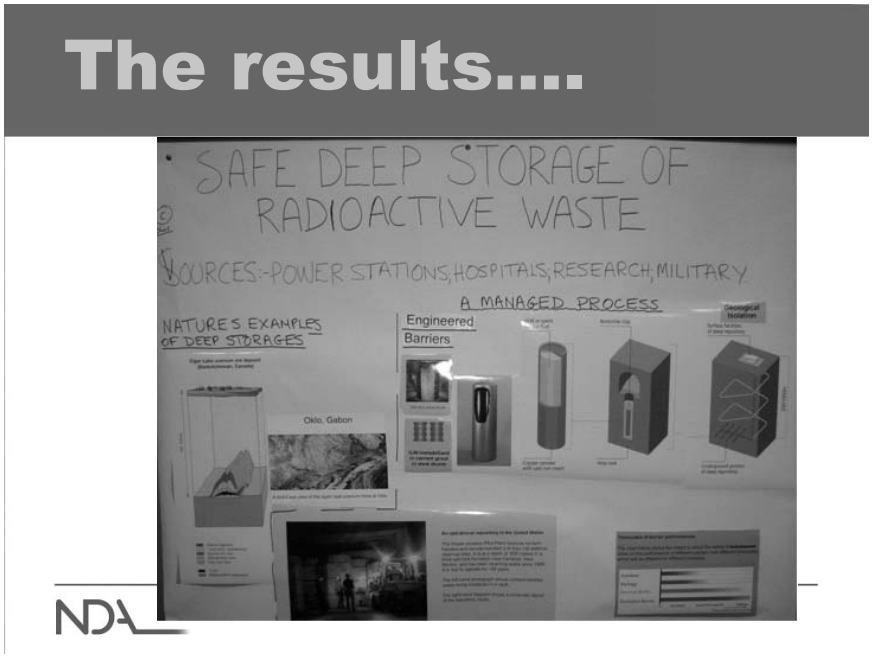
The NDA used the opportunity to test material being developed for our next safety case.



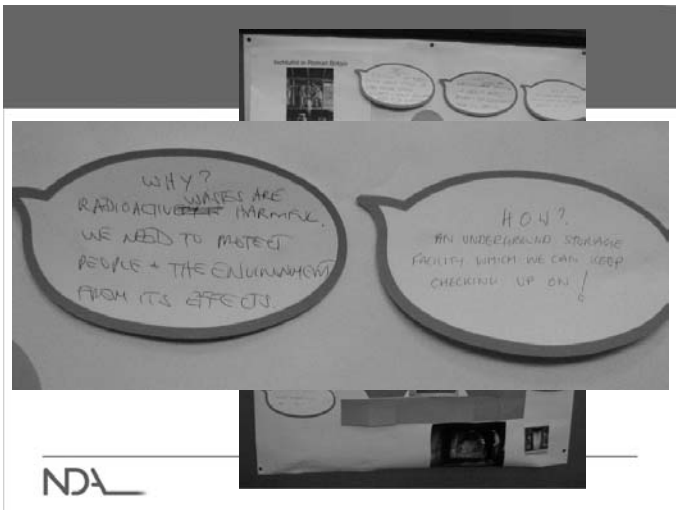
The structure of the workshop was highly interactive.

It involved presentations, posters and showing the Nagra natural analogue video.

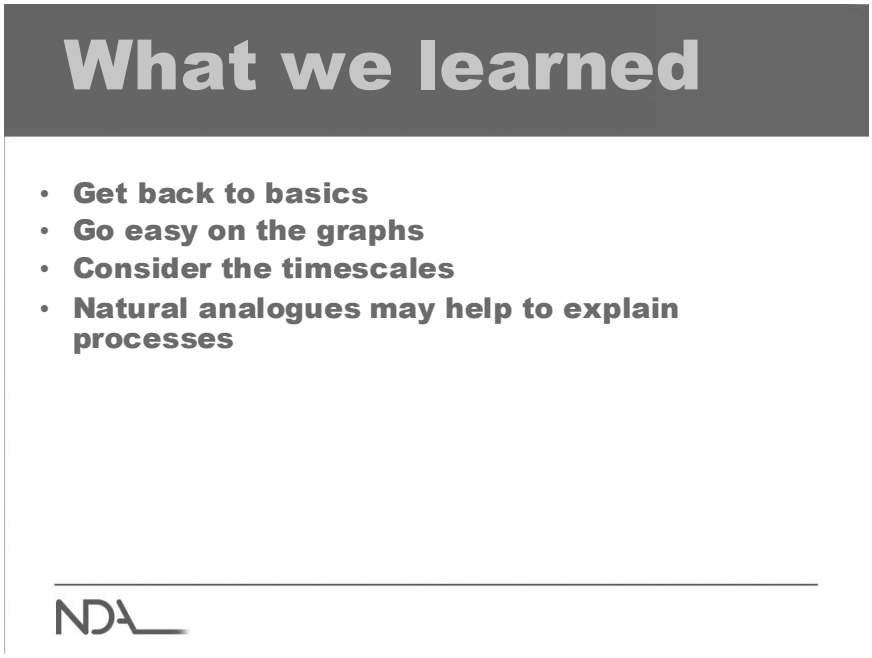
We asked stakeholders for feedback on our posters and then allowed them to cut up our posters and make their own.



This slide shows one of the posters the participants made.



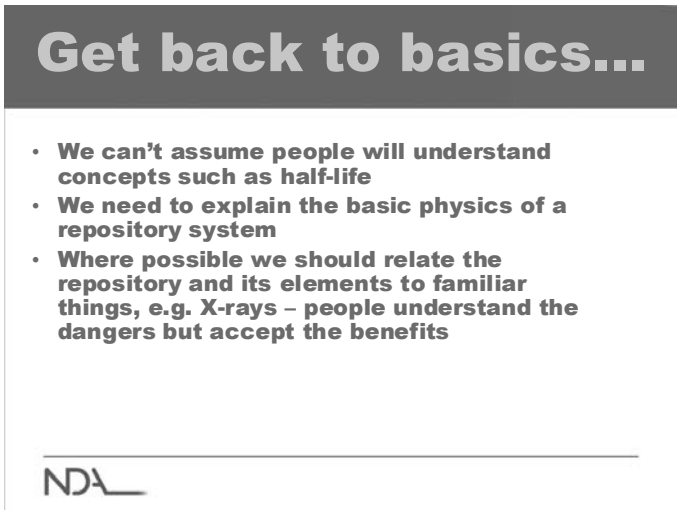
This slide shows what messages the participants thought it was important to communicate.



The feedback from participants emphasised several important issues.

- Get back to basics
- Go easy on the graphs
- Consider the timescales
- Natural analogues may help to explain the process.

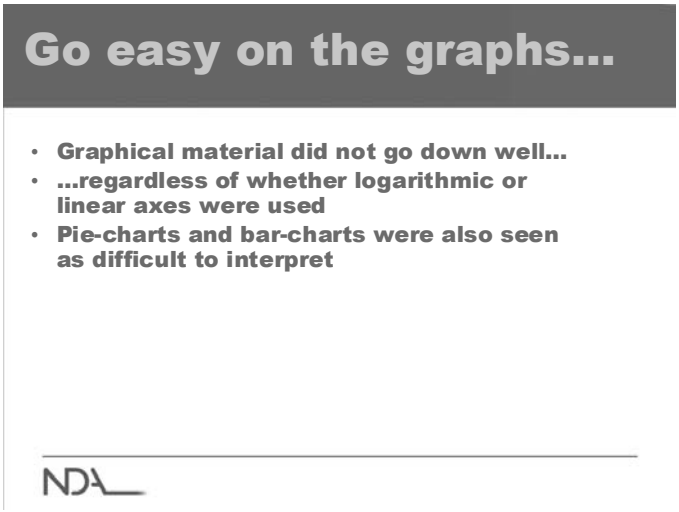
The following slides explain these in more detail



In terms of getting back to basics

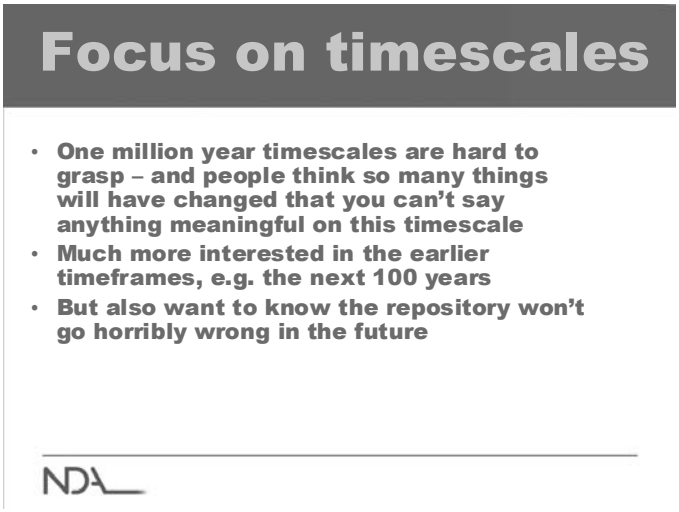
- We can't assume people will understand concepts such as half-life.
- We need to explain the basic physics of a repository system

- Where possible we should relate the repository and its elements to familiar things, e.g. x-rays – people understand the dangers but accept the benefits.



- Graphical material did not go down well….
- …. Regardless of whether logarithmic or linear axes were used.
- Pie-charts and bar-charts were also seen as difficult to interpret.

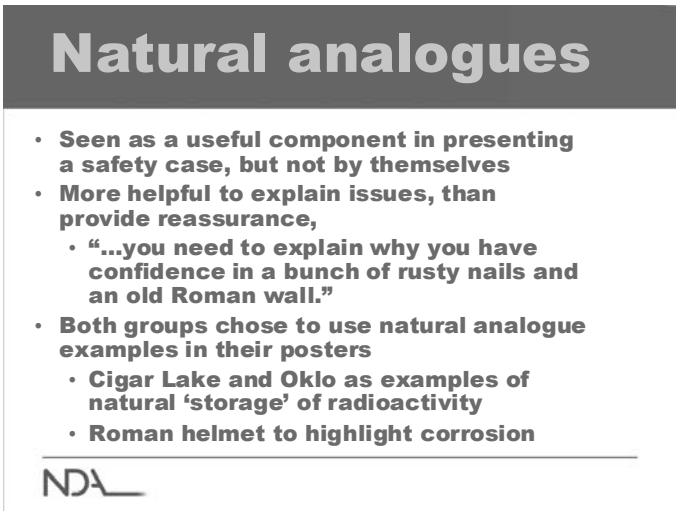
Therefore we need to find other ways to communicate quantitative data.



One million year timescales are hard to grasp – and people think so many things will have changed over that time period that you can't say anything meaningful over 1 million years

People are much more interested in the earlier timeframes, e.g. the next 100 years and want to know what will happen in this period in some detail

But people also want to know the repository won't go horribly wrong in the future and that if something does go wrong we are able to handle it



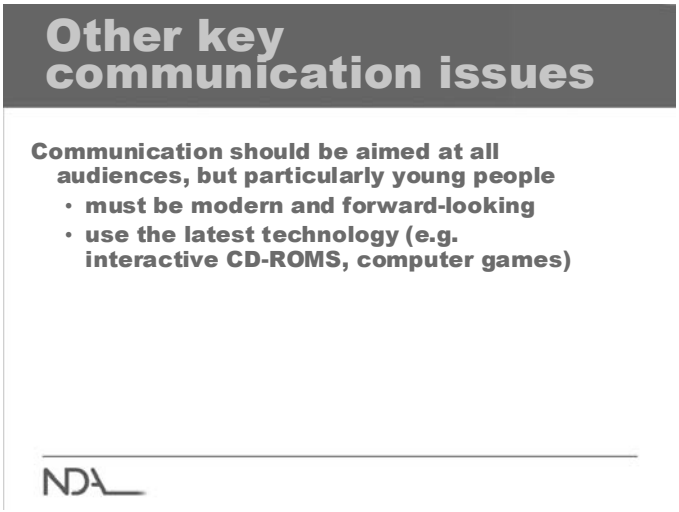
Natural analogues were seen as a useful component in presenting a safety case, but not by themselves

People felt they were more helpful to explain issues, than provide reassurance, one participant said,

"…you need to explain why you have confidence in a bunch of rusty nails and an old Roman wall."

Both groups of stakeholders chose to use natural analogue examples in their posters

- Cigar Lake and Oklo as examples of natural 'storage' of radioactivity
- Roman helmet to highlight corrosion



There were also some other communication issues that came up as part of the workshop.

The participants felt communication should be aimed at all audiences, but particularly young people they felt it must be modern and forward-looking and use the latest technology (e.g. interactive CD-ROMS, computer games)