

MORE THAN JUST CONCRETE REALITIES: THE SYMBOLIC DIMENSION OF RADIOACTIVE WASTE AND ITS MANAGEMENT



Symbols bring an extra layer of meaning to concrete realities. Since the beginning of human history, symbols are widely used in order to communicate information and feelings, to immortalise knowledge, carry traditions and facilitate a feeling of group 'belonging'. Key concepts of RWM, such as safety, risk, reversibility or storage and disposal, may carry a variety of meanings or symbolic connotations. It is important for radioactive waste managers to recognise and understand these different meanings. While symbolic aspects are often hidden they can be brought out through dialogue.

Symbols

Symbols are images, phrases, words or objects that represent or 'stand for' something and are used for various purposes of communication (political, spiritual, aesthetic...).

Oftentimes, words and objects have both *literal meaning* and symbolic connotation:

- S** The literal meaning corresponds to the dictionary definition of the word;
- S** The symbolic connotation is linked to specific socio-cultural and/or personal ideas associated with the word or object.

Connotations may change with time rather quickly, as the example of Ignalina shows.

Ignalina Nuclear Power Plant: an example of fast shifts in political symbolism in the nuclear domain

In the late 1980s, the Ignalina Nuclear Power Plant in Lithuania was a symbol of unwanted Soviet rule.

In 1990, it became a symbol of Lithuania's newly earned independence and economic achievement.

In the late 1990s, after accession to the European Union, political leaders spoke of the plant as a symbol of continuing national sovereignty.



Waste and radioactive waste

In all cultures the word "waste" is associated with negative symbolism. Waste is by definition something that is no longer wanted. It evokes images of dirtiness and impurity that spoil the landscape, have no economic value and may even be a threat. While radioactive waste probably shares those associations, it also has its own specific symbolic dimension. As observed by a scholar:

"Can an object, [with its] disposal process that engages such extensive, costly and meticulous scientific attention, that has become the focus of deep societal controversy for more than 50 years, and that is expected to remain under permanent surveillance for hundreds or even thousands of years, be considered to be just a waste? Nuclear wastes, that most people have never seen, have become folkloric in the deepest sense of the term. The class 'nuclear waste' is an icon, a symbol of the great adventure (and the uncertain destiny) of our technological civilization."

The 'long-lived' nature of radioactive waste – and the need to manage and isolate it over long periods – adds another symbolic connotation connected to the notion of "legacy".

When we leave waste to future generations, do we leave a positive legacy? Or is there an underlying, symbolic aspect of transmitting dishonour instead of honour, a curse instead of a blessing, a burden instead of riches?

The symbolic dimension of key concepts associated with radioactive waste management

Examples below show that there can be 'two sides to the coin' for every important concept. It is important for radioactive waste managers to recognise and understand the variety of meanings or symbolic connotations, because they may signal areas that need attention from societal and technical decision makers. These can be brought out by dialogue.

S Safety - in technical terms, safety is typically tied to protection of human life; safety is assured by specific technical features and quantified by analyses. On the symbolic level, however, there is a close link between the concept of safety and the degree of familiarity and control over a practice. Thus, a facility will be considered safer if the local community is familiar with its technology and exercises some degree of control over it. Such familiarity and control can be achieved by e.g., partnerships, joint studies, integration of the facility into its local setting, and citizen monitoring of the operating facility.

S Landscape – not simply the 'shape of the land' but, more importantly, the territory where we live. The concept embraces the feelings of home, amenity, peace, memory, family, accomplishment and protection. Landscape is also linked to resources of water, food and shelter. Our landscape thus symbolises both our survival and our quality of life. Protests against RWM facilities may often be the result of perceived threats to the physical and mental landscape of everyday life. Integration of landscape issues within facility siting procedures may help to identify different interests and to build win-win solutions.

S Storage and disposal - technically, the word 'storage' means that the facility is temporary, while 'disposal' means that the facility is potentially definitive. Disposal, as a practice, tends to draw the image of wanting to get rid of something; of abandoning control and hence responsibility. Certain communities, however, have worked to integrate a RWM facility into their brand image and it is viewed as a scientific, modern high-tech industry, providing multiple solutions for today and also addressing needs of future generations. Facilities can become a symbol of prosperity, modernity and safety in the region and a positive feature of the local identity.

An example of change in the symbolism of nuclear facilities is found in Dessel and Mol. Until recently these Belgian towns did not want their community image to be linked to the nuclear industry and research activities present there. However, Dessel and Mol deliberated in local partnerships on how to create an integrated repository concept for the storage of low and intermediate level waste.

They concluded that a future repository could fit into a project with long-term social and economic added value for the region. Today the cAt project contributes to sustainable development by dealing responsibly with waste materials, paying attention to nature and the environment, communicating in an open and transparent way, investing in participation and dialogue, and fostering innovation.

S Compensation - may have negative connotations, suggesting a loss that needs repair, or harm that needs offsetting. The terms 'incentives' or 'benefits' have connotations of market and economy, suggesting to some that safety is traded in favour of immediate economic gains. Yet, providing economic resources to a community that hosts a facility is not just about money: it is about granting deserved recognition, and assuring quality of life. The concept of "regional development schemes" has more positive symbolism: it is forward looking, taking into account the needs of the whole region both in the present and in the future, focussing on ways to integrate the facility so that it adds value and contributes to long-term wellbeing.

Managing radioactive waste: Taking account of the symbolic dimension

Waste connected to nuclear tends to draw the image of death and decay, an aura of threatening mystery or destructiveness. By association, the practice of managing radioactive waste has also taken on a negative symbolic value. It seems connected with powerful industries, secretive and unconcerned by the interests of communities hosting installations. The past lack of transparency by nuclear institutions has entailed fears and a sense of power imbalance among stakeholders. Thinking about communities and nuclear waste could seem like thinking about David versus Goliath, or good versus evil. Many national programmes for radioactive waste management (RWM) have recognized the importance of **addressing the root causes** of such perceptions. Institutions have been restructured and laws passed to improve transparency. Formal or informal arrangements help today to build up partnerships between waste managers and civil society, promoting values of mutual learning, joint decision making and enlightened choice. Negative symbolism associated with radioactive waste management is not easy to overcome. In several countries, however, such appropriate changes in organisation have led to new relationships and views. These in turn may foster a more positive widespread symbolism in months and years to come.

To enable radioactive waste to be properly managed in our generation and beyond, we need a new approach.

- S** Although radioactive waste must be isolated to protect health and the environment... the facilities need not be hidden or ugly.
- S** Although specialised technical and scientific knowledge is needed... radioactive waste management can and should be based on partnership with local stakeholders.
- S** Instead of creating a burden for a community... a disposal or storage project should be integrated into an overall plan to ensure quality of life and long term economic development for its hosts.



Symbols help us to interpret underlying facts, ideas and values. Overall, it is important for both radioactive waste managers and host regions to understand that there is more to waste management than just concrete realities. **Positive symbolism is found through actions that empower people in decision making and add value to the host region.**

If radioactive waste managers and societal stakeholders do conduct meaningful dialogue around both technical and quality-of-life choices, then the symbolism attached to RWM facilities may factually evolve towards:

- S** a responsible solution for radioactive waste,
- S** an attractive facility sited in harmony with the landscape,
- S** an economic opportunity for the community,
- S** a technological resource linked to education, research, development and innovation.

IN SOCIETY, CERTAIN CONCEPTS CENTRAL TO RADIOACTIVE WASTE MANAGEMENT HAVE MULTIPLE MEANINGS OR SYMBOLIC CONNOTATIONS THAT SHOULD NOT LIE HIDDEN. ENGAGING IN DIALOGUE PROVIDES FOR JOINT CREATION OF KNOWLEDGE, ENHANCING MUTUAL UNDERSTANDING AND CLARIFYING ISSUES. IT RESULTS IN MORE POSITIVE SYMBOLS BEING ASSOCIATED WITH THE WASTE MANAGEMENT TASK. SYMBOLIC CONNOTATIONS AS WELL AS SOCIETAL VALUES ARE APT TO EVOLVE OVER TIME AND DIALOGUE MUST BE CONTINUED ACROSS THE MULTI-YEAR CYCLE OF RWM.