

- WNA Statement -

**Towards Greater Efficiency in the Management of Low-Level Radioactive Material
that Concurrently Supports Reuse, Recycling and Disposal**

Essential Message

The World Nuclear Association (WNA) emphasizes the importance of converging towards greater efficiency in the management of low-level radioactive material. This requires consistent strategies and approaches between countries for proper reuse, recycling and disposal. All domestic strategies and approaches may have cross-boundary implications. For instance, recycling steel from equipment which may be ultimately exported abroad cannot be viewed as a purely domestic choice. WNA therefore supports further international standardization and implementation. This WNA statement sets the stage for constructive discussions toward this international goal with a view to facilitate practical implementation at the national level.

Discussion

There are currently near 450 operating civil nuclear power reactors in the world with many associated nuclear fuel cycle and nuclear research facilities. In addition, an impressive number of new power reactors are under construction, planned or proposed.

During the operation of nuclear facilities, low-level radioactive material is routinely generated from normal activities. This includes various items such as clothes, rags, metal equipment, concrete structures, etc. that were not radioactive in the first place but that can become slightly radioactive due to the presence of tiny amounts of radioactivity in the nearby work environment, but isolated from the nuclear processes. Most of this material can be freed from its added radioactivity through survey and simple clean-up. If necessary, further decontamination measures can also be used. It is emphasized that the vast majority (over 90%) of the volume of radioactive material that is generated at nuclear facilities – other than the used nuclear fuel in reactors - is of this simple nature. So what is the problem?

Should these facts be more widely known, an often negatively charged debate could be substantially depolarized, reducing habitual systematic opposition to any reuse, recycling and disposal of such material. When properly managed and regulated these activities pose no real health issues for people or the environment.

In a rational world committed to greater efficiency and sustainability, there is no more room for this kind of artificially created log jam to thwart the re-use and recycling of valuable resources for which a better end use is needed. In turn, this amplifies the key issue of continued reliance on new resources. Meanwhile continued indecision on the safe disposal of low-value material is not sustainable either and leads to unnecessary accumulation of storage. It is easy to see that this inefficiency comes at a high price, not just for the nuclear industry but also for society as a whole. For greater efficiency, it follows that all three options of reuse, recycling and disposal need to be concurrently available.



Unfortunately, irrationality concerning the reuse, recycling and disposal of low-level radioactive material continues to prevail in too many countries – even in those countries with large nuclear power programmes. Taking Europe as an example, excellence in the implementation of the reuse and recycling of metals and of disposal of very-low radioactive waste, would, if widely shared between countries, no doubt lead to greater efficiency. Instead, any country's choice of locking-in into a single option – no matter how good – imposes serious limits on any efficiency gain.

It is worth emphasizing that all industrial nuclear facilities will eventually require decommissioning at some time and that this will generate a considerable amount of extra material that is suitable for reuse, recycling and disposal. Gaining robust experience on all three fronts with the material that is generated from operating nuclear facilities is an essential building block for the subsequent optimal management of the larger amounts of material that will be produced later on during decommissioning.

It is understandable that against this backdrop there are increasing public demands and expectations for the reuse and recycling of valuable resources, which nuclear - like many other sectors - can no longer ignore. Industry and governments, including regulators, are aware of this. As a starting point, the nuclear sector stands to benefit from internationally recognized approaches for each of the three successive options by which low-level radioactive material can be safely managed¹:

1. Reuse of any valuable material, be it equipment, components, etc.;
2. Recycling of any valuable material, which cannot be directly reused; and finally,
3. Disposal as waste of any low-value material or of valuable material which cannot be recycled at a viable cost – e.g. if, in the latter case, material permanently contains enhanced radioactive levels.

The selection of an option would be made with proper oversight in consideration of a range of factors such as safety, protection of the environment, sustainability, technical feasibility and economics.

All of the three options for the safe management of low-level radioactive material have been successfully implemented through proven technologies in several countries over many years and a wealth of operational experience has been gained worldwide. This experience commonly shows that a pre-condition to success is a solid industrial business case built around a viable level of activity. For reuse and recycling, the viability of a processing facility's input and output streams is key (e.g. suppliers' volumes and operational track records, buyers' demand volumes). We emphasize that the reuse and recycling case is mainly about a controlled industrial process with input material and output products that have defined specifications. Narrowing down this case to the notion of 'clearance' of radioactive material falls way short of the complete picture. For disposal, capacity is a key factor that definitely plays a key role in defining unit cost. Simplified disposal for very low-level radioactive material is another important factor for large volumes.

¹ WNA also supports the notion of general exemption for low-level radioactive material that does not warrant regulatory control. This key international notion is also an important part of efficient management.



For all three options, disproportionate emphasis is too often put on a series of technical parameters – no matter how important – and this tends to mask the viability or not of the overall industrial business case. To illustrate this, there are examples of cases for which newly built recycling facilities have faced a too small a market for reuse and recycling, or of cases for which disposal capacity was found insufficient even before the start of disposal operations. Another key factor to success is the need to maintain all along a high degree of trust and confidence in the business case and this primarily relies on the continued involvement of responsible operators and regulators.

The bottom line is that whenever the management options considered is supported by a solid industrial business case, operators and regulators worldwide can (and must) concurrently deploy and operate the safe reuse, recycling and disposal of low-level radioactive material. As both operators and regulators are well equipped to achieve the safety and protection of people and of the environment as part of both normal and special operations in the nuclear sector, achieving the same for safe reuse, recycling and disposal is rather straightforward.

So what is the issue? Despite the good reasons to do so, too few countries have concurrently enabled the reuse, recycling and disposal options due to the unavailability or non-acceptance of one or more of the three options. This state of affairs cannot be maintained without causing a significant disservice to society by depriving it from the full benefits of three essential complementary options for the safe and efficient management of low-level radioactive material.

A range of frequently encountered situations can be deduced from the following typical examples. There is little or no interest in the disposal of large volumes of valuable material (e.g. stainless steel, copper wires, etc.) with very low or no radioactive levels. Furthermore, strictly relying on disposal may lead to a rapid saturation of existing disposal capacity by large volumes of material that could otherwise be easily and safely recycled and reused. On the other hand, recycling large volumes of low-value material is unwise and recycling small volumes of specific metals may be non-economical in the first place. Clearly, a balance must be struck in order to find an optimal solution that fits each case and this can only be achieved through the concurrent availability of reuse, recycling and disposal. Relying on a single option eliminates competition thus reducing opportunities for cost efficiency.

Conclusion

This *status quo* on the reuse, recycling and disposal of low-level radioactive material arising from the civil nuclear industry is clearly untenable. International and national leaders from both industry and governments should enable the concurrent availability of these three safe management options in each country, worldwide. Whenever the option considered is supported by a solid industrial business case, operators and regulators can (and must) concurrently deploy and operate safe reuse, recycling and disposal. WNA entirely supports this more flexible approach. WNA has the firm conviction that the exclusive commitment to a single option cannot be sound on any grounds.



The World Nuclear Association is the international private-sector organization **supporting the people, technology, and enterprises** that comprises the global nuclear energy industry.

WNA members include the full range of enterprise involved in producing nuclear power – from uranium miners to equipment suppliers to generators of electricity.

With a secretariat headquartered in London, the **WNA serves as a global forum** for industry experts and as an authoritative information resource on nuclear energy worldwide.

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