It has been noted that the minimization of one detrimental impact is always likely to result in something else detrimental not being minimized. Hence the need for a holistic view of optimization.

reference levels. Again, the process should be supported by stakeholder engagement. Solid waste minimization, as has been recommended, can be achieved by discharging more waste to air and water, for instance through incineration or dissolution, or creating higher-level waste that is not suitable for shallow land burial. It is not entirely evident that such discharge is the optimum management method, and so the choice would need to be supported by a relevantly structured assessment. More generally, it has been noted that the minimization of one detrimental impact is always likely to result in something else detrimental not being minimized. Hence the need for a holistic view of optimization, both as developed in radiological protection and as would be more widely understood by stakeholders.

Storage and disposal

In addition to large quantities of fuel debris, the remediation and decommissioning response to an accident of the Fukushima Daiichi type is likely to generate radioactive waste that exceeds limits for near-surface disposal or intermediate-depth disposal. This waste needs to be appropriately stored and stabilized until a final disposal solution is developed.

The large quantity of waste created by an accident may exceed existing radioactive waste disposal capacity or be in a waste class for which a disposal solution is not currently available. It may be necessary to create interim stores, but they should be designed taking into account that final disposal will be needed in due course and may need to remain effective for extended periods while sites for final disposal are identified and licensed. The accident site, however, may not be the location to site this interim storage facility.

Safety analyses

Safety analyses and radiological and environmental impact assessments are necessary to support identification of priorities, identify feasible management options, and select preferred options from feasible alternatives. This process needs to be technically underpinned, but must be informed by stakeholder engagement, particularly in regard to local conditions, but also in terms of ensuring that the assessments address issues of interest to stakeholders.

These analyses must, to the extent possible, be based on existing regulations and regulatory guidance. Only in exceptional circumstances, and based on a safety case that demonstrates compliance with the safety basis of the applicable regulation(s), should exemptions from these criteria be permitted.

Thus, the design and content of these analyses and assessments should be specific to the purposes of the assessments, including the interest of the intended audience for each analysis or assessment.

International cooperation

Further development of plans for international cooperation in the event of a major accident would be useful, as would further guidance on the application of international recommendations, standards, and guidance in the post-emergency phase of a major nuclear accident.

Preplanning guidance on decommissioning and radioactive waste management should consider:

- what can be planned in advance;
- what cannot be planned until the parameters of the accident are understood;
- the scope for sharing characterization resources, staff, and equipment, both nationally and internationally.

Additional guidance in other areas could also be useful, including on:

- the transition from emergency response to normal radiation exposure regulation;
- stakeholder engagement, with emphasis on later stages of recovery;
- communication processes;
- how to address chemicals alongside the radiological risks. ■

This article has been excerpted from "Management of Radioactive Waste after a Nuclear Power Plant Accident" (NEA No. 7305, OECD 2016, www.oecd-ilibrary.org) with permission from the OECD. It has been edited for clarity and length.