

The main findings of the symposium were as follows:

- Considerable progress has been made in the last ten years towards the harmonization of standards and regulatory approaches. However, the issue of harmonization remains a prospect rather than a reality and continues to be the subject of much debate. In the meantime, severe disruptions in international trade are being experienced to an increasing extent. A determined effort is therefore needed at the national and international level to achieve a common and coherent approach to the regulation of NORM.
- The activity concentration criteria of 1 Bq/g for uranium and thorium series radionuclides and 10 Bq/g for ^{40}K are, despite some reservations, generally accepted as the most practicable way forward in determining which materials should be considered for regulation in terms of the requirements for practices.
- More clarity is needed in the IAEA Transport Regulations regarding the definition of ‘natural material’ so that the criteria for defining the scope of the Transport Regulations can be understood as being applicable regardless of whether or not the material has been subject to processing.
- A dose criterion of the order of 1 mSv per year is now commonplace as a de facto standard for exemption of NORM from the regulatory requirements for practices.
- Some industrial applications of thorium have been shown to give rise to significant worker exposures, but these applications are now disappearing as non-radioactive substitutes become available. This appears to leave work involving monazite and rare earths extraction as being the only major area outside of the uranium industry where worker doses are likely to reach a substantial fraction of the dose limit. In other industrial activities involving NORM, there is growing evidence that the enforcement of normal occupational health and safety measures would most likely be sufficient to ensure that annual effective doses received by workers do not significantly exceed 1 mSv and therefore do not require the implementation of specific radiation protection measures.
- The information now available on public exposure to NORM suggests that the annual effective doses received by members of the public are likely to be always below 1 mSv provided that present-day environmental protection measures (such as the treatment of effluent streams) are applied. Indeed, the only evidence of doses even approaching 1 mSv relates to exposures arising from the occupancy of former landfill sites containing NORM.
- With the increasing use of facility-specific data for worker and public dose assessments, it is becoming ever more clear that the use of unrealistic assumptions to characterize exposure situations can give rise to very large overestimates of dose. These overestimates can in turn lead to false conclusions being drawn on the need for, or extent of, regulation. More attention therefore needs to be focused on the use of site-specific measurements for dose assessment.
- The use, reuse and recycling of NORM residues and NORM-contaminated items — including, where appropriate, the dilution of NORM residues to reduce the activity concentration — is now starting to be recognized as a legitimate and desirable option for minimizing the quantities of NORM that need to be disposed of as waste. In particular, the beneficial (and safe) uses of phosphogypsum as a co-product of fertilizer production are now very much in the spotlight and, in some countries at least, there is already evidence of a shift in regulatory attitude towards this approach. However, when considering the use of NORM residues in the construction of dwellings, as a component of either landfilling material or construction material, the possibility of increased radon exposure needs to be carefully taken into account.

- It has been demonstrated that NORM-contaminated metal scrap can be safely recycled in a suitably controlled melting facility and this recycling option now seems to be gaining greater acceptance by the general steel industry.
- A protocol developed in Spain for controlling the inadvertent introduction of radioactively contaminated scrap into conventional scrap processing facilities, based on voluntary cooperation between all the concerned parties, is now gaining acceptance at the international level as a model for dealing with this problem. The protocol, while originally having been designed to prevent the inadvertent melting of radiation sources, is equally effective in dealing with scrap with unacceptable levels of NORM contamination.
- Despite the many opportunities for use, reuse and recycling, there are still many NORM residues that will ultimately have to be disposed of as waste. There is now a considerable body of knowledge on appropriate methods for conditioning, storage and disposal of the various types of NORM waste, but the necessary facilities and regulatory provisions are in many cases not yet in place.
- There is growing evidence to suggest that bulk wastes contained in properly engineered surface impoundments have very low radiological impacts. However, their environmental, safety and financial liability implications can be seriously underestimated. This has been demonstrated in the case of phosphogypsum stacks, where recent developments have suggested that the stacking option is not optimal and that more attention should be given to beneficial uses of the material.
- Landfill disposal has been demonstrated as being an appropriate option for dealing with many types of NORM residue for which the quantities and activity concentrations are moderate, including most types of furnace dust with enhanced concentrations of ^{210}Pb and ^{210}Po . Normal landfill facilities are generally suitable, but the presence of non-radiological contaminants such as heavy metals may require the use of landfill sites specially designated for hazardous waste.
- Scales and sludges, which are generated in small volumes but which may have activity concentrations reaching very high levels, such as those originating from the oil and gas industry, usually have to be held in storage pending the establishment of suitable disposal facilities. Suitable techniques exist for conditioning (e.g. separation of mercury) and long term storage.
- NORM residues from the chemical extraction of rare earths from monazite are produced in significant quantities and have characteristically high activity concentrations. It has been demonstrated that such wastes can be suitably disposed of either in earthen trenches or in engineered cells, depending on the activity concentration.