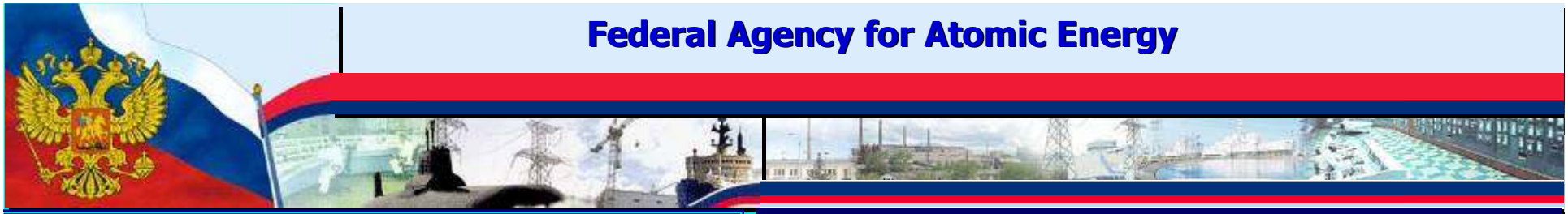


Federal Agency for Atomic Energy

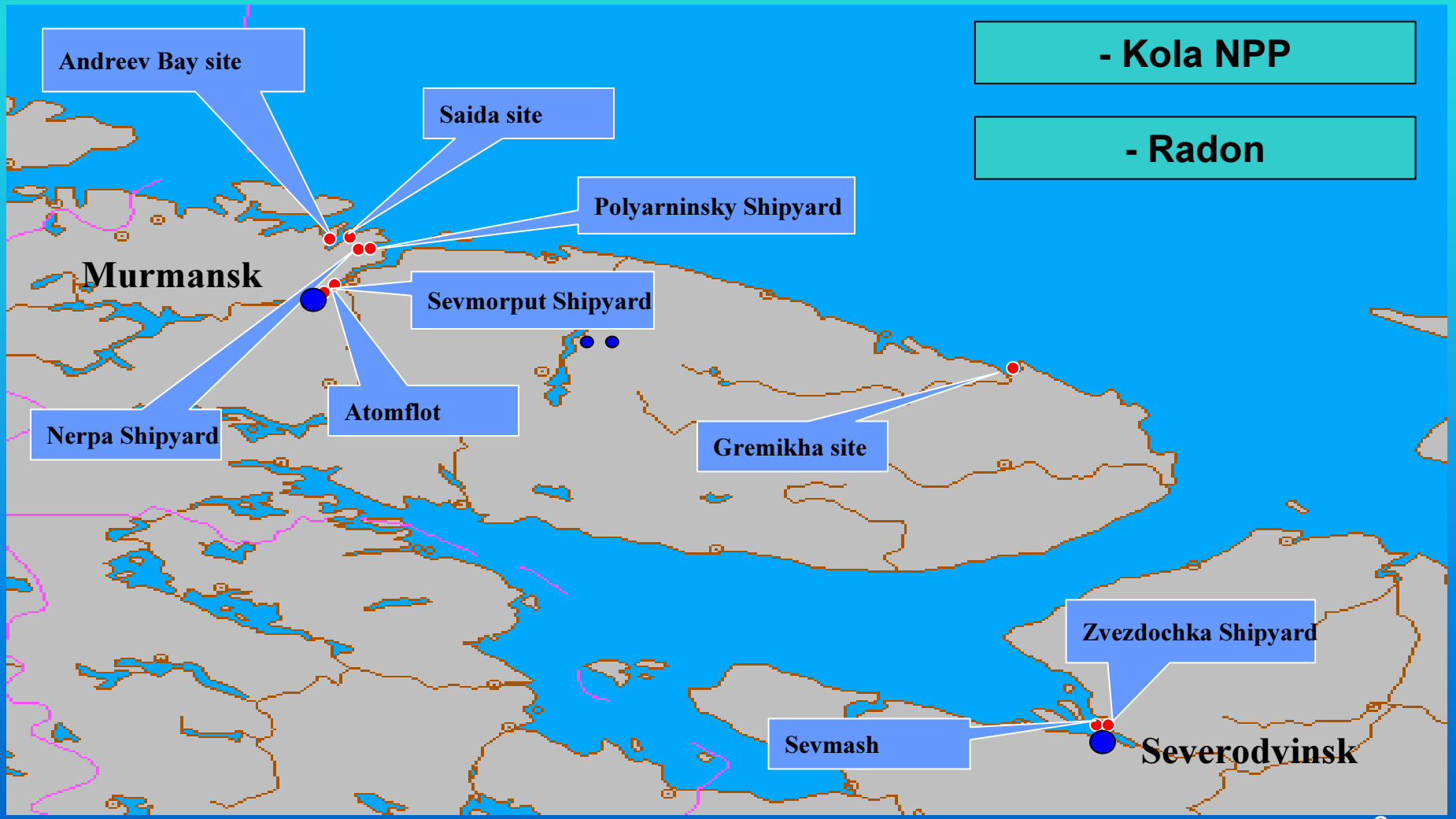
N.A. DOLLEZHAL RESEARCH AND DEVELOPMENT INSTITUTE OF POWER ENGINEERING

General concept of nuclear legacy waste management in the North-West of Russia

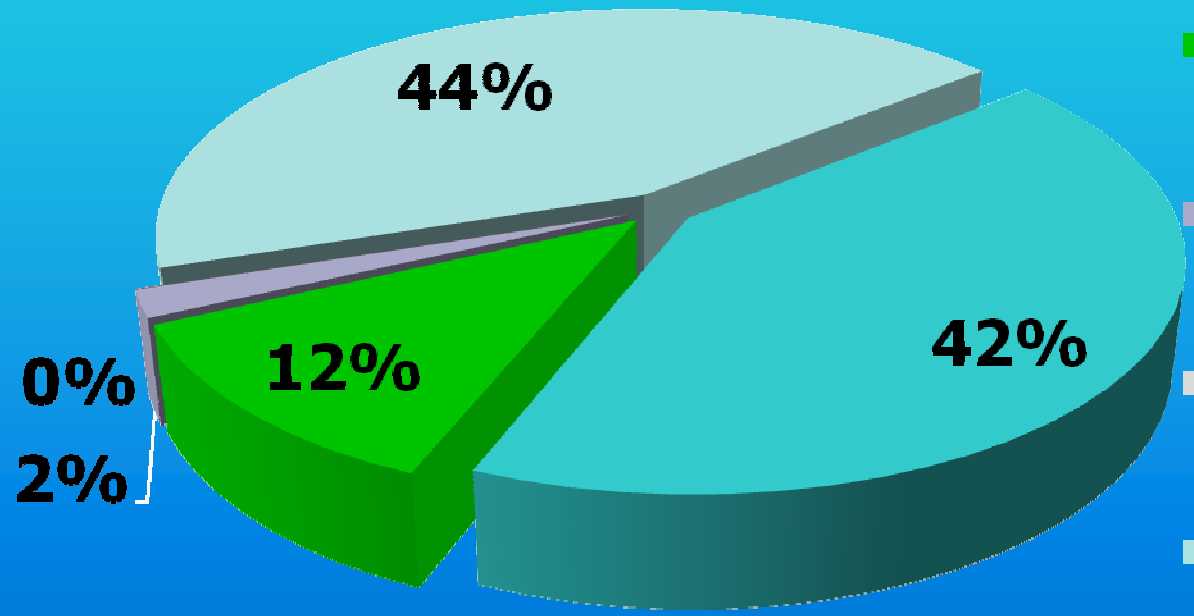
A.O. Pimenov
Deputy Chief Designer

Oxford, March 2008

Location
of RW storage sites in the North-West of Russia

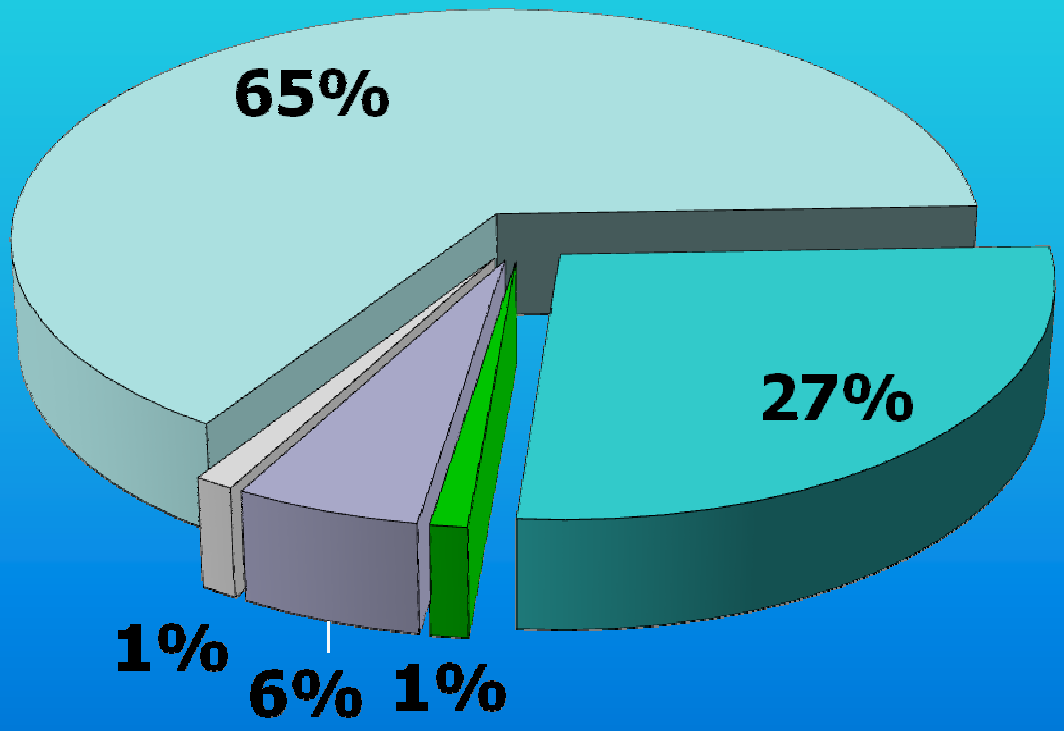


Distribution of accumulated radioactive waste by sources



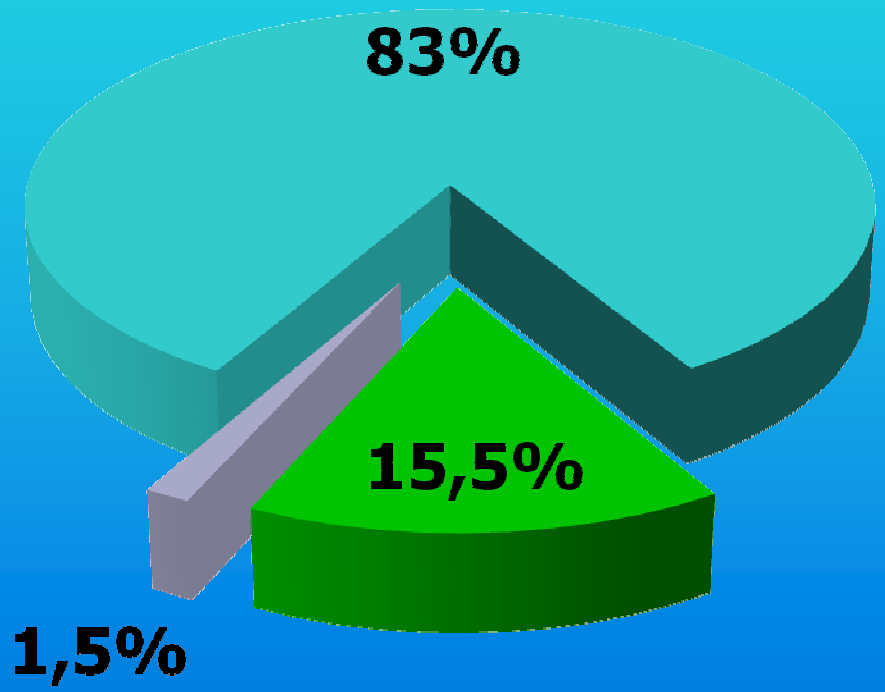
- SNF&RW storage sites
- Industrial and naval sites
- Nuclear service vessels
- Nuclear-powered surface ships and icebreakers
- Reactor blocks from submarines and surface ships

Distribution of future radioactive waste by sources

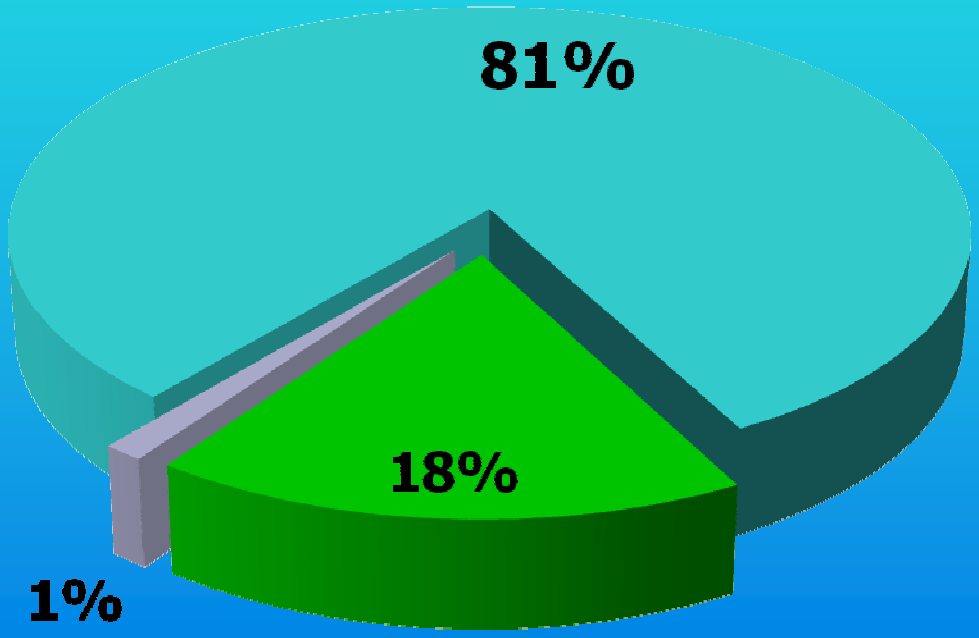


- SNF&RW storage sites
- Industrial and naval sites
- Nuclear service vessels
- Nuclear-powered surface ships and icebreakers
- Reactor blocks from submarines and surface ships

Distribution of accumulated SRW by categories

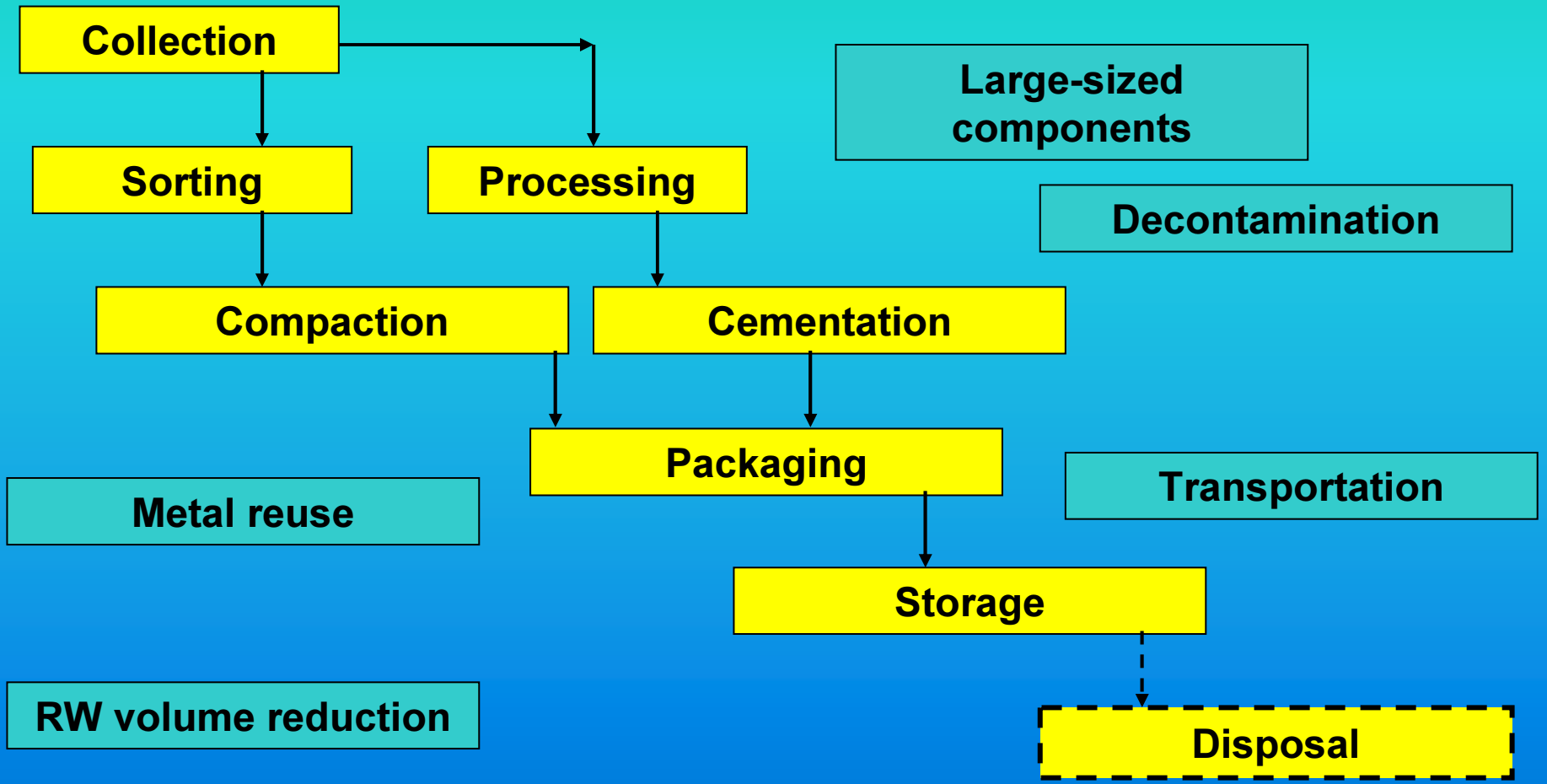


Distribution of accumulated LRW by categories



- Low-level waste
- Intermediate-level waste
- High-level waste

Basic process stages in RW management



Main categories of the waste under consideration

Solid RW

- High-level
- Intermediate- and low-level
- Very low-level (after introduction of this category)

Liquid RW

- High-level
- Intermediate- and low-level
- Complicated chemistry

Main initial RW categories related to proposed handling methods

High-level SRW

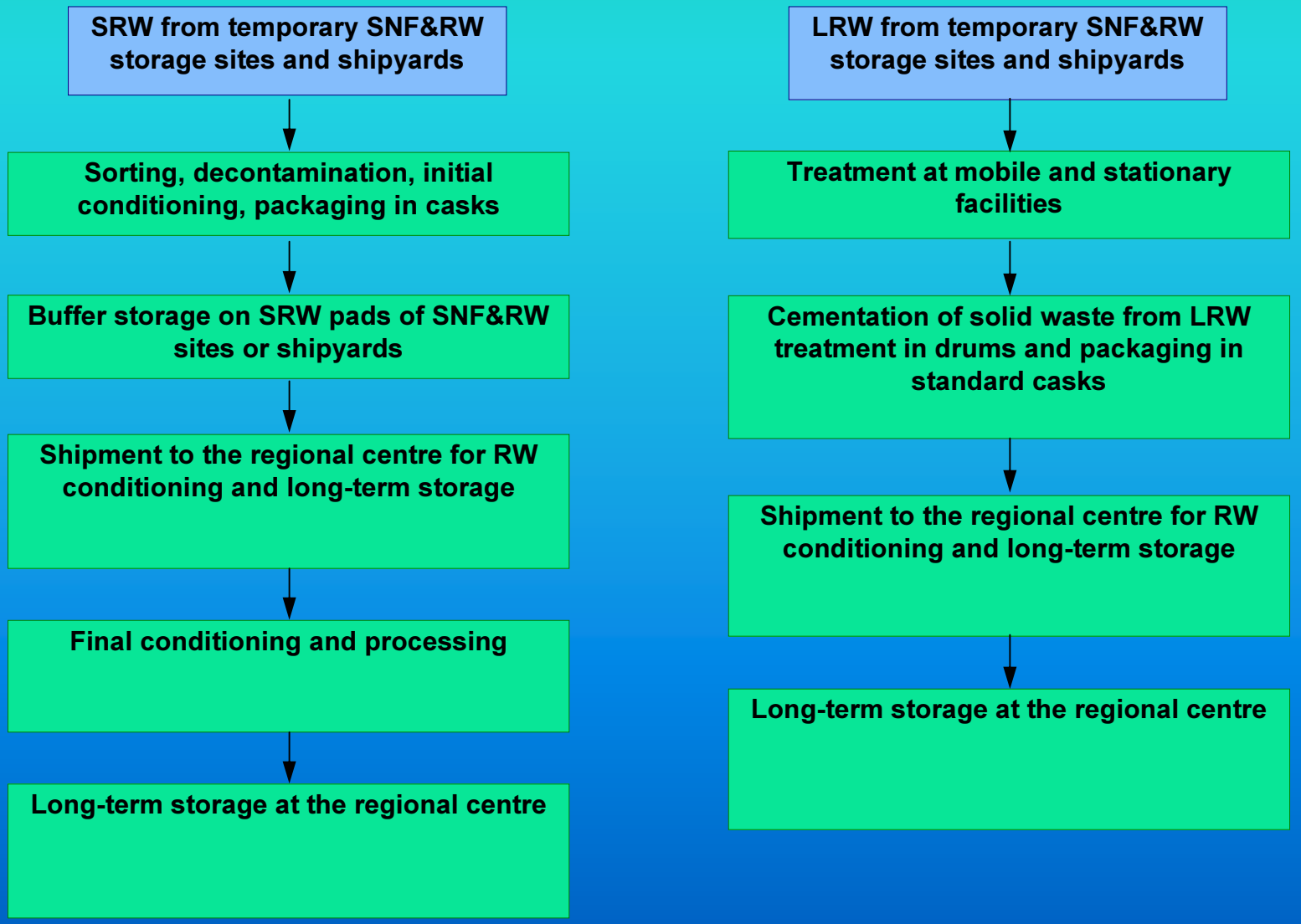
Intermediate- and low-level SRW

Very low-level SRW

(after introduction of this category)

Liquid RW

Strategic approaches to SRW and LRW management in the North-West Region



Intermediate- and low-level SRW management

ILW ~ 15.5 %

LLW ~ 83 %

Collection, sorting, decontamination, packaging for shipment

Large-sized components

Very low-level waste

Buffer storage

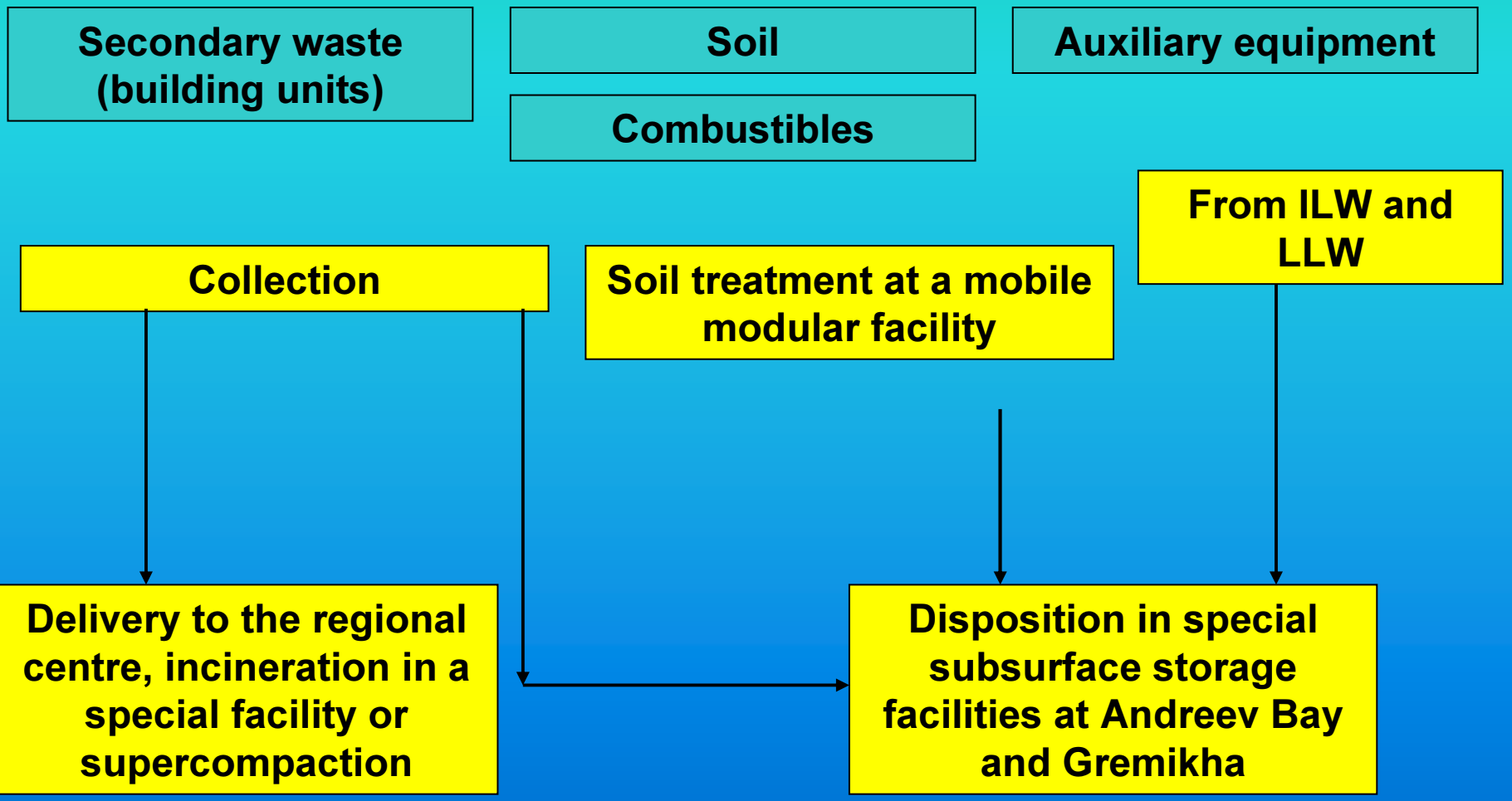
SRW pad

Carrier vessel

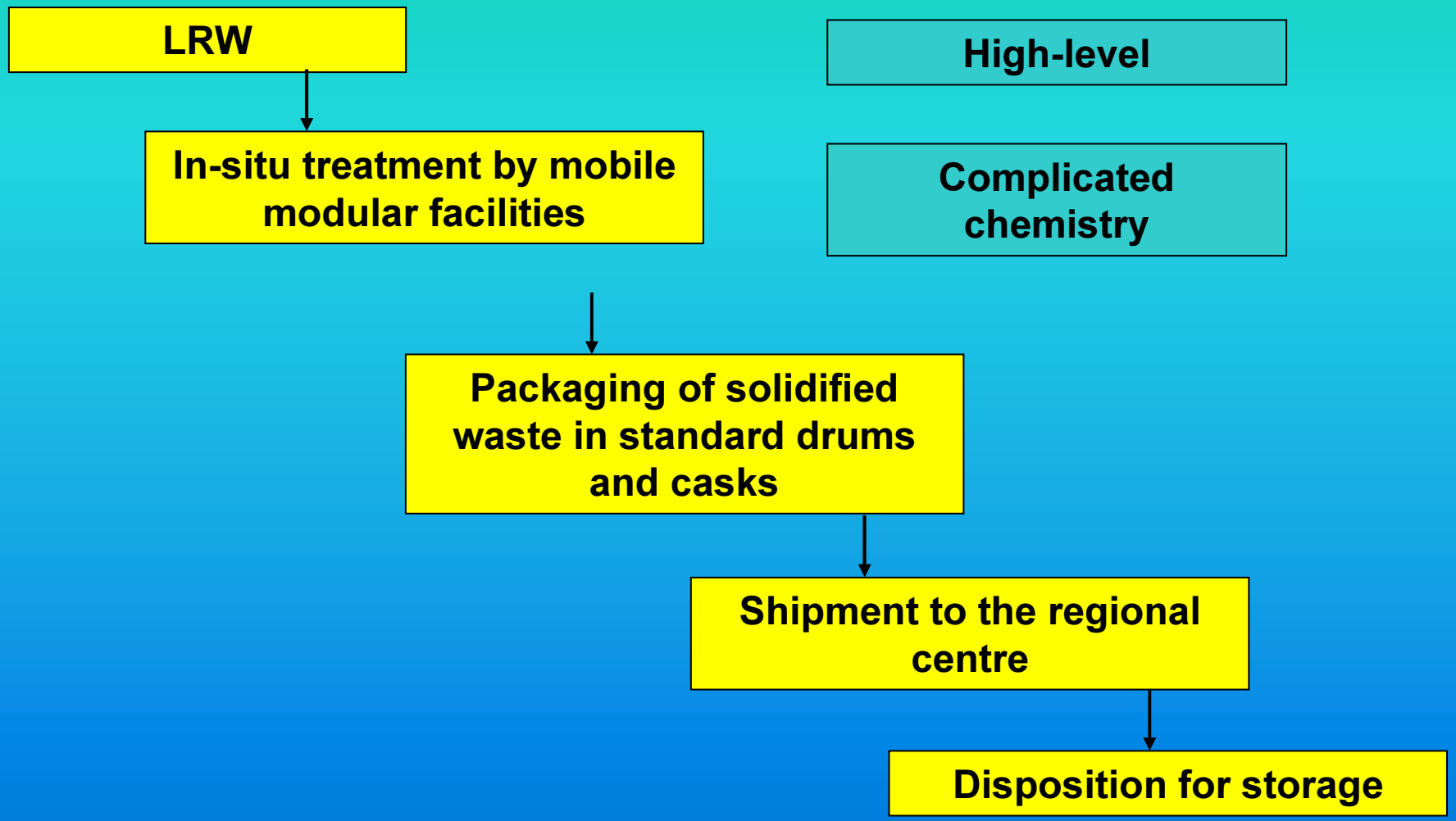
Delivery to the regional centre

Final conditioning (sorting, supercompaction), decontamination, processing, packaging, disposition for storage

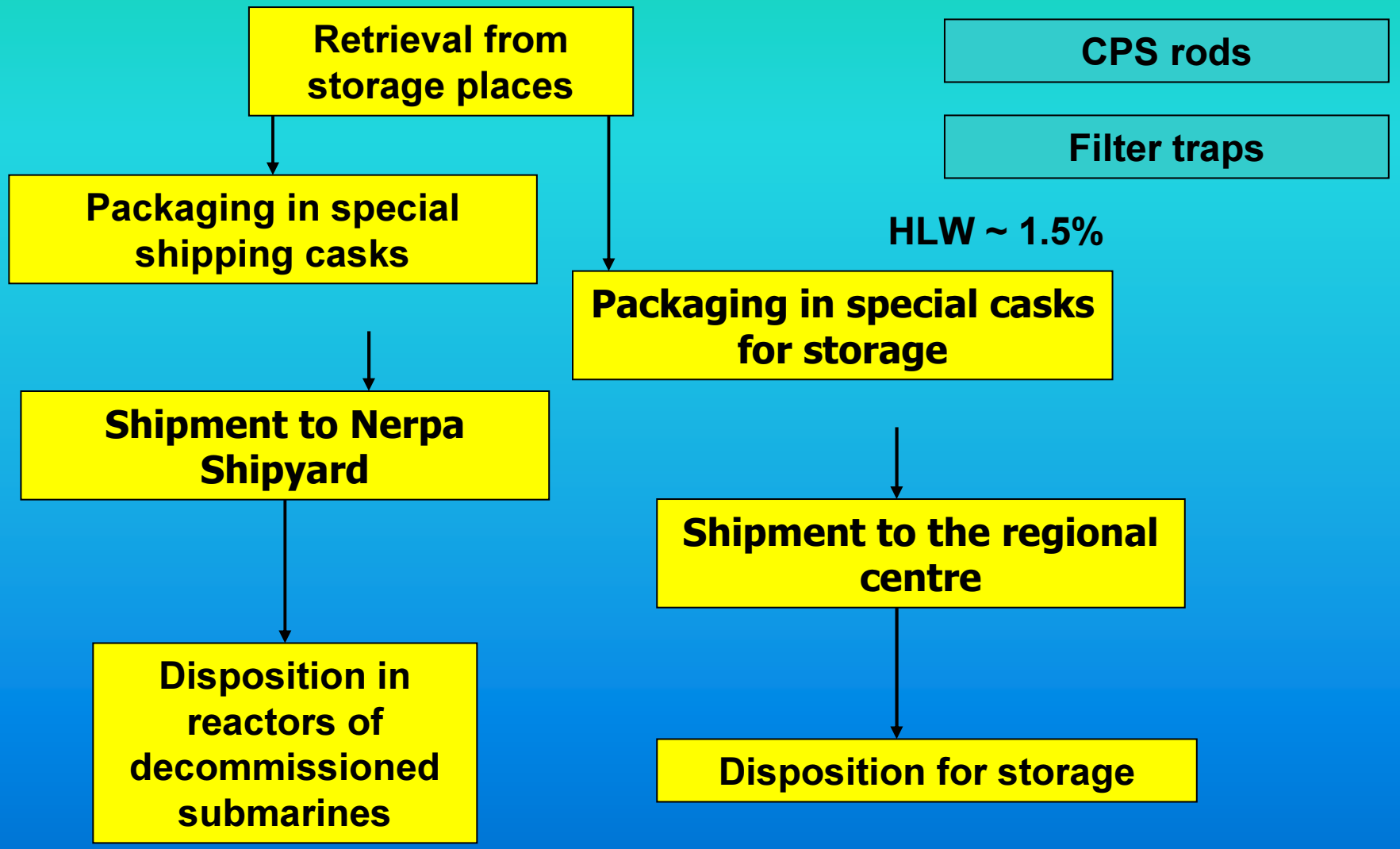
Management of very low-level SRW (after introduction of this category)



Liquid waste management



High-level SRW management



Conclusions

1. The above approach provides for optimal use of the infrastructure available already or planned to be built.
2. In-situ operation of mobile modular facilities will minimise the number of facilities to be built on the sites, which will subsequently have to be dismantled or subjected to remediation.
3. In the cases unprovided for in the general handling and transport scheme, the radioactive waste will be dealt with under separate projects.
4. The technical assignment on building the regional centre for RW conditioning and long-term storage should describe as much as possible the equipment and facilities to be provided.
5. It is necessary to assess in technical and economic terms and to optimise the handling and transport options for RW delivery to the regional centre.
6. The casks to be used in the handling and transport process should be clearly identified and unified, with the number of their types reduced to a minimum.
7. All the basic engineering solutions for the RW management system should be adopted in consultation with NIKIET and should be approved by Rosatom to prevent uncoordinated actions and to have a common RW management policy pursued in the region.