



Strål
säkerhets
myndigheten

Swedish Radiation Safety Authority

Implementation of the Euratom BSS rules for clearance in the Swedish legislation

NKS-B RadWorkshop, Roskilde, October 2018

Workshop on Radioanalytical Chemistry
for Nuclear Decommissioning and Waste Management

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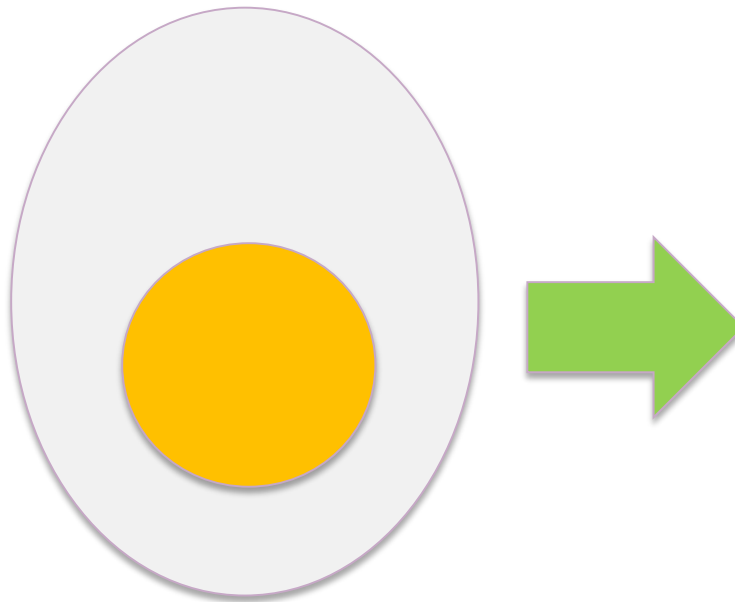


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Ranstad uranium leaching facility



The mission in decommissioning



Cleanup

- Reuse of the site
- Release of the site from regulatory control

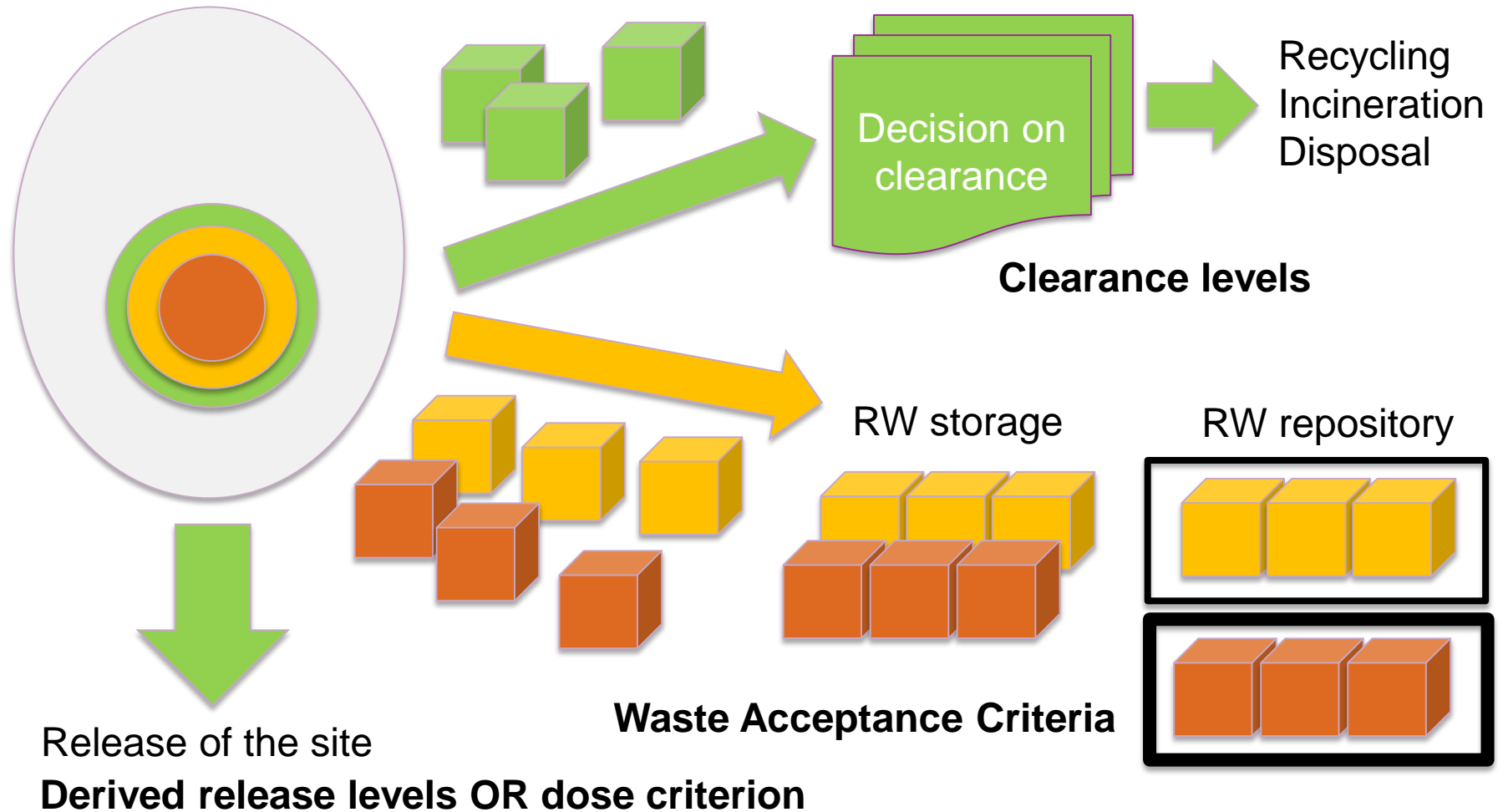
Fulfillment of obligations

- Waste disposal
- Reporting
- Archiving

**Proper management of every Bq
relies on proper knowledge of the radioactive "beginning state"!**



The mission in decommissioning





The mission in decommissioning

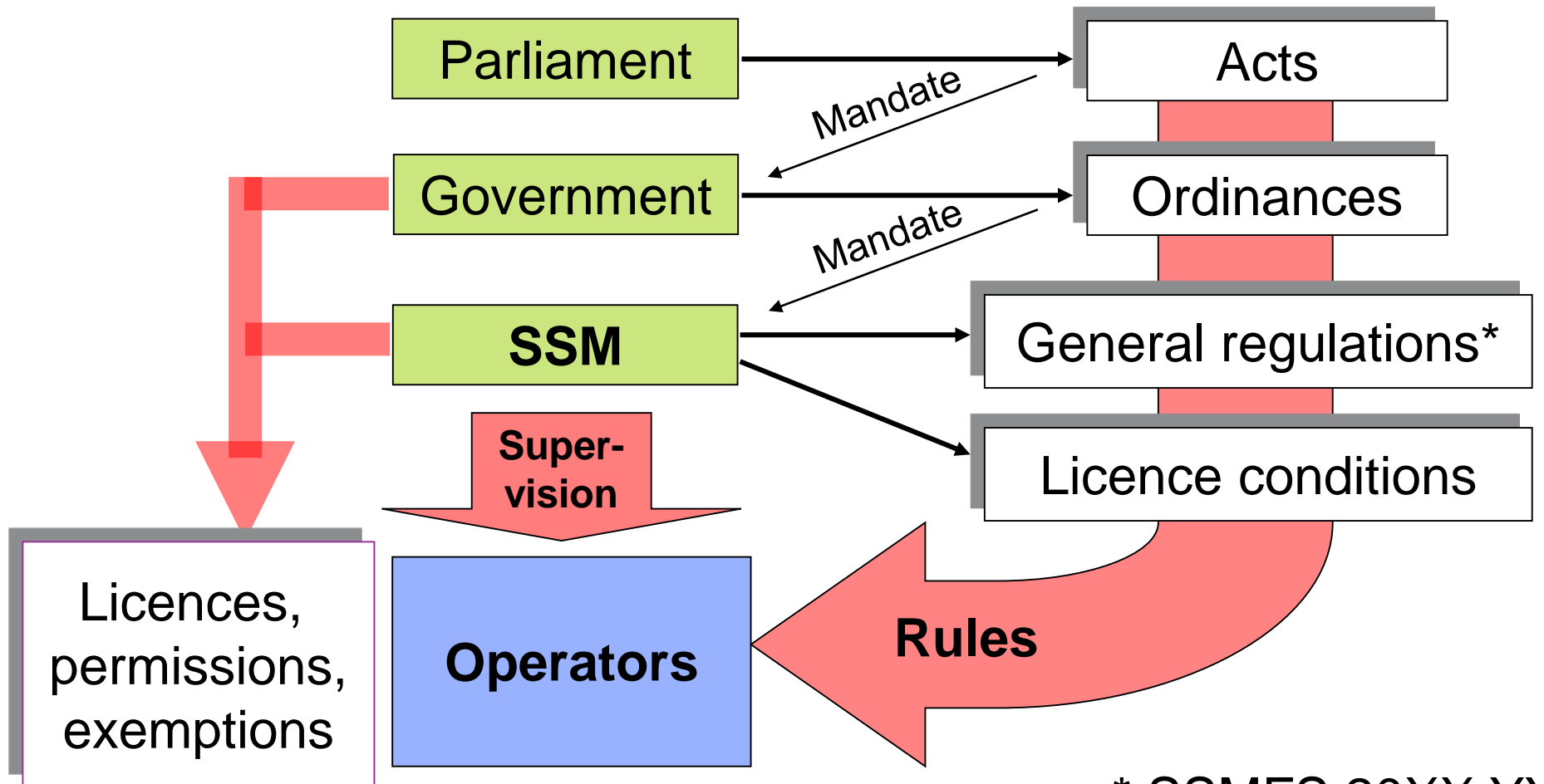
CHARACTERISATION!

CHARACTERISATION!

CHARACTERISATION!



Legal system, SSM mandates

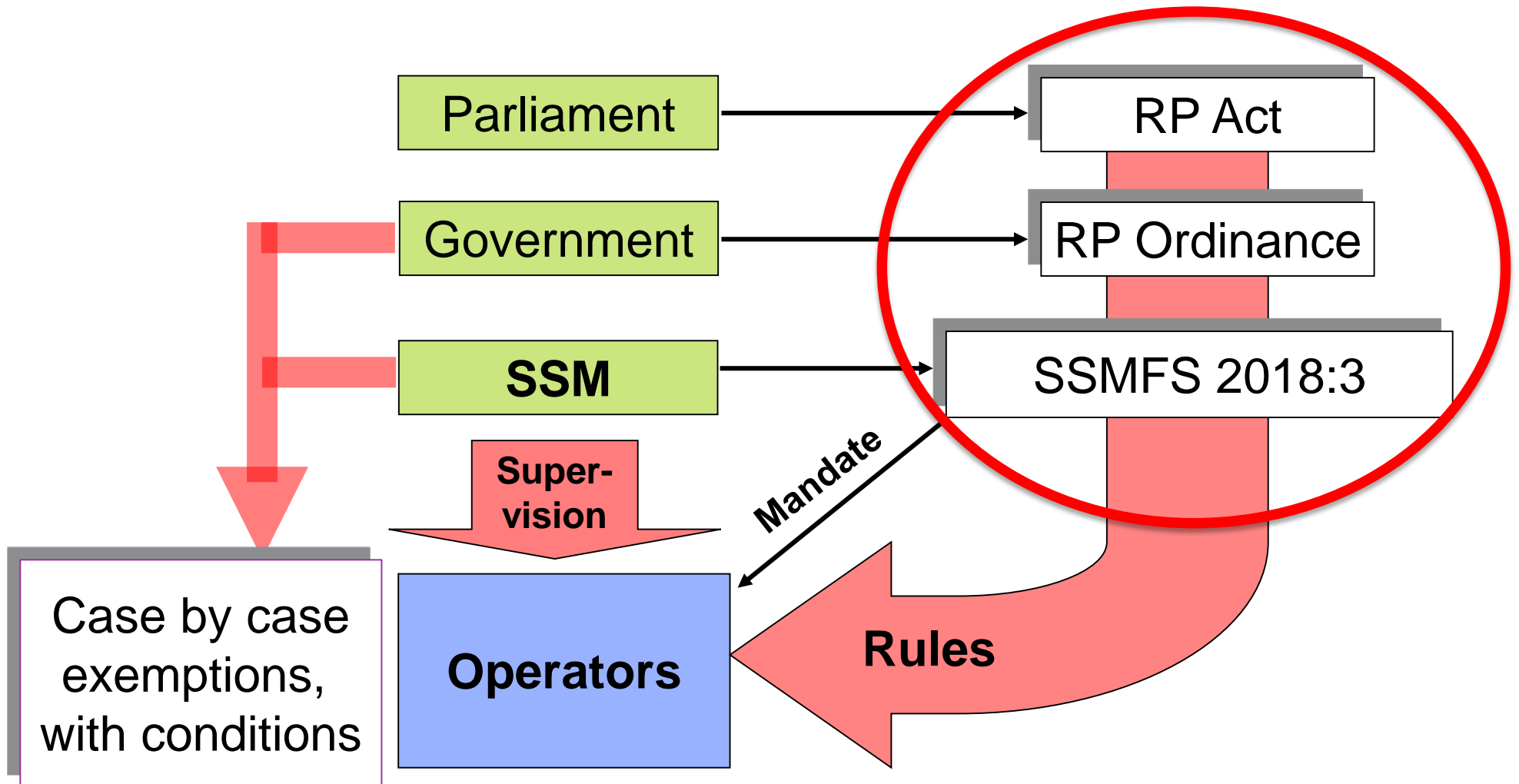


* SSMFS 20XX:YY



Mandates for clearance

BSS implementation





Implementation of the Euratom BSS rules for clearance

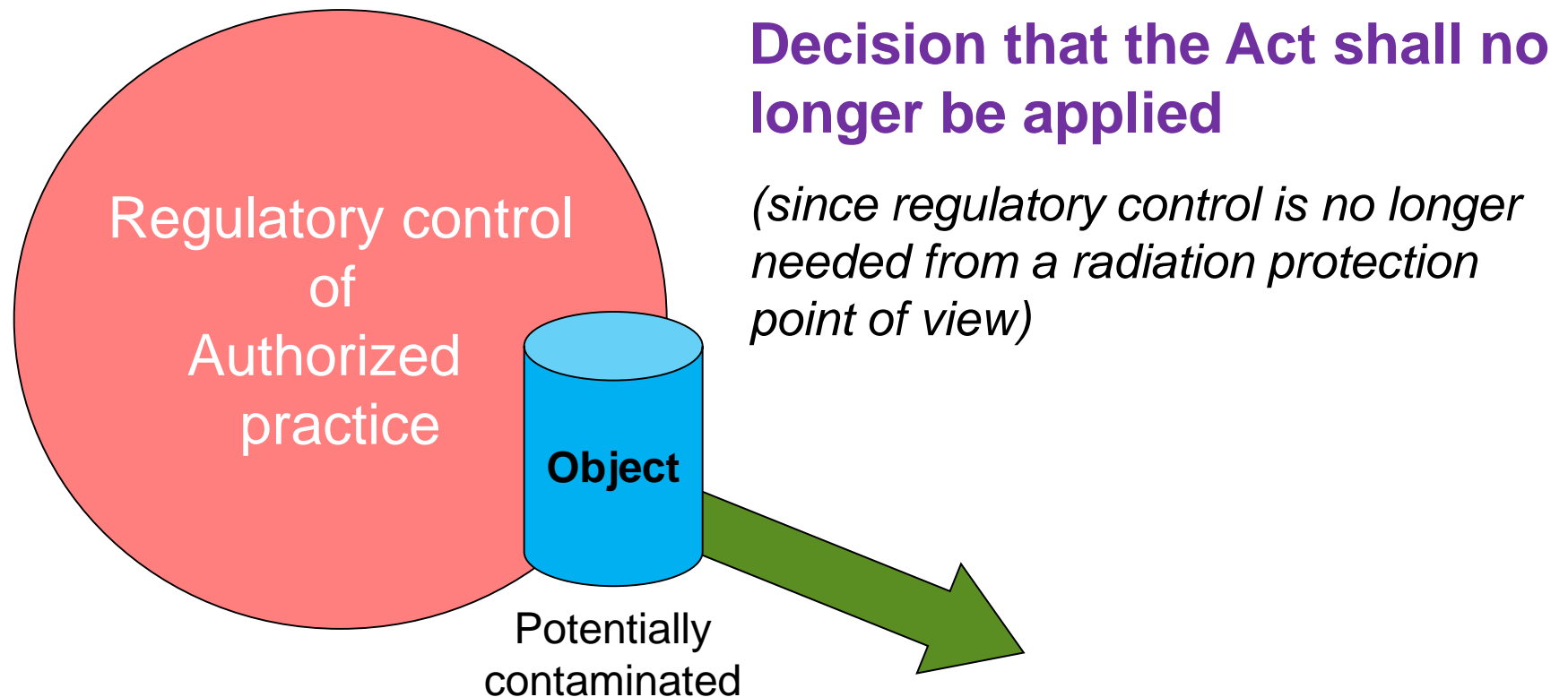
Revision of old regulations for clearance of materials, building structures and land (SSMFS 2011:2)

- Implement EU BSS articles on clearance
- Develop rules for release of sites
- Include experiences from 6 years of application of the old regulations



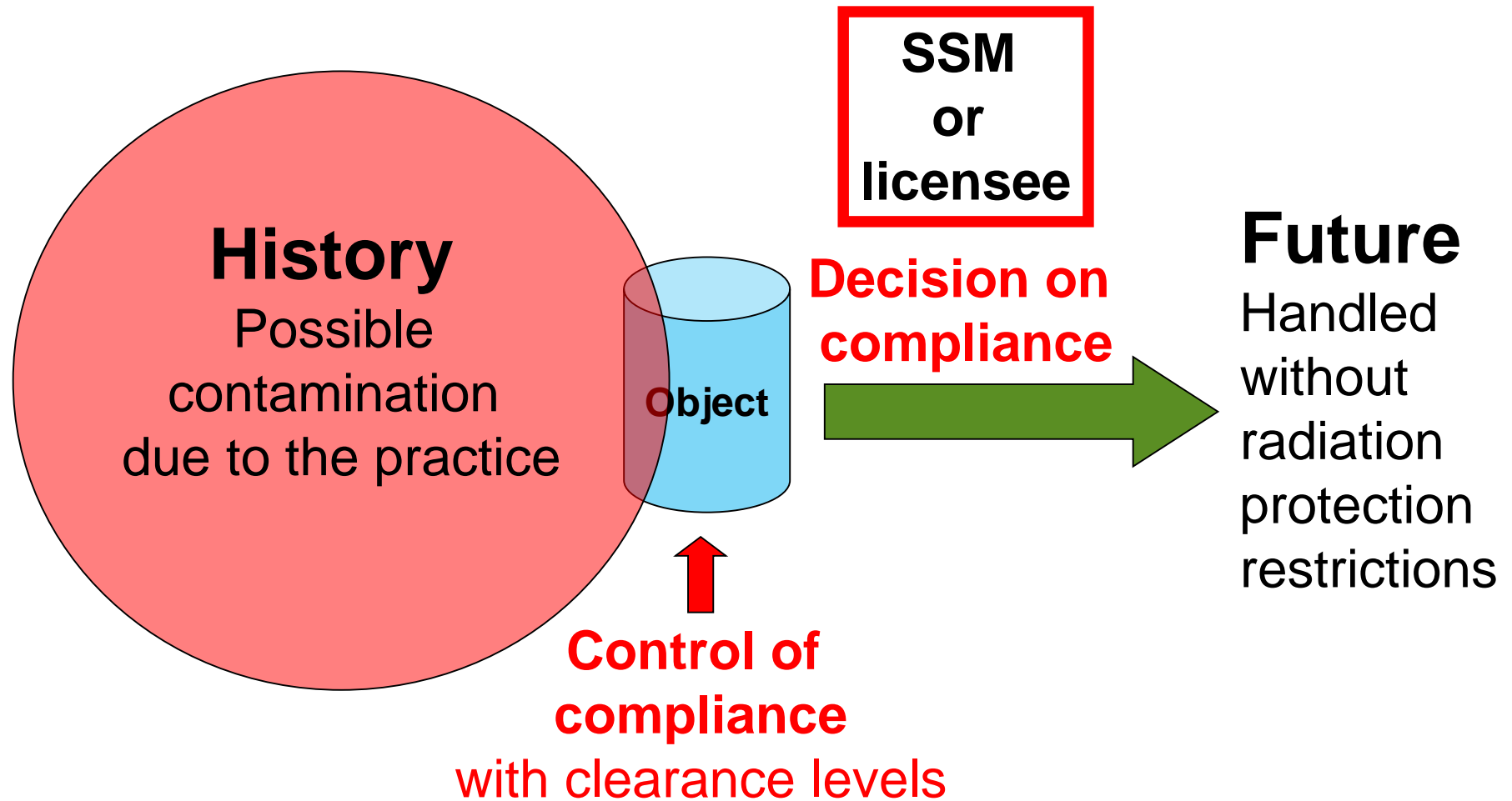
Clearance – definition

New Act on Radiation Protection (2018:396)



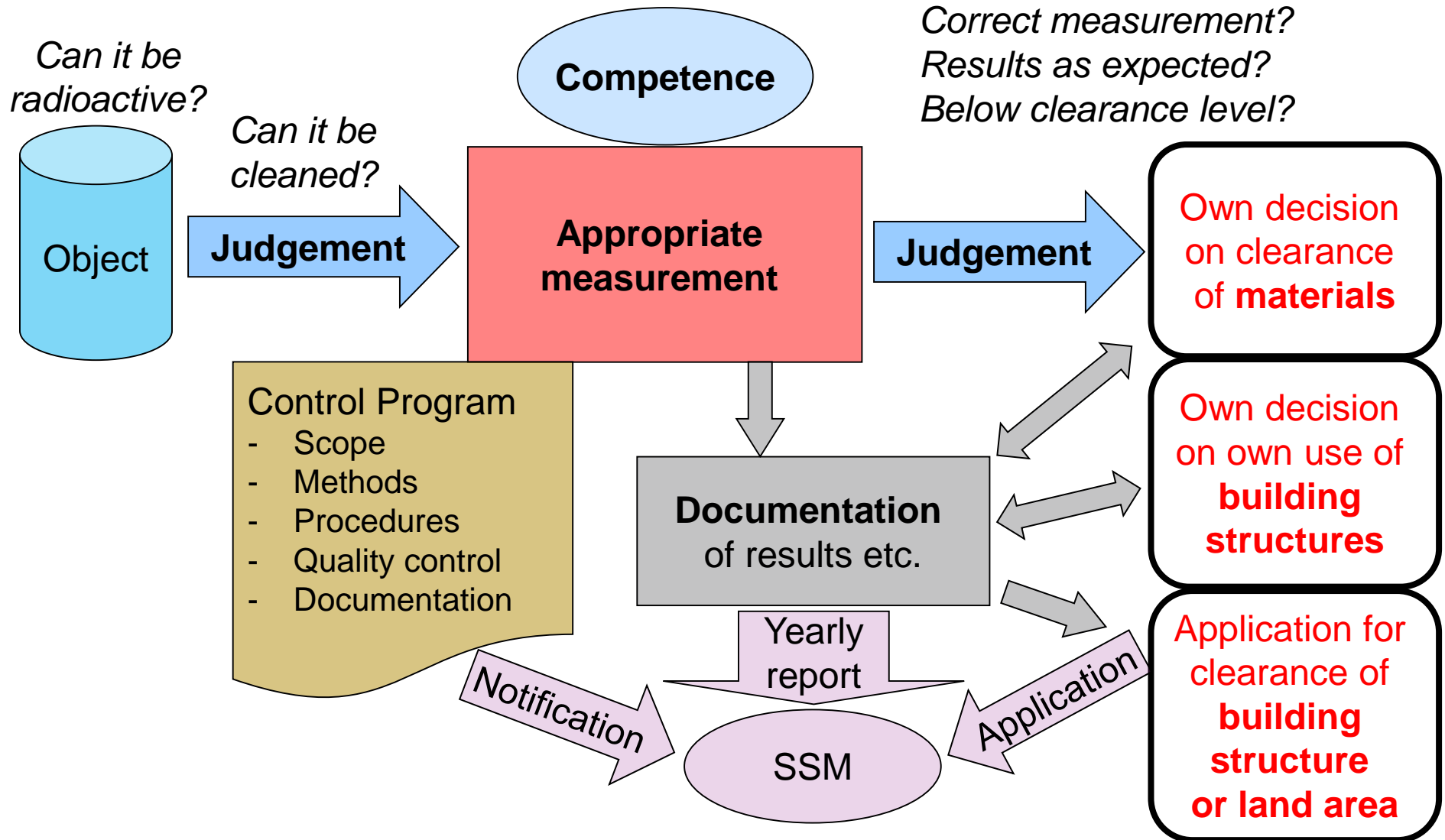


Principle for regulation





Requirements on clearance procedures





New regulations on clearance: SSMFS 2018:3

- EU BSS clearance levels (**IAEA RS-G-1.7**)
and **RP122** (for naturally occurring radionuclides, cf. BSS Art 30.3)
- Higher surface contamination levels for some difficult to measure radionuclides
- Requirements on removal of contamination
- 0.1 mSv/y dose criterion for release of sites



SSMFS 2018:3 clearance options

- General clearance of materials (free use)
- Clearance of hazardous waste (limited amounts)
- Clearance of personal objects and tools and equipment for reuse
- Clearance of building structures for reuse or demolition
- Clearance of land areas with or without restrictions on future use (0.1 mSv/y dose criterion, 1 mSv/y if restrictions fail)



Other clearance options

SSM can decide other, specific clearance levels on a case by case basis,

if there are circumstances that reduce the risk for exposure of members of the public

Examples

- ➔ Clearance of metal ingots for remelting
- ➔ Clearance of waste for disposal



New option?

Clearance for incineration of
non-hazardous waste

Proposed by Vattenfall
(owner of Forsmark and Ringhals NPP:s)

No application yet, discussion ongoing.

Situation adopted clearance levels

Object	Materials				Building structures		Sites	
Dose Criterion	0.01 mSv/y					0.1 mSv/y		
Free or specific use	Specific (eg. disposal)	Hazardous waste	Tools etc. for free reuse	All other materials for free use	Buildings for free use	Buildings for demolition	Sites for free use	Sites for use with restrictions
Clearance levels	Decision by SSM	Clearance levels in SSMFS					Decision by SSM	
Decision maker	Decision on clearance by the licensee				Decision on clearance by SSM			

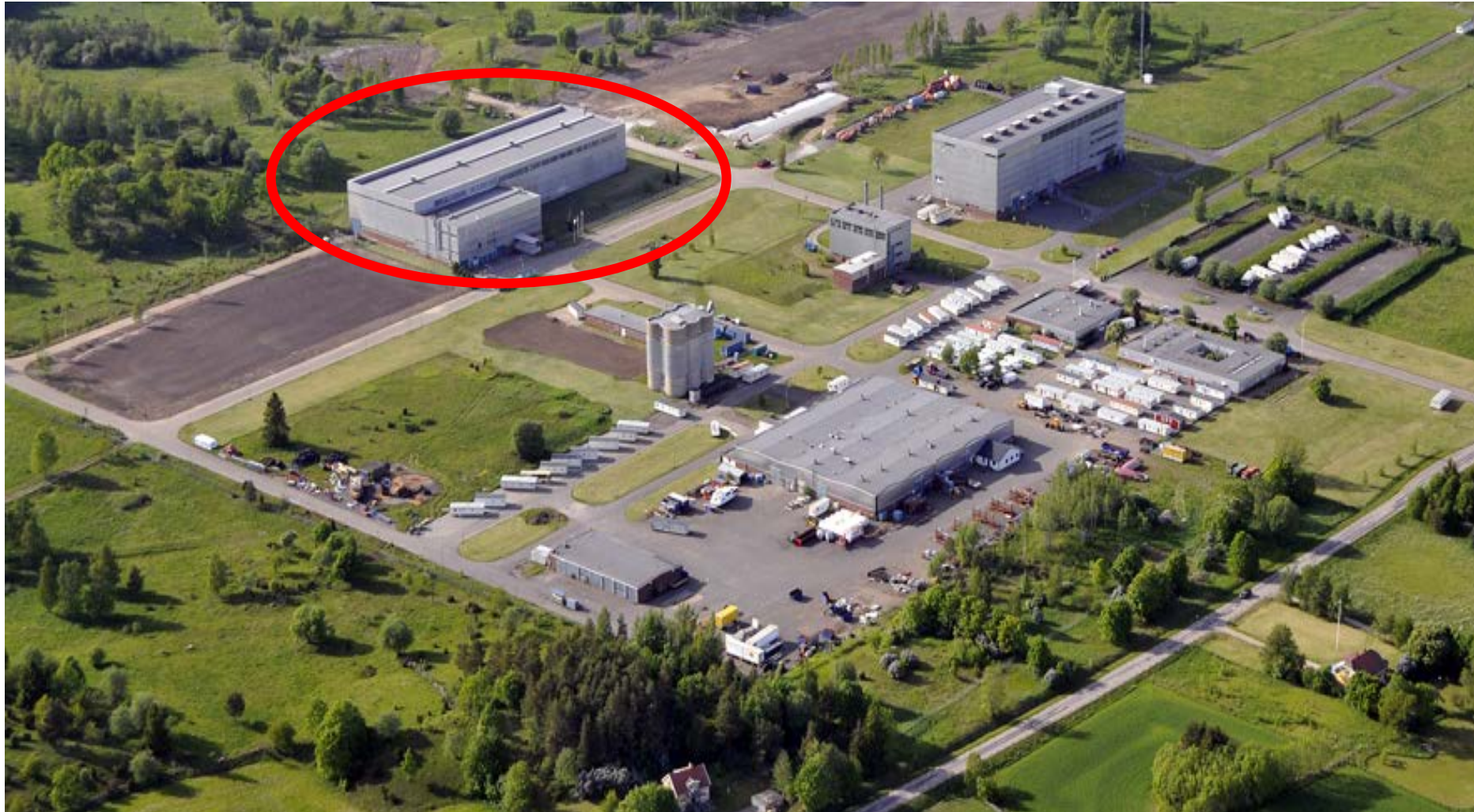


Main experiences from application of the old regulations

- Development of uncertainty considerations
- Need for **reference materials** for calibration and intercalibration
- The importance of logistics
- The importance of clear responsibilities, transparent documentation and decision points
- The importance of SSM measurements



Example: Ranstad uranium leaching facility





SSM sampling in November 2016



- Samples from surfaces and other material samples
- γ and α spectrometry
- Good agreement when considering the uncertainties

Impact:

- Additional removal of contaminated material
- Confidence in reported results from the licensee
- Stakeholder confidence









Thank you for your attention!

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EU BSS, Article 30

Release from regulatory control

Article 30.1.

Member States shall ensure that the disposal, recycling or reuse of radioactive materials arising from any authorised practice is subject to authorisation.



EU BSS, Article 30.2

Materials for disposal, recycling or reuse may be released from regulatory control provided that the activity concentrations:

- (a) for solid material do not exceed the clearance levels set out in Table A of Annex VII; or
- (b) comply with specific clearance levels and associated requirements for specific materials or for materials originating from specific types of practices;



EU BSS, Article 30.2b (cont.)

...these specific clearance levels shall be established in national legislation or by the national competent authority, following the general exemption and clearance criteria set out in Annex VII, and taking into account technical guidance provided by the Community.



General exemption and clearance criteria - EU BSS Annex VII

- (i) the radiological risks to individuals caused by the practice are sufficiently low, as to be of no regulatory concern; and
- (ii) the type of practice has been determined to be justified; and
- (iii) the practice is inherently safe.



General exemption and clearance criteria - EU BSS Annex VII (cont.)

For compliance with the general criterion (i), it shall be demonstrated that workers should not be classified as exposed workers, and the following criteria for the exposure of members of the public are met in all feasible circumstances:

For artificial radionuclides:

- ➔ The effective dose expected to be incurred by a member of the public due to the exempted practice is of the order of $10 \mu\text{Sv}$ or less in a year.



EU BSS, Article 30.3

Member States shall ensure that for the clearance of materials containing naturally-occurring radionuclides, where these result from authorised practices in which natural radionuclides are processed for their radioactive, fissile or fertile properties, the clearance levels comply with the dose criteria for clearance of materials containing artificial radionuclides.



EU BSS, Article 30.4

Member States shall not permit the deliberate dilution of radioactive materials for the purpose of them being released from regulatory control.

The mixing of materials that takes place in normal operations where radioactivity is not a consideration is not subject to this prohibition.

The Competent Authority may authorise, in specific circumstances, the mixing of radioactive and non-radioactive materials for the purposes of re-use or recycling.