

# Improved security measures for radiation sources in Norway – A case study of irradiation facilities in hospitals

EAN Vienna, 21-23 October 2009

[www.nrpa.no](http://www.nrpa.no)



Statens strålevern  
Norwegian Radiation Protection Authority

# Radioactive sources in Norway

- IAEA category 1-2 sources
  - Irradiators used for calibration, sterilization, research and radiotherapy, 4 units
  - Cs-137 blood irradiators, 13 units
  - Industrial radiography, ca. 200 radiography containers.
- IAEA category 3-4 sources
  - Well logging
  - Radioactive gauges in permanent installations, ca. 2500.

# Regulatory framework – new regulation 2004

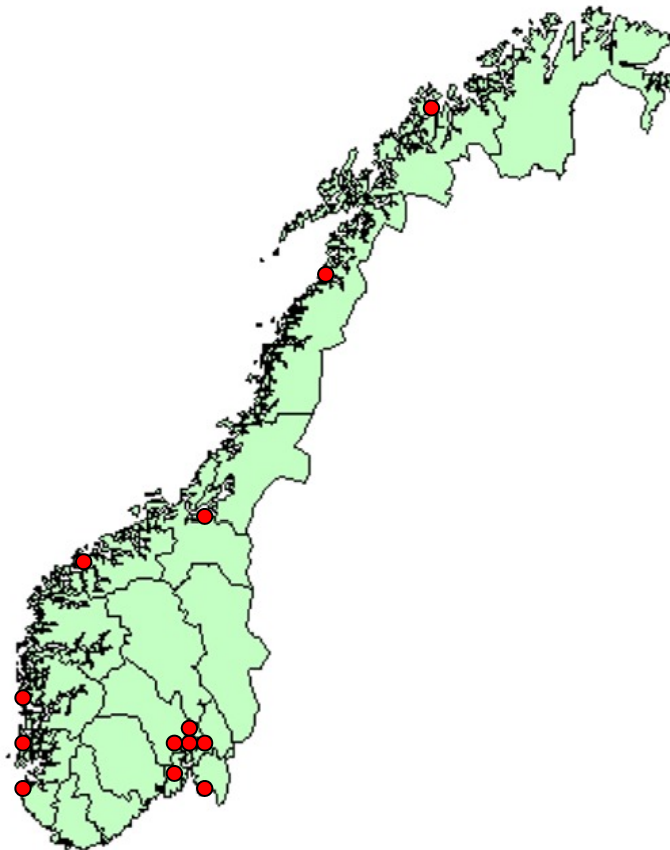
- New regulation with security requirements (in line with international guidelines)



# Concerns for the security of blood irradiation facilities

- Radioactive sources with open beam: security measures as a consequence of stringent safety requirements
- Self shielded blood irradiators:
  - No safety issues
  - Low risk for theft and sabotage but serious consequences if so should happen
  - Need for upgraded security measures

# Geographical distribution of blood irradiators

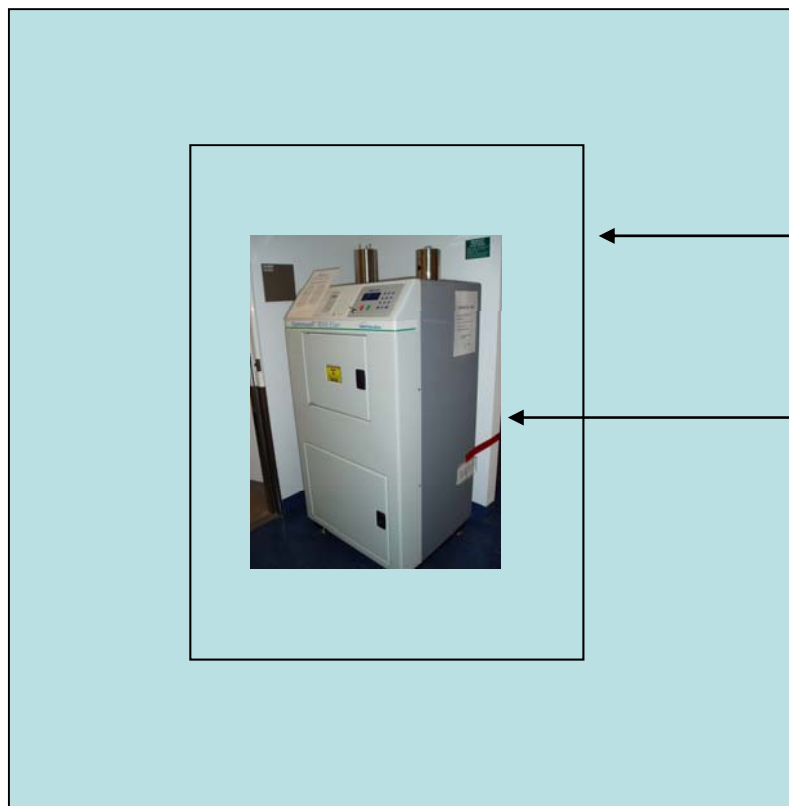


# Upgrading security at blood irradiation facilities 2006 - 2007

- Previous requirements
  - Two independent security measures
- Today's requirements
  - Three independent security measures (room with access only for users of the irradiator)
  - Reliability check of users



# Barriers



← Department, access restricted

← Separate room - further access restricted

← Irradiator, key or code



# X-rays as an alternative

- X-ray blood irradiators are available alternative technology
- Advantages; x-ray devices are less attractive to terrorist.
- Disadvantages; more expensive, more failures



# Register for sources in industrial and medical application

- From paper based notification to web based registration tool
- End-user and NRPA have access to the same information
- End-user register and update information about themselves
- Covers radioactive, x-ray, UV- and laser sources.

