Post-Chernobyl experience: Sami reindeer herders in Norway

Yevgeniya Tomkiv, Deborah Oughton (NMBU, CERAD)
Astrid Liland, Lavrans Skuterud, Inger Eikelmann (NRPA, CERAD)

NEA Workshop on Stakeholder Involvement in Nuclear Decision Making
17-19 January 2017, Paris

www.nrpa.no
Sami reindeer herders

- Live in Norway, Sweden, Finland and Russia
- Total population of 70,000, half of them in Norway
- Historically, self-supportive hunters and gatherers
- Now, meat producers dependent on economical income
Chernobyl consequences for Norway

"Atlas of caesium deposition on Europe"

Reindeer herding
(40% of the territory)

Hot spots > 500 kBq/m²
Radiocaesium → Lichen → Reindeer
Norway 1986

June - July
Samples of reindeer meat up to 90,000 Bq/kg
Existing intervention levels: 600 Bq/kg

All reindeer meat in Southern Norway condemned
18,000 animals - 545 tonnes

November
Intervention level raised to 6,000 Bq/kg
(reindeer meat, freshwater fish, game, mushrooms)
Why raising the intervention level?

- Food bans and condemnation are expensive, not cost-efficient, and very unsatisfactory for the farmers/producers
- Important to maintain a meaningful business base for reindeer herders and the associated Sámi culture
Additional countermeasures

- **Clean feeding**
- **Live monitoring of animals**: Avoid slaughtering animals above permissible levels – and determine required clean feeding periods
- **Caesium binders** – technology made available to Russia, Ukraine and Belarus
- **Changed slaughter season** (reindeer less contaminated in autumn)

- 1987: Whole Body Counting for Sami Population
- Dietary advice
Stakeholder involvement

- Reindeer herders engaged in sampling/mapping
- Authorities, farmer’s and reindeer herder’s unions, food industries etc. involved in working and coordination groups on countermeasure R&D, practical implementation, etc.
- Negotiations with the unions on economic compensation
Stakeholder involvement (cont)

- Field testing of measures developed in labs (live monitoring, clean feeding, administration of Cs binders)

Live monitoring of cattle, sheep and reindeer using 3”x3” NaI detector
Post-Chernobyl

- 1994: Intervention levels reduced to 3000 Bq/kg
- 2008: Proposal to reduce intervention limits to 1500 Bq/kg
  - Difference in levels in reindeer meat in Sweden (1500 Bq/kg) and Norway (3000 Bq/kg)
  - Lowering would allow export of reindeer meat (EU: 600 Bq/kg limit for import)

- ... but societal and economic consequences should be evaluated

"Norwegian Ministry of Health and Care Services, 2008"
EURANOS Co-expertise seminars

Discussion Topics
- Psycho-social effects
- Changing the food intervention level in for reindeer meat
- Outdoor life and nature-based tourism
- The export industries and aquaculture

Consequences of lowering limits

“I don’t know where to find the motivation to go back twenty years; start clean-feeding, build fences and all the practical consequences that comes with it. This also has to be considered... A reduction in the food intervention levels would practically be comparable to a new Chernobyl, both for the reindeer and sheep industry.”

“One has also to think about health; which signals are given by lowering the limits? People start thinking; has this been dangerous to us?”

Bq/kg
(extract from Terje Eggen’s presentation).

EURANOS Deliberable: (CAT)-RP(04)-0, 2008
Lessons learned

1. Involve all stakeholders before implementing any countermeasure, e.g. from animal owner to slaughterhouse or dairy, local authority responsible for the implementation, and authority who will inspect that implementation was successful.

2. Develop set of measures, i.e. options. Gives some feeling of influence/control/independence. No freedom cause frustration.

3. Live monitoring acceptable and appreciated measure to avoid condemnation.

4. Local monitoring stations enable building of local knowledge on contamination, giving the local population specific rather than general answers, e.g. free monitoring of their own private products.
Lessons learned (cont.)

5. Need to maintain and develop national competence. Need definite answers. Experimenting and testing create “guinea pigs”

6. Take into account possible scepticism towards national authorities and experts:
   - Inherent scepticism among rural populations towards practical values of regulation/advice from national authorities and experts
   - “Any scientist in radiation protection/radioecology is a pro-nuclear activist” – direct contact crucial for confidence

Photo: Lavrans Skuterud
Lessons learned (cont.)

7. Stakeholder involvement is not a consensus exercise:
   • Individuals from the same stakeholder group have various views
   • Stakeholders may represent more than one group (e.g. political interests as well as personal costs)
   • Stakeholder views may change with time (30 years….)
Thank you for your attention!

yevgeniya.tomkiv@nmbu.no

Photo: Lavrans Skuterud