

Dounreay Doses

Paul Dale
Radioactive Substances Unit

SEPA duty

- ... to assess doses to the representative person...
- site constraint
- Annual limit – 1 mSv

Assessment needs

- Habit surveys...
 - Determine exposure pathways
 - Occupancy and consumption rates
- Environmental monitoring
 - Samples of food and in-situ measurements of dose rates
- Dose assessment – use consumption rates and environmental monitoring to determine doses to ‘potential’ groups.

Dounreay 2008

- Routine monitoring programme for large number of samples to determine doses to representative person
- One wild game sample (rabbit in 2008)
 - each sample is a number of rabbits
 - activity of 110 Bq ^{137}Cs kg⁻¹
- One component of dose (but dominates for 2008 around 90%)



Detriment

- Total dose to representative person at Dounreay
 - Adult 0.078 mSv
 - 10 year old 0.033 mSv
 - 1 year old 0.017 mSv (milk)
 - Prenatal 0.032 mSv
- Legal limit 1mSv i.e. less than 1/10th of legal limit

Rabbit - Follow up (July – Dec 2009)

- Five rabbit samples
 - $<1 \text{ Bq } ^{137}\text{Cs kg}^{-1}$
- Three venison, samples
 - 59, 54, 50 $\text{Bq } ^{137}\text{Cs kg}^{-1}$
 - 86 $\text{Bq } ^{137}\text{Cs kg}^{-1}$ in 2007
- To be repeated in 2010

Potential causes

The possible sources of ^{137}Cs near Dounreay could be:

- Site airborne discharges and any radioactive deposits.
- Weapons test fallout
- Sea to land transfer
- Deposition from the Chernobyl accident