

# Proposed regulation of handling of peat-ash and tree-ash in Sweden and it's justification.

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## Abstract:

Since 2006 handling of tree-ash contaminated with  $^{137}\text{Cs}$  from the Chernoby fall-out produced in heating plants has been regulated in Sweden. Now a regulation is proposed that will include both peat-ash and tree-ash.

The regulation is aiming at reducing the extra doseburden to the general public from handling of ashes. For the naturally occurring radionuclides the dose constraint has been chosen to be 0,3 mSv/y for a dose scenario with up to three exposure path-ways and 0,1 for drinking water. For  $^{137}\text{Cs}$  the dose constraint has been chosen to be 0,01 mSv/y for each exposure path-way. From the dose constraints different concentrations of radionuclides in ashes have been derived for each path-way. The way of handling ashes can be divided in to two categories, recycling and depositing. The different scenarios considered are a deposit, building materials, landfill and spreading ash on forestland, farmland and on rain-deer grazed forestland. The breaking point where the regulation becomes applicable is a heating plants that produces more than 100 tons of ash/y and if the  $^{137}\text{Cs}$  concentration  $> 0.5$  kBq/kg or  $I_2 > 1$ , where  $I_2 =$

$$\frac{C_{232Th}}{0,2} + \frac{C_{226Ra}}{0,3} + \frac{C_{40K}}{3}, \text{ where } C_i \text{ is in kilobecquerel/kg. At the } ^{137}\text{Cs} \text{ concentration } > 10$$

kBq/kg or  $I_1 > 1$ , where  $I_1 = \frac{C_{232Th}}{1} + \frac{C_{238U}}{1} + \frac{C_{40K}}{20}$  the ashes have to be deposited mandatory.

At the  $^{238}\text{U}$  concentration  $> 2.5$  kBq/kg peat may not be used for energy production.