WRITTEN QUESTION E-2621/08
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to the Commission

Subject: Risks of high burn-up nuclear fuel in EPR reactors

The European Pressurised Water Reactor EPR designed by Areva/Siemens envisages the use of fuel burn-up rates of 60 GWd/tU or more, which is higher than in any commercial nuclear reactor so far. Two EPR reactors are under construction in Europe, one in Olkiluoto, Finland, and another one in Flamanville, France.

The US Nuclear Regulatory Commission (NRC) is investigating the safety of high burn-up fuel. A team led by Michael Billone at Argonne National Laboratory in Illinois recently stated that nuclear fuels with a burn-up above 45 GWd/tU cause previously unforeseen safety problems, and would break existing NRC safety rules, unless changes are made to the way fuel elements are packaged. The danger occurs if there is a sudden loss of cooling water - as at Three Mile Island in 1979. If the cladding has become brittle, the rods may split open and leak plutonium and other radioactive materials into the reactor building.

Present NRC rules do not seem to fit high burn-up fuel >45 GWd/tU. In tests that simulated a loss-of-coolant accident, the zirconium became brittle before the oxidation had reached the current limit of 17 % of the thickness of the cladding. NRC has launched a three-year consultation aiming to tighten up the rules, the New Scientist reported (14 April 2008).

If the construction of the reactor in Olkiluoto, Finland, proceeds according to the latest timetable announced by TVO, it would be operational in 2011, just when the results of consultations launched by the US NRC are expected to be available.

Spent fuel with a burn-up of 55 GWd/tU would be around 50 % more radioactive than fuel with 33 GWd/tU throughout the time it needs to be stored. Higher radioactivity translates into more heat generated during waste storage, and the fuel rods need to be stored further apart and require much longer intermediate storage periods prior to final disposal.

In Europe the standards are still based on a fuel burn-up of up to 45 GWd/tU. The higher risks of meltdown and increased radioactivity of nuclear waste has to be taken into account in the planning of new nuclear plants in Europe.

Is the EU Commission aware of the studies on high burn-up fuel in the USA and the consultation launched by NRC? Is the Commission going to urge European national nuclear safety authorities, especially in France and Finland, to review the safety of the reactors using high burn-up fuel to minimise the higher risk of meltdown and leakage of radioactive material and the specific risks associated with nuclear waste storage? Is the Commission planning to take action in order to reconsider its approval of nuclear reactor projects that imply fuel with burn-up rates beyond 45 GWd/tU, until the results of the work going on in USA are available, and all the precautions are taken to make sure the new risks are eliminated or mitigated?