**Direct Plutonium Transfer from soils to animal biota in Palomares**

*I, Vioque1, O.C.Lind2, J. Galván3 and* ***R. García-Tenorio1,3\****

*1 Departamento Física Aplicada II, Universidad de Sevilla, Spain*

*2Norwegian University of Life Sciences, Centre of Excellence for Environmental Radioactivity, Norway*

3*Centro Nacional de Aceleradores (Universidad Sevilla, Junta Andalucía, CSIC), Spain*

\* e-mail presenting author: gtenorio@us.es

On January 17, 1966, a B-52 bomber and a KC-135 tanker aircraft, both belonging to the United States Air Force, collided during mid-air refuelling over Palomares (Spain). Both aircraft were destroyed, and the four thermonuclear bombs carried by the bomber fell to the ground. Two of the bombs remained intact due to their parachutes, while the other two impacted the ground, causing part of their chemical explosive to detonate and spreading a significant amount of nuclear fuel in the form of plutonium (Pu) and uranium (U) oxides. Despite cleaning efforts, today we continue to detect radioactive particles in the area of the accident.

The Palomares radioactive particles disseminated in the soils have a micrometre size, are formed by a mixture of weapon Pu and enriched U, and particularly are found in a quite refractory form as we have proved by performing controlled leaching experiments treating isolated particles from the area to different leaching agents (water, HCl 2M, rumen cow fluid). This refractory behaviour limits enormously the transfer of the Pu and U to water and plants, appearing as the most important transfer route the direct one from soils to specific animal biota (snails, rabbits).

In this presentation we will show initially a compendium of the experiments performed in our laboratories by a) isolating and characterizing Palomares radioactive particles using non conventional, no radiometric techniques, and b) performing control laboratory leaching experiments to analyse its behaviour. Afterwards we will concentrate our presentation in showing the experimental work performed to demonstrate and evaluate the direct transfer of radioactive particles from soils to snails and rabbits, and its relation of these transfers with the feeding habits of these animals.