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Atoms for Peace: The First Half Century
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Nitrate and pesticide monitoring and modelling in Slovenia

The challenge…

Slovenia wished to meet the EU and national standards for good quality groundwater status under an intensive agricultural zone.

The project…

The project aimed to establish a monitoring system for soil water balance, and for pesticide and nitrate leaching from the fields. It also aimed to validate and implement risk assessment tools, and to transfer knowledge to the stakeholders.

The impact…

The project has provided reliable data for soil and groundwater protection from pesticide and nitrate pollution in Slovenia, supporting compliance with the EU Water Framework Directive (2000/60/EC). The project results will help farmers and decision makers to use the best agricultural practices, reducing the leaching of nitrate and pesticides, and the input of water, without adversely affecting product quality and farm profitability.

Quantifiable data…

- **Isotope techniques were used to study the effects of organic matter amendment on the degradation of 14C-labeled herbicide glyphosate. Biosolids treatment to light textured, alluvial soil increased the mineralization of pesticide from an average of 21.6% to 33.6%.**
- **Vulnerable areas for pesticide leaching in the Dravsko Ptujsko polje plain were identified.**
- **The results from an experimental field in Sneberje showed that applying mineral fertilizers by fertigation and covering 100 % of potential evapotranspiration (ETP) of endive with irrigation caused on average the lowest nitrate concentration in soil water and thus presented the lowest risk for groundwater contamination.**

SLO/5/002: Protecting Groundwater and Soil against Pollutants Using Nuclear Techniques