

Fungi can be used as biomonitors for assessing radioactivity in our environment

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Fungi can be used when assessing the presence or absence of radioactive contamination in the soil. Credit: UEx

Radioactive contamination is the unwanted presence of radioactive substances in the environment. The environment is contaminated by naturally occurring and anthropogenic radionuclides, unstable isotopes of an element that releases radiation as it decomposes and becomes more stable. These radionuclides can be transferred throughout the food chain.

until reaching humans, comprising a potential health risk.

To study the presence of [radionuclides](#) in different products for human consumption and their subsequent transfer, research has been based fundamentally on foods such as meats, fish or milk, without considering foodstuffs like fungi, which are well known for accumulating concentrations of some radionuclides in their fruiting bodies.

As a result, the Environmental Radioactivity Laboratory of the University of Extremadura (LARUEX) has carried out a study to quantify radioactive presence in fungi. Thus, the author of the study, Javier Guillén, says, "This quantification is made using transfer coefficients that compare the radioactive content in the receptor compartment of the [radioactive contamination](#), that is to say, in the fungi, to that existing in the soil."

To conduct this research, the authors considered the base level of radionuclides established in ecosystems with low radioactive content, and then used the software called the ERICA Tool. "This allows us to enter the transfer coefficient from the soil to the organism—in this case the fungus—thus calculating the dose of radionuclides a non-human organism receives."

From the study, we may conclude that the estimated dose rates for fungi in Spain are similar to those determined for other animals and plants and therefore, this species can be used when assessing the presence or absence of radioactive contamination in the soil. "Even though it is not strictly necessary to include fungi amongst the existing instruments and frameworks of assessment, they can be used in ecosystems that may require them based on criteria such as biodiversity."

The [fungi](#) in the study are concentrated in the Mediterranean area, and they do not contain a [high dose](#) of radionuclides, meaning there is no

[environmental contamination](#), and they are therefore perfectly suitable for consumption by humans.

More information: J. Guillén et al, Do fungi need to be included within environmental radiation protection assessment models?, *Journal of Environmental Radioactivity* (2017). [DOI: 10.1016/j.jenvrad.2017.04.014](#)

Provided by University of Extremadura

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