



PFAS in Ecosystems

Pollution in the environment can make it harder for plants and other organisms to grow. One example is a group of toxic chemicals called **PFAS**. These man-made chemicals have been produced since the 1940s. PFAS do not break down in the environment, which is why they are sometimes called “forever chemicals”. Unfortunately, PFAS contamination is found in many places around the world. PFAS contamination can occur in many ways. Two examples are chemical spills and using certain fire-fighting foams that contain PFAS.

Scientists all over the world have been studying how PFAS contamination affects living things, like plants. They do this by growing plants in different concentrations of PFAS. After some time, they measure the plants' growth and see how many had trouble growing. For example, one group of scientists studied how PFOA, one type of PFAS, affected rockcress seedlings. Rockcress is in the same family as radishes and broccoli. After a week, the scientists found that half of the seedlings had reduced shoot growth at a concentration of about 27 parts per million (ppm). (One ppm is about 1 drop per 10 gallons of water.) Higher concentrations (around 80 ppm) caused about half the seedlings to have reduced root growth as well.

1. Imagine you planted your radish seedlings in contaminated soil. How do you think that would affect their growth?
2. The scientists hypothesize that PFAS makes it harder for the seedlings to get the right amount of soil nutrients, like iron and potassium. How do you think different types of soil will affect the seedlings' ability to cope with PFAS contamination?

Scientific Reference:

Fan L, Tang J, Zhang D, Ma M, Wang Y, Han Y. Investigations on the phytotoxicity of perfluorooctanoic acid in *Arabidopsis thaliana*. *Environmental Science and Pollution Research*. 2020 Jan;27(1):1131-44.

Local Examples:

[FDA food testing finds contamination by PFAS and other ‘forever chemicals’ | PBS NewsHour](#)

[Study Examines PFAS Data From 3 States | Coastal Review](#)

[Cancer fears plague residents of US region polluted by ‘forever chemicals’ | Pollution | The Guardian](#)

Additional Resources:

www.niehs.nih.gov/research/supported/exposure/pfas/index.cfm

<https://www.epa.gov/pfas>