How plants absorb pollutants

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The environmental concern is great when considering the role of toxic contaminants in the plant-soil relationship. Understanding plant's absorption and accumulation of these contaminants from the soil would be incredibly beneficial.

One highly carcinogenic contaminant commonly found in soil is called polycyclic aromatic hydrocarbons. They are the byproduct of the incomplete combustion of coal, oil, gas, and garbage. These contaminants can also be manufactured; they can be found in certain dyes, plastics and pesticides. Since most the contaminants do not break down easily in water, they stick to solid particles in soils or settle at the bottom of waterways.

Scientific evidence associates prolonged prenatal exposure to these contaminants with low birth weight, premature delivery, heart malformations, lower IQ and childhood asthma. Long-term exposure of an adult can cause damage to the lungs, kidneys, liver, and skin.

In a study funded by National Natural Science Foundation of China, scientists at Nanjing Agricultural University investigated the distribution of contaminants in the roots of ryegrass. Recent studies had indicated that contaminated fungi attached to the root of plants were responsible for the plant's uptake of toxic contaminants.

The study at Nanjing Agricultural University focused on the subcellular process and distribution of the contaminants in plants with fungi attached to the roots. Using a contaminant called acenaphthene,

scientists determined that contaminants were absorbed and dispersed into the plants cells.

Yanzheng Gao, who conducted the study, said research is ongoing at Nanjing Agricultural University to examine other persistent organic pollutants, their risk, and their transportation.

More information: Results from the study are published in the March-April 2011 issue of the *Journal of Environmental Quality.*

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