

1. Biogeochemical sink of some elements in urban soils

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Abstract:

The area of urban soils has increased continuously over the last centuries as a result of worldwide urbanization, during which the biogeochemical cycling patterns of some important elements have changed due to their massive mobilization and utilization. As one of the most important end acceptors in the environment, urban soils have functioned as a reactor, a sink of many biologically essential and human activity-related elements.

Fossil fuel burning has brought a large amount of black carbon into urban soils, besides the volatile carbon dioxide emission in urban and industrial environment. The storage of black carbon has also recorded somewhat the history of fossil fuel use in some cases. A massive mobilization of nitrogen, ammonium, and nitrate is entering into urban soil and water systems, as well as the atmosphere, contributing seriously to global warming. Phosphorus is more likely stored in urban soils than other environmental media as it is closely bound with organic and inorganic soil components. Another group of elements that are bound in urban soils are heavy metals, which normally take soils as their final destination. As a rough evaluation, the percentages of those important elements stored in urban soils, over the total resource mined, are estimated, which shows that urban soils should be taken with care, otherwise far-reaching environmental impacts would appear.

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