



Risk of antibiotic resistance from metal contaminated soils

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It is known that contaminated soils can lead to increased incidence of illness and disease, but it may also prevent our ability to fight disease. Many antibiotic resistant genes (ARG) acquired by bacteria originate from the environment. It is important to understand factors that influence levels of ARG in the environment, which could affect us clinically and agriculturally. The presence of elevated metal content in soils often promotes antibiotic resistance in exposed microorganisms. Using qPCR, the abundances of ARG to compare levels with geochemical conditions in randomly selected soils from several countries. Many ARG positively correlated with soil metal content, especially copper, chromium, nickel, lead, and iron. Results suggest that geochemical metal conditions influence the potential for antibiotic resistance in soil, which might be used to estimate baseline gene presence on various landscape scales and may translate to epidemiological risk of antibiotic-resistance transmission from the environment. This suggests that we may have to reconsider tolerances of metal pollution in the environment.