The Effect of Rainwater Origin on the Heavy Metal Content, pH, and Ion Percentage

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Understanding the characteristics of rainfall is important in addressing challenges that affect agriculture and climate change. This study examines the feasibility of using rainwater as a water source in Oregon, where frequent precipitation presents an opportunity to address water shortage and quality concerns. The study investigates the correlation between the origin of rain in Portland, Oregon, and its heavy metal content, pH, ion percentage, and organic matter. Rainwater samples were collected from the south, west, and southwest rain origin, analyzed using a pH probe, water element test kit, and bacteria test bottle, and further examined with ICP-MS to verify heavy metal content with additional accuracy. The analysis results of eight rainwater samples collected over four months, with fifteen tests per sample, indicate that the rainwater samples from both south and west have contaminants exceeding safety levels of total organic carbon, sodium, and lead. Moreover, the outcomes imply that rainwater is laden with various chemical constituents that demand enhanced filtration systems tailored toward targeting contaminants that exceed recommended limits. Future studies should focus on investigating the development of filtration systems for rainwater.

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