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512-3 Analysis of Chromium and Nickel in Soil and Plant Tissue Collected from the Experimental Vineyard at California Polytechnic State University, San Luis Obispo CA.

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Serpentinitic soils often contain high concentrations of heavy metals, including chromium (Cr) and nickel (Ni). Soils derived from serpentine parent material are used for agricultural purposes throughout San Luis Obispo County, CA. This study was undertaken to determine the amount of total and bioaccessible Cr and Ni in soil and vine tissue from a vineyard planted on soils derived from serpentine geology. Eighteen soil and plant samples were collected from different slope position and vine types (syrah and chardonnay). Soil samples were collected from about 0 to 30 cm at the base of the vines and 15 to 20 leaf with attached petiole samples were collected from one vine at each sample location. Soil and plant samples were extracted with 1:1 HNO_3 for total Cr and Ni concentrations using U.S. EPA method 3050a. Bioaccessible Cr and Ni concentrations from soil samples were determined by extracting samples twice with neutral 1 *N* $NH_4C_2H_3O_2$. Metal concentrations were determined using flame atomic absorption spectroscopy.

Mean total Cr and Ni concentrations from all soil samples were 49.26 and 42.43 mg kg^{-1}, respectively. Total mean Cr concentrations in vine tissue samples were below the method detection limit (MDL) for Cr, and total mean Ni concentrations in vine tissue were 2.75 mg kg^{-1}. Bioaccessible Cr and Ni concentrations from soil samples were below MDLs for each metal. The undetectable amounts of bioaccessible Cr and Ni indicate that they are most likely strongly sorbed to soil particles. The low heavy metal bioaccesiblility in this vineyard soil indicates that Cr and Ni poise little risk to vine health for toxicity considerations. Future research will evaluate Cr and Ni concentrations in other local agricultural soils derived from serpentinite.

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