Article

Lead, Cadmium and Cobalt (Pb, Cd, and Co) Leaching of Glass-Clay Containers by pH Effect of Food

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Abstract: Recent studies have shown that handcrafted glass-clay containers are a health
risk because they can be contaminated by heavy metals, which can be transferred to food,
thus reaching the human body to potentially cause illness. Therefore, in the present work,
we evaluate the leaching of lead, cadmium, and cobalt from glass-clay containers into two
types of food: tomato sauce (salsa), and chickpea puree. The containers were obtained from
four regions in the Mexican state of Hidalgo. Repetitive extractions from the containers
were carried out to quantify the leaching of the heavy metals into the salsa, the chickpea
puree, and acetic acid using the technique proposed by the USFDA. The results show that
greater use of the containers leads to more leaching of heavy metals into both types of food
and into the acetic acid, with the greatest metal extraction recorded for the Ixmiquilpan
vessels. These results indicate that the metals present in the glass-clay containers leach into