

Toxic metal and nicotine content of cigarettes sold in China, 2009 and 2012

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Abstract

Background: Metals of primary health concern can accumulate in the tobacco plant and contribute to smokers' exposures to carcinogens, a significant cause of the millions of smoking-related deaths in China each year. These exposures are due to the smoker's addiction to nicotine.

Objective: This study sought to explore toxic heavy metal and nicotine concentrations in the tobacco of Chinese cigarette brands purchased in 2009 and 2012, as well as its regional variation.

Methods: Cigarette packs for this study were purchased from seven Chinese cities in 2009 and 2012, and 91 pairs of cigarettes were matched based on UPC for comparison. Ten cigarette sticks were randomly selected from each pack and tested using polarised energy dispersive X-ray fluorescence (XRF) for arsenic (As), cadmium (Cd), chromium (Cr), nickel (Ni) and lead (Pb) concentrations. Nicotine analysis was conducted following Coresta's Recommended Method N°62. Data analysis was conducted using SPSS, encompassing descriptive statistics, correlations and generalised estimating equations to observe changes in brand varieties overtime.

Findings: On average, from 2009 to 2012, As, Cd, Cr and Pb concentrations have decreased in Chinese tobacco. Of the seven cities where the cigarette brands were purchased, only four cities showed significant differences of the selected metals from 2009 to 2012. However, there was no significant change in the tobacco nicotine content from 2009 to 2012.

Conclusions: Tobacco in Chinese cigarettes purchased in seven geographically disbursed cities contains consistently high levels of metals, including carcinogens like Cd. One source may be the improper use of fertilisers. These numbers should be monitored more carefully and regulated by health officials.

Recommended Citation

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