The unwanted extras in your morning filter coffee

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Research by Müller et al published in *Food Additives & Contaminants: Part A* examines chemical leaching into coffee from filter coffee machines and electric kettles. The alarming results suggest that caffeine consumption is not all we have to worry about in our coffee culture.

Materials in contact with food preparation can result in human exposure to chemicals, including metal ions and toxic alloying components, a problematic issue for food surveillance authorities often raised to European Commissions food regulators. Research by Müller et al published in *Food Additives & Contaminants: Part A* examines chemical leaching into coffee from filter coffee machines and electric kettles. The alarming results suggest that caffeine consumption is not all we have to worry about in our coffee culture.

Past research on hot beverage appliances has shown raised quantities of nickel, copper, zinc, chromium and lead in our coffee. Despite current lack of European Law regulating leaching of elements from metallic food contact materials, the Council of Europe resolved in 2013 that contaminants "must not be released in quantities which could endanger human health" and specifies limits for and methods of testing metals released into food. Following the CoE specified method, Müller et al tested 11 electric kettles and eight coffee machines for release of elemental ions, three times on three separate days both before and after manufacturer recommended decalcification of the device.

Kettles showed leaching to be well within the CoE specified release

limit, however coffee machines showed in some cases alarmingly high levels of lead, especially post-decalcification, one particular machine giving results 150 times the recommended limit. Levels of nickel, manganese, chromium and zinc exceeded limits up to fourfold. On the plus side concentrations of leached elements did reduce throughout each individual day and overall throughout the 3 days testing combined. Filter machines showed significantly higher levels than Pod machines.

With such significant contaminants in our coffee we are surely at risk of endangering our health. In the absence of law, Müller et al recommend "strictly perform(ed) extensive rinsing steps subsequent to the decalcification procedure before …use". In conclusion they point out that CoE guidelines are achievable as "one particular portafilter machine did not release any element at concentrations that causes concern."

More information: Frederic D. Müller et al. Metal release from coffee machines and electric kettles, *Food Additives & Contaminants: Part A* (2015). DOI: 10.1080/19440049.2015.1086929

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