

Smartphones and PDA's may add to toxic substance exposure

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The study found that although most of the metals were found at levels below the analytical limit of detection, certain lifestyle factors affect exposures including breastfeeding, supplement consumption and other dietary habits. Credit: gail

Lifestyle factors including breastfeeding and diet may impact on

expecting mothers' exposure to persistent toxic substances (PTS) including metals commonly found in electronic devices, according to a study into environmental contamination.

As part of the Australian Maternal Exposure to PTS study, researchers tested levels of alkali, alkali earth and [transition metals](#) of 173 pregnant women from across WA from whole blood, urine and drinking water samples.

Edith Cowan University Centre for Ecosystem Management Associate Professor Andrea Hinwood says the study was part of an ARC linkage project due to a perceived low level of [environmental contamination](#) and a lack of research on human [exposure](#) in the southern hemisphere.

Exposure studies often focus on heavy metals, while there is limited investigations into alkali, alkali earth and transition metals that are found in [electronic devices](#) and occur naturally in the environment.

The samples were analysed for antimony, beryllium, bismuth, cesium, gallium, rubidium, silver, strontium, thallium, thorium and vanadium, some of which have severe health consequences at high levels of exposure.

"These are commonly used in the electronics industry and as we all know we have a big increase in electronics products—so it's a natural question to ask about current levels of exposure," A/Prof Hinwood says.

"We also don't know a lot about the potential for health effects if we were to identify higher concentrations.

Questionnaire considers diet and home environment

They took samples from pregnant women about two weeks prior to them

giving birth so samples were considered a surrogate for [prenatal exposure](#).

In addition to blood, urine and water samples, each woman completed a comprehensive questionnaire about their lifestyle, activities, residential characteristics and diet.

"In all [human exposure](#) studies, lifestyle factors must be taken into account as they can influence metals exposure but also there are factors that mediate or increase exposure," she says.

The study found that although most of the metals were found at levels below the analytical limit of detection, certain lifestyle factors affect exposures including breastfeeding, supplement consumption and other dietary habits.

"What is interesting is that we can measure these metals and also factors that increase or decrease them and hence can also focus our efforts on exposure reduction if needed," she says.

A/Prof Hinwood says the low concentrations of metals found were not concerning but due to the study's relatively small sample size they need to further examine the importance of [lifestyle factors](#) and how it impacts on exposure.

More information: "Maternal exposure to alkali, alkali earth, transition and other metals: Concentrations and predictors of exposure," *Environmental Pollution*, Volume 204, September 2015, Pages 256-263, ISSN 0269-7491, [dx.doi.org/10.1016/j.envpol.2015.04.024](https://doi.org/10.1016/j.envpol.2015.04.024)

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