

Study links chemicals in our body with income

Media Release from the University of Exeter

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A new study published this week has found that the build-up of harmful chemicals in the body is affecting people of all social standings - not just those from economically deprived backgrounds as previously thought.

The research has been led by Dr Jessica Tyrrell from the University of Exeter Medical School's European Centre for Environment & Human Health, in Truro, Cornwall.

Using data from the U.S. National Health and Nutrition Examination Survey, the team analysed possible links between a person's socioeconomic status and the prevalence of chemicals in their body.

They found that people across the poverty spectrum were accumulating chemicals in their bodies but, importantly, that it was the type of toxicant that was dependent upon economic status.

Dr Tyrrell and the team were not expecting their findings to contradict the conventional thinking that lower socioeconomic status will lead to a greater prevalence of harmful elements in the body:

"We've found that as people become better off, changes in their lifestyle alter the types of chemicals in their bodies, rather than reducing the overall amount. This realisation has a profound impact on the way we treat chemical build ups, suggesting we should move to dealing with groups based on lifestyle, rather than earnings."

By comparing the results from 6 separate populations, the researchers have been able to show strong associations between 18 different chemicals and poverty ratings.

Individuals with higher incomes had larger amounts of several toxicants, including urinary mercury, arsenic, caesium and thallium, with diet likely to play a key role in their accumulation.

"The age old adage of 'you are what you eat' seems to be true when explaining some of the trends we're seeing in the data. It's certainly very likely that fish and shellfish consumption is partially responsible for build-ups in mercury, arsenic and thallium" says Dr Tyrrell.

The use of sunscreen was also found to be an important factor in the accumulation of benzophenone-3, with people from higher socioeconomic groups more likely to use products containing the chemical.

Those with lower incomes were more likely to have build-ups of urinary lead, cadmium, antimony and bisphenol A. Cigarette smoking and a poor diet were amongst the factors likely to lead to the accumulation of both lead and cadmium in these groups.

"Long term exposure to chemicals, even in very small quantities, can lead to a number of adverse health effects such as diabetes and cardiovascular disease. This study has produced a robust analysis of how the accumulation of these chemicals relates to socioeconomic status, giving us an important understanding that will help to inform strategies aimed at improving health" Dr Tyrrell concludes.

Notes to Editors

A video is available to accompany this release; it can be embedded wherever appropriate:

<https://vimeo.com/71085290>

Embed code:

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<iframe src="http://player.vimeo.com/video/71085290" width="500" height="281" frameborder="0"
webkitAllowFullScreen mozallowfullscreen allowFullScreen></iframe> <p><a
href="http://vimeo.com/71085290">Analysing the build of chemicals in people's bodies</a> from <a
href="http://vimeo.com/ecehh">ECEHH</a> on <a href="https://vimeo.com">Vimeo</a>.</p>
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The study *Associations between socioeconomic status and environmental toxicant concentrations in adults in the USA: NHANES 2001-2010* is published in the journal *Environment International* and is available here:

www.sciencedirect.com/science/article/pii/S0160412013001359

Further details can be found here:

www.ecehh.org/publication/socioeconomic-status-and-chemical-body-burdens

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The Department for Communities and Local Government is the managing authority for the European Regional Development Fund Programme, which is one of the funds established by the European Commission to help local areas stimulate their economic development by investing in projects which will support local businesses and create jobs. For more information visit www.communities.gov.uk/erdf

European Social Fund Division, part of the Department of Work and Pensions, is the managing authority for the European Social Fund (ESF) Convergence, which is one of the funds established by the European Commission to help local areas stimulate their economic development. ESF Convergence invests in the economic regeneration of Cornwall & Isles of Scilly, investing in people, their jobs and skills. For more information visit <http://www.dwp.gov.uk/esf/> and <http://www.cornwallworks.org.uk/>

About the University of Exeter

The Sunday Times University of the Year 2012-13, the University of Exeter is a Russell Group university and in the top one percent of institutions globally. It combines world-class research with very high levels of student satisfaction. Exeter has over 18,000 students and is ranked 7th in The Sunday Times University Guide, 10th in the UK in The Times Good University Guide 2012 and 10th in the Guardian University Guide. In the 2008 Research Assessment Exercise (RAE) 90% of the University's research was rated as being at internationally recognised levels and 16 of its 31 subjects are ranked in the top 10, with 27 subjects ranked in the top 20.

The University has over 18,000 students at three campuses. The Streatham and St Luke's campuses are in Exeter and the Cornwall Campus (known locally as the Tremough Campus) near Penryn. In an arrangement that is unique in the UK, the Cornwall Campus is owned and jointly managed as the Tremough Campus with Falmouth University. At the campus, University of Exeter students can study programmes in the following areas: Animal Behaviour, Conservation Biology and Ecology, English, Environmental Sciences, Evolutionary Biology, Geography and Zoology, Geology, History, Mathematics and the Environment, Mining and Minerals Engineering, Politics and International Studies and Renewable Energy.

The University has invested strategically to deliver more than £350 million worth of new facilities across its campuses for 2012, including landmark new student services centres - the Forum in Exeter and The Exchange in Cornwall - and world-class new facilities for Biosciences, the Business School and the Environment and Sustainability Institute. www.exeter.ac.uk/cornwall