

## **SCAHT: More data required to confirm link between pesticides and reproductive health**

**At this point of time, it is too early to say if men whose mothers were exposed to chemicals such as pesticides, heavy metals or phthalates during their pregnancies will encounter problems with their fertility in adult life. This is the independent centre's assessment after a study of one of its research groups had given rise to speculations which current evidence cannot fully substantiate. This statement aims to contribute to an evidence-based balanced discussion on the effects of pesticides on human health, which are under scrutiny in view of the upcoming popular votes on banning the use of pesticides.**

SCAHT has been funding studies investigating how environmental exposures, in particular to endocrine disrupting chemicals (EDCs), influence hormones and semen quality. In the most recent [study](#) published in March, SCAHT researchers at the University of Geneva and colleagues from the University of Rennes studied the link between semen quality of Swiss army conscripts and their mothers' possible occupational exposure to EDCs. These chemicals have an effect on hormones, and may cause developmental disorders when interfering with the body's normal function.

While the recent study found some associations with mothers' estimated occupational exposures, it is not possible to conclude from the results that there is a causal relationship between foetal exposure to any specific chemical and semen quality of the men. The authors are cautious in their interpretation because they could not directly measure the mothers' exposure to the chemicals, and semen from the different men were only collected at a single point in time. In addition, certain broad categories such as *pesticides* include many different substances, which may or may not have any endocrine disrupting properties.

Animal studies have shown that exposure of the foetus to a number of chemicals may influence sperm production and quality in adulthood. Male reproductive health has been reported to be declining over the past decades in a number of European countries. This timescale suggests that the causes are lifestyle and environmental rather than genetic. For Switzerland, no information is available on male reproductive health and exposure to chemicals that may adversely affect semen parameters. That is why a large-scale epidemiological study on male reproductive health in Switzerland was launched to collect data on 3,000 Swiss army conscripts from all regions of the country during their visit to the national army's recruitment centres. Several SCAHT [publications](#) in international peer-reviewed scientific journals have already resulted from this data set.

In the latest study published in March 2021, researchers contacted the conscripts' mothers to collect information on their occupations during pregnancy, which was then the basis for their classification as *unexposed* or *exposed*. Because of the retrospective nature of the study, the scientists could not actually measure the women's exposure to the different hormone-active chemicals considered. In total, 138 mothers (14.0%) were classified as *exposed* during pregnancy to at least one type of EDC. The researchers reported significant associations between maternal occupational exposure to the categories *pesticides*, *heavy metals* and *phthalates* (chemicals used to make plastics flexible) and some parameters of low semen quality of their sons, specifically low semen volume and total sperm count. In contrast, they did not find any association between exposure and lower sperm motility and morphology.

The findings raise some important questions, which require further confirmation and investigation. In its present funding period, SCAHT is continuing to support studies, both mechanistic and epidemiological, to shed further light on the relationship between semen quality, fertility and environmental exposures, including to EDCs. The Swiss Tropical and Public Health Institute STPH is also conducting exposure and health assessments in farming and non-farming families as part of an interdisciplinary Swiss National Science Foundation-funded [project](#).

SCAHT supports high-quality research to advance the science of human toxicology and contribute to a safer and healthier environment. Its projects fill an existing gap in Switzerland between academic scientific research and regulatory requirements, allowing policy makers to take decisions on a sound scientific basis. Priority is given to major human health problems of regulatory concern and projects are conducted within the framework of a coordinated strategic research programme. Male reproductive toxicology is one of the core research areas in which SCAHT has supported projects since its establishment in 2009.

**Reference:**

Istvan M, Rahban R, Dananche B, Senn A, Stettler E, Multigner L, Nef S, Garlantézec R. ***Maternal occupational exposure to endocrine-disrupting chemicals during pregnancy and semen parameters in adulthood: results of a nationwide cross-sectional study among Swiss conscripts.*** Hum Reprod. 2021 Mar 17: deab034. <https://doi.org/10.1093/humrep/deab034>

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