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## Alarm sounded over chemicals in sunscreens

"High and worrying" levels of hormonally active chemicals known as endocrine disruptors can be found in maternal milk and aircraft, warn Swiss researchers. The scientists said ultra-violet filters found in sunscreens and commonly used fireproofing materials were to blame for the presence of these dangerous chemicals.

Even at low dosages these chemicals have an effect, according to the national research programme into endocrine disruptors. They bind with hormone receptors in the body, upsetting normal functions. They are also in widespread use and can be found in many synthetic materials, pesticides and even cosmetics, according to the researchers who took part in a six-year national research programme.

Studies on rats carried out by programme participants showed these chemicals can have an effect

on the development of sexual organs and the brain.

The researchers say that the levels that caused problems in rats were only 11 times higher than those found in some of the maternal milk samples. Normally, a factor of 100 is considered the safety margin for this type of study. "Extremely high" concentrations of these chemicals were also found in aircraft. In this case, they came from bromide flame retardants installed to comply with anti-fire norms. Endocrine disruptors of this type are fairly common in the environment, in household dust or office spaces. Researchers consider that people absorb these airborne chemicals at least as much this way as they do through nutrition. Small children who are still crawling as well as aircraft crew are considered to be among those most under threat.

Traces of bromide fireproofing agents have also been found in fish, in sludge at sewage treatment plants and even in foxes living in urban zones.

The good news, according to the researchers, is that the concentrations of endocrine disruptors in Switzerland's lakes and rivers as well as in drinking water were rather low.

Working groups involving representatives of industry, scientists and the federal authorities are considering ways of reducing the effects of endocrine disruptors.

The cosmetics industry is already considering if it can do away with a UV filter commonly found in sunscreens, 4-MBC.

The federal authorities will decide if other restrictions are necessary and if bromide-based fireproofing should be banned.

*from swissinfo*

## Researchers find off-switch for skin cancer

Scientists at the Swiss Institute for Experimental Cancer Research in Lausanne may have discovered how to shut down the uncontrolled growth of some skin cancer cells. The researchers have identified how tumour cells found in the upper layers of the skin signal to each other to maintain their population, renewing a stock of rogue stem cells. They have been focusing on one of the most common skin cancers, so-called squamous cell carcinomas. These carcinomas make use of one of the skin's major properties – the fact that it can renew itself thanks to stem cells.

Once the cancer stem cells were identified, the researchers found that transplanting material derived from these cancerous stem cells to a cancer-free mouse led to the disease in the animal.

The next task was to uncover the mechanism that allowed the population of these stem cells to survive and thrive. The scientists

were able to put their finger on a single protein known as beta-catenin as the crucial element.

This protein is part of the signalling pathway between the cancerous stem cells. If the protein is blocked, the stem cells eventually shrink because there is no signal telling them to renew themselves.

The study, published in the top-ranked *Nature* science journal, used genetically modified mice that actually lack the protein to prove this point.

The researchers say the result was very clear, with more than 99 per cent of the cancerous cells regressing.

The research offers the possibility of treating this type of cancer in humans. The protein blocked in the mouse tumours is also found in people. But patients should not get their hopes up just yet. It will take at least another five years before treatments might appear. So far the scientists have only concentrated

on the squamous skin tumours. Research elsewhere on problems such as melanomas, is only in the early stages, meaning it is still too early to say if blocking proteins is effective for all types of skin cancer.

Squamous cell carcinoma (SCC) is one of the most common forms of skin cancer. It appears in the cells that compose most of the skin's upper layers.

Most cases are caused by chronic overexposure to the sun. Tumours appear most frequently on the sun-exposed face, neck, bald scalp, hands, shoulders, arms and back. They can also occur where skin has suffered certain kinds of injury: burns, scars, long-standing sores, sites previously exposed to X-rays or certain chemicals. Chronic skin inflammation or medical conditions that suppress the immune system can also engender these carcinomas.

*from swissinfo*