Chemical exposure before mid-30s may be critical in breast cancer development

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Occupational exposure to certain chemicals and pollutants before a woman reaches her mid-30s could treble her risk of developing cancer after the menopause, suggests research published in *Occupational and Environmental Medicine* .

Women exposed to synthetic fibres and petroleum products during the course of their work seem to be most at risk, the research suggests.

The researchers base their findings on more than 1100 women, 556 of whom were diagnosed with breast cancer in 1996/7 in Montreal, Canada, when aged between 50 and 75 and who had gone through the menopause.

The other 613 women, who were matched for age and date of diagnosis, had a range of other cancers, and were intended to act as a comparison group.

An expert team of chemists and industrial hygienists then set about investigating the women's levels of exposure to around 300 different substances throughout the course of their employment history.

After taking account of the usual factors associated with an increased risk of breast cancer, the analysis indicated a link between occupational exposure to several of these substances.

Compared with the comparison group, this risk peaked for exposures

before the age of 36, and was magnified with each additional decade of exposure before this age.

This resulted in women occupationally exposed to acrylic fibres running a seven-fold risk of breast cancer, while those exposed to nylon fibres almost doubled their risk.

When tumours were divided into their hormonal responsiveness, women whose cancers responded to oestrogen, but not progesterone, were at least twice as likely to have breast cancer for every 10 year period they were exposed to monaromatic hydrocarbons (a byproduct of crude oil) and acrylic and rayon fibres.

Exposure to polycyclic aromatic hydrocarbons, found in petroleum products, before the age of 36, tripled the risk for women whose tumours were responsive to both oestrogen and progesterone.

The authors concede that their findings could be due to chance alone, but say they are consistent with the theory that breast tissue is more sensitive to harmful chemicals if the exposure occurs when breast cells are still active - in other words, before a woman reaches her 40s. And they point to the rising incidence of breast cancer in developed countries, which is likely to be due to a range of factors, including diagnosis of small slow growing tumours and changes in alcohol consumption.

But environmental and workplace factors are also thought to have a role, they suggest, with previously published evidence implicating exposure to certain chemicals, low frequency electromagnetic fields, and disruption of the body clock.

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