

CANCER MYTH: LIPSTICK AND CANCER

Origin of the myth

Some years ago, an Australian news website ran a story stating: “Chemicals found in lipstick and nail varnish could trigger breast cancer, scientists have warned.” The article suggested that butyl benzyl phthalate (BBP) caused breast cancer and referred to a study published in the online journal, BMC Genomics.¹ That study in rats found that very high infant (neonatal) exposure to BBP had a short term effect on the gene expression of breast (mammary) tissue. The study was not designed to test whether BBP in lipstick caused breast cancer in rats, let alone humans.

A related myth is that lead in lipsticks is toxic and causes cancer.

Current evidence

Butyl Benzyl Phthalate

Butyl Benzyl Phthalate (BBP) belongs to a class of chemicals called phthalates which have properties similar to the female hormone oestrogen. Studies on rats have linked BBP to changes in the reproductive system. These changes include reduced sperm count, genital changes, lower birth weights in offspring, and hormonal changes. It is important to note that these changes were observed at very high doses of BBP.²

Recently, the Centre for the Evaluation of Risks to Human Reproduction (CERHR) estimated that the general population in the United States of America is exposed to about 2 micrograms (μg) of BBP per kilogram of body weight per day ($\mu\text{g}/\text{kg}/\text{day}$). Another study suggested that most people are exposed to 4 $\mu\text{g}/\text{kg}/\text{day}$. Lower birth weights were observed in rats as a result of ingesting 100 $\mu\text{g}/\text{kg}/\text{day}$. Hormonal and genital changes and reduced sperm count were not observed until doses reached 500 $\mu\text{g}/\text{kg}/\text{day}$. This is 125 times greater than the highest estimate of what the general population is currently exposed to.²

Studies on rats also have linked BBP exposure with increases in the number of bladder and benign (non-cancerous) pancreatic tumours and impaired development of the male reproductive system. These results have not been reliably repeated in humans.³

The US Report on Carcinogens is a list of known or reasonably anticipated human carcinogens (cancer causing substances).⁴ BBP is not included in this list. The International Agency for Research in Cancer (IARC) also does not recognise BBP as carcinogenic.³

Lead

Some red lipsticks contain lead at very low levels as a red colour additive. In 2007 a group called the Campaign for Safe Cosmetics tested 33 lipsticks and detected lead in levels which exceeded the limitations for lead in confectionery. This caused some concern amongst the public, even though the levels were not sufficiently high to cause any health effects. It is worth noting that confectionery is intended for ingestion, often by small children, whereas lipstick is only applied to the lips.⁵

Very high lead exposure has been linked to impaired reproduction and behavioural, learning and language difficulties.

The International Agency for Research on Cancer (IARC) has evaluated inorganic and organic lead compounds, using blood lead levels to assess exposure. Inorganic lead compounds were assessed to be probably carcinogenic to humans and organic lead compounds are not classifiable as to their carcinogenicity in humans, meaning that there is not enough evidence to make a judgement. These assessments are based on exposure that is high enough to cause elevated blood lead levels.⁶

Summary

Although high exposure to lead and BBP is unsafe, the levels found in lipstick are insufficient to have adverse health effects. Current BBP exposures in the general population are too low to cause cancer or reproductive abnormalities. We are exposed to lead every day through our environment, and the trace amounts found in lipsticks is only a concern if it accumulates with lead from other sources. Major sources of lead, such as lead based paints and solder, have been restricted since awareness of the effects of lead has increased.

References

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