The incidence of certain cancers has increased sharply over the past 50 years, and the quest to find out the reason for this disturbing trend has been a long and complicated one. No one knows yet what causes most cancers, although some risk factors have been identified. You may have heard about a possible link between hair dye and certain kinds of cancer. Studies on the association between hair dyes and cancer have generated mixed results.

### Evidence for the Health Claim

Some studies examining the claim that hair dyes increase the risk of certain types of cancer have found a link. In the 1970s, researchers at the National Cancer Institute discovered that rats fed large doses of hair dye ingredients (including substances found in coal tars, which are used for dark-colored dyes) were more likely to develop cancer than rats left unexposed to these substances. The FDA responded by requiring a warning label to be placed on dyes containing certain substances, and many manufacturers stopped using these ingredients. However, some scientists fear that replacement compounds may have similar chemical structures and cause comparable reactions in the body.

The *American Journal of Epidemiology* recently published a study suggesting that people who frequently used permanent, dark-colored hair dyes before 1980 (which is when the ingredients changed and coal tar was removed) were at a slightly elevated risk for developing non-Hodgkin’s lymphoma, a relatively common cancer of the lymph nodes. Although the removal of certain coal tar ingredients may have reduced the risk of cancer, it still may be too early to determine the long term health effects of this product change.

### Evidence Against the Health Claim

Research published in the *Journal of the American Medical Association* (JAMA) in 2005 collected numerous studies that focused on a possible relationship between hair dye and cancer. Two types of studies were analyzed: (1) Case control studies compared hair dye use among people diagnosed with a specific cancer to a comparable sample of hair dye users without cancer. (2) Cohort studies focused on groups of people who did or did not use hair dye, and followed them over time to see who developed cancer.

The analysis found no link between hair dye and breast or bladder cancer. A weak relationship between hair dye and a few types of cancers that affect the blood cells (hematopoetic cancers) was found, but further research showed that an increase in dye frequency and intensity, as well as using dark-colored dye as opposed to light colors, did not affect the risk of getting such cancers. A recent meta-analysis that looked at personal use of hair
dyes did not find any increased risk of bladder cancer.

Close examination also found that rates for some of the cancers thought to be linked to hair dye, such as non-Hodgkin’s lymphoma, increased in men. This is another indication that hair dye exposure is probably not the underlying reason, because significantly more women use hair dye than men, and if hair dye was causing the cancers, an increase in incidence in women would be expected, not men.

The analysis also found that the majority of studies examined did not adjust for factors such as smoking, which is a major risk factor for cancer. If, for example, people who smoke are more likely to dye their hair (or vice versa), than the results would have to be interpreted differently.

The effect of this study, therefore, was to discredit the link between cancer risk and hair dye use.

**Conclusion**

An analysis of the many studies examining a possible link between hair dye use and cancer was unsupportive of a cause and effect relationship. Although it remains unlikely, there could still be a small risk associated with certain cancers. More studies focusing on hairdressers, who are routinely exposed to the chemicals in hair dyes, may shed more light on a possible connection with cancers.

Hair dye is unlikely to be a significant risk factor for cancer, if it is one at all. Family history, diet, smoking, and exercise have far more to do with cancer risk than whether or not you choose to be a brunette or a blonde.

**REFERENCES:**


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