

Circle Of LifeSM: Cancer Education and Wellness for American Indian and Alaska Native Communities

Appendix D: Chemicals and Exposures Known to Cause Cancer

Many people worry that substances or exposures in their environment may cause cancer. Cancer is caused by changes in a cell's DNA – its genetic "blueprint." Some of these changes may be inherited from our parents, while others can be caused by outside exposures. These are often referred to as *environmental factors*.

Environmental factors can include a wide range of exposures, such as:

- Lifestyle factors (nutrition, tobacco use, physical activity, etc.)
- Naturally occurring exposures (ultraviolet light, radon gas, infectious agents such as bacteria or viruses, etc.)
- Medical treatments (radiation and medicines including chemotherapy, hormone drugs, drugs that suppress the immune system, etc.)
- Workplace exposures
- Household exposures
- Pollution

Substances and exposures that can lead to cancer are called carcinogens. Some carcinogens do not affect DNA directly, but lead to cancer in other ways. For example, they may cause cells to divide at a faster than normal rate, which could increase the chances that DNA changes will occur.

Carcinogens do not cause cancer in every case, all the time. Substances known to be carcinogens may have different levels of cancer-causing potential. Some may cause cancer only after prolonged, high levels of exposure. And for any one person, the risk of getting cancer depends on many factors. These factors include things like how they are exposed to a carcinogen, the length and intensity of the exposure, and the person's genetic makeup.

You can find out much more about what is known or suspected to cause cancer and measures a person can take to prevent it on our website page, "What Causes Cancer?" at <http://www.cancer.org/cancer/cancercauses/index> . Or you can call the American Cancer Society at 1-800-227-2345 and ask about what causes cancer. They can also mail a written list of known and probable human carcinogens at no cost to people who call and ask for it. A person can request detailed information on many known and suspected carcinogens the same way.

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Appendix E: American Cancer Society Guidelines for HPV Vaccine to Prevent Cervical Cancer

The HPV Vaccine can protect against the 2 types of HPV that have been linked to nearly 70% of cervical cancers:

- Routine HPV vaccination is recommended for females ages 11 to 12 years. The vaccine is a series of 3 shots usually given over a 6-month span of time.
- Girls as young as nine years may receive HPV vaccine.
- HPV vaccination is also recommended for females 13 to 18 years of age to catch up on missed vaccine or complete the 3-shot series.
- There are currently insufficient* data to recommend for or against vaccinating women aged 19 to 26 in general. A decision about whether a woman aged 19 to 26 years should receive the vaccine should be based on an informed discussion between the woman and her health care provider regarding her risk of previous HPV exposure and whether the vaccine is likely to help her. Ideally, the vaccine should be given before potential exposure to genital HPV through sex. In studies, the vaccine only helped women who weren't infected with those 2 HPV types before vaccination. The potential benefit is likely to diminish with an increasing number of lifetime sexual partners.
- The HPV vaccination is not recommended for women over age 26.
- Gardasil HPV vaccination was more recently approved by the FDA for use in boys and young men ages 9 to 26 to help protect boys from other cancers and pre-cancers caused by HPV, as well as to prevent genital warts. The vaccine should be given before exposure to genital HPV through sex.
- Pap tests to screen for cervical intraepithelial neoplasia (CIN) and cancer will still be needed by both vaccinated and unvaccinated women. A person should follow the Society early detection guidelines.

* Insufficient evidence of benefit in 19- to 26-year-old women refers to clinical trial data. In women with an average of two – and not more than four – lifetime sexual partners, the studies showed a limited reduction in cervical pre-cancers. In women with more than four lifetime sexual partners the vaccine couldn't prevent

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HPV 16 and 18 (the HPV types that cause most pre-cancers and cancers of the cervix).