Environmental pollution and breast cancer

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Introduction:

Cancer is one of the most important causes of death and disability in the world, especially in developing countries. In most cases, cancer is not caused by a person's inherent biology, but by the environment in which a person lives. Significant and rapid changes in the incidence of cancer over the past few decades can only be attributed to changes in the exposure of the population to environmental factors. The significant and rapid changes in the incidence of cancer during the past few decades can only be attributed to the changes in the population's exposure to environmental factors. There are many environmental factors that can cause cancer in humans. Environmental and chemical pollutants such as air, water and soil pollution are one of the most important factors in one to four percent of cancers in people. Contamination of water with heavy metals and the use of contaminated water in vegetable and fruit irrigation is an important issue that should be considered; because the connection between polluted water and cancer has been proven. High levels of nitrates in drinking water increase the risk of stomach cancer. Air pollution is one of the carcinogenic factors. One of the carcinogenic factors is the presence of carcinogenic factors in our space and living environment. The presence of soot that is created from incomplete factory fuel or car fuel are carcinogenic factors that ultimately prepare the ground for the existence of cancer. There are concerns about the health effects of exposure to environmental pollutants and the incidence of cancer worldwide.

Method:

The current review by searching in reliable books and useful databases such as Scopus, Elsevier, PubMed, Science Direct, Google Scholar, Mag Iran, Iran Dog, Iran Medex in the years 2010 to 2023 with keywords such as pollution, industrial pollution , environmental pollution, cancer, women's cancers, ovarian cancer and breast cancer and tumors were done.

Findings:

Air pollution is one of the most important causes of lung cancer, and it is classified in group 1 of carcinogens by IARC (International Agency for Research on Cancer). Air pollutants consist of a combination of substances including PAHs (Polycyclic Aromatic Hydrocarbons), metals and benzene. These substances can act as carcinogens or endocrine disruptors and thus be related to breast carcinogenesis. Materials such as chromium, nickel, arsenic, aromatics, tar, fireproof cotton, some dyes, insecticides, food preservatives such as nitrites, disinfectants and cleaners. Some fungi, such as Aspergillums, some drugs, such as DES, which are used in various industries such as plastic manufacturing, dyeing, leather manufacturing, bitumen and rubber manufacturing, insecticides, cosmetic industries, are potentially carcinogenic. Pollutant particles in the air can penetrate the breast tissue. Among the pollutant compounds, PAHs are the most studied substances, byproducts of fossil fuel combustion that have the ability to bind to DNA and form clumps in breast tissue. Both PAHs and metal compounds have estrogenic properties and by oxidizing tissues, they cause oxidative stress and cause mammary tumors. Particulate matter (PM) with its estrogenic properties and damage to DNA has the possibility of creating cancerous tissue in the breast. There are a wide range of chemical and environmental causes of breast cancer, today's world pollution affects the food we eat. Chemicals that increase the risk of breast cancer include:

Dioxin

Normally, dioxin enters the human body by eating animal products, especially babies, by drinking breast milk. Chemicals enter the food chain through vehicle exhaust, which leads to infiltration into food products or water, which are then consumed by animals and humans. Dioxin is a known carcinogen. Dioxins are unintentionally produced in a wide variety of industrial processes, such as metal smelting, bleaching paper pulp with chlorine, and the

production of some insecticides and pesticides. In terms of entering dioxin into the environment, non-standard and uncontrolled incinerators (solid waste and hospital waste) are the main culprits due to incomplete burning. Existing technologies allow for controlled burning of waste and the amount of their exhaust gases is low. More than 95% of the measurable level of dioxin is found in the body of the elderly. Research has also shown that women who have worked in factories in close proximity to this chemical have a significantly increased death rate from breast cancer.

Plastic dishes:

Another of the most common chemical substances that come into contact with people throughout their daily lives is the coating of many plastic and metal containers. Automatic rice cookers, food cans, microwave cookware, bottles and even glasses contain these harmful substances that lead to disruption of the endocrine system. Exposure to BPA is associated with an increased risk of breast cancer. Multiple studies in mice and humans show that not only does early exposure to BPA increase the risk of developing breast tumors, but exposure to BPA during chemotherapy reduces the likelihood of effective treatment.

Lead:

Heavy metals have estrogenic properties and are classified as known or suspected carcinogens in addition to endocrine disrupting effects. The general population is exposed to heavy metals mainly through diet, water, air, and smoking, and there is evidence of the risk of breast cancer and exposure to heavy metals from industrial and agricultural activities. Occupational exposure and high levels of lead in the air are associated with an increased risk of breast cancer and tumor growth.

UV:

Ionizing radiation is known as a carcinogen that can cause cancer in different parts of the body such as leukemia (blood), breast, thyroid, lung and liver, skin and bone.

Nitrogen oxides:

Nitrogen oxide (NOx) represents the total accumulation of NO2 and NO resulting from combustion processes. NO2 levels are considered as indicators of traffic-related pollutants and can be representative of the presence of other traffic-related pollutants, such as PAHs. Environmental studies have shown a correlation between NO2 levels and the risk of breast cancer. As a combustion pollutant, NO2 has a significant effect on breast carcinogenesis.

Suspended particles and nitrogen dioxide:

In addition to nitrogen dioxide, suspended particles are also effective in increasing the risk of breast cancer.

Fuel oil:

Using non-standard fuel oil is a dangerous process and causes cancer. In big cities, sulfate gas enters the air, which is usually accompanied by dust, which has increased cancer mortality.

Conclusion:

Environmental issues are issues that have both short-term and long-term destructive effects. There is an association between environmental pollutants and cancer. A large volume of environmental pollution and long exposure to these pollutions cause cancer. Avoiding exposure to chemicals is the best way to protect against disease. Finally, consuming antioxidants A, B, C, omega-3s and eating fresh fruits and vegetables is the best way of protection.

Key words:

Environmental pollutants, air pollution, women's cancers, breast cancer

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