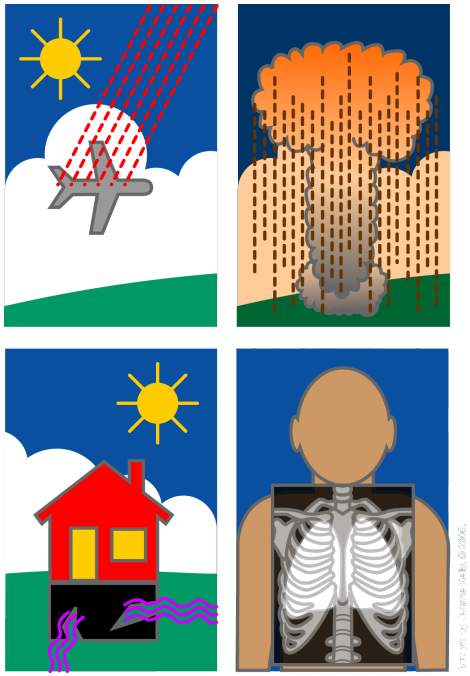
*Understanding Cancer and Related Topics*

# Understanding Cancer and the Environment



*Developed by:*
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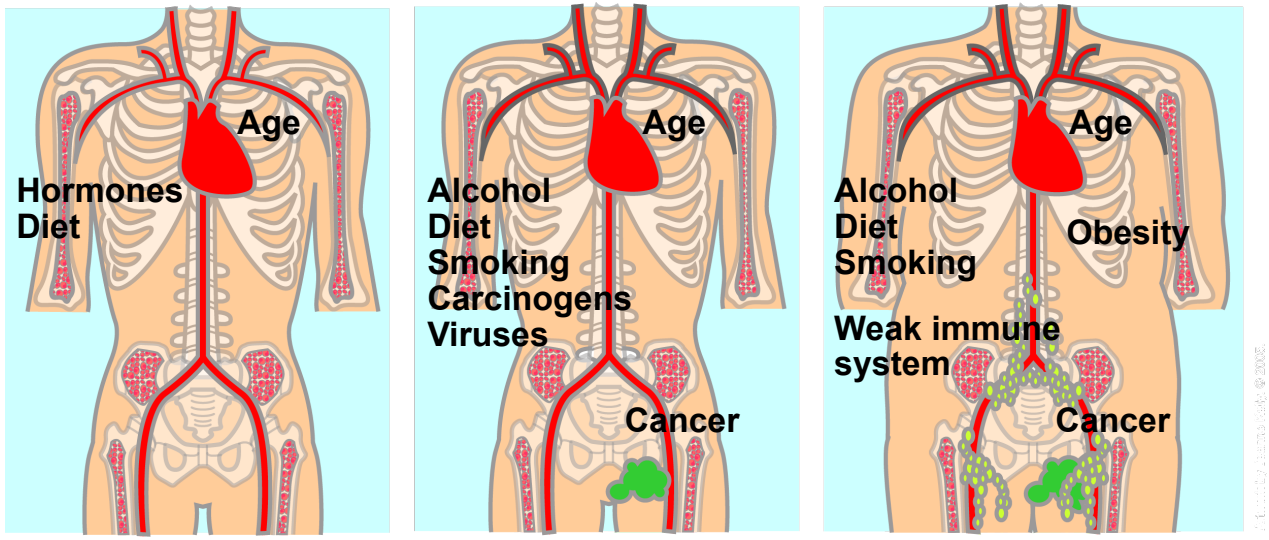
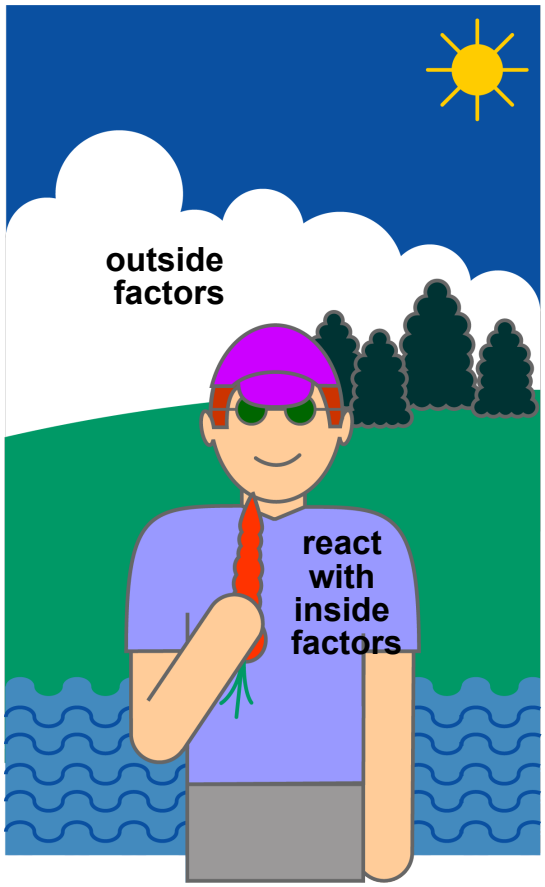
This tutorial discusses the risk of cancer that comes from exposure to certain substances in the environment. It mentions exposures that are either known to cause or likely to cause cancer, and explains how to limit or prevent these exposures. The tutorial also outlines how scientists discover which environmental exposures are linked to cancer.

# Cancer: Inside and Outside Factors

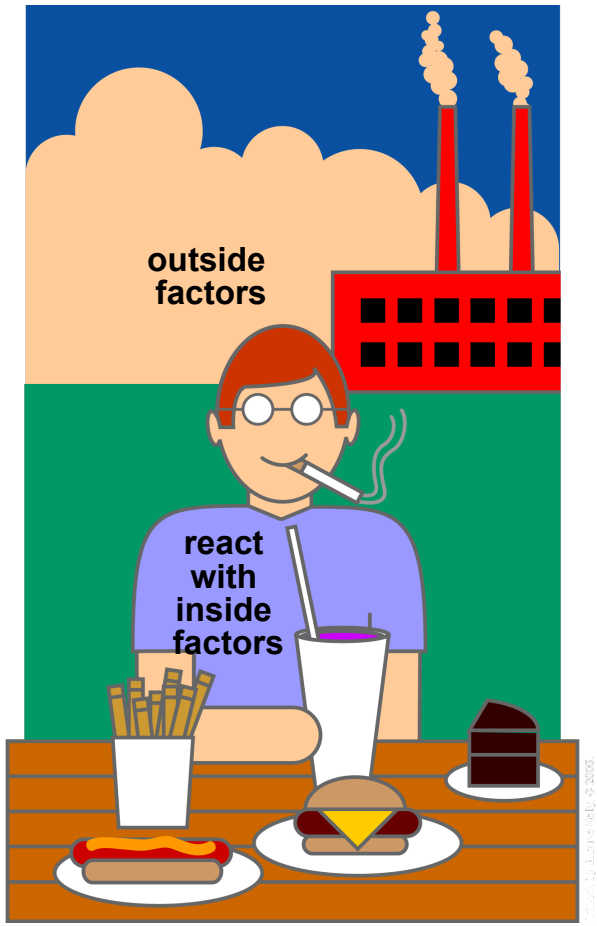



Cancer is not caused by an external pathogen. It is an enemy from within. The changes that must occur *inside* the body for cancer to flourish are genetic changes, but factors on the outside also are involved. Humans do not exist in contaminant-free surroundings. Over a lifetime, a person's internal genetic makeup persistently interacts with many external factors such as diet, smoking, alcohol use, hormone levels, or exposures to certain viruses and cancer-linked chemicals (called carcinogens). These may collectively conspire with internal genetic changes to destabilize normal checks and balances on the body's growth and maturation. (Please see *Understanding Cancer* for more information.)

# What Is the Environment?



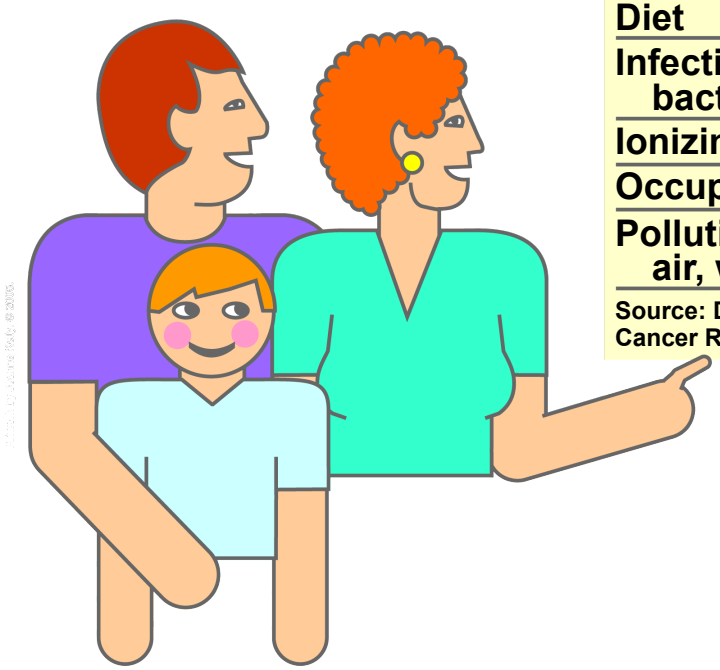

**Environment**




When most people think of the word “environment,” they think of forests, oceans, or mountains. In cancer research, however, scientists define the environment as everything outside the body that enters and interacts with it. This interaction is called an exposure. So, environmental exposures can include such factors as sunshine, radiation, hormones, viruses, bacteria, and chemicals in the air, water, food, and workplace, as well as lifestyle choices like cigarette smoking, excessive alcohol consumption (more than 2 drinks/day), an unhealthful diet, lack of exercise, or sexual behavior that increases one’s exposure to infectious agents.

Researchers have estimated that as many as 2 in 3 cases of cancer (67 percent) are linked to some type of environmental factor, including use--or abuse--of tobacco, alcohol, and food, as well as exposures to radiation, viruses, and substances in the air, water, and soil.

# Avoidable Environmental Factors

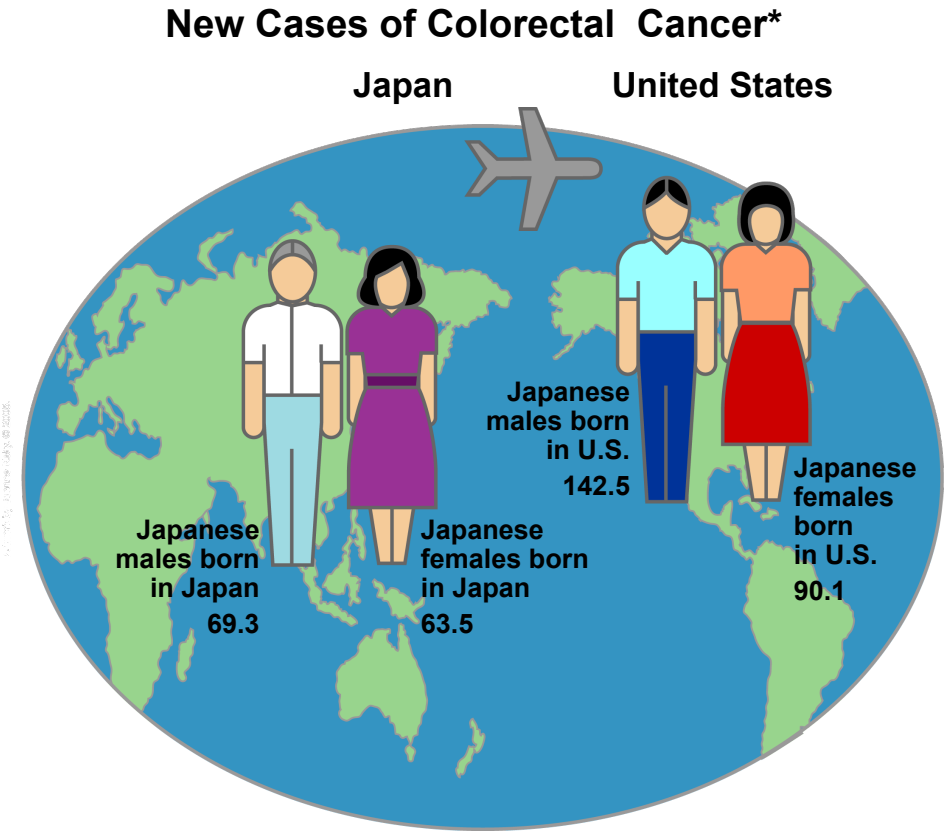


| Proportion of Cancer Deaths Linked to Avoidable Risk Factors | |
|---|---|
| Tobacco | 29–31 percent |
| Diet | 20–50 percent |
| Infections: bacteria, viruses | 10–20 percent |
| Ionizing and UV light | 5–7 percent |
| Occupation | 2–4 percent |
| Pollution: air, water, food | 1–5 percent |

Source: Doll R. (UK data) Recent Results in Cancer Research 1998; 154:3-21.

The good news is that the major environmental factors that are linked to cancer deaths can be modified, because most of them involve lifestyle choices. Almost one-third of all cancer deaths could be prevented by eliminating the use of tobacco products, for example, and making better dietary choices could prevent many more premature deaths from this disease. Our knowledge and certainty about specific dietary substances is much less firm than it is for tobacco. Diets are very complex and to study them, researchers need to know what people ate in the past that impacted their cancer diagnoses today.

# Influencing Rates and Risks

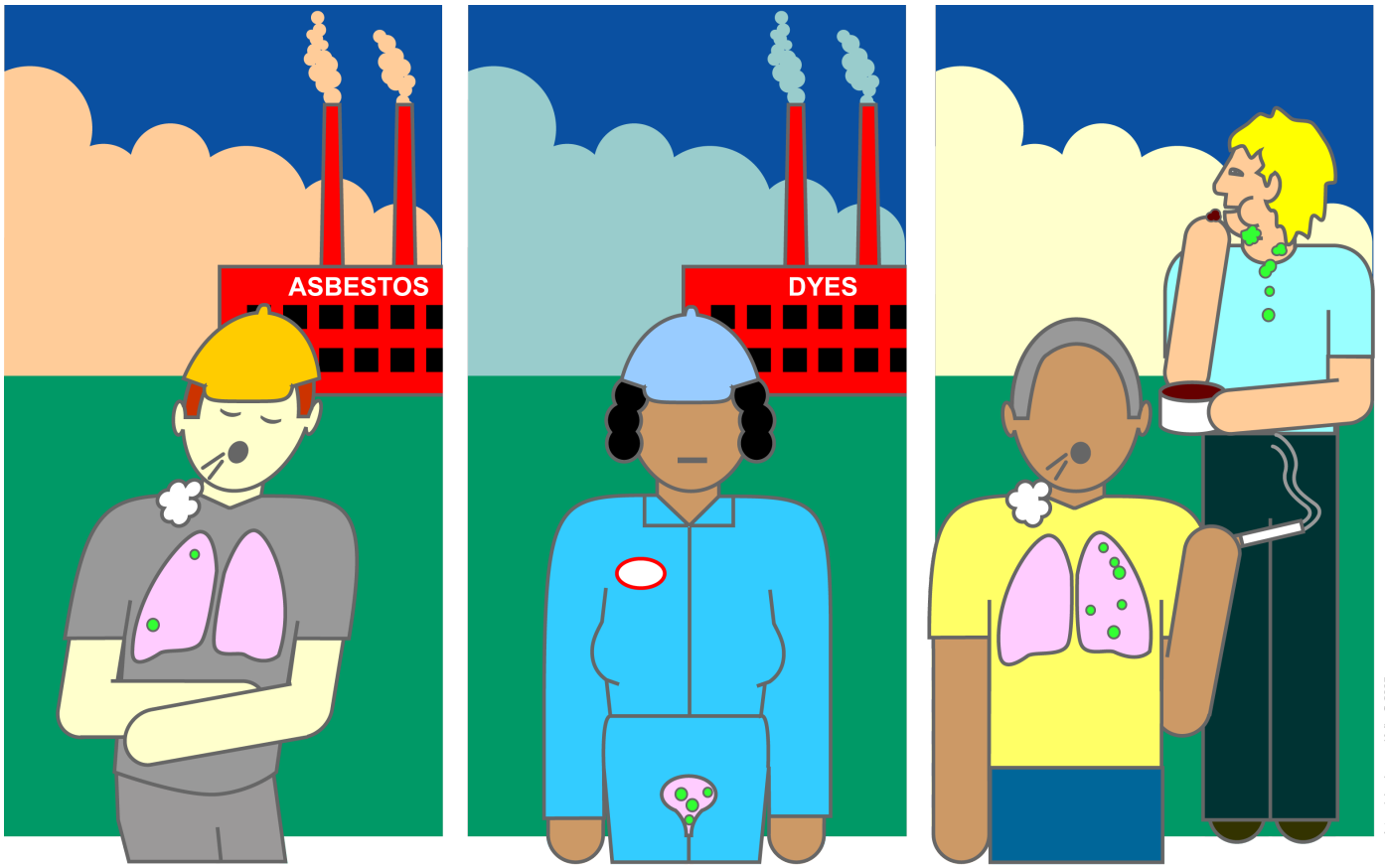



The environment *influences* cancer rates and risks. We can see this by comparing cancer rates in different countries, and how rates change when people move from one country to another.

For example, U.S.-born Japanese men have twice the rate of colon cancer as native-born Japanese men, and U.S.-born Japanese women have colon cancer rates 40 percent higher than their counterparts born in Japan. So scientists study what exposures or characteristics differ between Japanese immigrants and their descendants in the U.S. to better understand the environmental factors that may be influencing their colon cancer rates and risks.

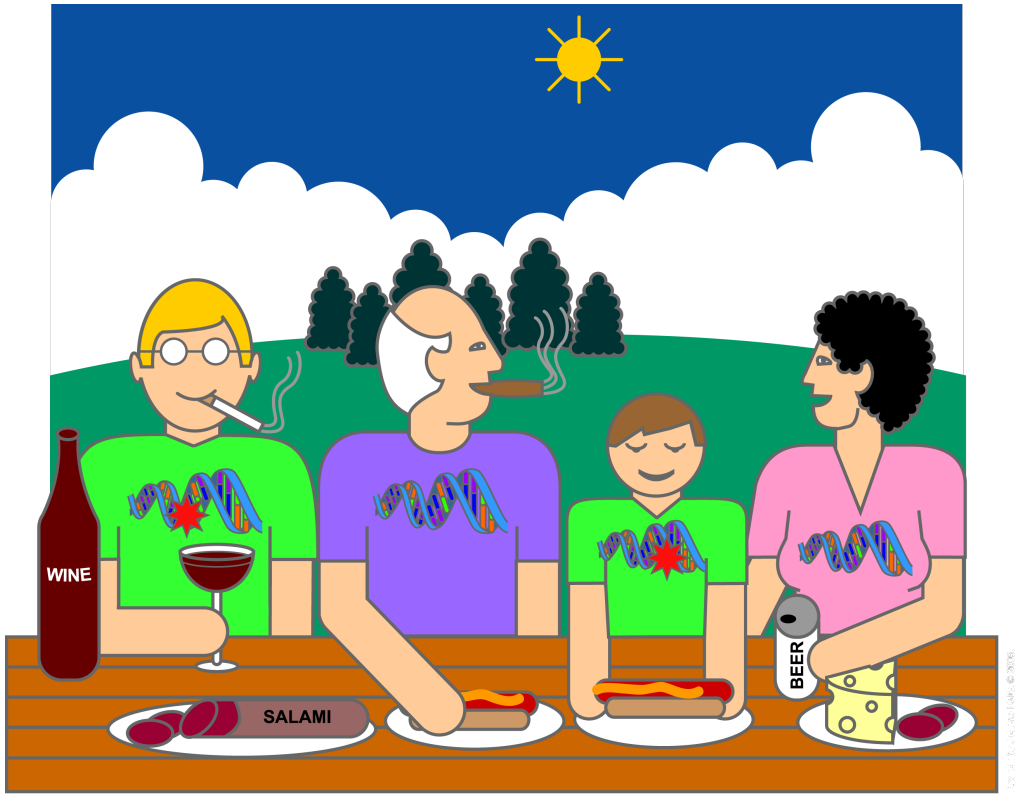
# Different Exposures, Different Rates and Risks

## Carcinogenic Exposures




Certain types of exposures are linked to specific cancers. For example, exposure to asbestos is linked to lung cancer, and exposure to benzidine (a chemical found in some dyes) is linked to bladder cancer. Exposure to carcinogens from tobacco use is linked to several types of cancer, including cancers of the lung, bladder, mouth, lip, throat, voice box, and esophagus.

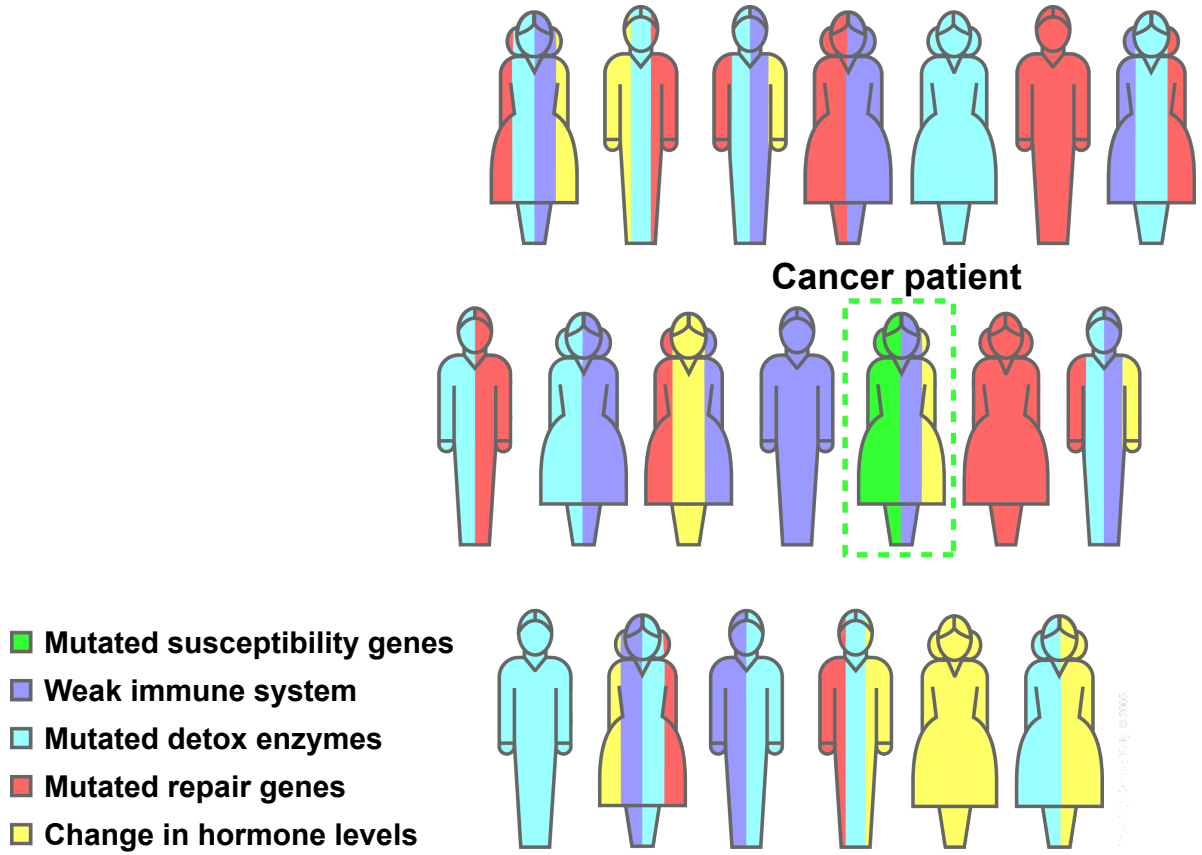
# The Inside Matters:
# Random Gene Changes




= cancer = random gene changes

Of course, environmental exposures by themselves do not cause cancer. Cancer is complex and involves many gene-gene interactions that occur inside the body and are not well understood. For example, certain randomly occurring gene changes may be accumulating in your body's cells right now. And these same kinds of changes *may not be* occurring in your friends, your coworkers, or even your family members, even though all of you remain in a similar environment most of the time. Over your lifetime, random gene changes are passed along as your body cells grow and divide. These changes accumulate. The unique genetic patterns that evolve over time may make some people more likely than others to increase their risk for cancer after exposure to a particular chemical or after choosing a particular behavior.

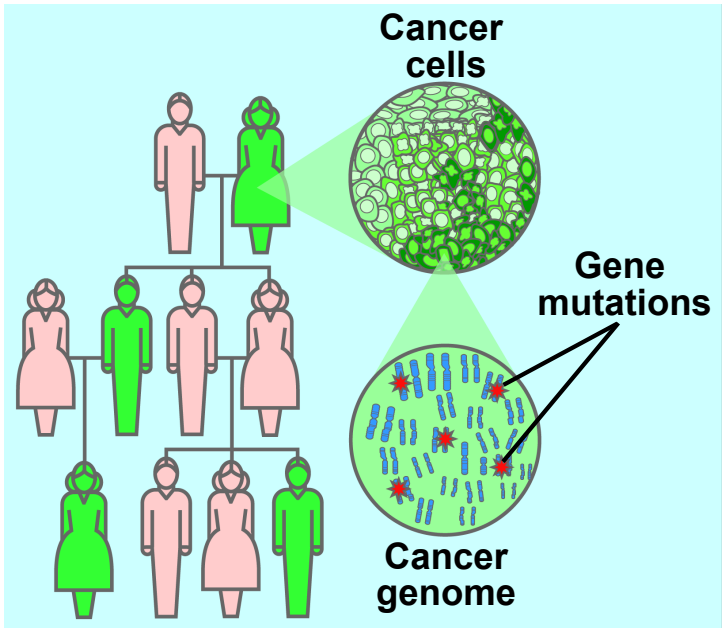
# The Inside Matters: Other Factors



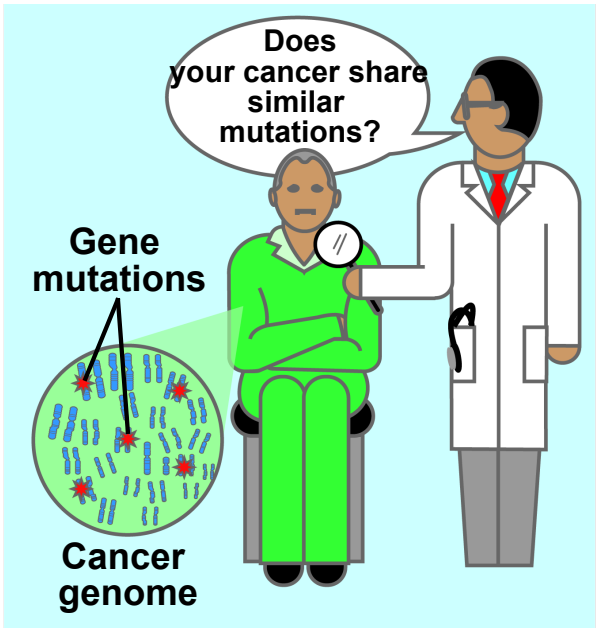

You might wonder why some families are more cancer prone than others. In part, inheritance is involved in some of these cases. This is because, at birth, some offspring unknowingly inherit gene changes that can make them more susceptible to cancer. But this explains only a very small percent of new cancer cases, no more than 5 percent. Others factors that may change your cancer risk include having stronger or weaker immune systems, variations in detoxifying enzymes or repair genes, or differences in hormone levels.

# Familial Rates and Risk:
# Those We Are Beginning To Understand

**Kidney Cancer in Family**

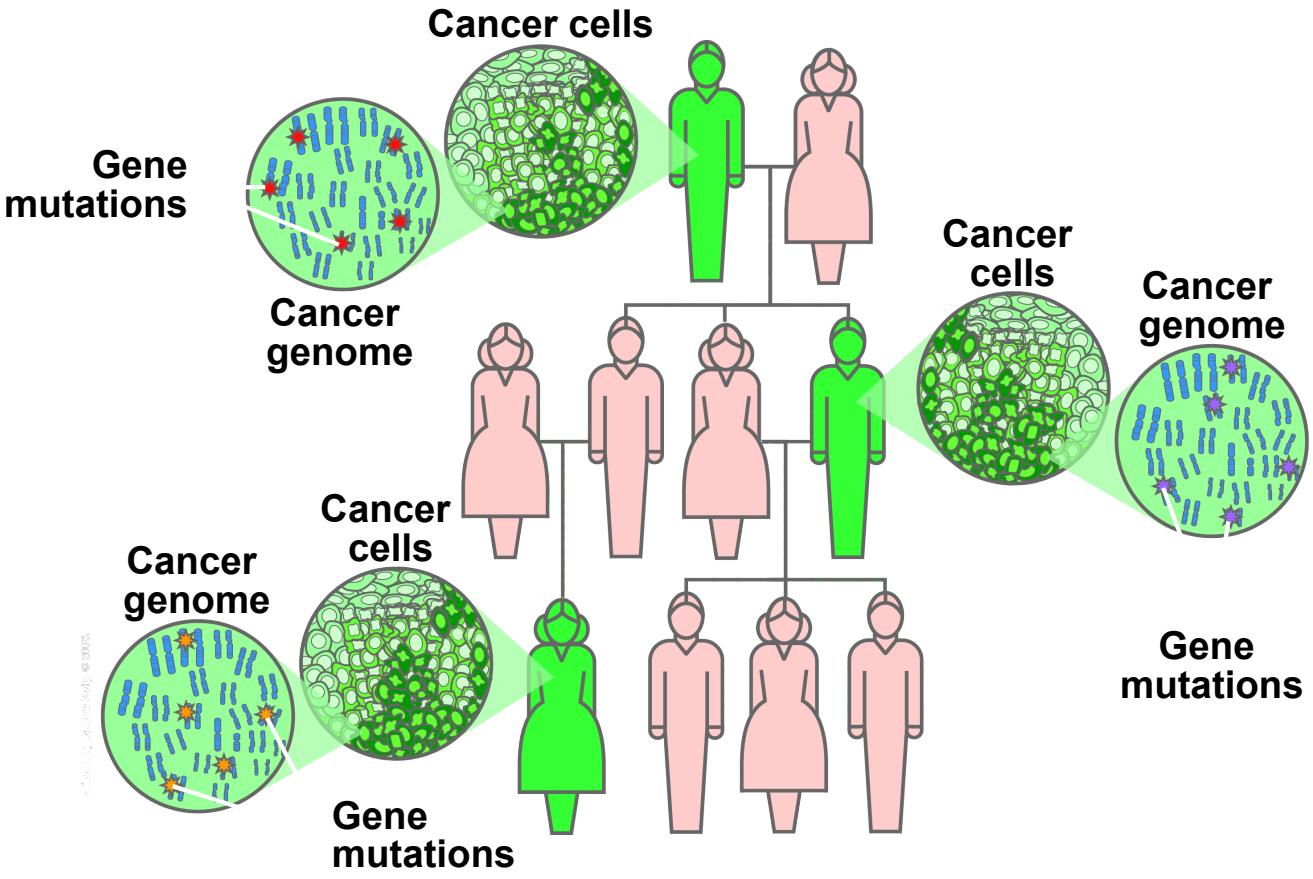



**Kidney Cancer: A Sporadic Case**



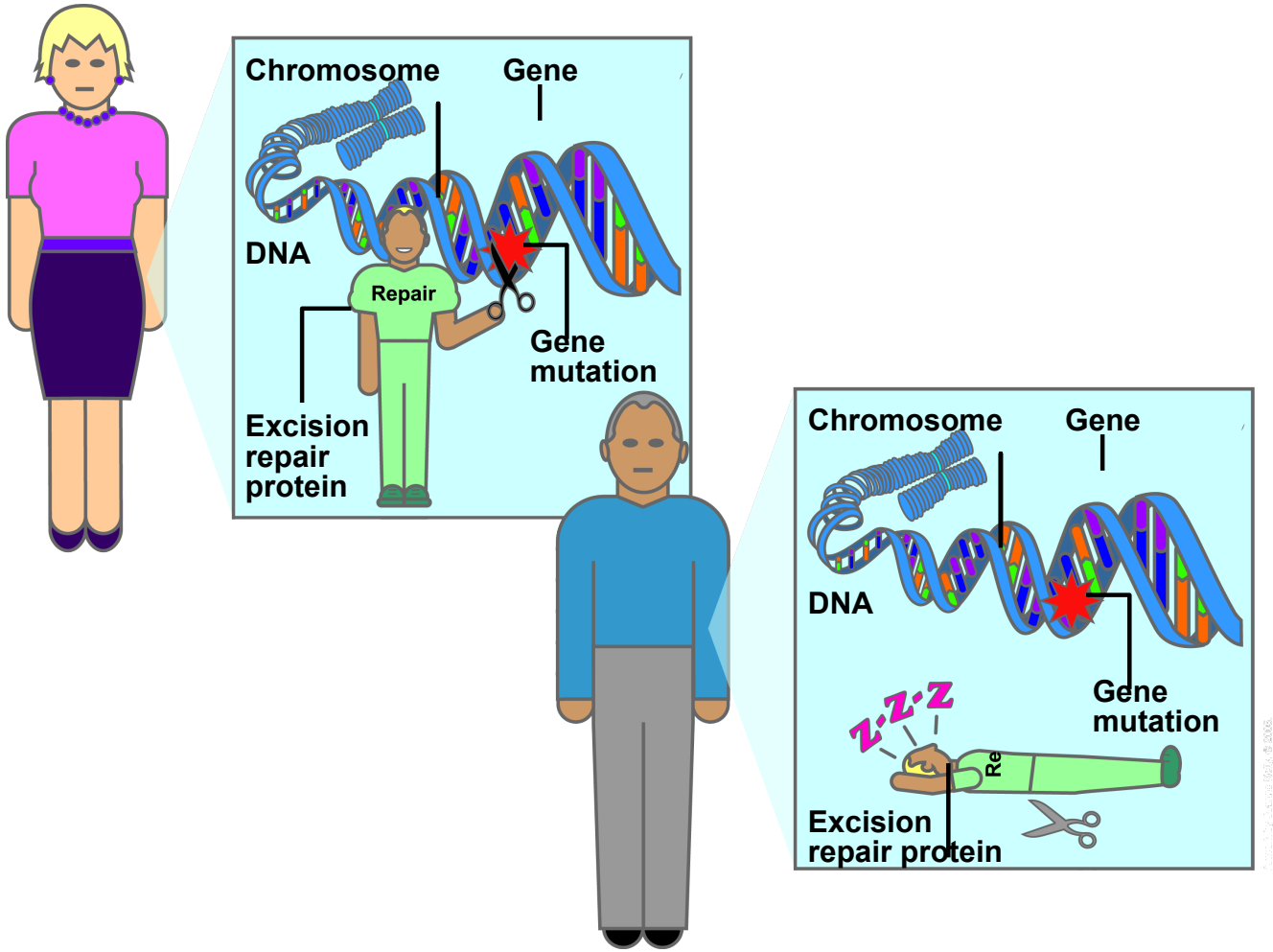

Rarely, several generations of the same family will develop the same type of cancer at rates much higher than those that occur in the population overall. Often, the family members are passing on mutated genes that impart a higher than average risk for developing this particular cancer. By studying the genetic profiles of these affected families, researchers are learning which genes are involved in cancer's development. Kidney cancer families are a good example of this. When scientists discovered the gene changes involved in the inherited form of renal cancer, they were able to use this information to better detect and diagnose sporadic or randomly occurring new cases of this cancer type.

# Familial Rates and Risk: Those We Still Don't Understand



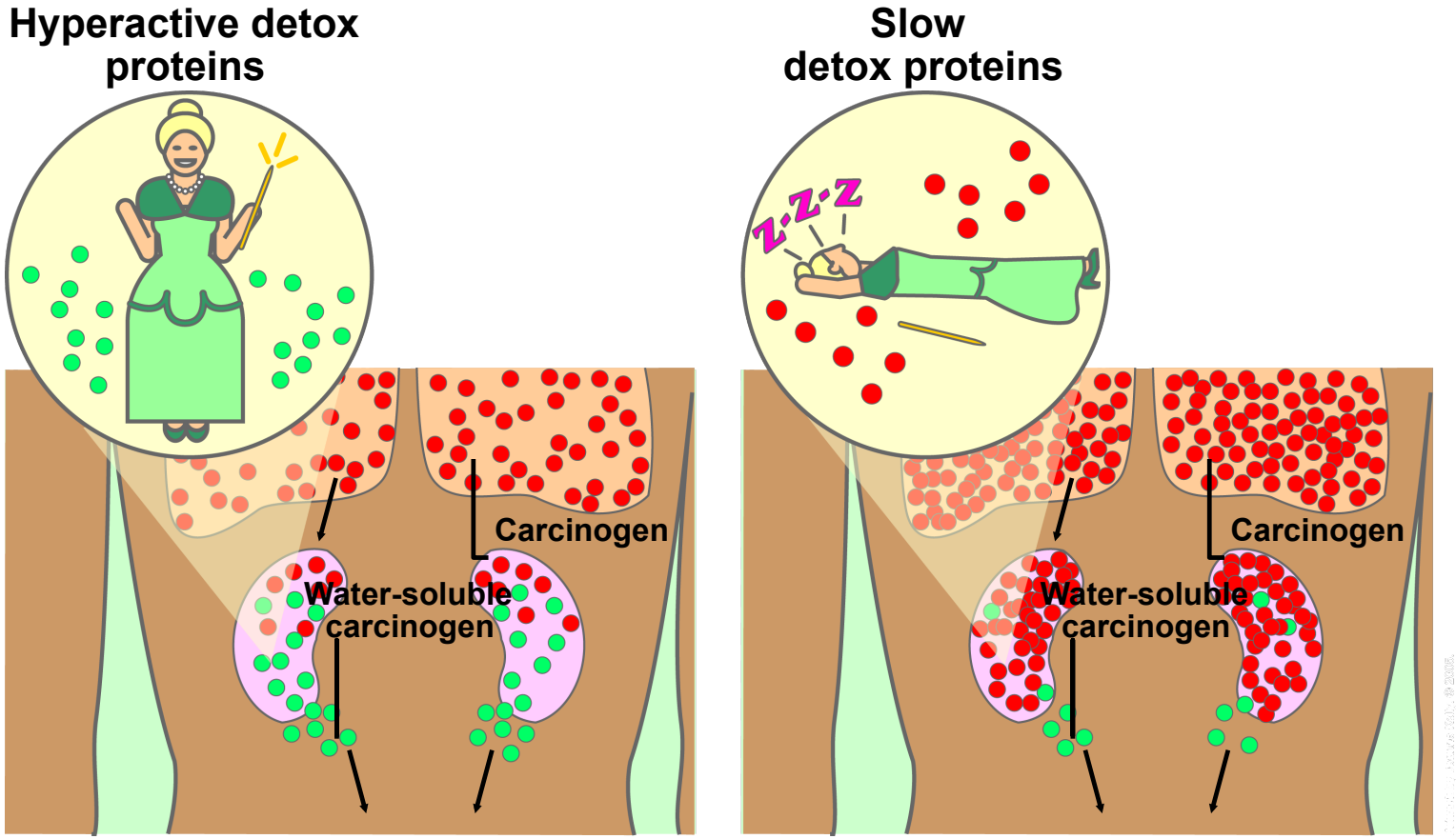

Some families will exhibit higher than average rates of a particular cancer, yet when scientists search their genomes, they are unable to find the usual genomic alterations suspected of increasing cancer risk. These cases seem to point to gaps in our understanding of the full set of mutations required for cancer's development. They also prompt researchers to probe deeper in search of possible environmental exposures suffered by the clan collectively.

# Faulty Gene Repair Activities



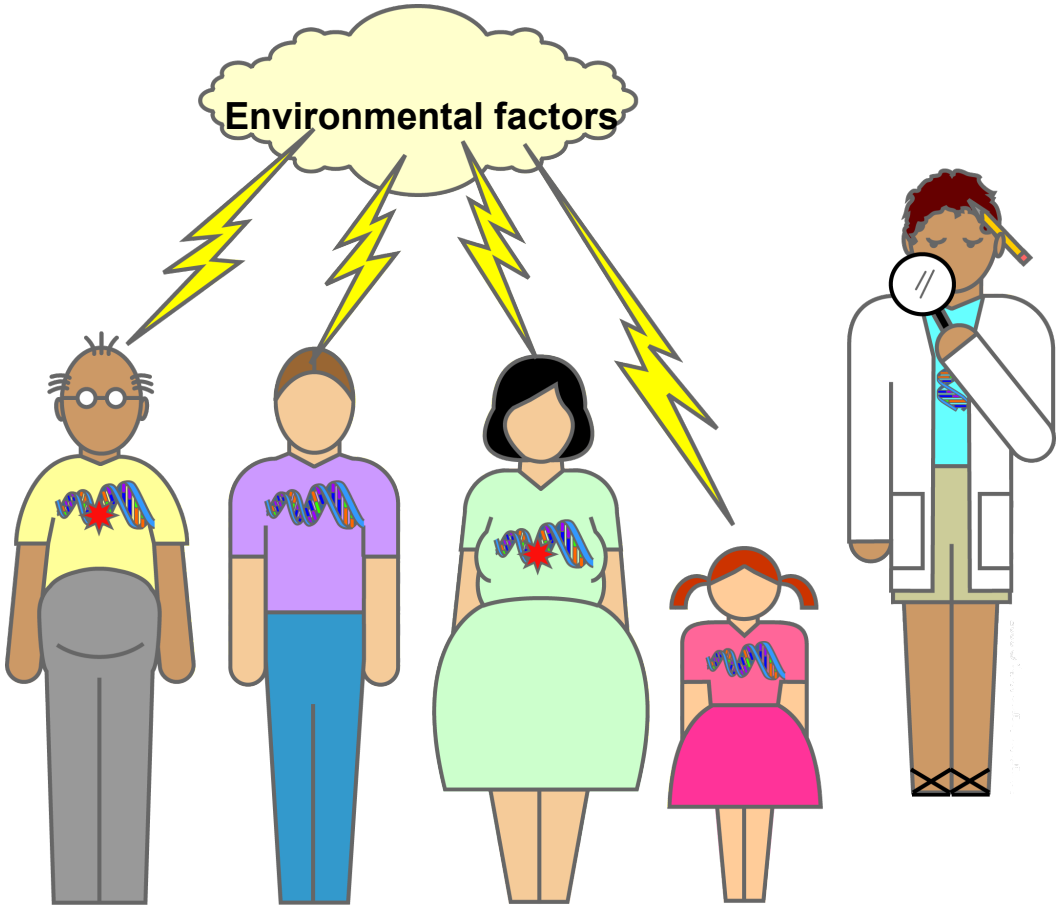

Normally, if environmental exposures cause an unwanted molecule to bind to a gene, excision repair proteins rapidly remove that damaged area of the gene. Because the genes in the body that produce these repair proteins can themselves have mutations, people can differ from one to another in their gene repair activities. Unfortunately, genetic variations can make a person's gene repair activities less efficient or more error-prone than normal, and this faulty condition can be passed from generation to generation.

# Hyperactive Detoxifying Activities




Other genes in the body produce detoxifying proteins that prepare toxic molecules for quick removal. Again, genetic variation in genes for detoxifying proteins can result in differences from one person to another in the ability to eliminate cancer-causing compounds. On the other hand, some genetic variation may actually produce hyperactive detoxifying gene activity. Then a person who possesses hyperactive detoxifying proteins may have some protection from harmful environmental exposures. Scientists believe, for example, that some persons inherit genes for hyperactive detoxifier proteins in lung tissues. This inheritance may partly explain why some smokers who refuse to give up the habit can still remain free of cancer. (For more information, please see *Genetic Variation*.)

# Chance of Cancer? It Depends…

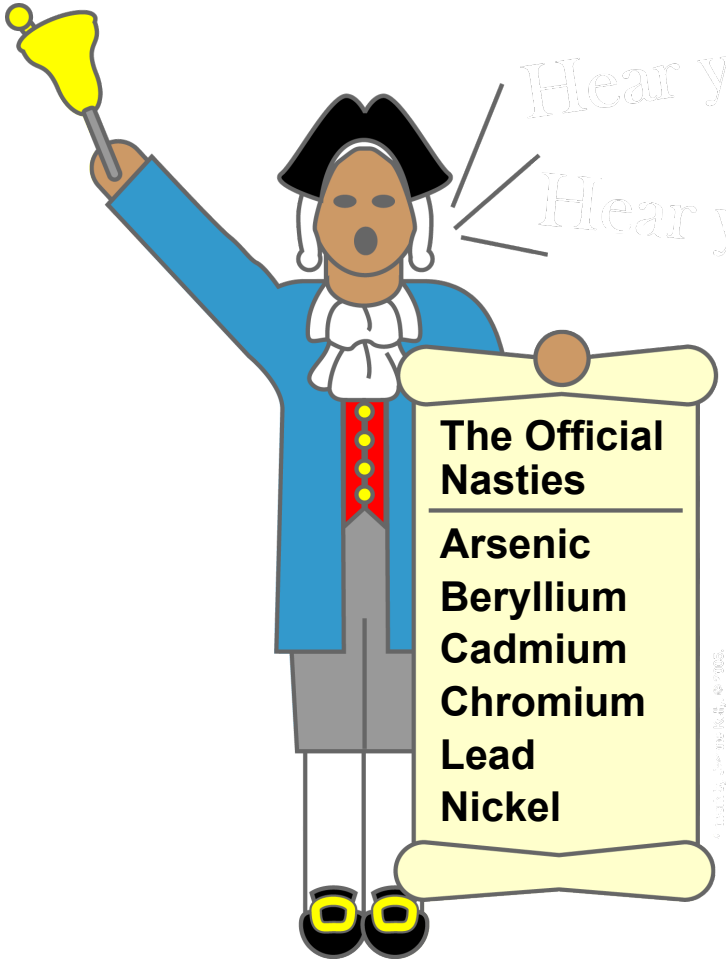



We know that some exposures increase the risk of cancer, but we don't know which specific combinations of environmental factors on the outside of the body combine with gene changes on the inside to lead to cancer. We don't know why two persons can have very similar environmental exposures, yet one gets cancer and the other does not. A number of individual factors are involved and there are complex relationships among them.

The individual chance that someone will develop cancer in response to a particular, single environmental exposure depends on how long and how often that person was exposed. It also depends on the person's:

- exposures to certain environmental factors (including diet, hormones)
- genetic makeup
- age and gender

# Environmental Carcinogens: The “Nasties” Lineup

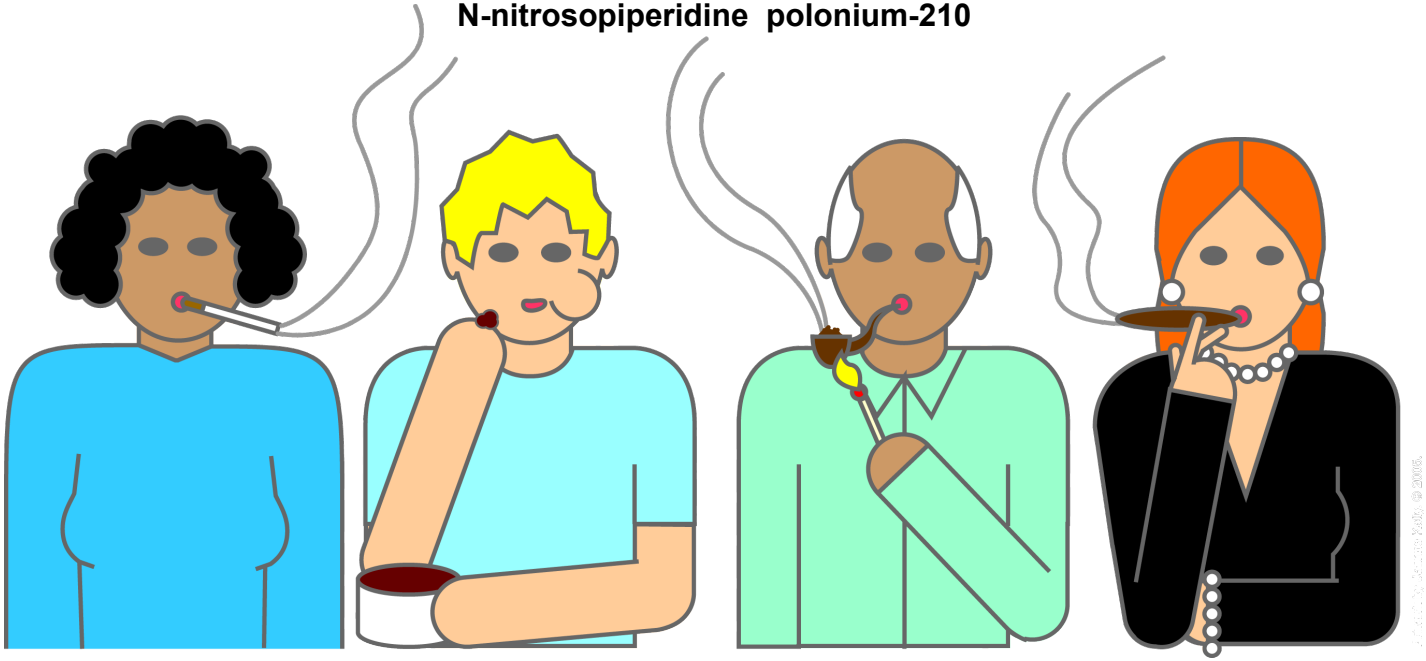



Every two years, the Federal Government’s National Toxicology Program publishes a report on environmental exposures that are linked to cancer (http://ntp.niehs.nih.gov/). The recent report included 246 substances, some known to be linked, others strongly suspected of having an association. Researchers search for which exposures could have the most impact on the public.

As you consider these factors one at a time, it is important to remember that, over a lifetime, an individual accumulates a unique set of responses to his or her unique environment. Along the way, lengths and strengths of exposures will vary, as will the person’s genome.

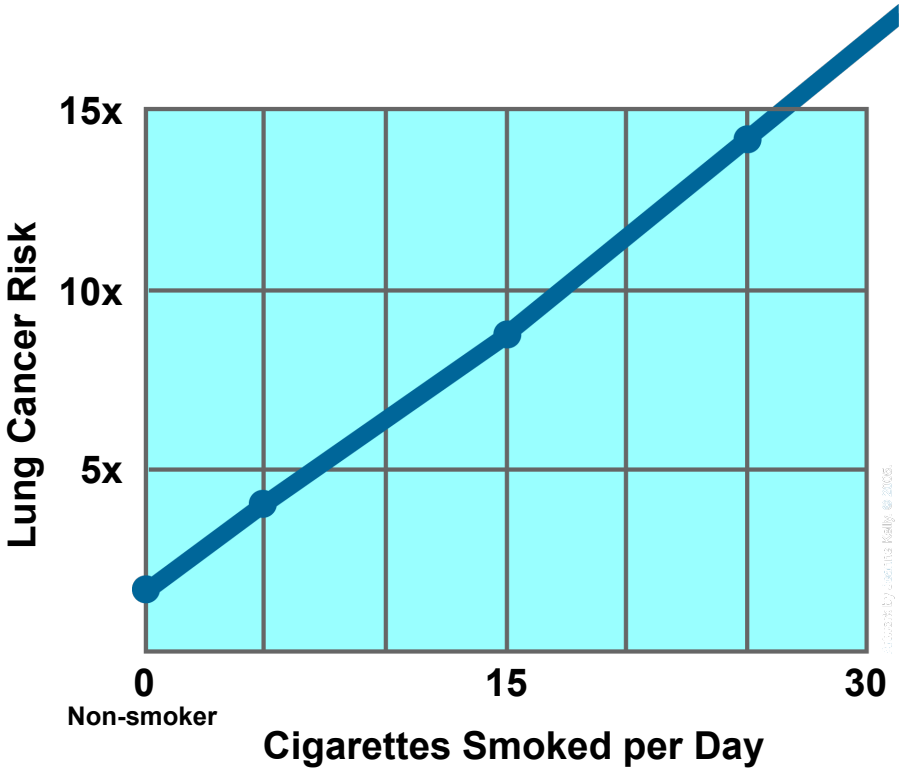
# Tobacco

**aminostilbene arsenic benz[a]anthracene benz[a]pyrene benzene benzo[b]fluoranthene benzo[c]phenanthrene benzo[f]fluoranthene cadmium chrysene dibenz[a c]anthracene dibenzo[a e]fluoranthene dibenz[a h]acridine dibenz[a j]acridine dibenzo[c g]carbazone N-dibutylnitrosamine 2,3-dimethylchrysene indeno[1,2,3-c d]pyrene S-methylchrysene S-methylfluoranthene alpha-naphthylamine nickel compounds N-nitrosodimethylamine N-nitrosomethylethylamine N-nitrosodiethylamine N-nitrosonornicotine N-nitrosoanabasine N-nitrosopiperidine polonium-210**



Cigarette, cigar, and pipe smoking have been linked to more than a dozen types of cancer, including lung, mouth, bladder, colon, and kidney cancers. Chewing tobacco and snuff increase the risk of oral cancer, and second-hand smoke increases the risk of lung cancer.

# Tobacco and Cancer Risks



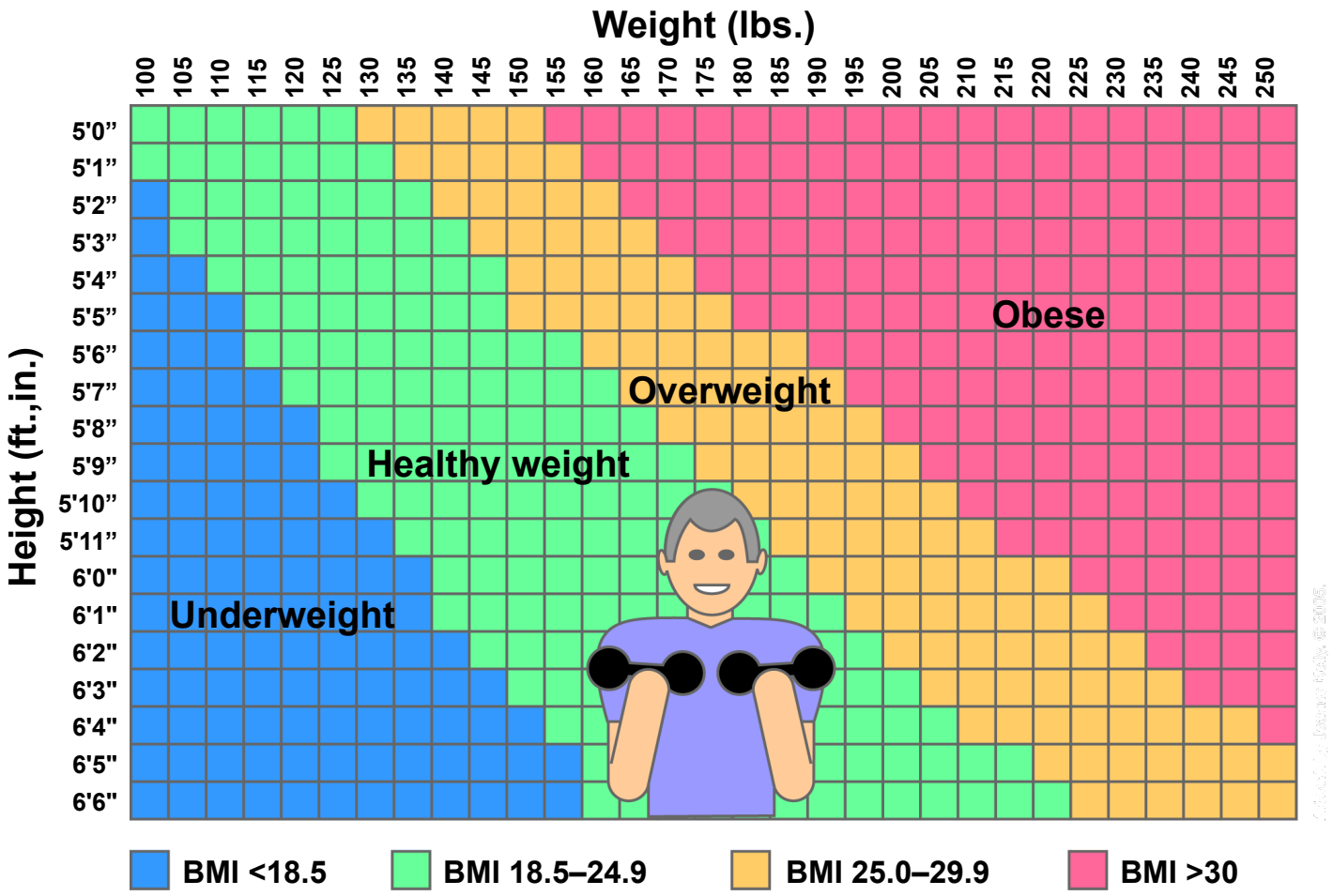

Smoking is the single most common cause of cancer, and exposure to cancer-causing substances in tobacco products accounts for about 30 percent of cancer deaths in the United States. To reduce your cancer risk, don't smoke or use tobacco products. Avoid smoke-filled rooms if possible.

# Alcohol


= cancer

Alcohol is another risk factor. Heavy drinkers have an increased risk of cancers of the mouth, throat, liver, voice box, and esophagus. There is also some evidence for an increased risk of breast cancer. Drinkers who also smoke may have an even higher risk of some oral and throat cancers. Drink in moderation, if at all: no more than one or two drinks per day.

# Overweight and Exercise




Being overweight is an important lifestyle factor related to cancer risk. There are links between obesity and the risks of breast cancer (in older women), endometrial cancer, and cancers of the kidney, colon, and esophagus. Not being physically active increases the risk of colorectal and breast cancers.

Together, obesity and physical inactivity are linked to about 30 percent of the cases of colon, endometrial, kidney, and esophageal cancers, as well as 30 percent of breast cancers in older women.

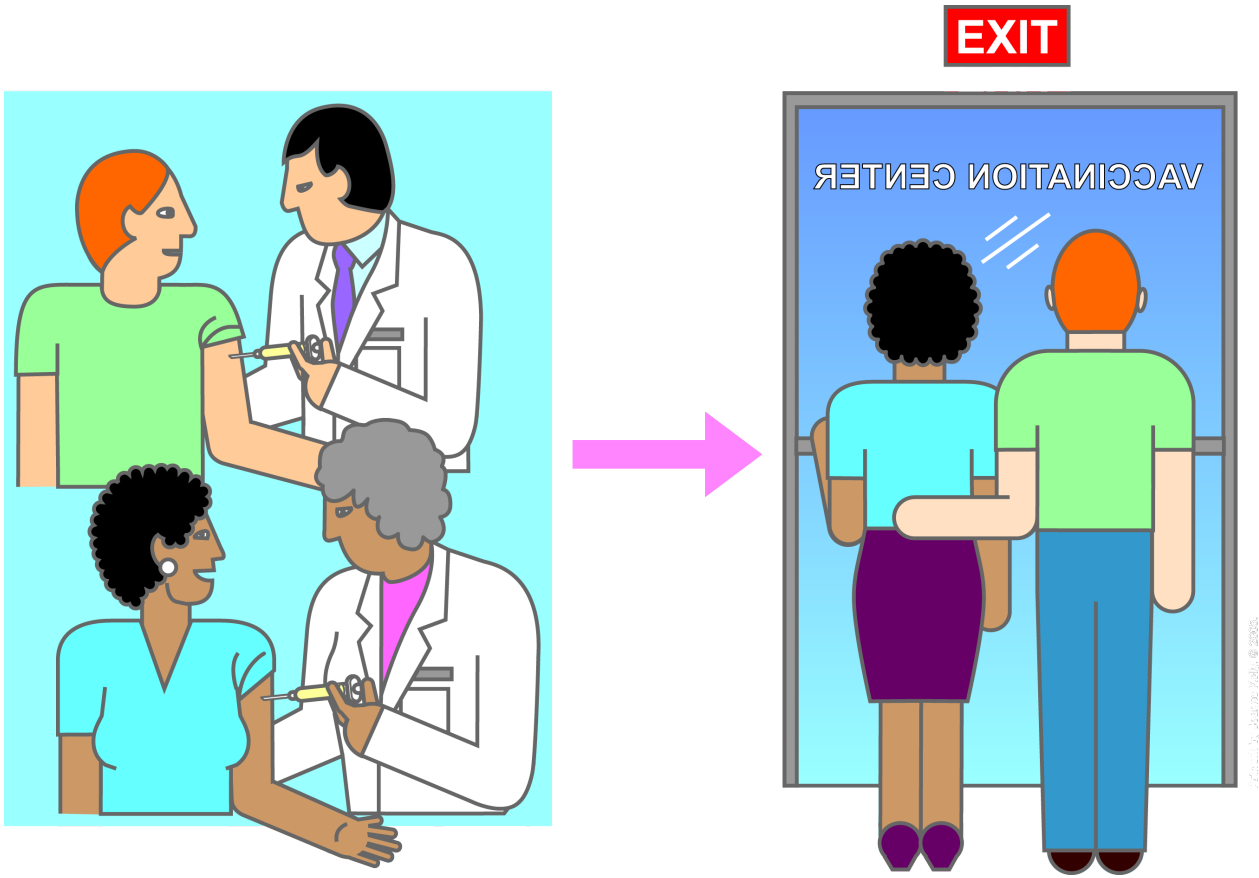
Losing weight and exercising can help reduce your risk. Exercise at least 30 minutes a day, most days of the week. Exercise alone can decrease the risk of colon cancer and breast cancer. The goal should be for adults age 20 or older to keep their Body Mass Index (BMI) below 25. The BMI is a number that shows your body weight adjusted for your height.

# Diet

The federal report on carcinogens doesn't discuss specific foods and cancer risk. However, studies show that consuming large quantities of red meat, preserved meats, salt-preserved meats, and salt probably increases the risk of stomach and colorectal cancers. Research also shows that a diet high in fruits and vegetables may decrease the risks of these cancers. And calorie restriction has been shown to reduce cancer risk for several cancer types.

Eat a healthy calorie-restricted diet rich in whole grains, fruits, and vegetables. Avoid consuming large amounts of fatty foods, red meats, salt, or salt-preserved food.

# Viruses




Some viruses are risk factors for cancer.

***Human Papillomavirus***

Certain strains of human papillomavirus (HPV), which are sexually transmitted, are the primary causes of cervical and anal cancer. Women who begin having sexual intercourse before age 17, or who have multiple sexual partners, are at greatest risk of HPV infection.

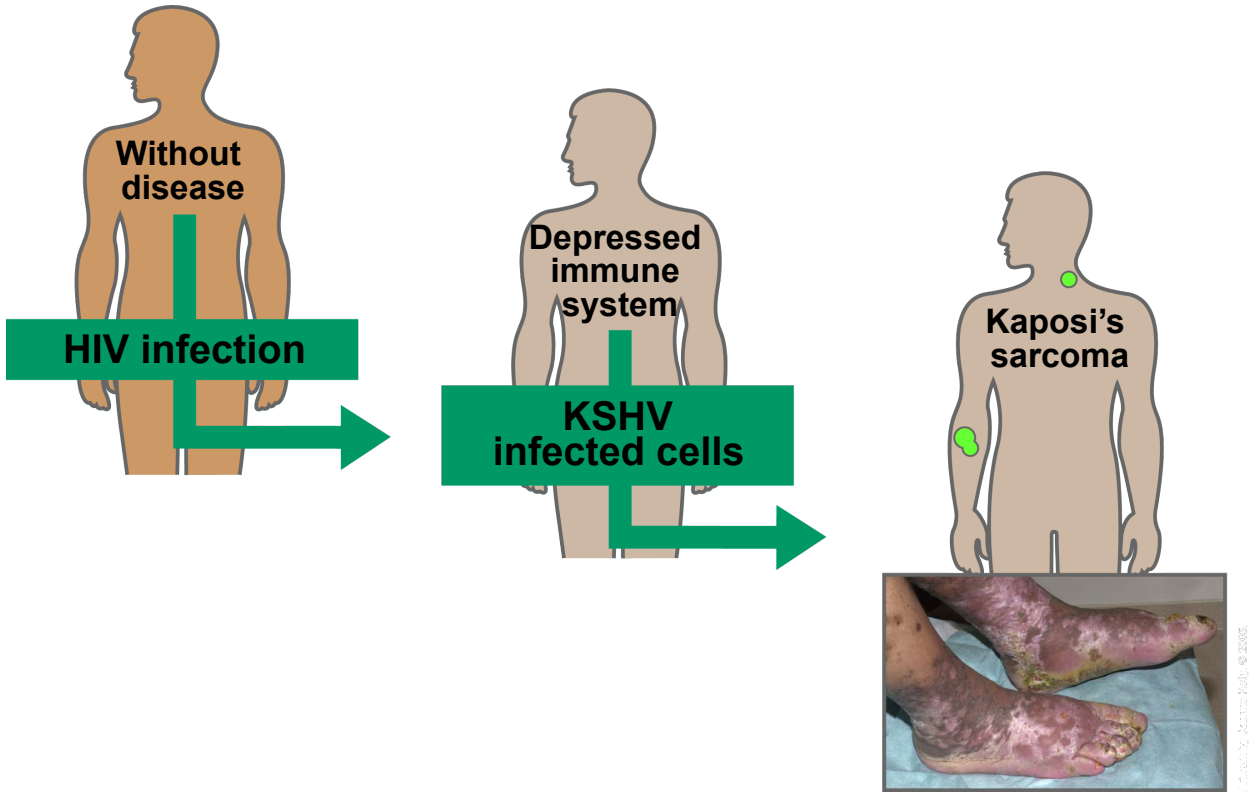
HPV may also be responsible for some cancers of the head and neck.

It's important to note that most people infected with HPV will not get cancer. Also, a vaccine will soon be available that can prevent infection with the strains of HPV that cause cervical cancer.

Hepatitis B and C

The hepatitis B and hepatitis C viruses are major causes of liver cancer worldwide. The viruses are transmitted through blood transfusions, injectable drug use, and unprotected sex. Vaccinations can protect against hepatitis B, but there is not yet a vaccine for hepatitis C.

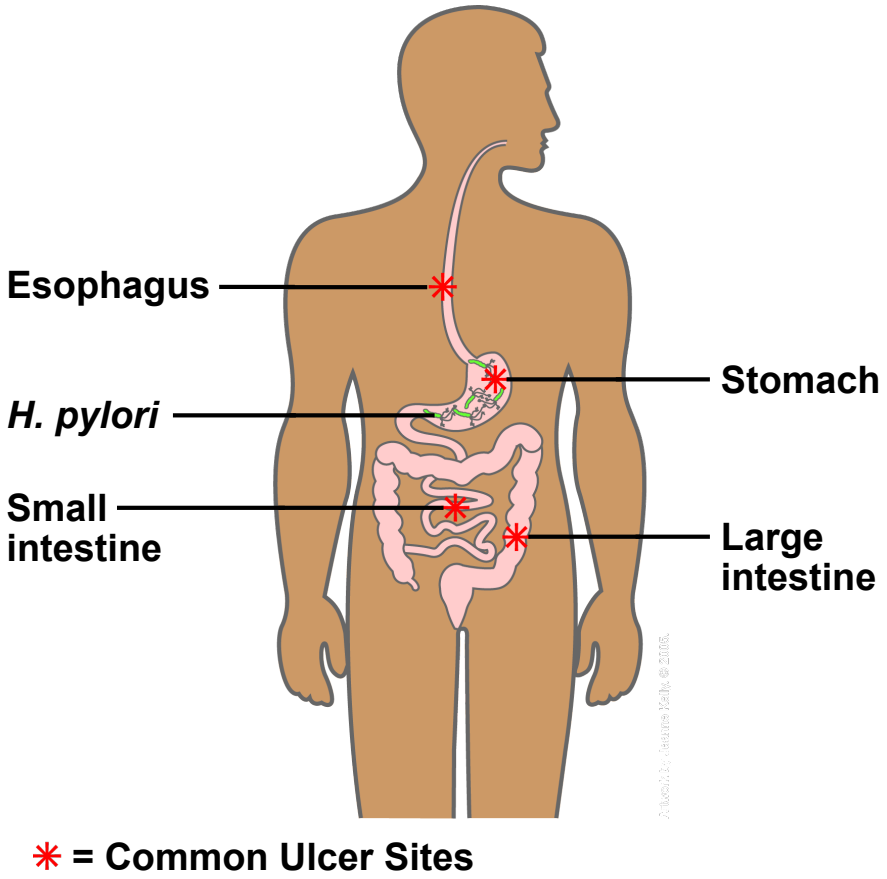
# Other Viruses




Kaposi's sarcoma lesions

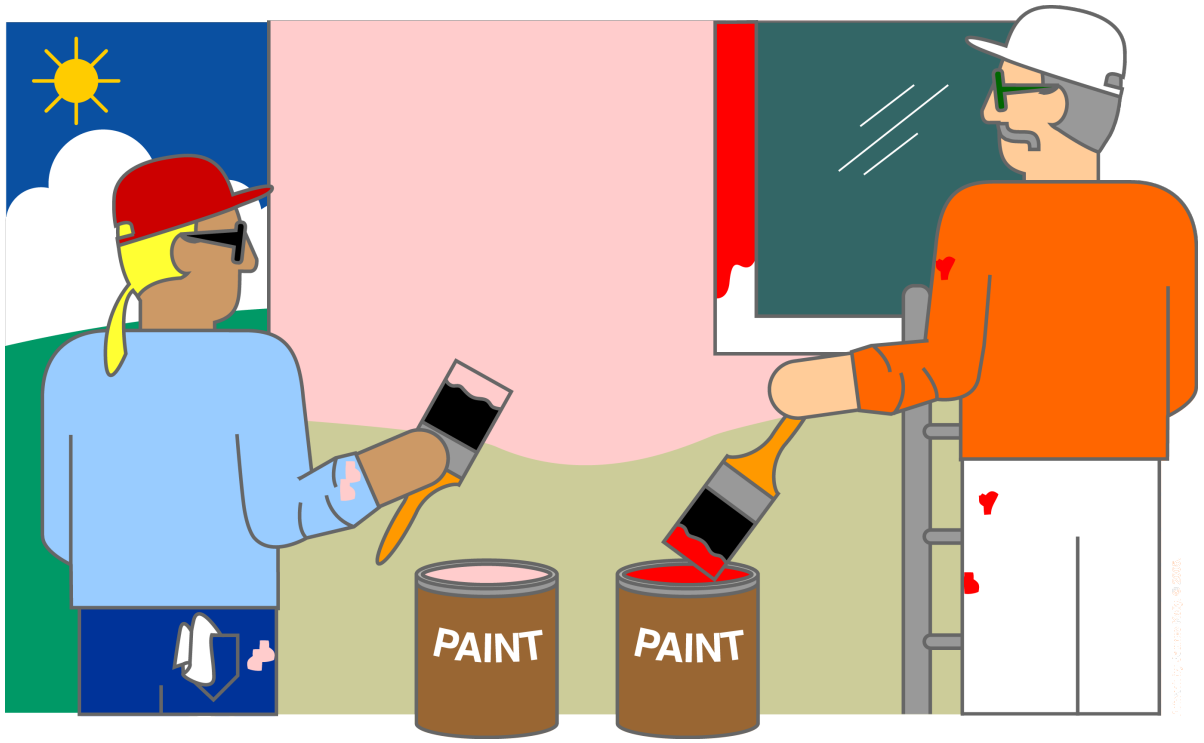
Epstein-Barr virus causes mononucleosis. In people with weakened immune systems, it can also lead to some types of lymphoma.
People with weakened immune systems may also be at risk for a cancer called Kaposi's sarcoma if they are infected with human herpesvirus 8 (also known as Kaposi's sarcoma-associated herpesvirus, or KSHV). In the United States, KSHV infection is most common in homosexual men.

# *Helicobacter pylori*




A bacterium called *Helicobacter pylori* (*H. pylori*) is the primary cause of stomach ulcers and inflammation of the stomach. *H. pylori* can contribute to the development of stomach cancer, but most infections lead to neither symptoms nor cancer.

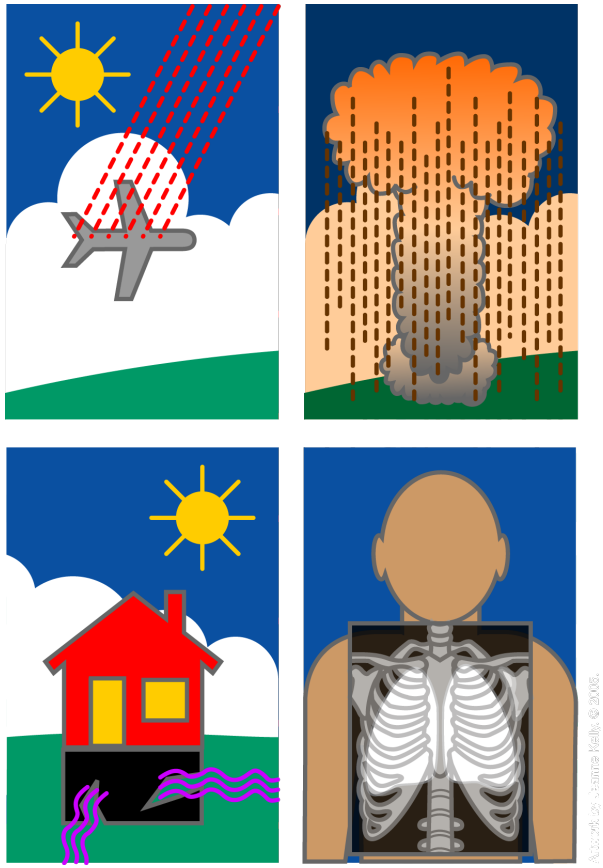
# Ultraviolet (UV) Radiation




Ultraviolet radiation--which comes from natural sunlight, sunlamps, or tanning beds--can lead to melanoma and other forms of skin cancer. While some sun exposure is good for health, excessive exposure during childhood seems a particularly important factor that increases skin cancer risk, and repeated exposure as an adult can increase risk as well.

If possible, avoid sun exposure between 10 am and 4 pm. Wear protective clothing and use sunscreen. Do not use tanning beds or other types of artificial UV exposure.

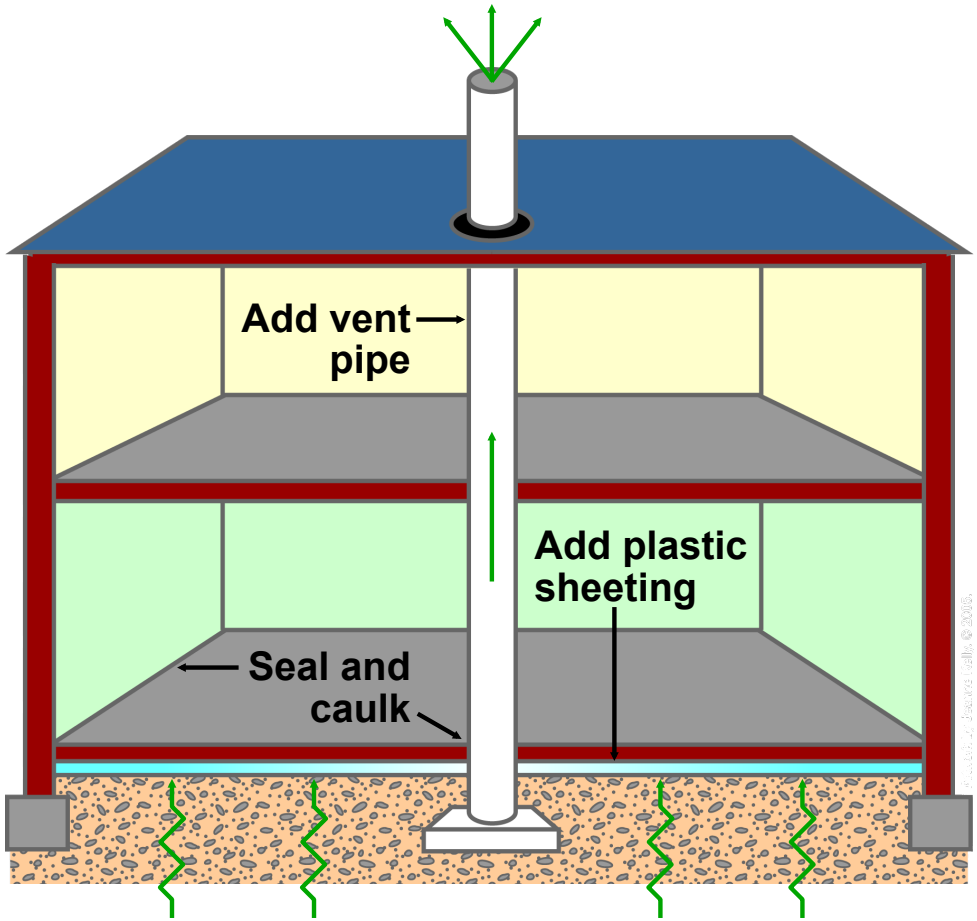
# Ionizing Radiation



Invisible high-energy rays called ionizing radiation can damage the body's DNA and genes, possibly enabling cancer-related mutations. There are several sources of ionizing radiation, including cosmic rays, radon, fallout from atomic bombs or above-ground nuclear testing, and screening or diagnostic X-rays.

We are all exposed to the ionizing radiation from the cosmic rays that enter earth's atmosphere from outer space. This radiation may account for a very small percentage (about 1 percent) of our total cancer risk.

# Radon




Radon, a naturally occurring radioactive gas found at low levels in most soil, is produced in the soil when the element uranium starts to break down. The health effects of high radon levels were first seen in the increased cases of lung cancer found in underground uranium miners in the United States and around the world. Radon gas seeps into cracks in the foundation of homes from surrounding soil; about 1 in 20 homes has elevated radon levels. Research estimates that about 20,000 lung cancer deaths every year may be linked to radon exposures in homes.

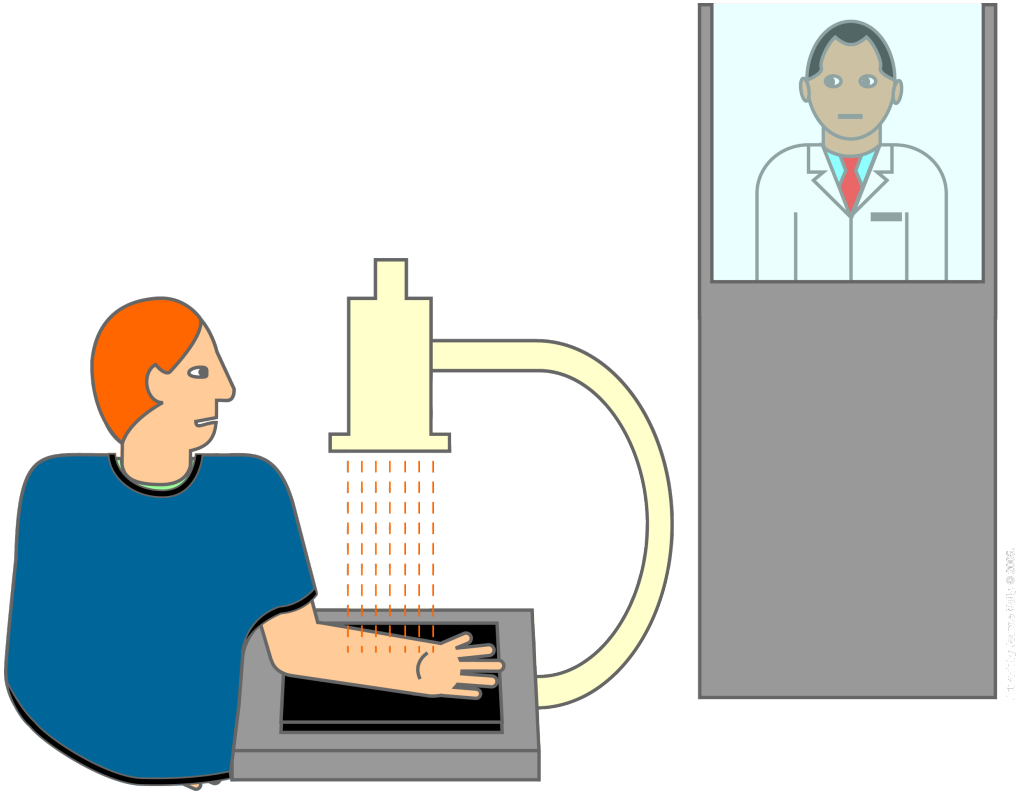
Check the radon levels in your home regularly. A ventilation system in your basement can dramatically reduce radon levels.

# Nuclear Fallout

= cancer

Atomic bombs and above-ground atomic bomb testing releases ionizing radiation that can increase cancer risk. People affected by the atomic bombs in Japan at the end of World War II, those living near nuclear testing sites in Nevada in the late 1950s and early 1960s, and those near the site of the Chernobyl nuclear power plant accident in the former Soviet Union in 1986 were all exposed to ionizing radiation.
Japanese atomic bomb survivors had increased rates of cancers of the breast, thyroid, lung, stomach, and other organs. People, especially children, exposed to iodine-131 (one form of radioactive iodine) both from the above-ground nuclear testing that has occurred in the United States and from the Chernobyl accident, have an increased risk of thyroid cancer.

# Diagnostic and Screening X-rays

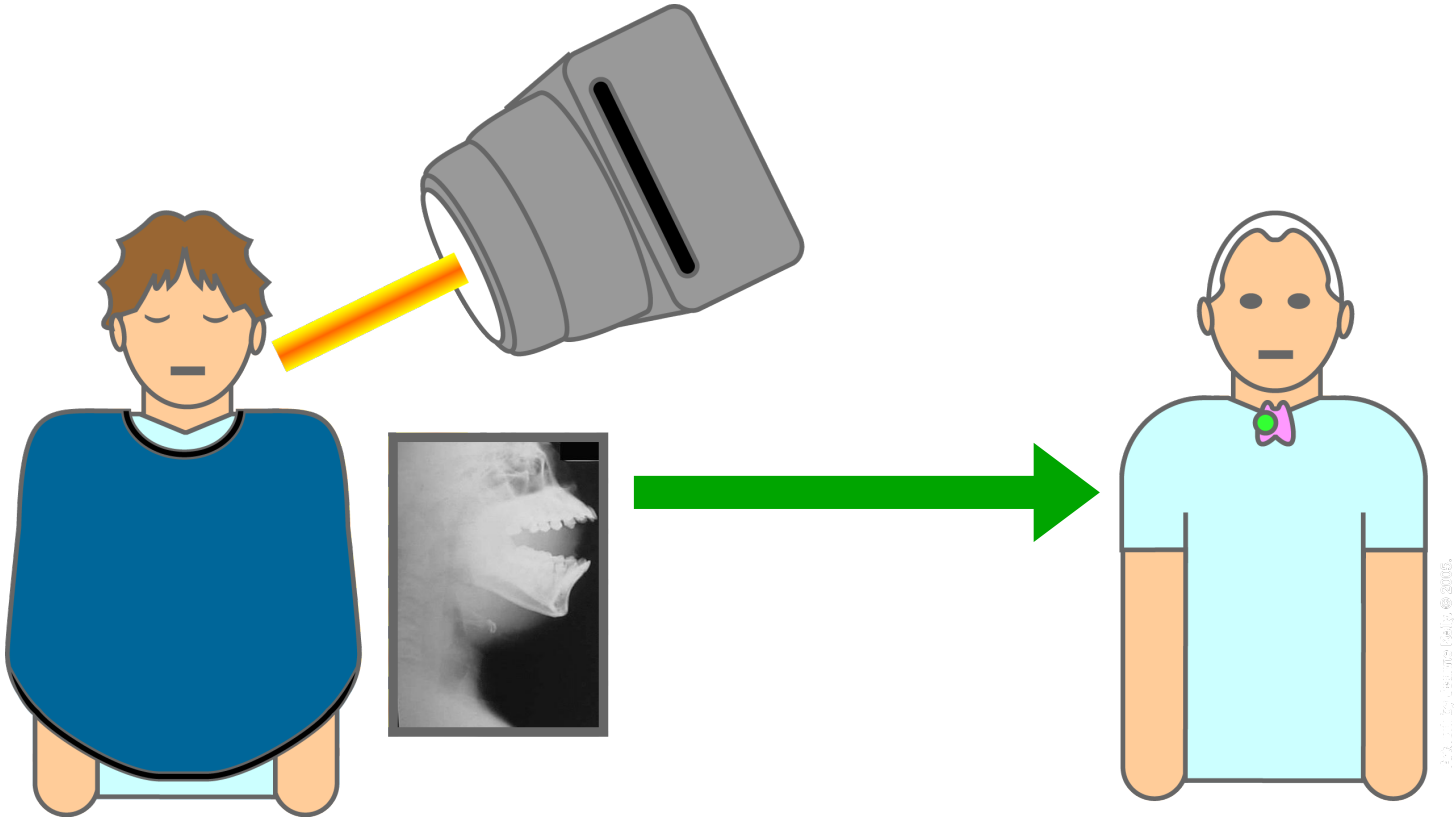


X-rays, mammograms, and radiation therapy all involve exposure to ionizing radiation. An X-ray of the chest exposes a patient to only a small amount of radiation--about the same as one gets from two airplane flights across the United States.

Studies have not shown an elevated cancer risk associated with X-rays taken to diagnose a disease or condition. One exception to this is in children whose mothers received X-rays while pregnant: the children were found to have increased risks of leukemia and other types of cancers. Because of this finding, X-rays to diagnose a condition in pregnant women are no longer recommended.

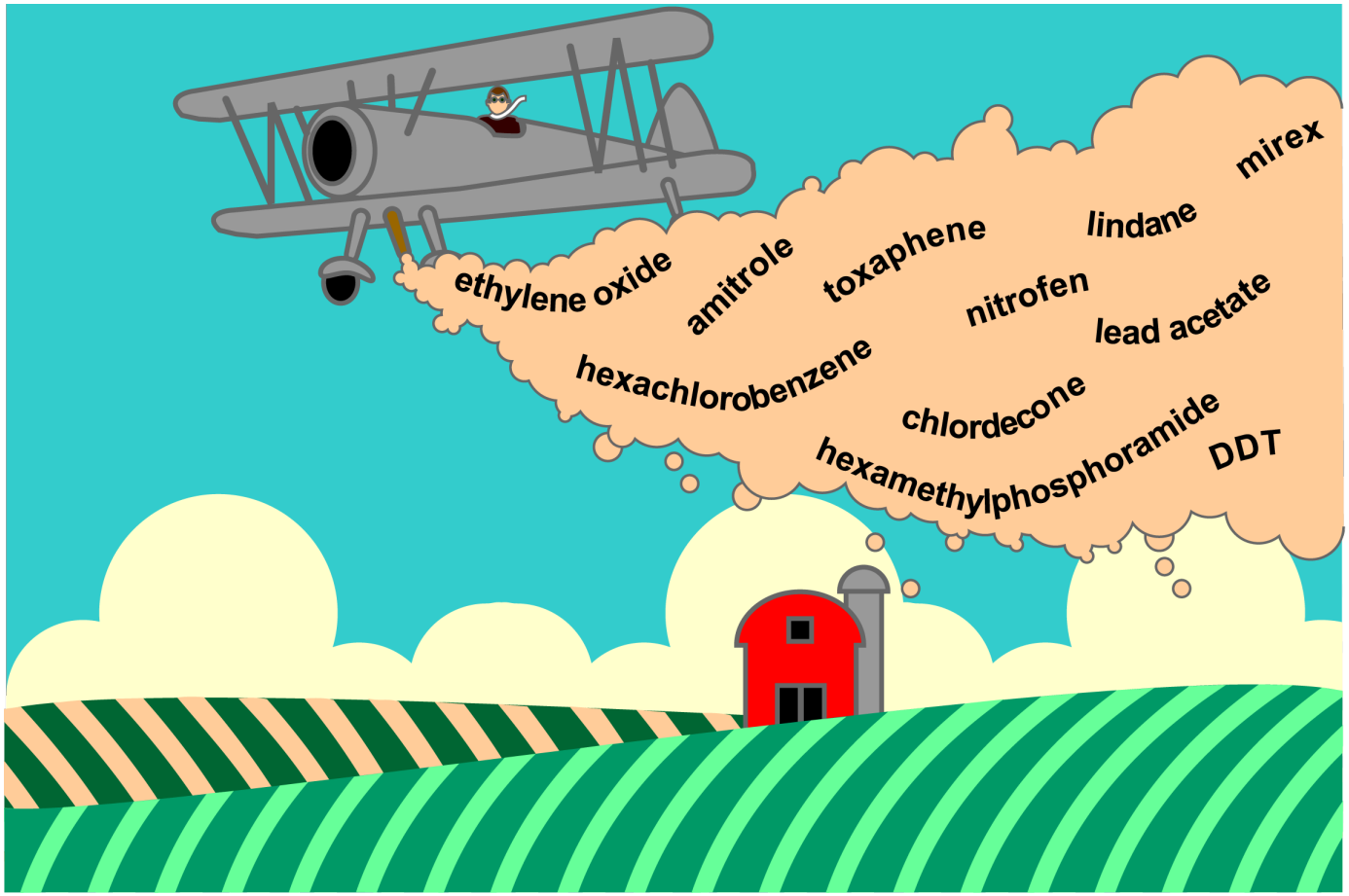
Talk with your doctor about the need for each X-ray that he or she suggests. Ask about shields to protect other parts of your body during an X-ray.

# Radiation Therapy



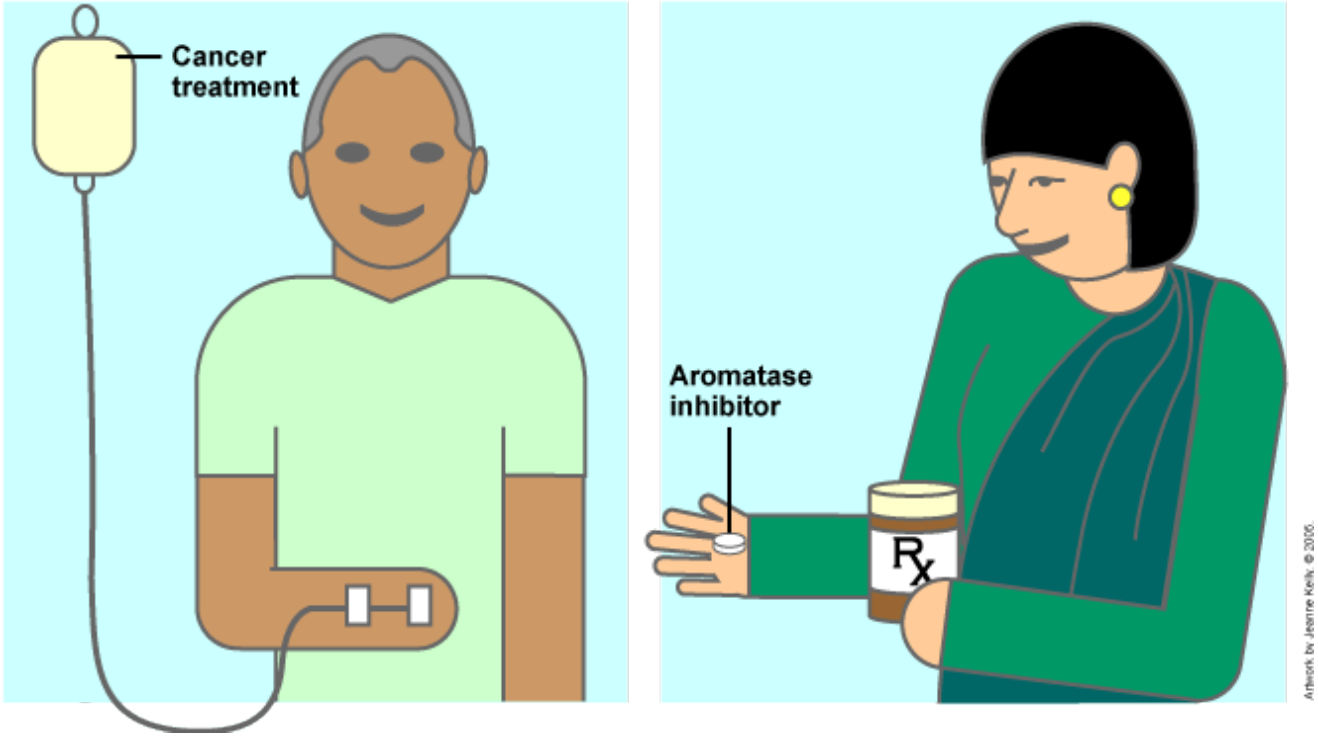
Radiation to treat a condition is more likely to increase cancer risk. For example, people who receive radiation to treat conditions of the head and neck have an increased risk of thyroid cancer and of tumors of the head and neck.

# Pesticides




About 20 ingredients in pesticides have been found to cause cancer in animals. Studies of people with high exposure to pesticides--farmers, crop duster pilots, pesticide manufacturers--have shown higher rates of blood and lymphatic system cancers in these people, as well as melanoma and cancers of the lip, stomach, brain, lung, and prostate.

# Medications




Some chemotherapy drugs used to treat cancer may increase the risk of second cancers later in life. Drugs that suppress the immune system--used to treat some cancers as well as to prepare patients receiving organ transplants--also are associated with increased risk of cancer, particularly lymphoma.

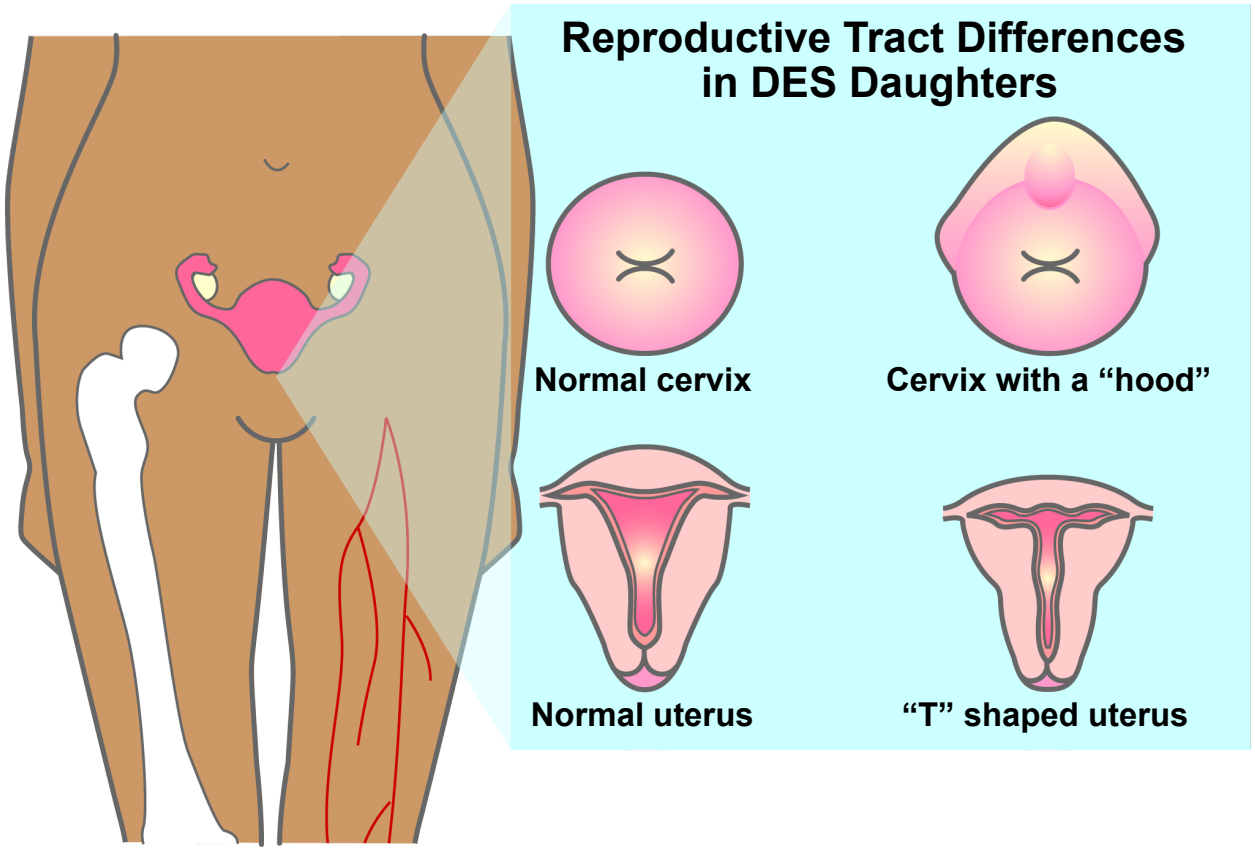
On the other hand, new estrogen-blocking drugs called aromatase inhibitors can decrease the recurrence of breast cancer.

Any medication carries risks and benefits, so always check with a health professional before starting a new drug.

# Hormones

Estrogen and progesterone are naturally occurring hormones. Given to women to treat the symptoms of menopause, they have been linked to increased risk of breast cancer.
Estrogen may also increase the risk of endometrial cancer, but progesterone helps protect against this increased risk. Estrogen and progestin (a synthetic form of progesterone) taken together are associated with increased risks of breast cancer, heart disease, stroke, and blood clots. Women who take oral contraceptives, which contain both estrogen and progestin, may have increases in early-onset breast cancers and liver cancer, but have substantially reduced risks of endometrial and ovarian cancers.

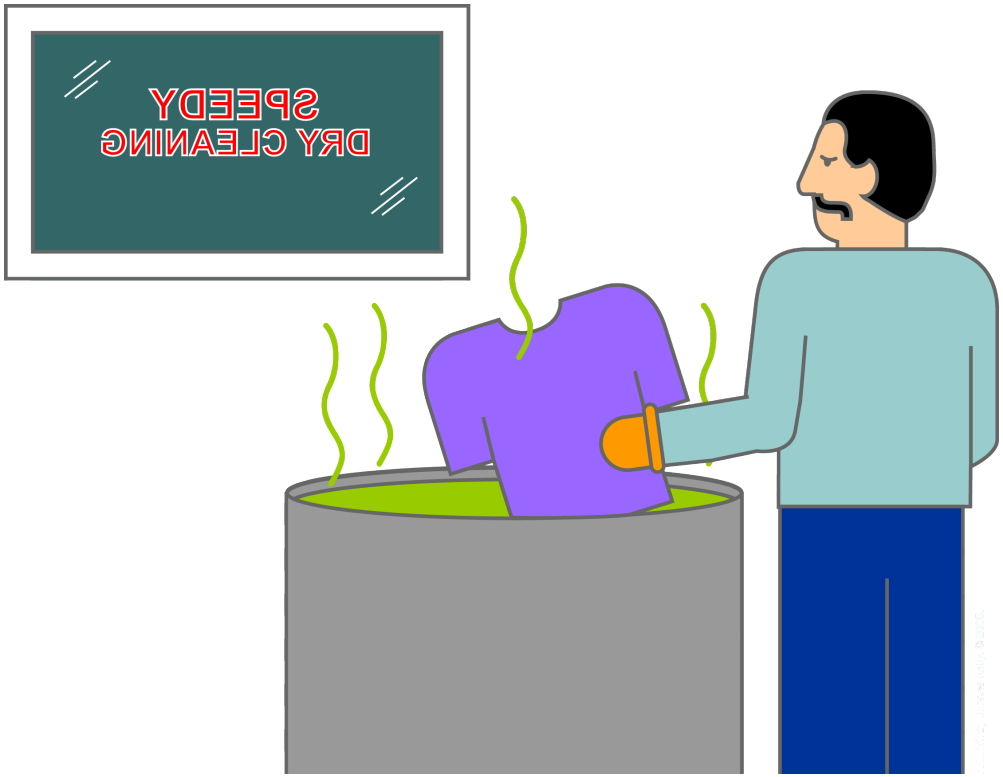
# Synthetic Hormones




The synthetic hormone tamoxifen is used in breast cancer therapies to prevent recurrence of disease or to prevent onset in women at high risk for this cancer, but it may increase the risk of endometrial cancer, strokes, and blood clots.

DES (diethylstilbestrol) is another synthetic hormone that was prescribed to pregnant women in the 1940s, 1950s, and 1960s. DES use was discontinued after scientists discovered that women taking it had an increased risk of breast cancer, and that girls born to women taking DES had an increased risk of rare types of vaginal and cervical cancer. Most physical or structural differences associated with exposure to DES are found in the reproductive tract, including a “hood” or collar on the cervix and a T-shaped uterus.

# Solvents

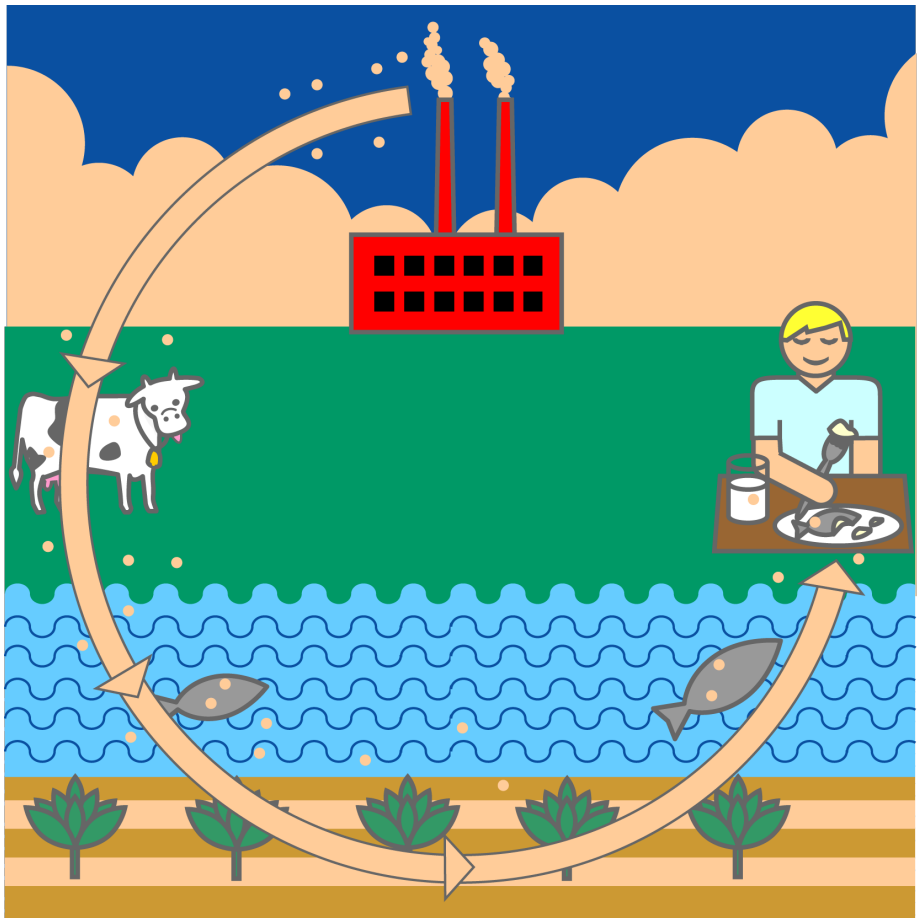



Solvents are used in paint removers, grease removers, paint thinners, and dry cleaning. The solvents benzene, carbon tetrachloride, chloroform, and methylene chloride have been linked to human cancer.
The strongest evidence linking a solvent to cancer involves benzene, which is also found in cigarette smoke and gasoline. It increases the risk of leukemia.
If you must work with solvents, work outside or make sure the area is well ventilated.

# Fiber and Dusts

Some fibers and dusts can increase the risk of lung-related cancers.
Asbestos is linked to increased risks of lung cancer and mesothelioma, a rare cancer of the lining of the lung and abdominal cavity. In the past, asbestos was widely used in construction, but its use has been restricted. However, workers employed in construction, electrical work, or carpentry may still be exposed through renovations or asbestos-removal projects.
Other fibers and dusts (including silica dust and wood dust) can increase the risks of cancers of the lung, nasal cavities, and sinuses.
Wear a well-fitting mask if your job exposes you to fine particles, fibers, or dust.

# Dioxins



Dioxins are byproducts of paper bleaching, smelting, and waste incineration. They are widespread in the environment because they break down very slowly. They also accumulate in fat cells. Most of our exposure to dioxins comes from eating dairy products, fish, and meat.

# Polycyclic Aromatic Hydrocarbons

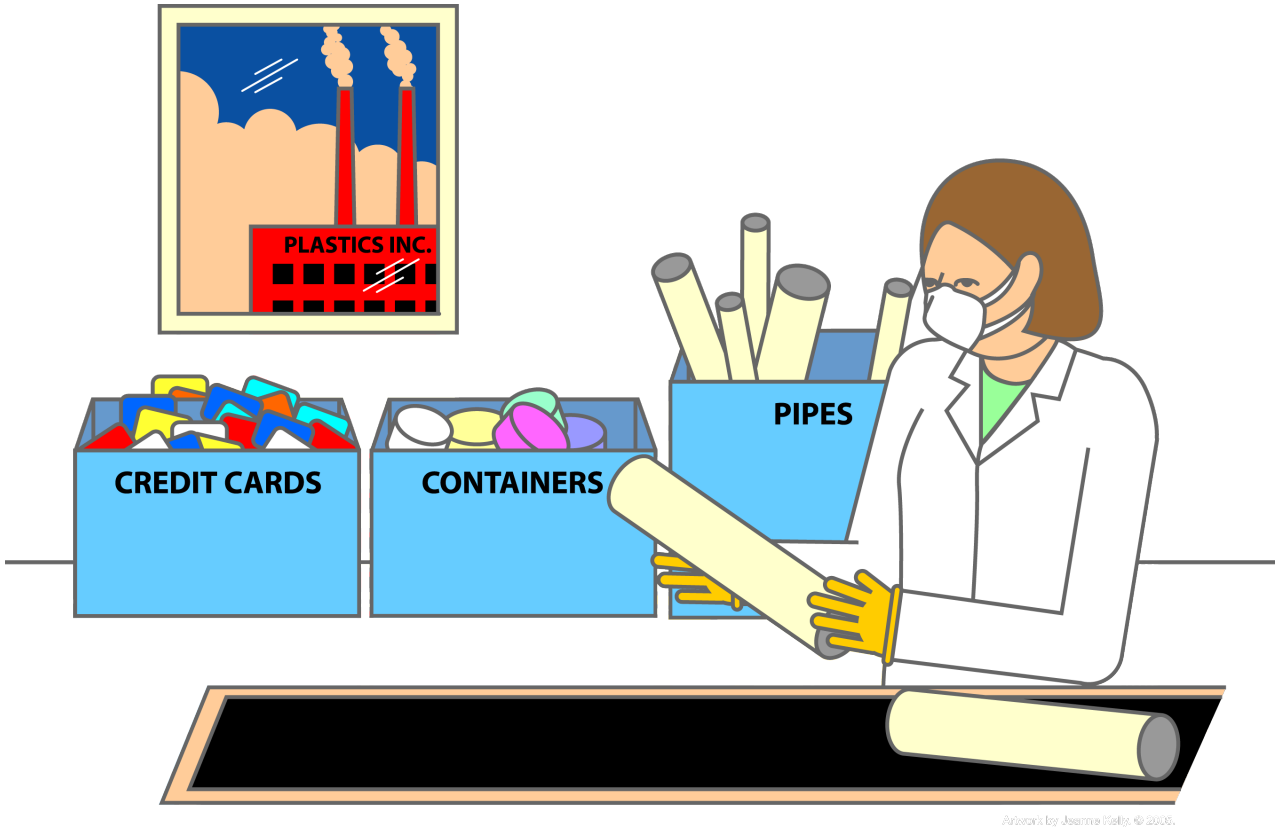

These compounds (known as PAHs) come from the burning of carbon-based material. They are found in wood smoke, car exhaust, cigarette smoke, and charcoal-grilled foods. Sausages and roasted coffees may also contain PAHs. These compounds have been linked to increased risks of lung, skin, and urinary cancers.

# Other Carcinogens: Metals

| Metal | Cancers | Present in | Human Carcinogen? |
|---|---|---|---|
| Arsenic | Skin, lung, bladder, kidney, liver | Wood preservatives, glass, pesticides | Yes |
| Beryllium | Lung | Nuclear weapons, rocket fuel, ceramics, glass, plastic, fiberoptic products | Yes |
| Cadmium | Lung | Metal coatings, plastic products, batteries, fungicides | Yes |
| Chromium | Lung | Automotive parts, floor covering, paper, cement, asphalt roofing; anti-corrosive metal plating | Yes |
| Lead | Kidney, brain | Cotton dyes, metal coating, drier in paints, varnishes and pigment inks, certain plastics, specialty glass | Probable carcinogen |
| Nickel | Nasal cavity, lung | Steel, dental fillings, copper and brass, permanent magnets, storage batteries, glazes | Nickel metal: Probable carcinogen<br><br>Nickel compounds: Yes |

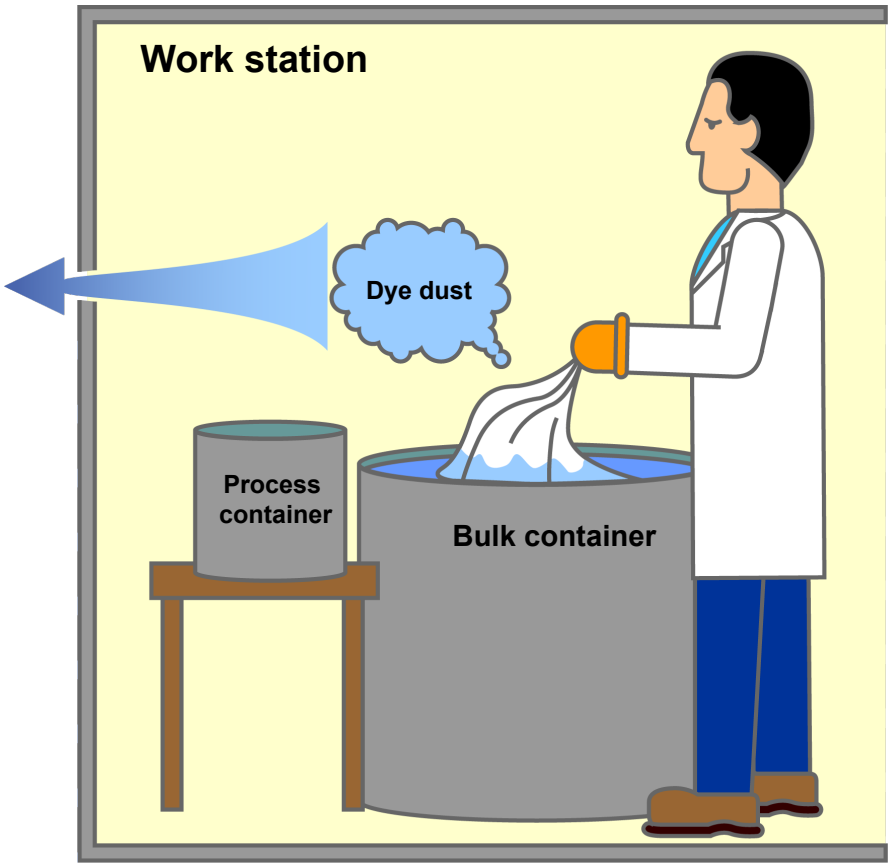
Some metals--including arsenic, beryllium, cadmium, chromium, lead, and nickel--have been associated with several types of cancer, including lung, kidney, brain, skin, and liver cancers.

# Other Carcinogens: Vinyl Chloride



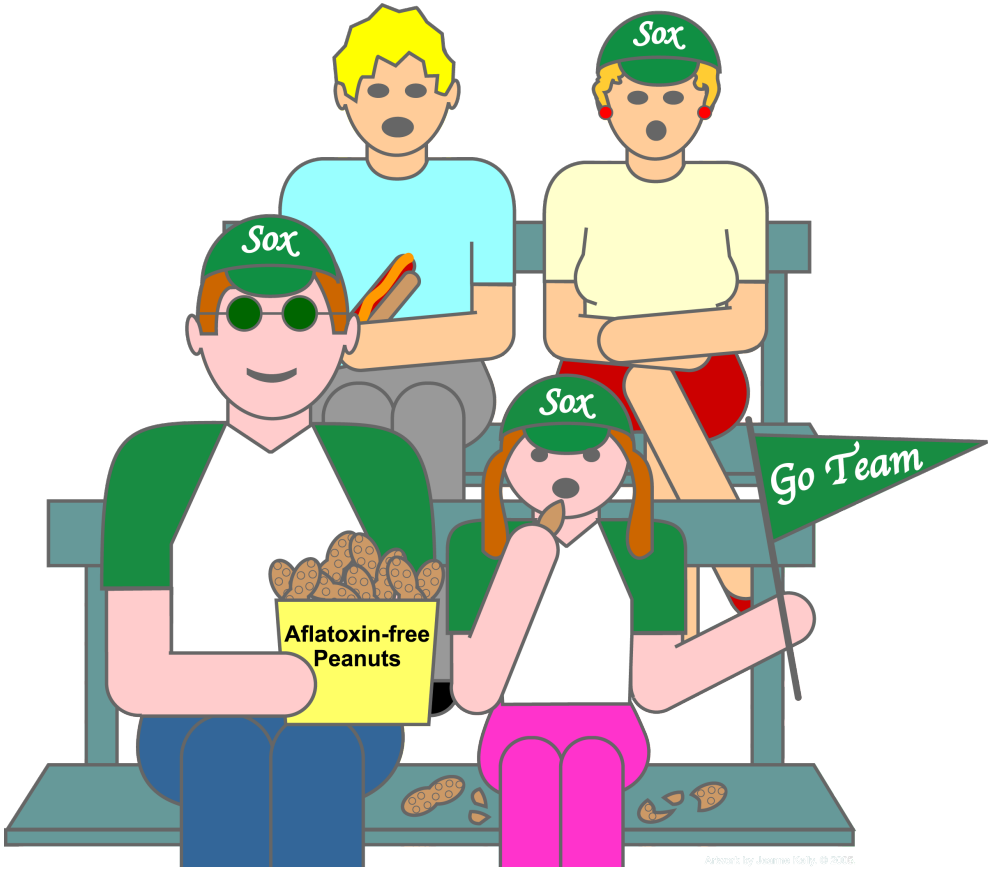

Vinyl chloride is used in the plastics industry and has been associated with lung cancer and with angiosarcomas (blood-vessel tumors) of the liver and brain. Most people are not routinely exposed to vinyl chloride unless they work in plastics manufacturing plants. People who live close to such plants also may be exposed through contaminated air.

# Other Carcinogens: Benzidine



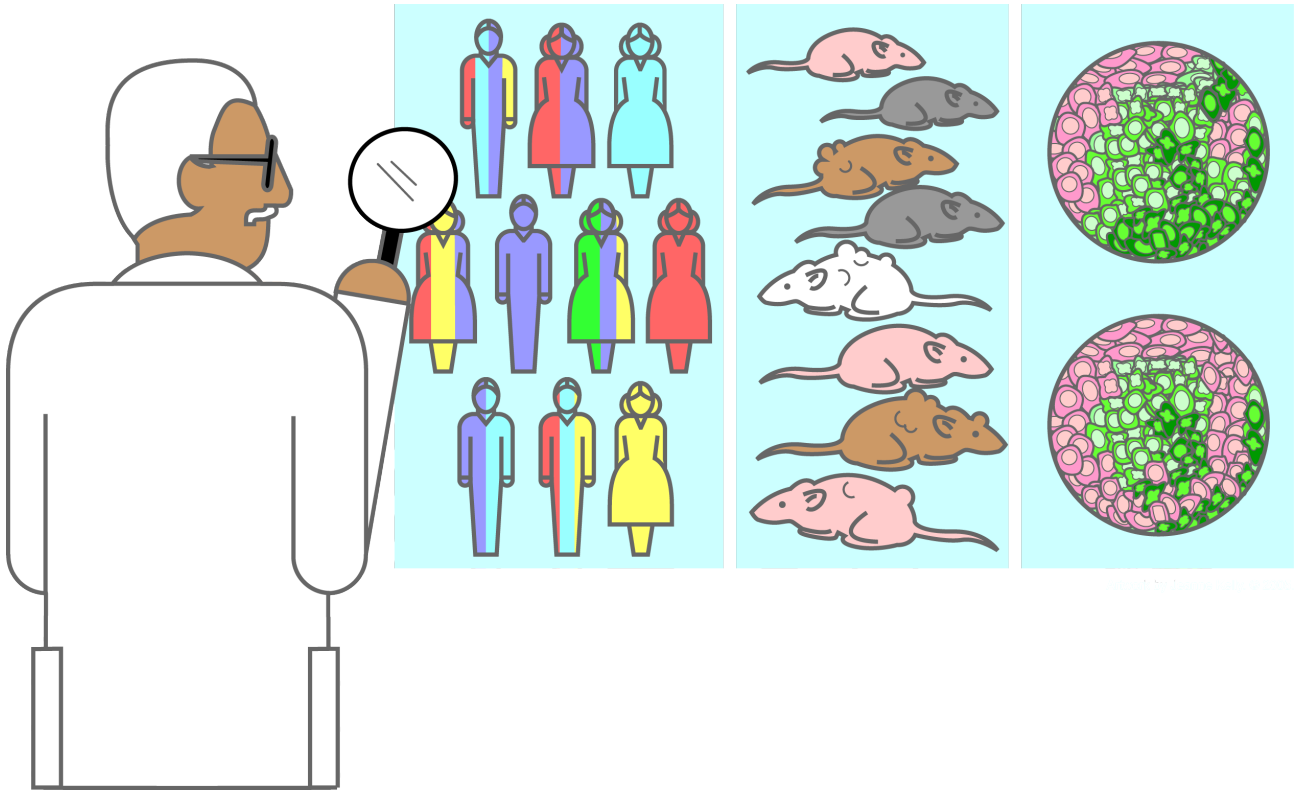

Benzidine has been known to be associated with cancer since the 1920s. It is used in the production of dyes for paper, textiles, and leather. Exposure to these dyed products is not hazardous, however.

# Other Carcinogens: Aflatoxins




Aflatoxins are produced by certain types of fungi that grow on grains and peanuts. People can also be exposed to aflatoxins by eating meat or dairy products from animals that ate contaminated feed. Exposure to high levels of aflatoxins increases the risk of liver cancer. Peanuts are screened for aflatoxins in most countries, including the United States.

# Identifying Cancer-Causing Substances

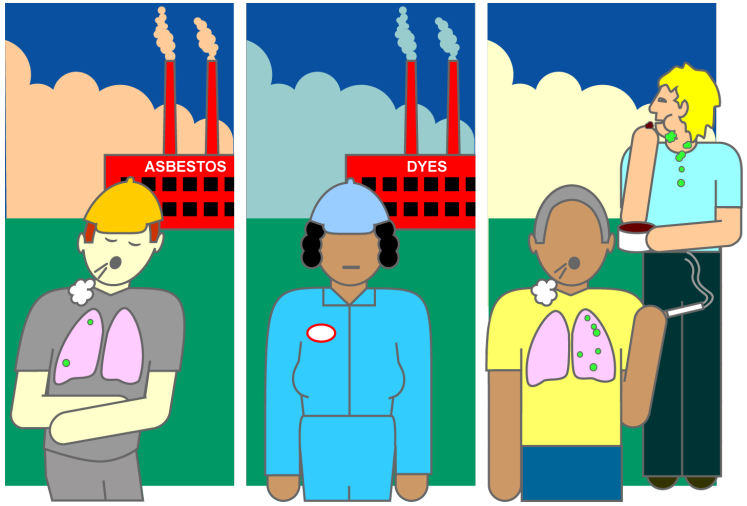


Americans commonly use more than 100,000 chemicals, and this doesn't take into account mixtures or combinations of chemicals. Plus, some chemicals are altered by the atmosphere, water, or incineration.

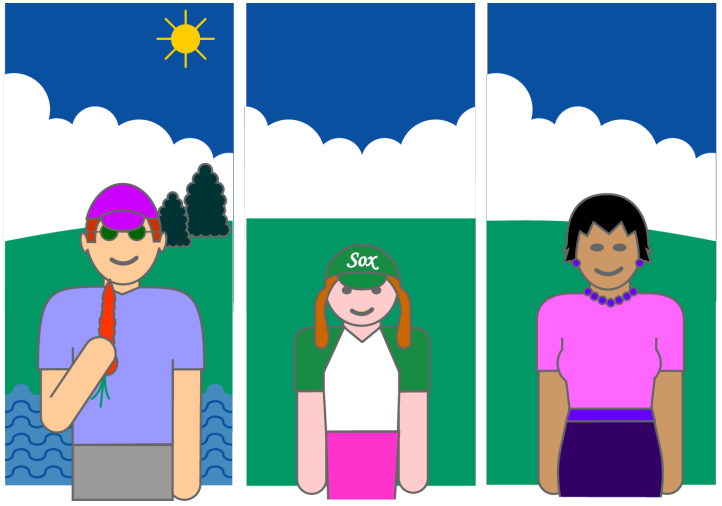
Scientists have been working for several decades to identify substances that cause cancer. They have three ways to do this: through human studies, animal studies, and laboratory experiments.

# Human Studies

## Carcinogenic Exposures



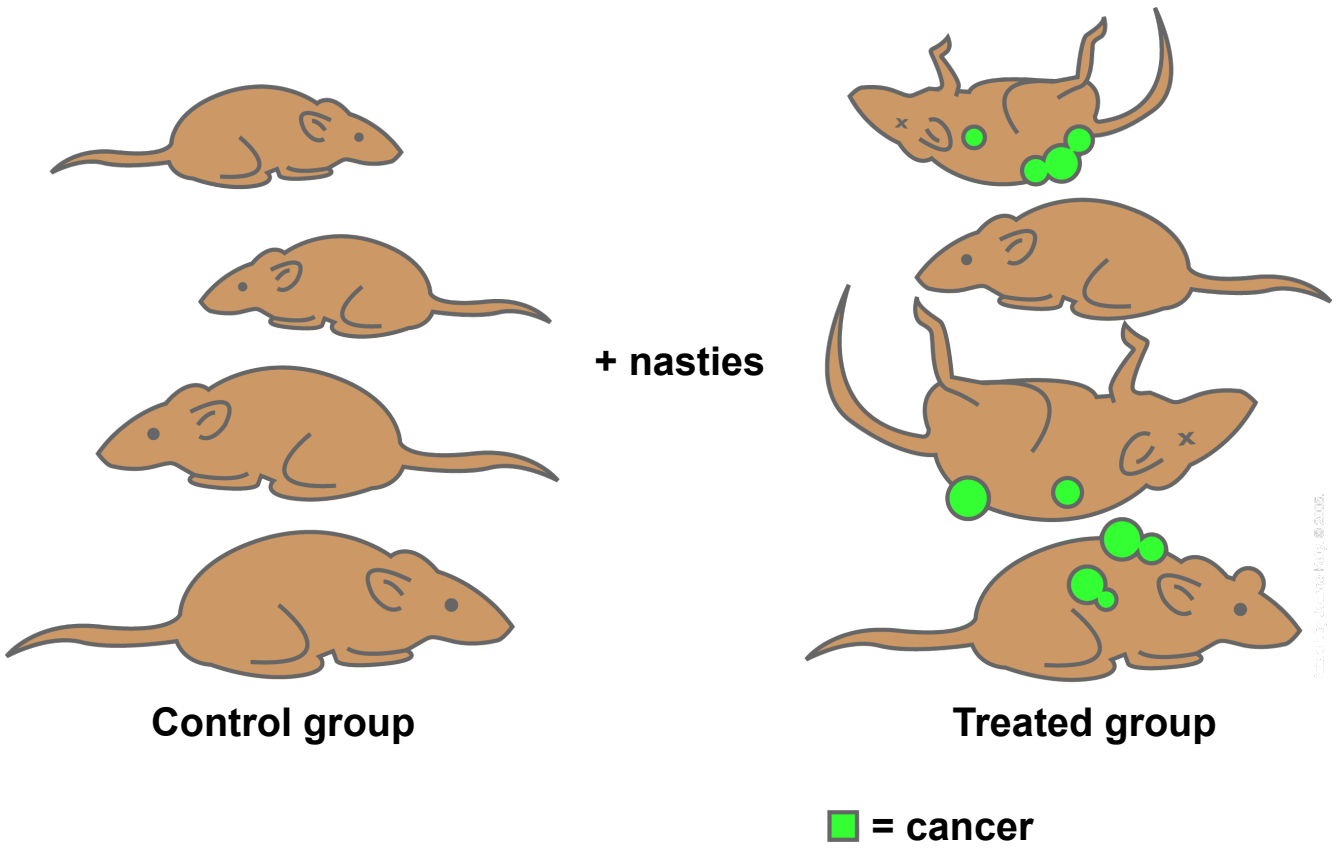

## Noncarcinogenic Exposures




= cancer

Human studies are the way to decide with the most certainty whether a substance causes cancer.
By following groups of people over time, researchers may be able to see whether certain exposures lead to cancer. They also compare a group of people who have been diagnosed with a type of cancer to another group of people without the disease. Sometimes the group with cancer has patterns of exposures very different from the patterns in the group without cancer.
Many environmental causes of cancer have first been noticed in the workplace, because people in certain occupations have higher exposures to some chemicals than do people in the general population.

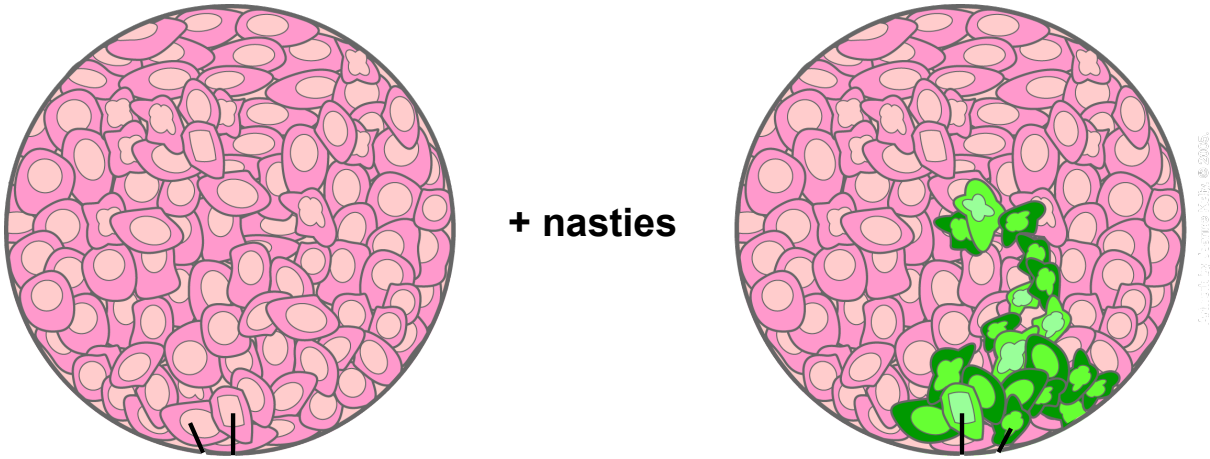
# Animal Studies




Rodents (mice and rats) are commonly used in studies of environmental causes of cancer. They have a relatively short lifespan (2 to 3 years), and their bodies' responses to known cancer-causing chemicals are similar to a human response. Dietary studies in rodents are more difficult, however, due to differences in the digestive systems of rodents and humans.

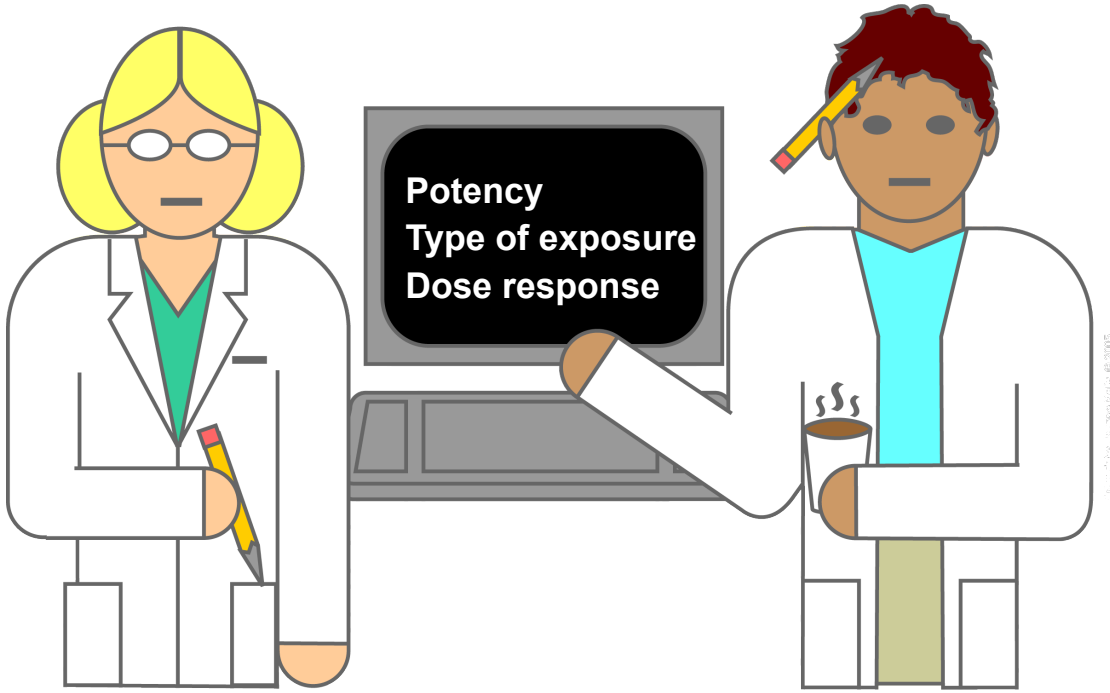
In animal studies, the chemical exposures are usually at much higher levels than would be seen with human exposure. If an extremely high level of exposure does not lead to cancer, researchers reason that the chemical most likely does not cause cancer at lower levels either.

# Laboratory Studies of Human Cells




Researchers study human cells in the laboratory to see whether certain chemicals might cause changes that could lead to cancer. These studies are often done to see if animal studies--which take longer and are more complex--are actually needed. If a chemical does not cause cancer in laboratory cells, animal studies usually aren't done.

# Risk Assessment




How do scientists decide which exposures are high risk and which are low risk?
Risk assessment involves three factors:

**1. Potency**: The potential of a given amount of a substance to cause cancer. Benzene, for example, is quite potent because even small amounts of it can increase cancer risk. Other compounds, such as chloroform, are less potent; they require higher exposures to increase the risk by the same degree.

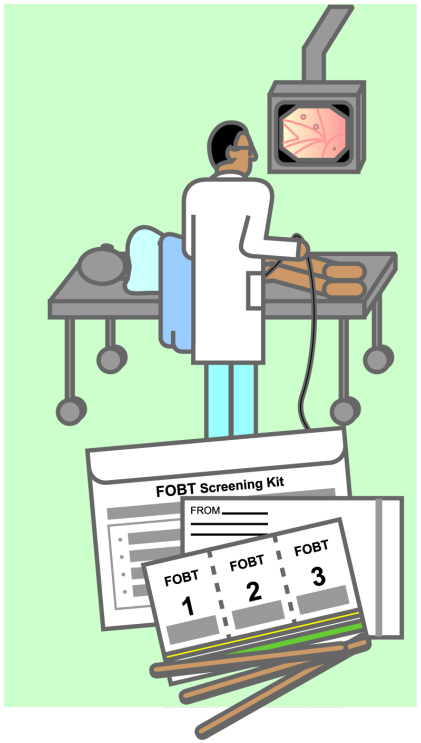
**2. Type of exposure**: Whether the exposure is one-time (acute) or long-term (chronic), and whether it is unavoidable (in the workplace, for example, or in the air we breathe).

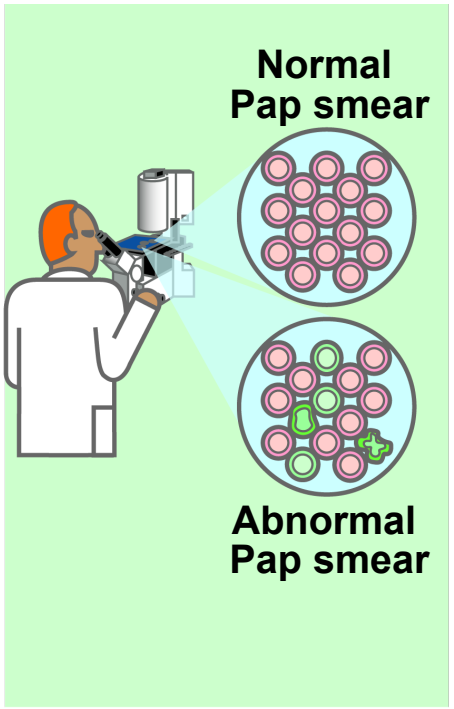
**3. Dose response**: A dose-response trend describes what happens to cancer risk as the level of exposure increases or decreases.

# Occupational Cancer Risks

Certain occupations carry an increased cancer risk: these include painters; furniture makers; workers in the iron, steel, coal, and rubber industries; and workers involved in shoe manufacturing and repair.
Always use proper protective equipment when handling chemicals, and clean spills immediately.
Ask at your workplace about Material Safety Data Sheets, which contain information about hazardous substances.
The National Institute for Occupational Safety and Health (http://www.cdc.gov/niosh/) can answer many of your questions.

# Cancer Screening for Early Detection




Cancer screening tests help detect cancer at an early stage, which allows treatment to occur before the cancer spreads.
Get screened regularly for these cancers:

**Colon/rectum**: Tests include the fecal occult blood test, sigmoidoscopy, and colonoscopy.

**Breast**: The standard screening test is a mammogram, or X-ray of the breast tissue.

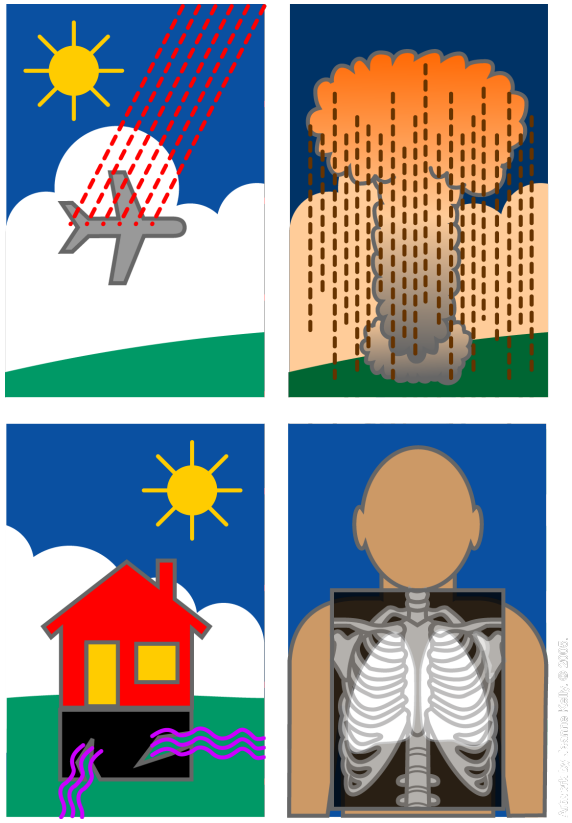
**Cervix**: The standard screening test is the Pap smear.

Guidelines for when testing should begin and how often it should occur may be different for each person, so talk with your doctor about what's right for you.

Also talk with your health care provider about exposures at work and at home, and discuss whether your family or personal history may put you at risk for certain types of cancer. Your doctor may recommend other cancer screening tests as well.

# Avoid the “Avoidable” Risk Factors


While it is prudent to be aware of environmental exposures to carcinogens, it is also wise to minimize exposures to “avoidable” risk factors. Three major avoidable factors linked to cancer deaths involve poor behavior choices, so choose well: eliminate use of tobacco products, use alcohol in moderation, and make better dietary choices. If good behavior choices in these three areas prevailed, approximately half of all cancer deaths could be prevented.



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