

## Cancer and the Environment in the News

There are several principles to keep in mind when you read an article or hear a news report about a new scientific study:

- **A single study on the causes of cancer is seldom conclusive.**  
There are many examples where one study identifies a risk, but later studies do not confirm it. Scientists look for multiple studies with consistent results before drawing conclusions. Each new study that you hear or read about adds to the body of evidence that scientists use for understanding the causes of cancer.
- **The dose determines the poison.**  
Scientific results are usually specific to a particular dose and route of exposure to a specific population being studied. Each individual's chance of getting cancer from an exposure will be different depending on:
  - The amount of contaminant to which a person is exposed
  - The length of time a person is exposed
  - The number of times a person is exposed
  - How the person was exposed, such as by eating, breathing, or touching the substance
- **Realize that uncertainties are always present in any study of environmental exposure and cancers.**  
Due to the long latency period of cancer development, it is often difficult to collect information regarding exposures years or decades after they occur. Individual genetic differences, age, gender, and health status interact with lifestyle habits, as well as environmental exposures -- causing some people to be more sensitive to developing cancer than others. Because it is difficult to account for all of these variables and how they interact, "uncertainties" exist in the study of cancer and environmental risk factors.
- **"Safety factors" or "uncertainty factors" are used to set acceptable levels of exposure.**  
These factors take into account that certain individuals might be more sensitive to chemicals because of age (children and the elderly), genetic make-up, gender, diet, or health status. In addition, if mice or rats were used to test the chemical, the possibility is considered that people may be more sensitive to the cancer-causing effects of the substance than the rodents. To ensure that the acceptable level of exposure will protect the public, government agencies use safety factors that result in setting acceptable levels of exposure as much as 10,000 times lower than the levels used to observe cancers in mice and rats.
- **Sometimes it is necessary to weigh risks vs. benefits.**  
Some drugs are prescribed even though they may increase the risk of cancers in later years. An example is the use of certain drugs to treat cancer that increase the risk of secondary cancers. In these situations, the immediate benefits of treating an often imminently life-threatening disease have been determined to outweigh the risks of developing another cancer several years later.