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## Spotlight on Acrylamide

Acrylamide is a chemical formed during the cooking of carbohydrate (starchy) foods and as a byproduct of tobacco smoke. Acrylamide is used to make a compound called polyacrylamide. Polyacrylamide is used in water purification, sewage treatment, paper production, and as components of some cosmetics, soaps, and disposable diapers.

### How People Are Exposed to Acrylamide

Most people are exposed to acrylamide through food (such as potato chips, French fries, and coffee) and tobacco smoke. People who work in industries that make or use acrylamide can have higher exposures to this chemical through skin contact or inhalation. Finished products made with polyacrylamide, such as cosmetics and disposable diapers, are not considered significant sources of general human exposure to acrylamide.

### How Acrylamide Affects People's Health

Sudden exposure to large amounts of acrylamide can damage the brain. Exposures of this type are almost always occupational (at work, usually in manufacturing), occur when proper safeguards are not used, and involve very large amounts of acrylamide.

Long term exposure to large amounts of acrylamide can cause lasting nerve damage. In animals tested, acrylamide has caused damage such as reproductive problems and cancer. Because of this, acrylamide is considered a potential cancer-causing chemical in workplaces using acrylamide.

The acrylamide found in most Americans is due to eating or smoking. Most people receive low levels of acrylamide from food throughout their lives. The health effects of low-level, long term exposure to acrylamide are not known.

### Levels of Acrylamide in the U.S. Population

CDC scientists tested the blood of more than 7,000 people aged three years and older who took part the National Health and Nutrition Examination Survey (NHANES) during 2003–2004. Some acrylamide becomes glycidamide inside the body. Both chemicals combine with proteins in blood. This combined product is called an adduct. By looking for glycidamide and acrylamide adducts in the blood, scientists were able to tell how much acrylamide people had been exposed to for the past several months.

CDC scientists found:

- Acrylamide and glycidamide, respectively, are in the blood of 99.9% and 97.5% of the U.S. population.
- Smokers had nearly twice the levels of acrylamide and glycidamide adducts in their blood than nonsmokers.
- Among smokers, non-Hispanic black smokers had the highest acrylamide adduct levels and the lowest glycidamide adduct levels. Acrylamide and glycidamide levels were about the same for non-Hispanic blacks, non-Hispanic whites, and Mexican Americans.
- In nonsmokers, children age 3–11 years have slightly more acrylamide and glycidamide in their blood than nonsmoking adults, while adults age 60 and older have the lowest adduct levels.
- For nonsmokers, acrylamide and glycidamide adduct levels together were highest in Mexican Americans.

### For More Information

- National Institute for Occupational Safety and Health  
**Acrylamide: A Review of the Literature**  
Detailed information about Acrylamide and public health is available at <http://www.cdc.gov/niosh/pel88/79-06.html>
- U.S. Food and Drug Administration  
**Acrylamide Questions and Answers**  
<http://www.cfsan.fda.gov/~dms/acryfaq.html>
- U.S. Environmental Protection Agency  
**Consumer Factsheet on Acrylamide**  
[http://www.epa.gov/OGWDW/contaminants/dw\\_contamfs/acrylami.html](http://www.epa.gov/OGWDW/contaminants/dw_contamfs/acrylami.html)
- U.S. Department of Health and Human Services and U.S. Department of Agriculture  
**Finding Your Way to a Healthier You: Based on the Dietary Guidelines for Americans**  
<http://www.health.gov/dietaryguidelines/dga2005/document/pdf/brochure.pdf>
- Centers for Disease Control and Prevention  
**Quit Smoking Facts and Tips**  
[http://www.cdc.gov/tobacco/quit\\_smoking/index.htm](http://www.cdc.gov/tobacco/quit_smoking/index.htm)

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