

# Acrylamide and Drinking Water

*Acrylamide is a contaminant that has been found in finished drinking water and also in waters that could be used as drinking water sources in Minnesota. The Minnesota Department of Health (MDH) developed health-based guidance values for acrylamide in drinking water and, based on these values, does not expect levels in drinking water to harm Minnesotans.*

## What is acrylamide?

Acrylamide is the main ingredient in polyacrylamides, which are used in wastewater treatment, water reuse in mining operations, well construction, and drinking water treatment. Only a trace amount of acrylamide remains in polyacrylamide products.

Acrylamide can be present in starchy foods that are cooked at high temperatures. Acrylamide is most often found in foods that are dense with carbohydrates such as fried potatoes, coffee, breads, and breakfast cereals.<sup>1</sup>

## Has acrylamide been found in Minnesota waters?

In 2014, MDH sampled some recently constructed residential wells in Minnesota for acrylamide. Only one residential well sample to date has contained a very small amount of acrylamide.

Because polyacrylamide is used to treat drinking water, a small amount of acrylamide impurity has also been detected in drinking water from one public water supplier. This level of acrylamide in drinking water is tightly controlled by water utilities and is not a health concern.<sup>2</sup>

Acrylamide has been detected in surface waters that are not used for drinking water near a sand mine in southern Minnesota.

## What is the MDH guidance value for acrylamide in drinking water?

Based on available information, MDH developed a guidance value of 0.2 parts per billion (ppb) for acrylamide in drinking water. The guidance value is based on protecting Minnesotans from cancer.

## Can acrylamide in drinking water affect my health?

The levels of acrylamide found to date in drinking water are not expected to affect your health. At high doses, acrylamide can damage the nervous system and male reproductive organs. Studies have also shown that chronic acrylamide exposure causes tumors in rodents. MDH continues to look for acrylamide in residential wells and public water supplies.

## At a Glance

### Acrylamide is...

- a chemical used to produce polyacrylamides for water treatment, mining, and well construction.
- a chemical that forms when starchy foods are heated or fried

### Acrylamide enters your body from...

- eating starchy foods that are cooked at high temperatures
- drinking water that has been treated with a polyacrylamide.

### Your exposure to acrylamide can be reduced by....

- limiting your intake of carbohydrate-rich foods that are cooked at high temperatures, such as fried potatoes and darkly toasted breads.

### Acrylamide in drinking water is safe if...

- it is below the MDH guidance value of 0.2 ppb.

### How am I exposed to acrylamide?

The most common exposure to acrylamide is from starchy foods that are cooked at high temperatures. Fried potatoes, such as restaurant french fries or potato chips, contain the highest levels of acrylamide. Breads, instant coffees, prune juice and breakfast cereals can contain elevated acrylamide, depending on how they are prepared or cooked.

You may also be exposed to acrylamide in your drinking water. Some treated drinking water from public water systems contains small amounts of acrylamide impurities after polyacrylamides are used to treat the water.

### How can I reduce my exposure to acrylamide?

The majority of acrylamide exposure occurs through the diet, with a much smaller proportion of acrylamide coming from drinking water. MDH reviewed data<sup>1</sup> that suggests most Americans consume an amount of acrylamide in their diet to cause public health concern. Limiting your intake of foods high in acrylamide (fried potatoes and other cooked or processed foods high in starch that are cooked to a medium or dark brown color) is the best way to avoid exposure to acrylamide. The Food and Drug Administration (FDA) is working with industry to change processing methods to reduce acrylamide in foods.<sup>3,6</sup>

### How does acrylamide get into the environment?

Most acrylamide enters the environment as an impurity from polyacrylamide products when polyacrylamides are used in water treatment or industrial operations.<sup>4</sup> Acrylamide is quickly broken down by biological processes in soil and water.<sup>5</sup>

### What are the potential environmental impacts of acrylamide?

Based on the results from short term laboratory studies, acrylamide is not expected to harm aquatic plants or aquatic animals at the levels found in Minnesota waters. However, the overall ecological risk posed by acrylamide is uncertain because longer term studies are lacking.

### What Minnesotans Need to Know . . .

Minnesota waters have been tested for acrylamide, including some public water supplies and newly constructed residential wells. Exposure to acrylamide from drinking water is low and levels found in Minnesota drinking waters are not expected to affect health. The most common exposure to acrylamide is from starchy foods that are cooked at high temperatures, such as french fries, potato chips, and dark toasted breads.

### For more information contact:

Health Risk Assessment

Phone: (651) 201-4899

Website: [www.health.state.mn.us/risk](http://www.health.state.mn.us/risk)

E-mail: [health.risk@state.mn.us](mailto:health.risk@state.mn.us)

### The Contaminants of Emerging Concern (CEC) Program...

Evaluates health risks from contaminants in drinking water and develops drinking water guidance. MDH works in collaboration with the Minnesota Pollution Control Agency and the Minnesota Department of Agriculture to understand the occurrence and environmental effects of contaminants.

### References

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