

Acrylamide

What is it?

Acrylamide is a chemical that forms in starchy, carbohydrate-rich foods during high heat/low moisture methods of cooking—such as baking, deep frying, roasting and grilling.

What is it used for?

Acrylamide has been used as a coagulant for water treatment, a soil conditioner, and a construction aid in dam foundations. In 2002, Swedish researchers discovered that acrylamide forms in food, with the highest levels observed in fried and baked foods.

Where do we find it?

Acrylamide occurs in a wide range of foods, and it is formed during the condensation of reducing sugars and the amino acid asparagine during high temperature/low moisture roasting, baking, and frying—such as deep frying french fries.

Food products made from starchy plants—such as potatoes, grains, and coffee beans—contain the necessary reducing sugars and asparagine for the formation of acrylamide. End products such as potato chips and french fries contain varying levels of acrylamide, which are dependent on factors such as cooking temperature, cooking time, and cultivar of potato.

Is it safe? What is the safe level of use?

Acrylamide is considered to be “probably carcinogenic to humans” by the International Agency for Research on Cancer.¹ It is also listed on California’s Proposition 65 with other chemicals recognized by the state to cause cancer and reproductive toxicity.² Studies have shown that acrylamide causes cancer in animals at very high doses, however the U.S. Food and Drug Administration (FDA) has yet to fully examine the impact on human health.

Typical acrylamide exposure from diet is 0.4 micrograms (mcg)/kilogram (kg)/day³, which is below the U.S. Environmental Protection Agency (EPA) chronic reference dose of 2 mcg/kg/day.⁴

What is being done?

EPA does regulate levels of acrylamide in drinking water and FDA has announced plans to issue guidance for industry on acrylamide in food during 2013. FDA recommends “that consumers adopt a healthy eating plan, consistent with the Dietary Guidelines for Americans, that emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products; includes lean meats, poultry, fish, beans, eggs, and nuts; and is low in saturated fats, trans fats, cholesterol, salt (sodium) and added sugars”.⁵

Summary:

FDA’s 2006 risk assessment demonstrated that typical exposure to acrylamide was below the EPA’s level of health concern. FDA continues to develop policy to reduce exposure.



Referenced sources for Acrylamide:

¹ <http://monographs.iarc.fr/ENG/Monographs/vol60/volume60.pdf>

² <http://oehha.ca.gov/prop65/acrylamide.html>

³ <http://www.fda.gov/downloads/Food/FoodSafety/FoodContaminantsAdulteration/ChemicalContaminants/Acrylamide/UCM197239.pdf>

⁴ <http://www.epa.gov/iris/subst/0286.htm>

⁵ <http://www.fda.gov/food/foodborneillnesscontaminants/chemicalcontaminants/ucm053569.htm>

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