THE CANCER ASSOCIATION OF SOUTH AFRICA’S POSITION STATEMENT ON CANCER AND THE ENVIRONMENT

FACT SHEET ON ACRYLAMIDE

WHY SHOULD I CARE ABOUT ACRYLAMIDE?

- Because acrylamide is a probable human carcinogen.¹
- Because there is sufficient evidence for the carcinogenicity of acrylamide in experimental animals.²
- Because it is formed in several carbohydrate-rich foods, especially potatoes, during high-temperature processing (e.g., frying, grilling and baking).³
- Because a positive association has recently been found between acrylamide-hemoglobin levels in the blood and estrogen receptor-positive breast cancer in Danish women.⁴ A study in Italy could find no correlation with prostate, breast, colorectal, laryngeal or ovarian cancers² and a Swedish study could find no correlation with breast cancer⁵.
- Because smokers have much higher (3x) levels of acrylamide-hemoglobin adducts.⁴
- Because a positive association has been found between high acrylamide intake (40 micrograms/day) and renal cancer.⁶
- Because an increased risk of postmenopausal endometrial and ovarian cancer has been found with increasing dietary acrylamide intake.⁷
- Because acrylamide is neurotoxic at relatively high doses in animals and humans.⁸

WHAT IS ACRYLAMIDE?

- Acrylamide is a chemical compound made by man and used in the laboratory for so-called gel electrophoresis and other research applications.
- It is a white odourless crystalline solid, soluble in water.
- In April 2002 it was accidentally discovered in foods by Swedish scientists and it was concluded that it forms spontaneously during cooking in special circumstances.³
WHAT DOES ACRYLAMIDE LOOK LIKE?

It can be seen that acrylamide has a simple structure and a molecular weight of only 71.

In fried, baked or microwave cooked food, acrylamide is formed by the reaction between asparagine and reducing sugars like fructose and glucose.

WHERE IS “NATURAL” ACRYLAMIDE FOUND?

- 1. Potato crisps (0.49 micrograms/gram)\textsuperscript{9} (1.2 microgram/gram\textsuperscript{10})
- 2. French fries (0.16 micrograms/gram)\textsuperscript{9}(0.35 micrograms/gram\textsuperscript{10})
- 3. Crisp Bread (0.069 micrograms/gram)\textsuperscript{9}
- 4. Coffee (0.16 micrograms/gram)\textsuperscript{9}
- 5. Cigarette smoke (1.1 – 2.34 micrograms/cigarette)\textsuperscript{11}
- The internationally accepted daily dose is 1 microgram/kg body weight/day\textsuperscript{12}

WHAT SOURCE OF ACRYLAMIDE POSES THE GREATEST THREAT?

- Overcooked oil-fried chips (12 micrograms/gram)\textsuperscript{13}.
- Potato crisps
- French fries
- Coffee

HOW CAN THE POTENTIAL CANCER RISK OF ACRYLAMIDE BE REDUCED?

- Breed potatoes that produce less acrylamide
• Lower maximum temperature when baking

• Asparaginase enzyme can be added to raw food to decrease asparagine before cooking

• Avoid potato crisps, chips, French fries, coffee and crispy bread that do not state the concentration of acrylamide.

• Do not exceed 1 microgram per kilogram body weight per day.

• Don’t smoke and avoid any smoke from whatever source.

SELECTED QUOTATIONS:

• “The big public health question here is whether the amount of acrylamide in foods is enough to lead to cancer?”

  Lorelei Mucci, Harvard School of Public Health (Ref. in this document).

REFERENCES:


