

FAO/WHO Acrylamide in Food Infonet Update
Number 2 – July 2003

Research Database

The following table represents the distribution of the 114 research projects listed in the research database in addition to eight listed in the Studies in Development database as of 08 July. Since the CIAA Acrylamide in Food Workshop in Brussels on 28 March, JIFSAN has been working with the European Commission and the Food Standards Agency of the U.K. to have projects listed in their respective acrylamide websites also listed in the Acrylamide Infonet. This is being done in an effort to make the Acrylamide Infonet “one-stop shopping” for work in acrylamide in progress or planned globally. Progress is being made, although there are still a number of projects and activities that have not been registered in the Infonet. Anyone with a project (planned or in progress) related to acrylamide in food is invited and urged to register the project in the Acrylamide Infonet. Instructions on how to do this are listed at www.acrylamide-food.org.

	Research Database (As of July 08)	Studies in Development Database (As of July 08)	TOTAL In both database (As of July 08)	April 9, Research Database Status (As of first Update)
Mechanisms of Formation in Food	22	3	25	12
Biomarkers	7	1	8	3
Neurotoxicity	5		5	4
Carcinogenesis	9	3	12	6
Other toxicology	8	1	9	3
Analytical Methodology	39	2	41	11
Occurrence in Food	48	4	52	18
Genotoxicity	9	1	10	6
Literature Search	5		5	5
Exposure Assessment	22	1	23	6
Other	15 Txicokinetics = 1 Epidemiology = 3 Bioavailability = 3 Horticulture = 1 Bcteriology = 1		15	5

	Ezymology = 1 Egineering = 1 Pocessing parameters influencing formation = 1 Mechanism of action = 2 Reproductive toxicity = 1 Metabolism = 1 Endocrinology = 1 Oncogenic Mechanism = 1			
TOTAL	114	8	122	43

Study status breakdown for Research Database (As of July 08)

- Ongoing = 83
- Presented = 27
- Published = 4

Continuing Research Needs:

Research projects are in progress in many of the areas previously identified as needing additional information concerning the potential health implications from the occurrence of acrylamide in food. These areas include: acrylamide contents in different foods and diets globally, mechanism(s) of formation of acrylamide in foods, exposure and biomarkers, toxicology and metabolic consequences (including human carcinogenicity), reduction/mitigation of acrylamide formation in foods, and risk communication surrounding the issue.

For many foods, data on the content of acrylamide in some specific foods can probably be considered sufficient. However, there are still a large number of foods, particularly in non-Western diets, for which data are insufficient or virtually non-existent.

Exposure estimates have been prepared by several countries, including Switzerland and the U.S. Sufficient data is available for occurrence of acrylamide in many of the foods included in the diets of those countries. The question remains as to whether other foods will need to be included. It is likely that, even if this is true, only small changes in amounts of acrylamide contributed to the normal daily diet will occur, i.e. foods representing the largest contributors have been identified. However, this is certainly not true for many countries. This is why exposure data are so critically needed and valuable.

While the U.K. has identified a research project on formation of acrylamide under the conditions of home food preparation and one is in the process of being funded in the U.S., there is still a critical need for data on the formation of acrylamide during home and food service preparation.

Some of the longer-term research projects on the toxicology of acrylamide have been initiated during the last two to four months and have durations of 18-24 months, with at least one study occurring over the period of 2003-2008. Thus, important data from these studies will not be available for at least another 18 months.

Current information indicates that FAO and WHO plan to hold a meeting of JECFA on acrylamide at the earliest in 2005 (possibly the 64th meeting in February). This will allow time to obtain additional data needed for a risk assessment of acrylamide in food.

Call for Data:

In order to perform a risk assessment of acrylamide in food, the amounts of acrylamide in the total diet are required to provide an exposure assessment for the general population as well as certain vulnerable groups. This can be estimated from amounts of acrylamide in individual foods or by conducting total diet studies, such as market basket and duplicate diet studies. Amounts of acrylamide in food can also indicate foods, processing methods, and interventions that offer risk management options that may need to be considered.

Consequently, a call for data is being made by the FAO/WHO for representative data on amounts of acrylamide in food and the total diet that are both reliable and comparable at the international level. It would be most helpful, if data are representative of an entire country. Data from developing countries are particularly encouraged.

In addition to researchers and other users, these data will be provided to the Joint FAO/WHO Expert Committee on Food Additives (JECFA) for its safety evaluation of acrylamide in food. All data will be provided to JECFA. Instruction for submitting data through the Acrylamide Infonet and information on the “confidentiality” of data, when needed, are included at www.acrylamide-food.org.

Meetings Since the Last Update (April):

Workshop for EU Experts on “Analytical Methods for Acrylamide Determination in Food,” Geel, Belgium, April 28-29, 2003. Organized by Institute for Reference Materials and Measurements, Joint Research Centre, European Commission. Information on this meeting located at: www.irmm.jrc.be/events.html

Workshop on “Acrylamide In Food,” Brussels, Belgium, March 28, 2003. Organized by Confederation of Foods and Beverages Association (CIAA). Information on this meeting located at: www.ciaa.be

FAO/WHO Seminar on “Acrylamide in Food: Current State of Affairs,” Arusha, United Republic of Tanzania, March 16, 2003. Meeting preceded the 35th Session of the Codex Committee on Food Additives and Contaminants. Organized by FAO and WHO. Information located at: <http://www.fao.org/es/esn/jecfa/acrylamide/program.htm>

Studies Published in the Peer-Reviewed Literature (since the April Update):

M. Friedman. 2003. Chemistry, biochemistry, and safety of acrylamide: A review. *J. Agric. Food Chem.* 51:4504-4526.

D. V. Zyzak, R. A. Sanders, M. Stojanovic, D. H. Tallmadge, B. Loye Eberhart, D. K. Ewald, D. C. Gruber, T. R. Morsch, M. A. Strothers, G. P. Rizzi, and M. D. Villagran. 2003. Acrylamide formation mechanism in heated foods. *J. Agric. Food Chem.* 51: 4782-4787.

A. Yasuhara, Y. Akio, Y. Tanaka, M. Hengel and T. Shibamoto. 2003. Gas chromatographic investigation of acrylamide formation in browning model. *J. Agri. Food Chem.* 51:3999-4003.

C. Pelucchi, S. Franceschi, F. Levi, D. Trichopoulos, C. Bosetti, E. Negri, C. LaVecchia. Fried potatoes and human cancer. *Int. J. Cancer* 105(4):558-60.

J. R. Pedersen and J. O. Olsson. Soxhlet extraction of acrylamide from potato chips. 2003. *Analyst* 128(4): 1753-7.

S. Takatsuki, S. Nemoto, K. Sasaki, and T. Maitani. 2003. Determination of acrylamide in processed foods by LC/MS using column switching. *Shokuhin Eiseigaku Zasshi* 44(2): 89-95.

E. Dybing and T. Sanner. Forum: Risk assessment of acrylamide in foods. *Toxicological Sci.* (in press)

Acrylamide Infonet Usage Statistics

The Infonet website has received 72,000 hits between the period of January 2003 and June 2003, averaging 12,000 hits per month. Though most of the audience appears to be concentrated in North America, Europe, and Japan, the Infonet web statistics data also suggest that the website is accessed by governmental, educational, commercial, and international organizations around the world. The research database section of the website is by far the most popular area of the website, followed by documentation and events section.