

ACRYLAMIDE - EU Summary of Activities

STUDY AREA 4 - MECHANISMS OF FORMATION

NEW/UPDATE since January 2005

Entry No.	STUDY TITLE	SOURCE (Member State/ Organisation)	STATUS C (completed) O (ongoing) P (proposed)	COMPLETION DATE (anticipated date if not yet completed)	SUMMARY OF AIMS OF STUDY Max 50 words	SUMMARY OF MAIN CONCLUSIONS Max 50 words	COMMENTS	REFERENCES/ INTERNET LINKS	CONTACTS
4.1	Formation of acrylamide in coffee	Austria / Graz University of Technology	O	October 2006	Investigate the formation of acrylamide in coffee during roasting	Arabica coffees contain less acrylamide		Bagdonaite, K., Murkovic, M. Factors affecting the formation of acrylamide in coffee. Czech J. Food Sci. 22, 22-24 (2004)	Michael Murkovic, Department of Food Chemistry and Technology, Petersgasse 12/2, 8010 Graz, michael.murkovic@tugraz.at
4.2	Formation of acrylamide in model systems	Austria / Graz University of Technology	O	October 2006	This work will reveal the chemical background of acrylamide formation				Michael Murkovic, Department of Food Chemistry and Technology, Petersgasse 12/2, 8010 Graz, michael.murkovic@tugraz.at
4.3	Reduction of acrylamide in food	Denmark / Danish Vet. and Food Administration/ The Centre for Advanced Food Studies/ 5 Food Industries	O	June 2006	To investigate the mechanism of formation of acrylamide in food		Ph.D. 3yr study. Started in spring 2003	www.fdir.dk	Mr. Henrik Frandsen, E-mail hf@fdir.dk Phone +45 33 95 65 97, Institute of Food Safety and Nutrition
4.4	„Development of new technologies to avoid acrylamide in food“ (ZUTECH-Cooperation Project; AiF-FV 108 ZBG)	Germany / Bund für Lebensmittel-recht und Lebensmittel-kunde e.V. (BLL)	O	March 2005	Elucidation of the mechanism of acrylamid formation by model reactions		See also study areas 1.18; 3.15; 6.5; 7.2; 9.16	http://www.bll-online.de	igelbert@bll-online.de Peter.Schieberle@lrz.tu-m.de

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4.5	AA formation in bakery ware	Switzerland / Official Food Control Authority of the Canton of Zurich	C	June 2003	Model studies to determine influence of key components and temperature	Ammonium carbonate strongly accelerates AA formation; AA formation even at RT		Mitteilungen aus Lebensmitteluntersuchung und Hygiene 94 (2003) 406-422	Koni Grob, +41 43 244 71 31, Konrad.Grob@klzh.ch
4.6	AA formation in potato products	Switzerland / Official Food Control Authority of the Canton of Zurich	C	August 2002	Formation versus elimination; influence of sugars, asparagine and other components	Reducing sugars are the parameter to act on		Mitteilungen aus Lebensmitteluntersuchung und Hygiene 93 (2002) 668-687	Koni Grob, +41 43 244 71 31, Konrad.Grob@klzh.ch
4.7	Relation between processing conditions and acrylamide amounts.	The Netherlands	O	March 2003	A number of inspections will be carried out at several industries to investigate whether different processing conditions could be related to various acrylamide amounts. Furthermore, formation of acrylamide will be studied for several heating processes in relation to other processing conditions and raw materials for potato chips and potato crisps.	Inspections have been performed at 2 producers of potato crisps and 3 producers of deep fried chips. Facts about the production process have been collected. In potato crisps acrylamide was formed in the last step of the production process. During the different production steps of deep fried chips no acrylamide was formed. Acrylamide was formed when the products were prepared for consumption			Dr. E. Konings. Dutch Food Authority, Inspectorate for Health Protection, Den Bosch, The Netherlands. E-mail: Erik.Konings@kvw.nl, Phone: +31402911500, Fax: +31402911600

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4.8	Tests for the depolymerisation of polyacrylamides as a potential source of acrylamide in heated foods	United Kingdom / CSL	C		This study was conducted to test the possibility that polyacrylamides used in agriculture, may contribute to acrylamide formation in heated foods by thermal depolymerisation.	it is concluded that even if polyacrylamides were to contaminate agricultural crops and foods derived therefrom (which itself is an unproven suggestion), there is no evidence that the polymers would depolymerisation on heating the food, to form acrylamide in any significant amount.		Tests for the depolymerisation of polyacrylamides as a potential source of acrylamide in heated foods. J. S. Ahn and L. Castle. <i>Journal of Agricultural and Food Chemistry</i> , 2003, Vol 51 (23) pp:6715-6718	L.castle@csl.gov.uk
4.9	Formation of acrylamide in the Maillard reaction	United Kingdom / Universities of Reading and Leeds	C		To determine the role of asparagine in formation of acrylamide in the Maillard reaction	Established for the first time that asparagine was the main precursor of acrylamide in heated food systems		Mottram et al. <i>Nature</i> 2002, 419, 448-449.	D S Mottram University of Reading Tel: +44(0)118 3786519 d.s.mottram@rdg.ac.uk
4.10	Acrylamide in Cooking Fume	United Kingdom / HSE	O	2004	Determine if acrylamide is released from food during cooking. If so what factors influence these levels.	No acrylamide was detected in fume from well-done deep fried chipped potatoes (frozen blanched or fresh). Crispbread and other potato products will be investigated.	Not detected in cooking oil after 4 cooking cycles		John Unwin Health and Safety Laboratory. Broad Lane, Sheffield S3 7HQ tel 0114 2892711 john.unwin@hsl.gov.uk
4.11	Investigation of the role of starch in acrylamide formation.	United Kingdom	O	31/12/2003	To determine the role of starch (and different types of starch) on acrylamide formation.			www.campden.co.uk	Dr James Williams, CCFRA, j.williams@campden.co.uk

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4.12	Exploiting process factors to reduce acrylamide in cereal-based foods. (see also study area 4)	United Kingdom / UK Food Standards Agency/RHM Technology Ltd/Brewing Research International	O	Jun-05	To identify potential precursors in food and investigate the relationship between process factors and the formation of acrylamide, with a view to identifying methods to reduce levels in cereal-based food.		The project is being carried out by RHM and BRI on behalf of the Food Standards Agency. As is study area 3.	http://www.foodstandards.gov.uk ; http://www.brewingresearch.co.uk ; http://www.rhmtech.co.uk	David Flynn, e-mail: "Dr D S Flynn" <david.s.flynn@lineone.net>; Wendy Matthews, e-mail: Wendy.Matthews@foodstandards.gsi.gov.uk; Colin Hamlet, e-mail: cghamlet@rhmtech.co.uk; Denise Baxter, e-mail: "Denise Baxter" <d.baxter@brewingresearch.co.uk>
4.13	Mechanism of the formation of acrylamide in cooked foods and factors affecting its formation during thermal processing (see also study area 3)	United Kingdom	P	March 2006	To identify the mechanism of formation of acrylamide in cooked foods, with the aim of recommending possible means of controlling acrylamide formation			www.food.gov.uk	Dr Karen Goonan, Food Standards Agency karen.goonan@foodstandards.gsi.gov.uk
4.14	The effect of domestic cooking on acrylamide levels in food (see also study area 3)	United Kingdom	O	May-05	The study will examine typical situations of domestic food preparation and cooking within the home, with respect to acrylamide formation.			http://www.food.gov.uk/science/research/researchinfo/contactantsresearch/mycotoxins/c03bprogramme/acrylamideresearch/c03037/	Dr Karen Goonan, Food Standards Agency karen.goonan@foodstandards.gsi.gov.uk