



POPs in the Foodchain: Research and Surveillance conducted by the Food Standards Agency

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FSA research and surveys

Agency spends £25-30m each year on science to:

- support delivery of the FSA Strategic Plan 2005-10 and underpinning core activities
- ensure sound basis for policies and advice
- inform UK negotiating positions
- ensure staff are “intelligent customers”
- influence other research funders in UK and abroad

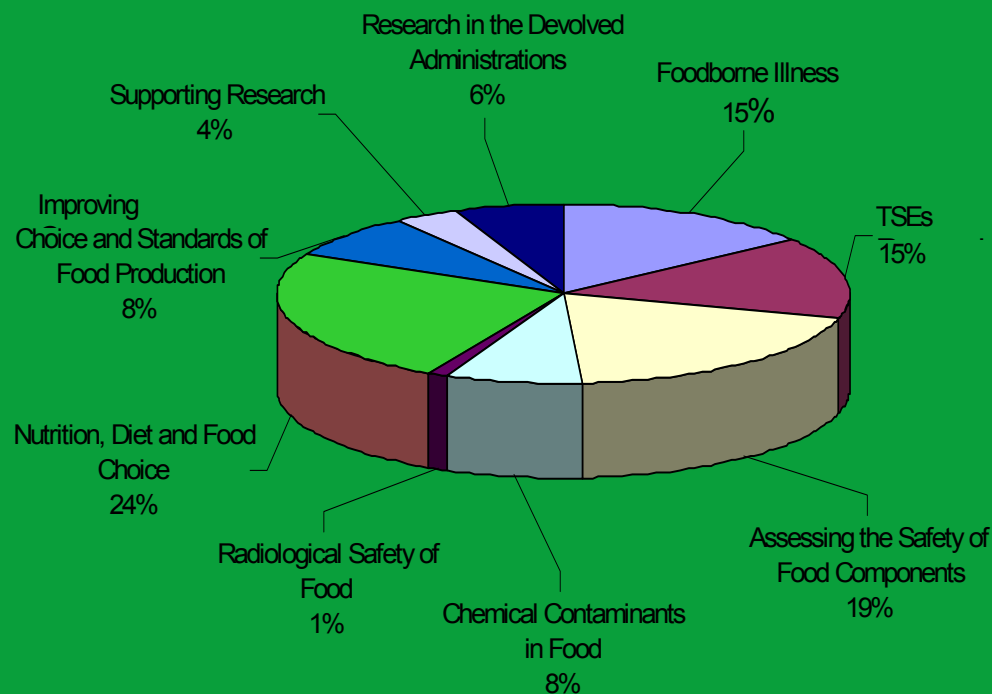


Research themes and programmes

- Research **themes** cover broad areas of activity (e.g. Food Safety - Food Products and Processes)
- Themes made up of **programmes** on specific topics (e.g. C01 - Chemical Contaminants In Food Production - Research; C02 - Chemical Contaminants in Food Production - Surveys)
- Programmes combine research, surveys and other science activities as needed to achieve aims
- Currently 8 themes - being revised to 'top-down' themes flowing from key areas in new Strategic Plan



FSA spend on science in 2003/04



Research procurement

- Procure by open competition (with certain defined exceptions e.g. emergencies):
 - Research Requirements Documents (roughly quarterly)
 - *Ad hoc* calls

see

<http://www.food.gov.uk/science/research/researchfunding/rrd/>

- To register for email alerts and other research news:
email: MB-RCU@foodstandards.gsi.gov.uk



Research and Surveys on Contaminants

Triggers for work include:

- expert and consumer concern
- need for updates
- availability of new or improved analytical techniques
- identification of new contaminants or new toxicological information
- need for improved toxicological knowledge
- EC proposals
- assessing effects of legislation, codes, new manufacturing methods



FSA Research on the Toxicology of Dioxins and Dioxin-Like PCBs



Rationale for study

- The Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) reviewed the TDI for dioxins and dioxin like PCBs and published a statement in 2001.
- Established a TDI of 2pg WHO-TEQ/kg bw/day based on the most sensitive endpoint being effects on the reproductive system of the male foetus.
- The committee identified gaps in the knowledge related to the risk assessment of dioxins.
- The most knowledge gaps related to the risk assessment of dioxins during pregnancy and specifically effect on the male foetus.



Potential contractors asked to address some of the following points:

- What are the characteristics (body burden, timing, *etc*) of the dioxin exposures required to disrupt these processes?
- What are the maternal and foetal body burdens arising from different dosing protocols in relation to the dose response relationship for adverse developmental effects in animals?



Potential contractors asked to address some of the following points (cont.)

- When, in human pre- and post-natal development, do these critically sensitive developmental processes occur?
- What are the existing human body burdens in the UK at these critical stages?

and

Additionally, the proposal might include PBPK modelling of human foetal exposure.



Risk assessment of dietary dioxins - T01034

Study commissioned at University of Nottingham

Duration Sept 2003 - April 2007



Risk assessment of dietary dioxins - T01034

Three main tasks:

- Acute range study in rats - single oral dose given to mother.
- Sub-chronic study in rats - continuous dosing before and during pregnancy administered via the diet. Aim to provide a steady-state maternal and foetal body burden.
- In addition the study will investigate the binding of dioxins and dioxin-like PCBs to the rat and human AhR.



Risk assessment of dietary dioxins - T01034

Further information available at:

- <http://www.food.gov.uk/science/research/researchinfo/foodcomponentsresearch/riskassessment/t01programme/t01projlist/t01034/>
- or contact:

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C01 Programme – Completed POPs-related research projects

C01007 Study of the effects of PCBs & PCDD/Fs in river sediment, deposited on pasture by flooding, on concentrations in cows` milk

C01008 Rapid, single step PCB extraction from liquid milk using perfluorocarbon fluids

C01010 & C01012 Measuring the bioavailability of human dietary intake of dioxin-like compounds, and of PAHs, phthalates and aromatic hydrocarbons

C01019 Transmission and occurrence of POPs through the food chain - a literature review

C01020 Transfer and uptake of organic contaminants into meat and eggs of chickens, sheep and pigs

C01022 Development of a mechanistic understanding and model of the air-herbage transfer of persistent semi-volatile organic contaminants (SOCs)



Breast Milk Archive

- **C01031** - Pilot studies to explore alternative methods for the recruitment, collection, storage and management of an archive of breast milk sample

<http://www.food.gov.uk/news/newsarchive/2004/dec/milkarchive>



Breast Milk Archive

- Methods for recruitment, collection and storage of breast milk samples
- Women between 16 and 42 from 6 NHS Trusts in Yorkshire provided samples between 2001 & 2003
- Data on contaminant levels was generated to test the sample integrity and the effects of storage for various environmental pollutants including dioxins, PCBs & organochlorine pesticides



Breast Milk Archive

- The intakes by breast-fed infants of dioxins and dioxin-like PCBs estimated from the SUREmilk study appear to be less than half of those from breast milk sampled in 1993/4
- The study did not raise any concerns for the health of breast-fed babies from any of the contaminants detected in the samples
- The COT considered the data and concluded that there was no reason to to alter breast feeding advice
- The FSA and DH continue to advise mothers that breast feeding is best for babies.



C01034 - Soil and Herbage Survey

- Soil and herbage from ~ 200 sites across UK
- Samples from urban, rural and industrial sites
- Urban and some industrial sites sampled in 2001
- Rural and majority of industrial sites sampled in 2002
- Samples not collected from agricultural land to avoid effects of ploughing and chemical use
- Site details
 - current and past use
 - proximity to industry
- Analysed for metals, dioxins, PAHs, PCBs and radionuclides



C01 Programme – Other POPs-related research projects that are almost complete

C01035 Literature survey for chlorinated and non-chlorinated PAHs and chlorinated and non-chlorinated aliphatic compounds in food.

C01037 Study of the effects of PCBs & PCDD/Fs in river sediment, deposited on pasture by flooding, on concentrations in cows' milk



Food Surveillance

To protect consumers, we conduct surveys

- inform EU negotiations
- assess the effectiveness of legislation
- consumer exposure assessments and monitor trends
- consumer advice



C02 Programme - Recent Published Surveys on Dioxins and PCBs

- 2001 Total Diet Study samples (FSIS 38/03)
- Fish oil dietary supplements (FSIS 26/02)
- Infant formulae (FSIS 49/04)
- Baby foods (FSIS 60/04)
- EU monitoring 2003
(published June 2004)



Current and Planned Surveys for Dioxins and PCBs

- Farmed and wild fish and shellfish 2003/04
- Fish products 2005
- Offals 2005
- EU monitoring 2005/06



Surveys for Other Halogenated Chemicals

- Brominated dioxins, PBBs and BFRs in 2003 Total Diet Study samples
- Brominated dioxins, PBBs and BFRs in farmed and wild fish and shellfish and fish oil dietary supplements 2003/04
- PFOS and PFOA in 2003 Total Diet Study samples



Horizon scanning

- Literature, conferences *etc*
- EA chemical strategy
- Chemical stakeholder forum
- This network
- IRFOS
- Advisory Committees

