

FOOD STANDARDS AGENCY – FORWARD EVIDENCE PLAN 2012

NOTIFICATION OF FUTURE ACTIVITIES AND INVITATION FOR FEEDBACK

The attached document summarises the topic areas in which the Food Standards Agency expects to take forward new science and evidence activities, including, where necessary, issuing requests for science and evidence proposals in financial year 2012/2013. These will deliver the evidence it needs to support its [Strategic Plan 2010 – 2015](#) (and possible future needs), published in December 2009 (and updated in March 2011.)

This Forward Plan has been developed as part of the FSA's business planning and builds on the input received in developing the Strategic Plan and the [Science and Evidence Strategy](#) . The evidence needs have been prioritised using the process described in the Science and Evidence Strategy (see Annex A, page 21), led by the FSA's Chief Scientist.

We are doing this for several reasons:

- To inform the Agency's stakeholders and help identify whether they are aware of any work either completed or on-going in these areas which we should take into account to help us focus our final requirements before issue;
- To draw to the attention of other funders to see if there are areas on which we could work more collaboratively on these or future needs;
- To provide early notice of possible tender opportunities to potential contractors, to stimulate interest;
- To also seek comments and suggestions on how best to progress some of the strategic science challenges facing the Agency

In some of these areas, more work is still needed to develop the final requirements, but the attached summaries should hopefully provide a good indication of the direction of travel. Also, in some areas, the requirements may be procured using frameworks already in existence. Calls for open competitions will be advertised at: <https://fsa-esourcing.eurodyn.com/epps/home.do>

If you wish to be alerted to calls for proposals, please follow the registration guidance, details of which can be found at the bottom of the page which is opened by the link above.

It should be noted that this forward plan is subject to budgetary confirmation and the possibility that some of the research areas may be displaced by priority evidence needs emerging within the year. It is also possible that some areas will be combined for tendering where there are procurement efficiencies identified. However, the publication of this forward plan does not commit the Agency to awarding contracts for any or all of the opportunities listed.

Invitation for feedback – by 15 February if possible

While it will not be possible at this stage to hold discussions on individual topics, there are some very specific questions on which we would welcome feedback. This should be sent to the following e-mail address:

CST@foodstandards.gsi.gov.uk

All replies will be forwarded to the team dealing with the research area within the Agency for consideration and follow up as appropriate.

To all recipients:

- Are you aware of any work completed or on-going which might inform or duplicate work outlined in the attached descriptions – please provide references or other details (to the e-mail address above) so that we can refine our requirements, if needed.
- Please also provide any comments or suggestions on how you would consider it best to progress some of the strategic science challenges facing the Agency.

To other funders

- Please contact us at the above e-mail address if there are any areas on which you would like to discuss collaborative working – either in relation to these current needs or possible future needs in the Agency's remit.

We expect the first requests for proposals to be issued in some of the identified issues in the next few weeks.

FOOD STANDARDS AGENCY – FORWARD EVIDENCE PLAN 2011

Outline Description of Proposed Activity Areas

The proposed activities have been grouped below into broad subject areas as follows:

FOOD SAFETY:

Hygiene and Microbiology

Campylobacter

VTEC

Listeria

Viruses

Other pathogens

Cross cutting

Future meat controls

Food and feed hygiene policy

Chemical Safety

Inorganic contaminants

Additives

Organic contaminants

Risk Assessment

Novel and emerging technologies

Food allergy and intolerance

FOOD LAW ENFORCEMENT, EFFECTIVENESS OF INTERVENTIONS/NEW APPROACHES

CROSS CUTTING

Social sciences

Food analysis

Strategic challenge

FSA IN SCOTLAND and NORTHERN IRELAND: Diet and Health

FOOD SAFETY

HYGIENE AND MICROBIOLOGY

Campylobacter

Mapping *Campylobacter* research to inform a gap analysis

The project will map *Campylobacter* research relevant to the UK chicken production chain from farmer to consumer. Research published since the EFSA opinion on *Campylobacter* controls , ongoing research projects and open research calls on a global basis should be included .

Enhanced molecular-based (MLST/whole genome) surveillance of *Campylobacter* infection in the UK and investigation of the effect of interventions

Campylobacter infections in the UK are not routinely speciated or typed yet this information is potentially of value for understanding the epidemiology of these organisms and through attribution work, where these infections originate from. The proposed work is to undertake enhanced surveillance using 5-6 sentinel clinical laboratories across the UK to collect a representative sample of *Campylobacter* isolates which can be further characterised by MLST or whole genome sequencing. Whilst it is not intended to collect detailed epidemiological data on cases of infections a minimum dataset (age, sex, travel history, outbreak associated) will be required. The further characterisation of the isolates should enable the source of these infections to be attributed therefore providing feedback on whether the *Campylobacter* risk management programme is having an impact on the proportion of poultry meat associated *Campylobacter* infections in humans. The work will also involve collection and characterisation of isolates from poultry and other sources to enable comparison with the isolates from human cases.

To assess the impact of freezing on *Campylobacter* in chicken livers

The work will indicate whether freezing is likely to make a contribution to reducing the levels of *Campylobacter* in chicken livers used in lightly cooked dishes. The research will therefore, alongside other considerations, inform FSA advice to caterers and consumers who prepare these dishes.

Investigating the reasons for reduced rates of *Campylobacter* reporting in deprived populations in Scotland

A previous FSA Scotland funded research project (S14004) demonstrated a decreased reporting of *Campylobacter* infection in more deprived areas of Scotland, when compared to less deprived areas. However, it was not clear whether this was actually a true reflection of the disease incidence, an artefact of reporting, or a signature of differential health care uptake by these communities. Further work is therefore required to determine if this situation is still observed and if so to

understand the reasons for the reduced rate of *Campylobacter* reporting in deprived areas and conversely why the more affluent population have a higher incidence of infection. The outputs of this work will inform how our *Campylobacter* risk management programme can be targeted at particular areas of risk.

VTEC

Survivability of VTEC on vegetables/soil through the food chain

The investigation of the recent UK outbreak of *E. coli* O157 PT8 pointed to soil contaminated root vegetables as the source of infection. However, whilst there is evidence to demonstrate the survivability of VTEC in the growing environment, there is a lack of data on the ability of the pathogens to survive on the surface of soil contaminated vegetables such as potatoes and carrots from the point of harvest through to the consumer. This project would help to address these evidence gaps and inform the development of interventions for controlling the risks of VTEC in produce through the food chain and help to target consumer messaging on the safe handling of vegetables

Development of predictive modelling tools for Verocytotoxin-producing and Enteraggative *E.coli* (EaggEC)

Very little is known of the growth and survival behaviour of EAggEC's or non O157 VTECs in foods. The proposed work is in collaboration with the US Department of Agriculture, Agricultural Research Service (USDA ARS) and will develop predictive models to describe the growth/survival behaviour of selected VTEC and EAggEC strains in relation to the main factors which control bacterial growth in food namely pH, temperature and water activity and the affect of heating on destruction of these organisms. It is anticipated that the FSA component of the work will focus on the effect of heat on these organisms. Work will also be undertaken to validate the models developed using data on growth and survival of these bacteria in real food systems. The work will provide modelling tools to complement existing ones on VTEC O157. It will support work on risk assessment for *E.coli* in foods other than *E.coli* O157, inform the development of safe food processing and formulation as well as incident response.

The extent and significance of internalisation of VTEC in salad vegetables and sprouted seeds.

Sprouted seeds and salad vegetables have been linked to previous *E. coli* outbreaks, including the large *E. coli* O104 outbreak in Germany in 2011. Laboratory studies have shown that VTEC can actively interact with plants and can colonize them as alternative hosts however the extent of internalisation of pathogens into salad vegetables and seeds in the field remains unclear. Additionally, the relative risk that internalisation of human pathogens poses to public health needs further investigation. Therefore, a study is proposed to examine the uptake and internalisation of VTEC through the roots and leaves of salad vegetables and by sprouted seeds and to determine the significance of internalisation to public health. Current industry washing practices may not be sufficient to decontaminate salad vegetables and sprouted seeds if internalisation is shown to play a significant role in

contaminating these foodstuffs during the growing season. Therefore the information gathered from this project will allow current primary production guidance for this sector to be reviewed (including the appropriateness of current washing protocols) to ensure that intervention strategies for VTEC control are effectively targeted.

Listeria

Microbiological Safety of Food Funders Group (MSFFG) report on publically funded research on *Listeria monocytogenes*

The Microbiological Safety of Food Funders Group (MSFFG) is a cross-representational body involving public funders of microbiological research in the area of food safety in the UK. It is proposed to commission a paper reviewing publically funded research on *Listeria monocytogenes* for the MSFFG for publication and to inform the planned research workshop (see below). The MSFFG last considered research on *L.monocytogenes* in 2004-5 so it is timely to take stock of research in this area which will be of benefit to the funding bodies for the research workshop and inform the evidence base underpinning *Listeria* risk management in the UK.

Microbiological Safety of Food Funders Group (MSFFG) workshop on *Listeria monocytogenes*

It is proposed that a workshop on *Listeria monocytogenes* research is organised for 2012-13 under the auspices of the MSFFG bringing together funders and researchers to consider the current status of *L.monocytogenes* research and to identify gaps in our knowledge. This workshop will be informed by the paper prepared under the previous topic (and will take account of upcoming research highlighted in this document).

Source attribution of listeriosis in the UK

The proposed work will involve sequencing the genomes of all clinical isolates of confirmed *L.monocytogenes* in the UK over a 1 year period together with 250 randomly selected food isolates from culture collections or isolations from foodstuffs during the same year, the basis of selection taking account of the main categories of foods from which the isolates originated (cooked meats, fish, dairy, produce etc). Bioinformatic analytical strategies will be developed to compare the diversity of the listeriosis clinical cases with those from foodstuffs and to pinpoint common lineages between the food and clinical strains as a basis for apportioning source attribution of infections.

A systematic review of current practices in the management of *Listeria monocytogenes* utilised by the cooked sliced meat sector, identifying key risk areas in the processing chain and gaps in the management of these risks

The research required will critically review the evidence base relating to effective *Listeria* control in the cooked, ready to eat, sliced, meat manufacturing and supply sector. The key elements will include a systematic literature review and information on industry and local authority practices and attitudes towards *Listeria* control in this sector. Where appropriate, the work will also draw upon findings for this sector related to other pathogens. It is anticipated that the outputs of the work will form part of a further piece of work to develop and populate a decision support tool to assist food businesses and enforcement officers in their work. Outputs from this work should improve the collective understanding of *Listeria* control in the food manufacturing environment, particularly for SMEs. The work should contribute to reducing contamination of finished products and hence reduce consumer exposure to *L. monocytogenes* via the food chain.

Viruses

Quantifying the effectiveness of depuration on reducing norovirus titre in oysters

The project aims to generate data to quantify the effectiveness of depuration in reducing norovirus in oysters. Under experimental conditions, the project will measure how much 'standard' depuration practices reduce norovirus titre. It is also anticipated that the study will include investigations of different variables for improving the reduction of norovirus. The data generated will allow us to identify interventions that have potential to control norovirus in shellfish. The outputs will form the basis of more extensive field trials.

A critical literature review and meta-analysis on the survival and persistence of norovirus in foods and on food contact surfaces

This project is a critical literature review on the survival and persistence of norovirus in foods and on food contact surfaces when subjected to different treatments such as heat, disinfectants, pressure, desiccation, etc. The project aims to gather and evaluate, using meta-analysis, existing data and will enable us to assess, in a systematic way, post-harvesting processing techniques for their viricidal potential. This will provide useful data in terms of gaps in our knowledge and help identify research priorities for controlling risk. The outputs of this work will also inform any development of an evidence-based norovirus risk management programme within the Foodborne Disease Strategy for 2010-2015.

Norovirus Research Workshop

The publication of the second Infectious Intestinal Disease Study (IID2 Study) has shown a continuing high burden of enteric viral disease in the UK, particularly that caused by norovirus. Person-to-person spread is a key transmission route for the virus, although food (e.g. shellfish, fresh produce) and food handlers are also

thought to be important sources. Tackling norovirus in the food chain is likely to be challenging because of the different transmission pathways and further research is required to provide the evidence base to support possible interventions

It is proposed to hold a norovirus research workshop in late 2012 involving participants from a range of disciplines from the research community, public and environmental health industry, consumer groups and funding bodies. The key aim will be to identify the norovirus research priorities that need to be addressed by the Agency or in partnership with others that will help develop tangible risk management strategies.

Other pathogens

Q fever risk assessment: risks to human health from unpasteurised milk and milk products

Q fever is considered endemic in livestock in the UK. In most cases clinical illness is not seen, but occasional large outbreaks or clinical cases of Q fever are reported in animals. Q fever is a recognised zoonosis which can cause serious human illness. There is, however considerable uncertainty surrounding whether and, if so to what extent, clinical disease in humans can result from the consumption of contaminated unpasteurised milk or milk products. A risk assessment is therefore required to assess the human health risks from *Coxiella burnetii* (the causative agent of Q fever) in unpasteurised milk and milk products from goats, sheep and cows in the UK. Data on the prevalence of Q fever, level of shedding of the bacteria (in milk and faeces), period of shedding and evidence on transmission to humans in milk and milk products should be assessed and where possible quantitative information provided. The risk assessment will also highlight any data gaps and uncertainties.

Cross cutting

Grant for a research residency of the European College of Veterinary Public Health

A grant for a student of the European College of Veterinary Public Health to undertake research work for the Agency. The award will offer a residency programme of two years of problem-based training under the supervision of a team of VPH specialists and following a programme run by the Royal Veterinary College (RVC). The resident will work on research activities that are linked to the Agency's Strategic Plan to 2015, providing support to the delivery of strategic outcomes 1 and 5. Research will cover areas of risk assessment, risk management and risk communication.

IID2 data storage

The aim is to provide for appropriate storage of participant data from the FSA funded Infectious Intestinal Disease (IID) 2 Study from questionnaires, email/postcard follow-up, and data from the web-based system and telephone survey database. In

accordance with the outcomes from the various Ethical approvals and the Guidelines for the Retention of Clinical Trial Records, we are required to store this data securely for a minimum period of 15 years (until 2025). It is proposed to identify a suitable supplier and contract the work for a fixed, 15-year period as it is not possible to do this in-house for technical reasons.

Critical review of the efficacy of washing treatments for the removal of pathogens from fresh produce

There are industry guides on protocols for washing fresh produce however it is unclear how effective these treatments are and what alternatives there are to chlorine-based disinfections. Additionally, in light of the recent *E. coli* O104 outbreak an understanding of the disinfection treatments available for sprouting seeds should be reviewed. It is envisaged the critical review would have three sections addressing the following areas - sprouting seeds, leafy greens and root vegetables. The information obtained from this review will inform whether there is a need for further research to improve washing treatments.

Research to address data gaps in the risk assessment on manures

The FSA previously commissioned a microbiological risk assessment to determine whether the application of slurry, farmyard manure and abattoir waste to agricultural land posed a significant risk of pathogens contaminating crops and livestock. The Advisory Committee on Microbiological Safety of Food (ACMSF) peer reviewed the final report of the risk assessment but was unable to endorse it due to significant data gaps, including pathogen die-off in animal wastes and land under different conditions. This project would determine whether the current 'Managing Farm Manures for Food Safety' guidance is still appropriate and generate/source the data to fill gaps that would strengthen the risk assessment and guidance.

Future meat controls

Poultry pilot to test alternative delivery of meat official controls

The aim of this research is to develop and test a new risk-based model for inspection of poultry meat. An alternative model will be built on the findings of two qualitative risk assessments carried out as part of the first tranche of research on Future Meat Controls ('Assessment of the risk of OV's not being present when Plant Inspection Assistants carry out post-mortem poultry inspection' and 'Assessment of the risk of an Official Auxiliary - rather than an Official Veterinarian - performing ante-mortem inspections for poultry and young/prime red meat species'). This project will enable the Agency to gather data to evaluate the benefits of the proposed model in terms of public health, animal health and animal welfare against the current system and to establish whether this alternative approach merits a case for regulatory change.

Research project to assess the implementation of the EFSA opinion on meat inspection for pigs to the UK situation

A study to apply to the UK pig production system the concepts described in the EFSA opinion published in October 2011 as part of the Commission mandate to review and modernise meat inspection. The study aims to understand the benefits and challenges of applying the EFSA principles in the UK and to develop a more risk based model of official controls for the pig sector.

The study will take into consideration public health, animal health and animal welfare controls, and possible emerging risks. This will involve:

- Assessing the relevance of the four pathogens identified by EFSA (*Salmonella*, *Yersinia*, *Toxoplasma* and *Trichinella*) to UK pig populations, as well as other hazards or emerging pathogens..
- Proposing UK harmonised epidemiological indicators based on the identified hazards and their infection status in the pig population.
- Develop a tool to enable risk managers to identifying potential end-of-line targets for relevant public health meat borne pathogens.
- Suggesting possible practical interventions from primary production up to the end of the slaughterhouse process for the control of each hazard identified as pertinent with a focus on *Yersinia* and *Toxoplasma*.
- Proposing options for a carcass safety assurance scheme based on the above. Carrying out a cost effectiveness assessment of this model.

Food and Feed Hygiene Policy

Temperature of meat carcasses

EU legislation requires meat to be chilled and remain below specified temperatures and only short interruptions to maintenance of the chill chain are permitted. When meat is found to exceed these specified temperatures it is desirable to establish if this is due to incomplete chilling or interruption of the chill chain. Current estimations can be undertaken using models based on data on the chilling of meat but not including data on chilled meat exposed to ambient temperatures. This project aims to identify the data needs and then undertake a limited range of temperature model validation studies. Experiments will cover a range of species, weights and air speeds for chilled and un-chilled carcasses subjected to storage at ambient temperatures, measuring surface and deep muscle temperature. Outputs will be compared to predictions from chilling models. A scientific publication of this work is envisaged.

Assessing the potability of treated potable water

Current EU legislation only permits the use of potable water in the production of meat carcasses and it is the Food Business Operator's (FBO) responsibility to demonstrate that water at the point of application (use) is potable. A study is required to identify information, data and techniques for assessing the potable quality of water at the point at which it is used for meat production, including water from a mains supply that is subsequently treated (e.g. with ozone) to improve food safety in meat

production. This will involve liaising with the Drinking Water Inspectorate and the Health and Safety Executive over the use of any water treatments in meat plants. The project output should include provision of information suitable for incorporation in the Meat Industry Guide and the slaughterhouse tool to assist FBO's and the FSA

Skin on sheep pilot trial to gather data identified in the EFSA opinion

The FSA has invested in several studies to assess the safety of a process to produce skin on sheep. A summary of the data was recently considered by EFSA and data gaps identified. One way of filling the data gaps would be to request permission from the EU and member states to undertake a pilot study. If permission was granted a project would be required to provide support in terms of study design and undertake some analysis. Industry would be expected to bear the costs of operating the pilot and possibly contribute/share the cost of testing. The data will be required to be gathered and reported in a format suitable for consideration by EFSA and to be published in peer review journal

***Trichinella* in UK wildlife**

A three year UK monitoring programme (with yearly break points) of susceptible wildlife for *Trichinella* sp. This will focus mainly on foxes (obtained from routine pest control activities wherever possible) and small numbers of other wildlife that are available from other studies (eg badgers, mink).

***Trichinella*: a feasibility study for mandatory monitoring of susceptible Game species**

A small study to fill in the sizeable evidence gaps we have around the populations of susceptible game species (particularly feral wild boar), their geographic spread and how many are hunted and the practical issues if mandatory *Trichinella* testing were to be introduced., The study will liaise with groups that will have evidence, anecdotal or other on feral wild boar and other susceptible game species populations and gather evidence on practicality and costs of introducing mandatory testing.

Investigation into the potential use of testing indicator shellfish species to classify shellfish production areas

As competent authority for food safety in the UK, the FSA ensures that official controls as outlined in the food hygiene regulations are carried out. Controls involve classification of shellfish harvesting areas in relation to faecal contamination. Currently a shellfish harvesting area is classified according to levels of E.coli contamination found in shellfish from the site. Each species within a production area is sampled and tested separately, so individual species beds are sampled. Sampling and testing of all beds is costly and resource intensive. The Food Hygiene Policy team is reviewing the current classification system to ensure that it is fit-for-purpose, utilises available resources effectively and provides adequate protection for public health. One possible change to simplify the classification system would be to use a single shellfish 'indicator' species to classify a whole production area, rather than

sampling individual species beds. A technical workshop held in early 2011 identified a certain amount of information based on available routine monitoring data from England and Wales which shows mussels accumulate E.coli to a greater extent than some species but not necessarily all. Research funded by Defra that may yield useful data is also nearing completion. A critical review of the current literature (and practices in other Member States) on the potential use of indicator shellfish species is proposed to support the Agency's review. This has not to our knowledge been carried out previously and would help to reliably inform UK policy development.

Assessment of robustness of Official Control regime for whole king scallops placed on the market in Scotland

Under EU Regulation 854/2004 the Official Controls (OC) monitoring of the shellfish in classified production areas (inshore waters) in Scotland is carried out by the Food Standards Agency. However, according to the Regulation, the OC on wild pectinidae (wild scallops) harvested outside classified production areas (offshore waters) are to be carried out in fish auctions, dispatch centres and processing establishments, and as such are the responsibility of Local Authorities. Food business operators (FBOs) harvesting scallops outside classified production areas or handling such scallops must demonstrate compliance with Regulation 853/2004 by ensuring that products placed on the market comply with the health standards.

The aim of this project is to study levels of Amnesic Shellfish Poisoning toxins (ASP), Paralytic Shellfish Poisoning toxins (PSP) and lipophilic toxins (LTs) including Diarrhetic Shellfish Poisoning (DSP) toxins in whole scallops placed on the market and assess whether the current OC regime is effectively protecting public health.

Research to support the development of a monitoring programme for emerging toxins

As Competent Authority for food safety in the UK, the FSA ensures that official controls outlined in EC food hygiene legislation are carried out. This involves the implementation and management of an Official Control (OC) Marine Biotoxin Monitoring Programme in relation to shellfish. Recent amendments to EU hygiene legislation (EC 2074/2005) introduced changes to the reference method for the detection of lipophilic toxins and testing regimes for shellfish. The amendment also introduced a requirement for Member States to carry out periodic monitoring for new or unknown (emerging) marine toxins. Currently, the UK does not have a specific monitoring programme for new or unknown toxins. The FSA therefore wishes to assess the available evidence to support the development of a risk based monitoring programme for new and emerging marine biotoxins.

An initial project is proposed which will collate and review current evidence, both published and unpublished, on emerging toxins and testing regimes in different countries worldwide. We would expect the study to consider EFSA opinions on algal toxins and evidence that has become available more recently including method development for both biological and chemical assays.

Scottish Local Authority (LA) Sampling Grants

This grant funding aims to extend an existing programme of targeted LA sampling of selected foods sold in Scotland. The data will improve our evidence base on foodborne disease risks and help to underpin our advice and guidance on the prevention of microbiological contamination during production and handling. Public Analyst (PA) laboratories in Scotland will manage the survey and data will be entered onto the UK Food Surveillance System in order that the outputs may be managed and analysed by staff in FSA in Scotland.

CHEMICAL SAFETY

Contaminants Research Programme Advisor

The chemical contaminants programme advisor is expected to provide expert independent scientific advice to the Agency on the commissioning, appraisal, management and final review of scientific projects within the remit of the chemical contaminants foods research programme (this includes, environmental and process contaminants, mycotoxins and food contact materials). This ensures a measure of independent oversight of the projects from someone with relevant expertise. As well as scientific excellence, a focus on delivery of outcomes in relation to project objectives and value for money is expected.

The chemical contaminants research programme advisor will have direct experience of the main research areas covered by the chemical contaminants research programme programme and as such can provide expert advice on the projects (ideally from both an academic and industry perspective).

Inorganic Contaminants

An Investigation by Laser Ablation of the Levels and Gradation of Metal Contaminants in UK grown Vegetables, Fruits & Cereals – 2012/13

Environmental sources are the main contributors to contamination of food with metals and other elements. Arsenic is widely distributed in the environment from natural sources, such as rocks and sediments and also as a result of industrial activities. Lead can also be found in the environment both naturally and as a result of industrial and other human activities e.g. lead mining. The presence of metals and other elements in food can also be the result of contamination by certain agricultural practices e.g. cadmium from phosphate fertilisers.

Arsenic, lead and cadmium and other elements can therefore be found at various levels in vegetables, fruits and cereal crops depending on the geographical growing region.

Food is a major contributor to consumers' overall dietary intake of these contaminants and certain food groups are known to naturally accumulate some of these contaminants e.g. cereals have a tendency to accumulate cadmium.

Laser ablation Inductively Coupled Plasma Mass Spectroscopy (LA ICP MS) is a relatively novel and cutting edge technique that enables the determination of the levels of contaminants throughout a cross-section of the product, resulting in the establishment of 'contaminant gradients'. The technique has recently been used by the Agency in a small scale 'pilot study' to assess levels of environmental contaminants in food and the Agency would like to develop this study to obtain new data and information on the extent of contamination regarding arsenic, lead, cadmium and other elements in UK grown vegetables, fruits and cereal crops. The establishment of the extent of gradation or profiling of these contaminants from the outer layers or 'skin' of vegetables, fruits and cereal crops to the 'core' will help inform/review the Agency's current 'wash and peel' advice to consumers to include environmental contaminants, as well as strengthen the UK's negotiating position with the EU in regard to appropriate and proportionate safety limits for environmental contaminants in food.

Additives

Survey on the level of nitrate and nitrites in meat products

The aim of this survey is to gather data on the level of nitrite and nitrates in processed meat products, e.g. bacon and ham, sold in the UK. Nitrates and nitrites are permitted preservatives that are used to prevent the growth of bacteria (e.g. *C. botulinum*) in these foods. The amount of nitrates/nitrites that can be used in meat products and other foods is specified in EU food additive legislation.

The European Commission has committed to review and examine the current authorisations for nitrates and nitrites in meat products within the next few years. Therefore the results of this survey will provide data on the patterns of usage of these preservatives which will assist in developing the UK negotiating position. The results will also be used to revise exposure assessments for these additives and to monitor compliance with the current legislation.

Organic contaminants

Geographical Survey for Contaminants in Fish & Shellfish

Within the Marine Strategy Framework Directive (MSFD), which aims to promote cooperation between EU Member States to improve the marine environment, one of the descriptors of Good Environmental Status (Descriptor 9) is that food from the marine environment must be safe for human consumption. Previous FSA investigations of contaminants in fish have focused on retail samples, the origin of which were generally not known. A geographically based survey for contaminants in fish and shellfish from UK waters. will be conducted to provide a baseline for MSFD

Descriptor 9. In particular, it will target species taken from areas considered to be at higher risk of pollution due to heavy shipping presence, significant nearby onshore industrial activity or major river outflow and will provide evidence for any contamination hotspots affecting the safety of seafood produced from the marine environment around the UK.

Uptake of Contaminants from Waste Streams into Animals

The Environment Agency is working with the waste industry to find outlets for the beneficial reuse of waste streams including Paper Sludge Ash and Poultry Litter Ash as soil improvers or bedding dessicants and chipped waste wood (and possibly compost) as animal bedding. All of these wastes potentially contain chemical contaminants. To date, risk assessments in support of such uses have been based on generic uptake models. This project aims to generate robust scientific evidence regarding the potential risks that such uses of waste present to food safety and to identify the nature and level of control measures needed to protect the food chain.

Survey for Brominated Flame Retardants in Food

In 2011, the European Food Safety Authority (EFSA) published a series of opinions on the presence of brominated flame retardants (BFRs) in food. In the case of both polybrominated diphenyl ethers and hexabromocyclododecanes, EFSA identified a need for more data, citing a possible health concern in the case of PBDEs in particular. A survey for BFRs in individual food samples will be conducted in response to this call for data. Following discussion within the Advisory Committee on Animal Feedingstuffs in December 2011, the investigation may also be extended to feed components.

Risk assessment

2012 Annual T01 & T10 Research Programme Workshop and T01 Programme Review

These research programmes aim to underpin the Agency's risk assessment process for ensuring the safety of chemicals in food.. The T01 programme seeks to develop: approaches to food risk assessment which take into account variability and uncertainty; integrated approaches which take due account of human data, in vivo data, in vitro data and expert judgement as appropriate; methodology for exposure assessment for food chemicals, including exposure assessment for population subgroups, and the integration of the hazard assessment with the exposure assessment into an overall risk characterisation. The T10 programme responds to the recommendations of the Committee on Toxicity (COT) for research related to the risk assessment of mixtures of pesticides and similar substances.

The research workshop provides the opportunity for a forum for discussion between projects, an opportunity to improve focus and outcomes of on-going projects and contributes to horizon scanning for future research needs.

In addition, programme reviews provide an opportunity to evaluate the body of research, its achievements, contribution to FSA's policy needs and value for money. They also help determine the future scope and aims of the programme. The T01 programme was last reviewed in 2007.

Review and Update of the FSA Recipes Database

Reliable food consumption data (with accompanying recipes/ ingredients) is vital to estimating dietary exposure to chemicals in food with appropriate accuracy. The proposed review and update of the FSA Recipes Database will ensure that the recipes are more accurate and that any assumptions made are consistent as well as documented, thus ensuring transparency.

Novel and emerging technologies

Estimation of intake levels for novel food ingredients

When considering potential intakes of novel foods the applicant company frequently claim that consumers will not habitually consume both supplements and foods fortified with the same ingredient; but this argument is not supported by any existing evidence. The purpose of this project is to investigate current behaviours for one or more existing nutrients and so inform the risk assessment of novel foods by providing improved exposure estimates.

Application of emerging methods of risk assessment to the safety assessment of GM crops

The intention is to hold a workshop of relevant stakeholders from academia, industry and regulatory bodies (e.g. EFSA) in 2012 to scope ideas for further research on methods of analysis of relevance to the risk assessment of GMOs. Following this the most promising ideas will be put forward for consideration as priorities for future funding. Previous projects have included metabolomics and proteomics.

Novel foods research programme advisor

The novel foods programme advisor provides expert independent scientific advice to the Agency on the commissioning, appraisal, management and final review of scientific projects within the remit of the novel foods research programme. This ensures a measure of independent oversight of the projects from someone with relevant expertise. As well as scientific excellence, a focus on delivery of outcomes in relation to project objectives and value for money is expected.

Projects in this area are usually highly technical and often involve the development or use of cutting edge methodologies in molecular biology (e.g. new methods of detection for GMOs or genetic modification) that can be difficult to understand unless you are familiar with such research. The programme advisor will have direct experience of the main research areas covered by the programme and as such can

provide expert advice on the projects (ideally from both an academic and industry perspective).

Food allergy and intolerance

Baseline study on the provision of allergy information to consumers for foods sold non-prepacked

The Food Information for Consumers Regulation (FIR) which was published in November 2011 will require that allergy information be provided for non-prepacked foods as well as pre-packed foods. There is a three year transition period to allow Food Business Operator's (FBO's) to take the necessary actions in order to comply with these provisions before the Regulation comes into force in December 2014. The purpose of this research is to obtain a baseline measurement of the current provision of allergy information to consumers for non-prepacked foods. This will inform how the Agency can best assist businesses in meeting the requirements of the regulations and to measure the impact of the FIR and any national guidance issued to help FBO's meet those requirements. It is likely that the research will include a survey of food businesses and a small qualitative element to explore certain aspects in more detail.

2012 Food Allergy and Intolerance Research Programme Review meeting

The Food Allergy and Intolerance Programme is scheduled to be reviewed in the Summer of 2012. This will allow the Agency to assess the success and productivity of recently completed and ongoing projects (from the past 4-5 years) as well as the Programme as a whole. These will be assessed against the aims and objectives of the Programme, the outcomes of the previous Programme Review meeting (held in 2008), relevant policy needs and the Agency's Strategic Plan. A horizon scanning session will be held during this meeting where, in conjunction with Stakeholders, future areas of research for the Programme will be considered.

FOOD LAW ENFORCEMENT, EFFECTIVENESS OF INTERVENTIONS/NEW APPROACHES

Variation in implementation of imported food controls at inland LAs

Investigative research to collect data and information (both quantitative and qualitative) to describe the variation in the monitoring of imports throughout the food chain by inland LAs and understand the underlying causes of this variation. This will enable the development of effective proposals to support all LAs to implement risk based and proportionate imported foods controls and effectively monitor imports throughout the food chain.

Imported food/feed control at smaller sea/airports

Investigative research to collect data and information (both quantitative and qualitative) to describe the implementation of imported food/feed control by PHAs/LAs at points of entry that may only receive infrequent, irregular or occasional consignments of imported food/feed and understand the underlying causes of weaknesses identified by FSA audit at some of these PHAs/LAs. This will enable the development of proposals to ensure consistent and effective risk based checks at all points of entry.

Impact of prescribed checks on routine surveillance of imports

Investigative research to collect data and information (both quantitative and qualitative) to determine if routine surveillance of imported food at points of entry has reduced and understand the underlying causes. To investigate the impact of prescribed checks under EC regulations 669/2009 and 1152/2009 on routine surveillance at ports. Recommendations can then be made for to improve routine surveillance and will inform future decisions on the provision of imported food and feed grants to PHAs/LAs.

Evaluation of FSA pilot to establish the compliance of consignments certified under assurance schemes with import controls

Investigative research to collect data and evaluate FSA's approach to establishing the level of compliance of selected certified imported food consignments which are subject to intensive controls at UK points of entry. To make proposals for further roll-out to other certified products. Once the project is complete we will understand the role accredited certification schemes might play within the deployment of imported food and feed checks at UK points of entry. The project will also deliver proposals for establishing further evidence requirements and the information necessary to ascertain compliance performance of products subject to independently assured schemes prior to third country export.

Feed assurance schemes - mapping compliance in feed businesses

This study will inform the Agency about the use of assurance schemes and how the outcomes of their own inspections or audits affect compliance with animal feed legislation. Where appropriate, it will suggest ways in which the outcome of assurance scheme audits might be improved to ensure better compliance with feed safety requirements. It will also provide information about how assurance schemes might form part of earned recognition within the scope of official controls within the feed sector.

Similar work has already been conducted on dairy hygiene and this study will draw on the methodology and recommendations from that research. It will also be informed by previous research that looked at whether the existing feed assurance schemes matched the FSA's published advice for third party assurance schemes, and on work in Scotland on compliance rates at primary production level.

The project will assess and compare the approaches of different LAs in using membership of various assurance schemes e.g. those coming under the umbrella of the Agriculture Industries Confederation and Assured Food Standards, when monitoring and verifying compliance with the feed legislation at feed business operators in England and Wales.

Review of research in the Effective Risk based Enforcement and Compliance (ERBEC) programme

The aim is to carry out a review of research (completed, ongoing and upcoming) within the ERBEC area and determine strategic direction to 2015. This will include a series of internal workshops and involving external experts to review past and current direction, identify gaps and make recommendations for ERBEC related research to 2015.

Effectiveness of written systems in supporting Safe Food

The research aims to investigate how the existing European requirement that all food business must have a written food safety management system is applied and what effect it has on production of 'safe food', particularly within micro and small business. There has been some suggestion that this requirement can lead to a disproportionate level of regulatory resource being directed at food business establishment for what may be viewed as 'technical' compliance, rather than directing resource to activities which directly protect consumers. The impact and use of Safer Food Better Business (SFBB) in catering micro and SMEs has not been fully evaluated for its effectiveness in ensuring food safety. This project will provide data to contribute to comparative evaluation of other food safety management systems, such as the NI Safe Catering pack and extend to the industry 'Blue Books' guidance. Other 'local' approaches have additionally been developed by Local Authorities, with reported greater take up by micro-businesses. The Transforming Regulation White paper considers advice to businesses is an essential element of facilitating compliance, and an understanding of the effectiveness and delivery agents of guidance on written systems will improve knowledge on what drives up compliance and further protect consumers.

UKFSS 2012/13 - development of a function for use by ports

The UK Food Surveillance System (UKFSS) is a centralised national database of all feed and food samples submitted for analysis under official controls. Its overall aim is to improve Public Health Protection and streamline local authority resources. UKFSS is a useful tool to help FSA track the delivery of the strategic plan (2010 – 2015). As a real time system, it also can be used by the FSA to verify controls by LAs; horizon scanning; policy development and identifying evidence needs, with examples wherever possible.

As part of an FSA consultation with ports on UKFSS, the port users suggested that a function should be developed, within UKFSS, that is specifically designed to

accommodate port data. The aim of this new strand of work is to create a separate function for inputting data for ports, or LAs with a port health function. The data is additional to the usual UKFSS minimum data set for samples.

The system would store records of consignments and integrate with the existing information management systems at ports, where they are in place. The system will act as an information management system for smaller ports and LAs carrying out import activities for feed. It will link to systems such as TRACES and will use existing technology developed by the Felixstowe Philis system.

The system would give FSA the ability to collect data direct from the UKFSS and reduce the reporting burden for ports when submitting returns for imported foods and other EU data returns such as 669/2009. The system would give live / real time data on UK imported food/ feed controls.

CROSS CUTTING - SOCIAL SCIENCES

Willingness to Pay for food safety health outcomes

This project will scope and assess willingness to pay (WTP) for food safety health outcomes including WTP for risk reduction. The FSA currently uses a value of life figure from Dept for Transport for transport safety outcomes. This piece of work is initially intended to scope the viability and desirability for having a unique food safety measure beginning with a review of the relevant literature and possibly testing of new instruments. This will be followed by an estimation of WTP for health outcomes/risk reduction if the scoping project indicates it will be worthwhile. Benefits of this project include improvement of the analytical basis of our Impact Assessments and evaluations; improving our cost of foodborne disease estimates and making them more robust; and will provide evidence to help to support risk analysis/assessment work and quantification of consumer perceptions of risk.

Procuring Market Reports, Data and Intelligence

The FSA Analysis and Research Division (ARD) are planning a scoping study in 2011-12 to review available data and sources of information on market intelligence on:

- industry (covering financials like profitability, R&D investment, Share performance as well as innovations, closures, locations etc)
- the market (Retail, Catering, Manufacturing, Feed, etc.... Size of market segments, employment, value added)
- consumers (what & how they're buying, changing attitudes etc).

This will help the FSA improve and maintain its understanding of the food supply chain in these areas. Where necessary, the FSA will seek to procure data relating to information gaps that are left after existing FSA and government data sources are taken into account.

Methodological study on researching businesses and local authorities

The Agency is increasingly conducting research with business and local authority staff. This methodological study will outline the key considerations for the Agency in carrying out research with these audiences, identify the most appropriate sampling frames and consider whether the Agency would benefit from developing a time series study (such as a survey) with these audiences. The exact scope of this work is to be decided.

Understanding Regulatory Behaviours

The aim is to undertake primary research into understanding regulatory behaviours and the interactions between enforcement officers and businesses. It will provide underpinning evidence to support the Compliance Strategy and other FSA work such as the review of Official Controls by furthering our understanding of regulatory behaviours. It is part of a package of research in this area (including work conducted as part of the Food Hygiene Delivery Programme and as part of the previous E03 research programme) - we are currently reviewing and consolidating both of these, which will inform the direction of this new work.

CROSS CUTTING – FOOD ANALYSIS

Extensions of agreements on provision of UK National Reference Laboratory functions

Basic duties of the National Reference Laboratories are :

- a) collaborate with the European Union Reference Laboratories (EU-RLs) in their area of competence;
- b) co-ordinate, for their area of competence, the activities of official laboratories responsible for the analysis of samples in accordance with Article 11;
- c) where appropriate, organise comparative tests between the official laboratories and ensure an appropriate follow-up of such comparative testing;
- d) ensure the dissemination to the competent authority and official national laboratories of information that the EU-RL supplies;
- e) provide scientific and technical assistance to the competent authority for the implementation of co-ordinated control plans adopted in accordance with Article 53;
- f) be responsible for carrying out other specific duties provided for in accordance with the procedure referred to in Article 62(3), without prejudice to existing additional national duties.

The following 6 areas will be subject to 1 year extensions prior to re-tendering for these services in the coming year

Provision of Services by the UK National Reference Laboratory for Marine Biotoxins

Provision of Services by the UK National Reference Laboratory for Bacteriological and Viral Contamination of Shellfish and Anisakis

Provision of Services by the UK National Reference Laboratory for Contaminants in Food

Provision of Services by the UK National Reference Laboratory for Dioxins & PCBs in Feed

Provision of Services by the UK National Reference Laboratory for Milk and Milk Products

Provision of Services by the UK National Reference Laboratory for Trichinella and Echinococcus

Contribution to CEFAS for the EU-Reference Laboratory in Bacteriological and Viral Contamination of Bivalve Molluscs

The European Commission (EC) is responsible for implementing the EU policy food safety on the framework of Regulation (EC) No 882/2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules. For this purpose, the EC selects partners engaged in the area with whom it shares common general objectives and wishes to establish a relationship of lasting co-operation. Cefas has been indefinitely designated as the EU-RL for viral and bacteriological contamination of bivalve molluscs - a very important public health issue. The EU-RLs duties and requirements are laid down in EU legislation and they also influence the direction of research and legislation for their areas. The EC requires a formal commitment of co-financing support to be provided by the Competent Authority of an individual EURL's Member State. In this particular case, the responsibility lies with the FSA.

CROSS CUTTING – STRATEGIC CHALLENGE

New Strategic Challenge on Food Safety (part of Strategic Evidence Programme)

Following the General Advisory Committee on Science (GACS) advice at its meeting in November 2011 the amount for the Strategic Challenge has been increased from the previous year to fund a completely open call for innovative ideas to tackle strategic challenges for the Agency. This will enable the call to address 'anything that has been missed' in other work, as well as being able to open doors to

partnership funding with others. The funding will be spread over two years to allow longer projects than in the first round of funding.

The following 3 Strategic Challenge projects have been agreed to be fundable as reserves in the first tender of this initiative - approved as part of the Strategic Evidence Programme in the last Forward Plan. The call requested innovative proposals for potentially high-risk / high-gain projects, using new approaches that could lead to significant leaps forward in addressing our strategic challenges.

Approaches to mitigate food safety concerns of supply chains for nuts, seeds and dried fruit

The work will identify contamination levels in these commodities, evaluate hazards and probabilities, recommend methods for control and future research needs.

Data mining tool to address safety of imported food including identification of emerging risks

The work will evaluate current network analysis tools and establish best practice via scrutiny of practices across the EU.

Potential for rapid on-site testing at Border Inspection Posts

The work will include a desk review of rapid methods available, interviews with Border Inspection Post staff to identify issues and a mini-demonstration phase where a currently available method is installed at a Border Inspection Post.

FSA IN SCOTLAND AND NORTHERN IRELAND: DIET AND HEALTH

On 1 October 2010 the responsibility for nutrition policy in England transferred to the [Department of Health](#) and in Wales to the [Assembly Government](#). The Agency continues to advise and support Ministers in Scotland and Northern Ireland on nutrition policy.

On 1 September 2010 the responsibility for Food Labelling policy in England transferred to the Department for Rural Affairs (Defra). The Agency continues to advise and support Ministers in Wales, Scotland and Northern Ireland on food labelling policy.

The FSA in Scotland support the Scottish Government's National Food and Drink Policy and their route map towards healthy weight – *Preventing Overweight and Obesity in Scotland* by working to help improve Scotland's diet by providing effective support and expert nutrition advice to ensure consistent messages on all aspects of food policy including production and catering.

The FSA in NI is working in partnership with the Department of Health, Social Services and Public Safety and a number of other organisations to implement the

recommendations of the “Fit Futures – Focus on Food Activity and Young People” task force report by providing consistent population based nutrition advice and encouraging the food industry to reduce salt, saturated fat and standardise portion sizes.

Funded by FSA Northern Ireland

NI pilot on calorie information in catering businesses

This project will pilot the display of calorie information in caterers in N.I from April 2012 to October 2012. The pilot will build on the previous FSA UK pilot and a similar scheme currently running through the Dept. of Health’s Public Health Responsibility Deal. It will allow medium/ small businesses to trial it and consider implications for those with limited technical expertise, as well as consumer understanding of calorie information.

In Northern Ireland, it is estimated that obesity results in 260,000 working days lost each year and costs the economy approximately £500 million. This project will contribute to the overall long term cross-governmental plans to reduce overweight and obesity in N.I.

Under strategic Outcome 3 ‘Food producers and caterers give priority to consumer interests in relation to food’ the FSA has committed to working with relevant organisations in Northern Ireland (NI) to continue to achieve reductions in levels of saturated fat, salt and calories in food products and to encourage the development, promotion and availability of healthier options when eating out. Strategic Outcome 4 ‘Consumers have the information and understanding to make informed choices about where and what to eat’ commits the FSA to work with relevant organisations in NI to improve public awareness.

The provision of calorie information by caterers at point of choice is a key outcome in the Department of Health, Social Services and Public Safety (DHSSPS) draft Obesity Prevention Strategic Framework.

The pilot will provide participating companies with additional support including PR support, technical help and one to one meetings with FSA officials. To date, four companies have confirmed their participation and a fifth is very interested. A number of the 38 companies signed up to the DH Public Health-Responsibility Deal pledge in England are planning or are already displaying calorie information in their Northern Ireland outlets.

The pilot will be independently evaluated to consider the practical implications of displaying calorie information for businesses operating in N.I. The FSA in NI is particularly interested in exploring the implications for small and medium sized businesses with limited in-house technical expertise. The evaluation will also examine consumer reaction including barriers to using the information and understanding of applying this information to their lifestyle choices.

Funded by FSA Scotland

Monitoring population diet and nutrient intakes in Scotland using data from the UK living costs and food survey (LCF)

We wish to extend the current work on monitoring changes in the Scottish Diet for a further 2 years from November 2012 to October 2014. Ongoing annual monitoring of the diet provides data on the estimated food and nutrient intakes of the Scottish population from 2001 to 2010. This new proposal is to allow continued monitoring of the diet to include 2011 and 2012.

The motivation and influences to food and drink purchasing by secondary school pupils at lunchtime in supermarkets and convenience stores

Preliminary data from analysis of the food purchasing module (FPM) from the 2010 FSAS children's survey has produced some interesting data around purchasing behaviours of secondary school age children around lunchtime. The data shows that children most frequently purchase foods at lunchtime from supermarkets. The purpose of this study is to determine what motivates and influences these purchasing habits.

***eatwell week* communities intervention**

We wish to extend the current work on the *eatwell week* (http://www.foodbase.org.uk/results.php?f_report_id=712)

in order to:

- develop the *eatwell week* into an intervention for use in less affluent communities
- implement and evaluate the intervention in pilot sites, including gathering feedback on implementation to enable further improvements to be made.