

**SCIENCE IN THE FOOD STANDARDS AGENCY: ANNUAL REPORT BY THE CHIEF SCIENTIST**

**Executive Summary**

1. The paper presents the Chief Scientist's *1<sup>st</sup> Annual Report on Science in the Food Standards Agency* showing:
  - how science has contributed to the Agency's policy development;
  - independent views of the Agency's use of science;
  - progress to implement the Agency's science strategy;
  - progress to embed and strengthen the FSA's science governance processes; and
  - the Chief Scientist's proposals for future work.

**Board Action Required**

2. The Board is asked to:
  - **consider** and **comment** on the content of the 1<sup>st</sup> Annual Report on Science in the Agency; and
  - **consider** and **comment** on whether this format should be used in future years.

**CHIEF SCIENTIST TEAM**

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## SCIENCE IN THE FOOD STANDARDS AGENCY: ANNUAL REPORT BY THE CHIEF SCIENTIST

### Introduction

1. The Agency's Chief Scientist is delivering the 1<sup>st</sup> Annual Report on Science in the Agency to this Open Board meeting.
2. There are three parts:
  - The Chief Scientist will make a **presentation** (which will be published on [www.food.gov.uk](http://www.food.gov.uk) following the Board discussion).
  - This **covering paper** signposts key points for consideration by the Board.
  - The **1<sup>st</sup> Annual Report on Science in the Food Standards Agency** is attached as the Annex.
3. The Food Standards Agency is a science-based organisation. This is reflected by the revised strategic plan<sup>1</sup> and the science strategy<sup>2</sup>; and more importantly our day-to-day business and communications show that science is fundamental to delivering our vision of '**Safe Food and Healthy Eating for All**'.
4. Science is used to help the Agency meet its strategic objectives. We do not support science for its own sake. The integration of science, policy and other expertise in the Agency's structure helps to ensure there is no disconnection between science and its use either in planning or in assessing and applying the results of research and surveys.

### 1<sup>st</sup> Annual Report on Science in the Agency

5. The Board has asked the Chief Scientist to report to it annually an open meeting. This is the **1<sup>st</sup> Annual Report on Science in the Food Standards Agency**. It provides members with the opportunity to consider:
  - the Chief Scientist's overview of the Agency's use of science to develop policy, advice and effective communication (Sections 1-3);
  - the challenges to the Agency's use of science including how we handle and communicate uncertainty and risk (para. 1.10 – 1.18);
  - what others think about our use of science (para. 2.11);

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<sup>1</sup> [www.food.gov.uk/aboutus/publications/busreps/strategicplan](http://www.food.gov.uk/aboutus/publications/busreps/strategicplan)

<sup>2</sup> [www.food.gov.uk/science/researchpolicy/scistrat](http://www.food.gov.uk/science/researchpolicy/scistrat)

6. The 1<sup>st</sup> Annual Report on Science in the Agency also reports progress on two key areas of scientific work that were discussed and agreed by the Board in February 2006:
  - progress to implement the Agency's science strategy (Annex 1 to the report); and
  - progress to embed and strengthen the FSA's science governance (Annex 2 to the report).
7. The Chief Scientist also looks to the future and sets out his proposals for future work to further strengthen the Agency's science (Section 4):
  - extend and strengthen the Agency's science base (para. 4.1 – 4.3) ;
  - develop the Chief Scientist's Head of Profession role to help support and develop Agency scientists (para. 4.4 & 4.5);
  - develop the science and technology component of the Agency's horizon scanning strategy through establishment of the General Advisory Committee on Science (para. 4.6 & 4.7)
  - strengthen links and external communications with the wider science community (para. 4.8); and
  - develop performance indicators for the Agency's science (para. 4.9)
8. The Chief Scientist proposes to develop the present report to make it more outward facing. It will then be incorporated with the Annual Report on Research and Survey Programmes to produce a new Annual Report on Agency Science later this year.

### **Board Action Required**

9. The Board is asked to:
  - **consider** and **comment** on the content of the 1<sup>st</sup> Annual Report on Science in the Agency; and
  - **consider** and **comment** on whether this format should be used in future years.

**ANNEX**

**1<sup>ST</sup> ANNUAL REPORT ON SCIENCE IN  
THE FOOD STANDARDS AGENCY**

**MAY 2007**

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## SETTING THE SCENE

- 1.1 Good science and evidence are at the heart of the Agency's work. The gains in consumer confidence and food safety that have been made over the last few years have come about through the Agency's commitment to openness and transparency and by harnessing the best science and expertise to assess the risks, find solutions and communicate advice effectively. This has only been achieved through working in partnership with our key stakeholders from consumer groups, enforcement authorities and the food industry.
- 1.2 We do not support science for its own sake. Science is used to help the Agency meet its strategic objectives to make food and drink safer and healthier eating easier. 46% of Agency staff have a background in science, and, of these, more than 67% have postgraduate qualifications. The integration of science, policy and other expertise in the Agency's structure helps to ensure there is no disconnection between science and its use either in planning or in assessing and applying the results of research and surveys.
- 1.3 The Agency seeks out developments in science. Our scientists attend conferences and keep up-to-date with the scientific literature. We liaise with UK and international research institutions, and commission annually more than £20 million of research to increase understanding about food safety, consumer choice and healthy eating. Details of the Agency's research and surveillance work can be found at Annex 4.
- 1.4 In addition to scientific expertise from Agency staff, advice and challenge is sought from many eminent independent scientists. They help the Agency to evaluate research proposals, completed projects and carry out research programme reviews. There are also around 140 eminent scientists who contribute to the work of the 10 Scientific Advisory Committees (SACs) that advise the Agency (Annex 3). The Agency relies on the contributions of the SACs as a vital independent challenge to assure the integrity of the scientific evidence and analysis that underpins the Agency's work. The importance of this role is being developed and enhanced through the establishment of an

overarching SAC, the General Advisory Committee on Science, which will include the Chairs of each SAC.<sup>1</sup>

- 1.5 The emphasis in the Agency's first 5 years was on food safety – restoring consumer confidence by demonstrating that our action and decisions were based on sound science and an open and honest approach. The Agency gives the best advice based on the current evidence and commissions the necessary scientific work to address uncertainties and monitor the impact of our interventions.
- 1.6 The second strategic plan signalled an increasing focus on 'Eating for Health'. A consequence of which is that the range of the science used by the Agency has begun to shift. The social sciences now have an increasingly important role to play, helping the Agency to consider challenging and complex issues such as how to help consumers change their behaviour as well as defining what constitutes a healthy diet.
- 1.7 Science is fundamental to delivering the Agency's vision of "*Safe Food and Healthy Eating for All*". It enables the Agency to measure the risks to consumers from a range of contaminants and dietary behaviours that impact on the health of consumers; advise consumers on the best action and then to measure the impact of the agreed actions, advice and interventions.
- 1.8 The Agency's work on foodborne disease has provided some of the best data on the impact of strategic interventions to protect the health of consumers. The provisional number of laboratory-reported cases of the foodborne pathogens monitored by the Agency in 2005 is 53,052. This represents a reduction of 19.2% compared with the baseline figure for 2000. Over the same period it is estimated that cases have been reduced by 1.5 million at a cost saving of £750 million, representing a considerable improvement in public health and significant economic benefits. Over this period, these reductions in England and Wales represent 10,000 fewer hospitalisations as a result of foodborne disease, with a saving of almost 38,000 hospital bed days.

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<sup>1</sup> FSA 07/02/04

- 1.9 There is more that has to be done to reduce the incidence foodborne disease and the Agency needs to remain vigilant about the risks from other food contaminants. However, it is diet related diseases – which cause far more illness and premature death - that provide the major challenge to our health. Diet-related disease affects people’s health in many ways. For example, too much salt is associated with raised blood pressure.<sup>2</sup> Obesity, an important risk factor for a number of chronic diseases (such as stroke and diabetes), causes 9,000 premature deaths a year in England and costs the economy £3.3-£3.7 billion a year.<sup>3</sup>

## **The Key Challenges**

### ***Dealing with Uncertainty***

- 1.10 Much of the Agency’s reputation depends on the open way that we handle uncertainty. Science is fundamental to reducing uncertainty and providing consumers with the clearest possible advice. The weight of evidence for most key issues is usually sufficient to enable the independent SACs to define both the risks and the uncertainties so that the Board can make a judgement about managing the risk.
- 1.11 Sometimes the science is unable to offer the kind of certainties that we would all prefer. The absence of certainty is not an excuse for failing to address particularly difficult issues, especially when they impact on the health of children. Under these circumstances, open and transparent engagement with our stakeholders in developing the policy and advice becomes of even greater importance in winning trust. In these cases it is especially important to set out the limitations of the science and explain how the uncertainties are being handled in making a judgement.

### ***Dealing with Risk***

- 1.12 The Agency has developed an open and transparent approach to risk. Our practical experience has led us to adopt an integrated model of risk assessment, management and communication where two-way

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<sup>2</sup> <http://www.sacn.gov.uk/reports/#> Salt and Health Report 2003

<sup>3</sup> <http://www.parliament.the-stationery-office.co.uk/pa/cm200304/cmselect/cmhealth/23/2302.htm>  
published May 2004

communication with stakeholders takes place throughout the policy process. We aim to blend scientific knowledge, usually synthesised into expert advice (including all the limits of uncertainty) with participatory decision-making, in order to reach a judgement on what action, if any, should be taken in each case.

1.13 Key lessons we have learned about handling risks include:

- in order to withstand external scrutiny, the assessment of risk in relation to food is undertaken by independent scientists free from the influence of vested interests. However, scientific risk assessment does not exist in a vacuum. The framing of questions at the beginning of the process needs to be sensitive to the questions about the risks that society would want to ask (lay membership of scientific committees has been key in this regard and we have begun to look at the role that social scientists might play).<sup>4</sup> The results of risk assessment should be open to scrutiny and challenge, to ensure that divergent scientific views can be heard and assessed;
- the need to acknowledge uncertainty – saying what we know, what we don't know, and what we are doing about it – whilst taking proportionate and precautionary action;
- the need for risk management to incorporate knowledge of the attitudes and risk appetites of stakeholders, the costs and benefits of different options, practical delivery and enforcement, and feedback about effectiveness in order that better decisions are taken.

1.14 There is a range of benefits and costs that we take into account when deciding whether action is justified.<sup>5</sup> We consider the potential for improvements to public health; potential savings to the public purse; other benefits to consumers such as improved consumer choice; and potential benefits to industry and other stakeholders, such as improved consumer confidence in food and the way it is regulated.

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<sup>4</sup> Social Science Insights for Risk Assessment, September 2005

<http://www.royalsoc.ac.uk/page.asp?id=4295>

<sup>5</sup> FSA 05/10/02

## **New and Emerging Science**

- 1.15 The Agency seeks out developments in science. Its scientists attend conferences and keep up-to-date with the scientific literature. We liaise with UK and international research institutions, and commission annually more than £20 million of research to increase understanding about food safety, consumer choice and healthy eating; and to monitor the impact of our interventions and changing trends.
- 1.16 The findings of all new research, not just our own, are assessed both by Agency scientists and the SACs. They quality assess the work and view it against other peer reviewed studies to measure its importance and determine what it means for our advice to consumers.
- 1.17 New scientific issues are also identified through knowledge networks (including horizon scanning). These networks also provide a means of seeking informed advice and dialogue on the risks, opportunities and implications of the new science. It is vital for the Agency to work with others in the UK and internationally to get good advice, share information and avoid duplication of effort. Work on scientific horizon scanning is part of the Agency's wider horizon scanning programme.<sup>6</sup> The SACs have an important part to play in the process through identifying the potential impact of new science and technologies on food safety and consumer health issues. The General Advisory Committee on Science (GACS see para. 2.6), the new overarching SAC, will have a role here both in horizon scanning to identify new issues and gaps and in advising on sources of advice on new areas or those that cut across remits of existing SACs.
- 1.18 An example of the way the Agency works is given by the approach adopted on nanotechnology. As well as participating in cross-Government discussions, the Agency adopted the recommendation of The Interdepartmental Nanotechnology Issues Dialogue Group that departments should undertake their own regulatory reviews which would then be part of an overall review by OSI. The Agency issued its draft report on the use of nanotechnology in food

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<sup>6</sup> INT 06/01/05

manufacturing in May 2006. It sought advice on nanomaterial toxicology from the COT, COC and COM as part of this review.<sup>7</sup>

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<sup>7</sup> <http://www.food.gov.uk/multimedia/pdfs/cotstatements2005nanomats.pdf>

## SCIENCE IN THE AGENCY

- 2.1 When the Board discussed the Agency's science at the open meeting in February 2006, members agreed a number of proposals for
- strengthening the Agency's **science governance processes** to increase accountability in the ways that science is used to develop policy<sup>8</sup>; and
  - publishing the Agency's **science strategy**.<sup>9</sup>
- 2.2 The FSA's Chief Scientist has led the implementation of this work to strengthen the Agency's science. Progress reports on science governance and the science strategy are provided by Annexes 1 & 2 respectively. The following **headline examples** are taken from these reports:

### **Strengthening the Agency's Assurance and Challenge Processes for Science (Annex 2)**

- 2.3 The Chief Scientist (CS) performs a **challenge role at Board meetings** for issues that are underpinned by science and scientific advice. The CS briefs and provides assurance to Board members about the integrity of the systems and processes used to generate this scientific evidence and advice.
- 2.4 The CS's assurance role is underpinned by **the Science Checklist** (Annex 5 and para. 6.4 – 6.5) that has been rolled out and embedded in the Agency. The CS has established a support team to help him deliver this key challenge function. The Chief Scientist Team is working with the authors of draft Board papers to help them respond clearly and explicitly to the Board's concerns about the governance of science that underpin the Science Checklist.
- 2.5 The CS has been working with the Chairs of the SACs to agree **Good Practice Guidelines** (Annex 6 and para.6.4) that provide a further assurance stream to the Board about the use of science in risk assessment to complement the attendance of SAC Chairs at Board meetings when their committee's advice is being considered.

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<sup>8</sup> FSA 06/02/07

<sup>9</sup> FSA 06/02/06

### **Strengthening the Agency's Access to Independent Scientific Advice (para. 5.25 – 5.29 & 6.17)**

- 2.6 The Board has agreed to strengthen the Agency's access to independent scientific advice through the establishment of the new overarching SAC – **the General Advisory Committee on Science (GACS)** that will include the Chair of each SAC as a member in addition to an eminent independent Chair and new members.<sup>1</sup> A recruitment exercise for the Chair and members of the GACS (other than the Chairs of existing SACs, who be members of GACS *ex officio*) is being launched in May 2007. The aim is to complete new appointments and establish the GACS formally by the end of 2007.
- 2.7 The **Social Sciences Research Committee** is currently being established. It will provide the Agency with access to social sciences expertise and challenge that will complement the work of the other scientific advisory committees. The Committee will be recruited following the appointment of an in-house Social Research Team Leader and will hold at least one meeting by March 2008.

### **Strengthening Science Communication (para. 5.31 – 5.38)**

- 2.8 During summer 2006 Communications Division, working with the Chief Scientist, began to signpost more clearly the Agency's use of science in reaching its policies and decisions. The move formed part of a drive to champion scientific work in the Agency as an open and evidence-based organisation with access to in-house scientific expertise and independent expert advisory committees. Since then the FSA web and media teams have proactively sought opportunities to explain '**the science behind the story,**' and for this information to be clearly signposted in a dedicated box on homepage web stories and press releases, wherever possible.
- 2.9 As part of this initiative, the Agency was discussing blog opportunities with the Hansard Society political think-tank. In November 2006 **The Chief Scientist's blog** (para. 5.34 - 5.35) went live as part of the e-democracy project for the Department for Constitutional Affairs. Early indications suggest that many blog readers are consumers, a key target audience. The most popular blog entries

so far have been on traffic light labelling and on organic foods, both from January 2007, with 31 and 18 comments submitted respectively. Because of its success (46,127 visits to date), it was decided to extend the blog's life beyond February 2007 (the original review date) and continue into the autumn, at which time a decision will be taken on whether to make it a more permanent feature.

### **Prioritising the Agency's Science Spend (para. 5.11)**

2.10 A means of **prioritising the Agency's science spend** has been an objective for some time. Work has come to fruition during 2006 and we are currently running a large scale pilot of a prioritisation methodology.

### **What Others Think about Our Use of Science (para. 6.8 & 6.9)**

2.11 It is always valuable to learn what others think of our performance on science. In November 2006 the Agency received positive feedback from the House of Commons Science and Technology Committee Report on 'Scientific Advice, Risk and Evidence Based Policy Making'.<sup>10</sup> In April 2007, the Agency received informal feedback from the Office of Science and Innovation (OSI) on its self-assessment against the Eight Attributes<sup>11</sup> which have been developed by OSI. This exercise is providing a very useful way for departments to assess and benchmark their own performance in using science. The feedback indicated that the FSA is a strong performer across government. Nonetheless, we are taking steps to further strengthen our performance in all of these key areas

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<sup>10</sup> <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmsctech/900/900-i.pdf>, published 8 November 2006

<sup>11</sup> The 8 attributes can be found at [www.dti.gov.uk/science/science-in-govt/works/metrics/page27410.html](http://www.dti.gov.uk/science/science-in-govt/works/metrics/page27410.html). They can be summarised as: Embedded horizon scanning, Cross department working and priority setting, Commissioning (and conducting) science, A Departmental culture of evidence based decision making, Using scientific expertise to maximum effect, Fully integrated scientific knowledge, Communicating evidence and Knowledge transfer.

## KEY DEVELOPMENTS

- 3.1 The following case studies illustrate the key role of science in the Agency's business:

### ***Reducing Foodborne Illness***

- 3.2 Through the Foodborne Disease Strategy, we and our partners have helped to reduce foodborne disease cases substantially since 2000. The latest phase of the strategy is to reduce campylobacter in chicken. The target for 2005-2010 is:

*"We will work with industry to achieve a 50% reduction in the incidence of UK-produced chickens which test positive for Campylobacter by the end of December 2010."*

The data show that *Campylobacter* is responsible for more cases of foodborne disease in the UK than other pathogens (PRO 06/10/01); for example, in 2005, *Campylobacter* was responsible for 51,769 UK cases compared to 12,732 from *Salmonella*, 319 from *Clostridium perfringens*, 1,161 from *E. coli* O157 and 220 from *Listeria monocytogenes*.

- 3.3 Much remains to be understood about *Campylobacter* and its epidemiology and associated risk factors. Science can throw light on this in a number of ways. For example, FSA Scotland is funding a programme of research to examine the picture of *Campylobacter* infection in Scotland. This includes employing Multi-locus Sequence Typing (a molecular typing method) to compare *Campylobacter* strains isolated from humans, food and environmental sources to identify the major risk factors and epidemiological links. The findings will assist in the development of strategies to control *Campylobacter* infection in Scotland.
- 3.4 Science is also needed to help the Agency develop practical control measures that can be taken at the farm and slaughterhouse to reduce *Campylobacter* in broiler chickens. This is illustrated in the text box below.
- 3.5 The Agency has also used operational research expertise to develop a risk matrix which enables account to be taken of the severity of the cases

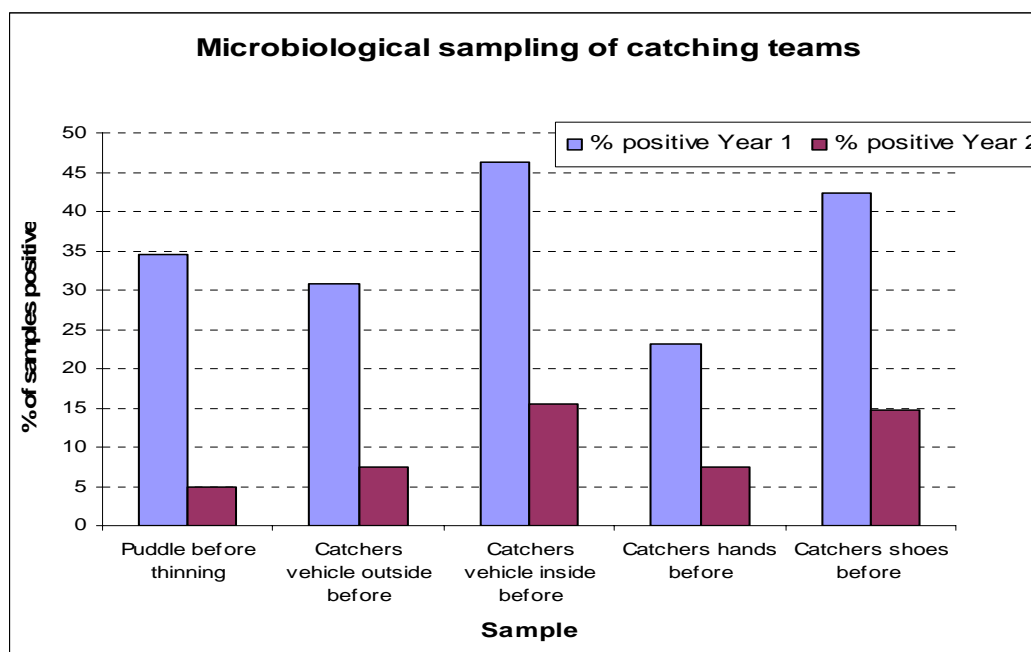
(hospitalisation and death have been used as markers) of foodborne illness as well as the number. The matrix provides a measure of the total burden, and also allows the risks to be ranked. This provides an additional reassurance that the priority areas currently being addressed are correct.

### REDUCTION OF *CAMPYLOBACTER* IN CHICKEN

The Agency's strategy to reduce *Campylobacter* in chicken focuses on control measures that can be taken at the farm and slaughterhouse as evidence suggests that effective measures are available to reduce *Campylobacter* in broiler chickens.

From 2003 to present action has focussed on a campaign to improve biosecurity on the broiler farm. Research identified key biosecurity messages and these have been promoted directly to poultry farmers through a very successful series of regional seminars. Feedback supported the Agency's view that thinning, where a portion of the flock is removed to go to slaughter prior to the whole flock being removed, was a particular risk for the spread of *Campylobacter* and other diseases such as avian influenza and that the biosecurity messages should be promoted to poultry catching teams. This current phase of the campaign is a joint initiative with Defra.

Research to identify best practice for minimising the spread of *Campylobacter* when broiler flocks are thinned is helping inform the key messages we promote to catchers. Microbiological sampling has been used to identify high risk activities, but interestingly it appears to be providing us with the evidence that strict biosecurity at the time of catching birds is effective in reducing *Campylobacter*. If we look at the figure below showing *Campylobacter* isolated from catchers' hands, shoes, etc., we see a dramatic reduction in *Campylobacter* between the first and second year of this project. So what happened in between time? Well, we had our biosecurity campaign widely promoted to the poultry industry and, perhaps even more importantly, the threat of avian influenza which resulted in the industry tightening up its biosecurity.



## ***Enabling Consumers to Choose a Healthier Diet and Helping Them to Reduce Diet-Related Diseases***

### **STRATEGIC TARGETS ON EATING FOR HEALTH**

- To reduce the average salt intake of UK adults from the current 9.5g to 6g per day by the end of December 2010, and to reduce the salt intake of children, in line with SACN age-specific recommendations, by the end of December 2010.
- To reduce the average intake of saturated fat (for everyone from age 5 upwards) from the current level of 13.4% to below 11% of food energy by the end of December 2010.
- To develop and implement, by the end of December 2008, a strategy for calorie intakes which contributes to achieving a balance between calorie intake and energy output.
- By the end of December 2008, we will have completed the independent evaluation of the impacts of front of pack labelling on consumer purchasing behaviour and knowledge and begun discussions on future approaches with our stakeholders.

3.6 Science is central to how the Agency responds to this challenge; in terms of understanding and defining discrete problems around diet and health, developing effective interventions and measuring their impact. However, it is one thing to fund research to determine what people need to do to reduce their risk of diet-related disease, and quite another to persuade them to take the necessary action. The Agency has evidence for this from the Consumer Attitudes Survey (CAS). Each year the percentage of people who know the 5-A-Day message is higher than the percentage which reports actually adopting this behaviour.<sup>12</sup>

### **Fruit and Vegetable Consumption from CAS**

- In 2006, 45% participants mentioned fruit and 38% vegetables that they were trying to eat more of.
- 69% knew that the Government recommends eating 5 portions of fruit and vegetables a day, but only 55% actually claimed to do so. This looks like an increase since corresponding figures were 26% in 2000 and 30% in 2005, but in 2006 a more detailed form of questioning was used to assess consumption.
- 73% eat fresh fruit daily, 67% fresh vegetables and 44% fresh salads.

<sup>12</sup> <http://www.food.gov.uk/science/surveys/foodsafety-nutrition-diet/cas07>

- 3.7 It is also important for us to take social factors into account when developing policies to ensure that they will be effective (see Text Box on Access to Healthy Food). Thus the Agency is increasingly using the social sciences alongside nutritional science to help us understand consumer attitudes to diet and health, and hence influence behaviour.

#### **Access to Healthy Food**

The Scottish Executive has set out its intention to increase access to healthier food choices, particularly in low income and rural areas, in its 2003 Strategic Plan 'Improving Health in Scotland: The Challenge'. In this project the Agency has focussed on the issues of availability and affordability, more specifically 'the access to good quality nutritious food at affordable prices, within a reasonable distance from home'. A representative healthy food 'indicator basket' will be developed to consider how availability and affordability of healthy food varies by various determinants of access. It will also provide a map of food retailing and describe how availability, access and price vary within local case study sites. The study will provide a systematic and rigorous national assessment of access to healthy food across Scotland, and will be used to inform policy development in this area.

#### *The Salt Campaign*

- 3.8 In 2004 the Agency launched Phase 1 of its salt campaign to reduce the average person's salt intake to 6.0g per day by 2010. In 2004 the average level of salt consumption was 9.5g per day, by 2007 urinary sodium tests showed this level had decreased to 9.0g per day.<sup>13</sup> This slight decrease shows the challenges the Agency still faces in achieving the target it has set for 2010. To lower salt intake the Agency is working with industry and health organisations on product reformulation, 70 organisations and companies have committed to lowering the salt levels in their products. In addition, the FSA is using TV adverts to raise consumer awareness of the health risks associated with the consumption of too much salt and encourage people to check the salt content of food they buy.

#### *Front of Pack Signpost Labelling*

- 3.9 A number of different streams of scientific evidence come together to support the Agency's work on signpost labelling. The basis of the work is information on the nutrient content of foods. This is well-established science and allows the development of the nutritional criteria which underpin the label design.

<sup>13</sup> <http://www.food.gov.uk/news/newsarchive/2007/mar/saltresearchmar07>

- 3.10 Several formats for the labelling, developed through consultation with stakeholders, might be effective and it was very important to carry out consumer research to see:
- which options worked best in practice to help consumers assess the nutritional content of foods and compare similar products in an attempt to choose healthier options; and
  - which did they prefer in terms of information content and presentation?
- 3.11 Once the preferred option was established and implementation begun, it is important to see how the scheme is working in practice. An independent evaluation Panel has been set up to assess independently the impact of the preferred approach to front-of-pack signpost labelling, and other front-of-pack nutrient schemes that are in use, on purchasing behaviour and consumer knowledge. The Panel is chaired by the Government's Chief Social Researcher and brings together expertise in market research, nutrition and social sciences.

### ***The Development of DNA Testing Methods to Defeat Fraud***

- 3.12 The Agency's Authenticity Programme is supporting public analysts (PAs) in their key role of enforcing food standards legislation and protecting consumers from fraud by transferring a suite of DNA methods to verify the description of certain foods. The Programme has successfully developed DNA based methods on the following foods:
- the identification of fish species to check the labelling of processed fish products
  - the identification of meat species in meat products covering common species such as pork, beef, lamb, chicken, and turkey, but also venison, duck, pheasant, horse and donkey. In addition, a method has been developed to identify 12 bushmeat species including primates, antelopes, bush rats etc.
  - the adulteration of durum wheat pasta with common wheat
  - the adulteration of Basmati rice with cheaper rice varieties
  - the adulteration of citrus juices and other fruit juices to falsify quality

3.13 Research is also being undertaken to convert all the above DNA assays to work in a simple, inexpensive yet robust format, the microfluidic *Lab-on-a-chip* system. In order to facilitate technology transfer of the above methods, and overcome the problem that very few PAs have the facilities to carry out DNA assays, last year, the Agency offered small grants to PAs towards purchase of DNA *Lab-on-a-chip* equipment

***Research on Atypical Scrapie to Clarify the Risks to Consumers***

3.14 The background to this problem is set out in the text box below. The challenge for the Agency on this issue is being addressed as follows:

- On the one hand, to clarify (in partnership with a number of other interested parties since this is a Europe-wide issue) what the risks to consumers actually are through commissioning research.
- However, since most of this work involves inoculating animals with atypical scrapie and waiting to see if they will succumb to the disease, meaningful results may not be available for a number of years. In the meantime, the considerable uncertainty around this disease will remain and yet the Agency still has to form meaningful advice. Information from stakeholder workshops, consumer research, and economic input on the costs and practicalities of the various options for additional measures has helped the Board develop its policy whilst it awaits the outcome of the research.
- The consumer research informed the FSA about how better to communicate uncertain but possible risk. The wording and presentation of the FSA's consumer advice has now been modified, after further consultation with stakeholder and media representatives.
- FSA funded research is underway and a contingency plan is being developed, in consultation with SEAC, should emerging research results from UK or elsewhere give information to indicate human health risk - or not.

## **ATYPICAL SCRAPIE**

### **Background**

Cattle and sheep are known to suffer from a group of transmissible neurological diseases, known as TSEs – the best known is BSE in cattle. Sheep also get a related neurological disease, classical scrapie, which has been recognised for over 200 years and, unlike BSE, is not known to be linked to any human disease.

In 2002/3, with the introduction of new, more sophisticated testing methods, TSE testing of sheep produced some anomalous scrapie positive results. These results were difficult to confirm until collaboration between scientists in a number of countries resulted in development and introduction of confirmatory methods for these “atypical scrapie” cases. In October 2005, the European Food Safety Authority (EFSA) concluded that tests were available that could differentiate between BSE, classical scrapie and atypical scrapie in small ruminants.

It is now known, as a result of continuing surveillance, that atypical scrapie is relatively widespread in sheep flocks in Europe, including the UK, and infects a range of sheep genotypes, including those which are comparatively resistant to classical scrapie and experimental BSE in sheep.

### **Is atypical scrapie a new transmissible disease?**

#### **What, if any, are the implications for human health?**

In order to assess whether atypical scrapie might be a risk to human health, the first scientific question that had to be addressed was whether it was transmissible from one animal to another. Results published in 2005 showed that atypical scrapie samples from France and Norway had been transmitted to mice carrying the ovine PrP gene. Experiments on transmission to sheep are known to be underway, to date one UK sheep inoculated intra-cerebrally with atypical scrapie, in an experiment funded by Defra, has gone down with clinical disease after one year.

In February 2006 the government’s independent advisory committee on TSEs (SEAC) sheep subgroup produced and published a position statement on atypical scrapie. This statement considered the available data and the potential risks for animal and human health. The subgroup concluded that:

- There is no evidence to date that atypical scrapie can infect humans, although a theoretical risk cannot be excluded.
- There are insufficient data, as yet, to make reliable risk assessments for human health or animal health and welfare.

The report highlighted the high level of uncertainty with regard to any risk and identified number of areas for urgent research to address this uncertainty.

A need for research to address questions around any potential human health risk had already been identified by FSA scientists. Calls for research on this topic, and on the distribution of infectivity within tissues of sheep of different genotypes, were issued. The resulting FSA funded projects and other research on atypical scrapie funded by Defra are underway. Since this is a Europe-wide issue, research is also being carried out in a number of key TSE research groups outside the UK. However, since most of this work involves inoculating animals with atypical scrapie and waiting to see if they will succumb to the disease, meaningful results may not be available for a number of years. In the meantime the considerable uncertainty around this disease will remain.

### ***Food Allergies: A Possible New Approach to Tackling Peanut Allergy***

- 3.15 Current Government advice is that mothers of children with a family history of allergic diseases may wish to consider avoiding peanuts during pregnancy, breastfeeding and until the child is 3 years of age.<sup>14</sup> However, Agency-funded research has shown that mothers have real difficulty in achieving total avoidance of particular foods during pregnancy.<sup>15</sup>
- 3.16 Since COT issued this advice, Agency funded research on the impact of this advice has been unable to ascertain any clear positive or negative effect on the prevalence of peanut sensitisation and allergy.<sup>16,17</sup> However, clinical observations in societies that wean babies using foods containing high levels of peanut protein, suggest that a high early dose of such foods consumed as a normal part of the weaning diet could lead to the development of tolerance to peanut, rather than sensitisation and then allergy. There is therefore uncertainty whether children should avoid peanuts in early life or whether they should eat them to prevent the later development of peanut allergy.
- 3.17 It is clearly important, both for individuals and from a public health point of view, to be able to give the best weaning advice to help reduce the chances of developing peanut allergy, and this is an Agency research priority. The National Institutes of Health (USA) are funding a randomized controlled trial (called the LEAP Study), in which young children at high risk of developing peanut allergy (children with eczema, egg allergy or both) will either eat peanut-containing snacks until age 5 years, or will be observed. It is being conducted by King's College London and is led by Professor Gideon Lack. It started in December 2006 and will follow children from recruitment at 4 - 10 months of age until they are 5 years old. The Agency is currently at an advanced stage of contract negotiations to fund additional mechanistic studies using subjects from this intervention study in order to explore the immune mechanisms that underlie the development of sensitisation, clinical allergy

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<sup>14</sup> [http://archive.food.gov.uk/dept\\_health/archive/cot/peanut.htm](http://archive.food.gov.uk/dept_health/archive/cot/peanut.htm) COT advice, issued in 1998

<sup>15</sup> Final report of Agency funded research project T07005 available from the FSA Library: <http://www.food.gov.uk/science/research/researchinfo/foodcomponentsresearch/allergyresearch/t07programme/t07projectlist/t07005/t07005r>

<sup>16</sup> Dean *et al*, *J Hum Nutr Diet*, 2007; 20; 95-99

<sup>17</sup> Hourihane *et al*, *JACI*, 2007; 119; 1197-1202

and tolerance to peanut. The study will monitor peanut-specific T and B cell responses, regulatory T cells and antibody isotypes during the trial, with the aim of characterising the key immunological mechanisms of prophylactic oral tolerance induction to peanut. This research aims to provide the scientific information necessary for designing new approaches to prevent food allergies and would provide a scientific basis for policies and advice on food consumption by children.

### **Incidents**

3.18 The Agency uses the scientific expertise of its staff and the independent SACs to assess the scientific evidence and provide stakeholders with authoritative advice. In most cases this evidence is collected and assessed by the SACs as part of their programmes of work, but when emergency incidents arise rapid action may be required. Under these circumstances, Agency scientists and the Chief Scientist assess the evidence and consult the relevant SAC before issuing advice. The following examples demonstrate the processes of using science that the Agency follows in handling incidents.

#### **Salmonella Contamination of Chocolate Products**

On 19 June 2006 Cadbury Schweppes plc first told the FSA that it had detected salmonella contamination in confectionary products from one of its plants in January 2006. Further details obtained on 21 June 2006 led to a precautionary recall of seven affected products by Cadbury Schweppes. As part of its investigations the Food Standards Agency sought the expert views of the ACMSF (Annex 3), at their meeting on 30 June 2006 the committee supported the Agency risk assessment and stated that salmonella in chocolate is 'unacceptable at any level'.

Considerations by the National Outbreak Control Team, made up of representatives from the Food Standards Agency, Health Protection Agency, other government departments and local authority representatives led to a confirmation on 21 July 2006 that Cadbury's chocolate was the most probable cause of the outbreak of salmonella food poisoning seen in the UK.

While food poisoning owing to salmonella is quite common, the strain identified in the contaminated chocolate, *Salmonella montevideo* is quite rare. Between March and June 2005 there was only 12 cases of *Salmonella montevideo* poisoning in the UK, however over the same period in 2006 four times the usual number of cases occurred, with 45 cases reported. Following the voluntary product recall by Cadbury Schweppes it was pleasing to note that the Health Protection Agency reported that the number of cases of salmonella seen had dropped.

### Avian Influenza

The Agency has been carefully monitoring developments since avian flu was first reported in the Far East 8 years ago. The Agency's advice on potential food safety risks is based on the opinions of experts from around the world including advisors to WHO, EFSA and the Agency's ACMSF. Following the report on 1 February 2007 of turkeys infected by H5N1 avian influenza virus at Bernard Mathews factory at Holton there were renewed concerns about the risks from potentially contaminated meat. The Agency was able to explain the science behind the advice that: "*Avian flu does not pose a food safety risk for UK consumers. For people, the risk of catching the disease comes from being in close contact with live poultry that have the disease, and not through eating cooked poultry and eggs*".

The Chief Scientist in his blog sets out the science as follows:

*"Although there doesn't seem to have been a panic by the media or consumers about the safety of eating poultry and eggs, people naturally look to the FSA and other bodies for reassurance. Understandably at times like this, our advice can come under scrutiny, and people have asked how we can be confident about the risk posed by 'new diseases'. Bird flu isn't of course a new disease, but H5N1 strains of it are, since we've only known about them since 1997.*

*As far as bird flu goes, the science shows that it isn't contracted by eating food. Flu viruses rely on receptors in the body to cause illness and those that flu latch onto are generally found in the respiratory tract. Those people who have contracted bird flu - currently about 270 worldwide - have been in very close contact with sick birds."*

- 3.19 In April 2007, the Agency published guidance to help businesses and enforcement authorities prevent and better respond to incidents.<sup>18</sup> This has been developed by the Food Incidents Task Force, a body set up by the FSA to bring together expertise from the food industry, consumer groups and enforcement authorities to identify good practice and develop guidance

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<sup>18</sup> [www.food.gov.uk/foodindustry/guidancenotes/incidentguidance/principlesdoc](http://www.food.gov.uk/foodindustry/guidancenotes/incidentguidance/principlesdoc)

## LOOKING FORWARD

### **Extending and Strengthening the Science Base**

- 4.1 As the Agency's work has broadened from food safety and standards to include healthy eating, increasing importance has been attached to evidence from the social sciences to help bridge the gap between consumers understanding the message and having the motivation to act on it.
- 4.2 An in-house social sciences team is currently being established to strengthen the Agency's expertise. Its role will be to help the organisation identify how it can best use social sciences evidence and provide the Secretariat to the new Social Sciences Research Committee (SSRC). The SSRC is being established as one of the ten Scientific Advisory Committees (SACs) providing independent advice and challenge to the Agency. It will advise on the nature and quality of the Agency's social sciences research and will also add a social sciences aspect to the work of the new General Advisory Committee on Science (GACS).
- 4.3 The Chief Scientist will work with GACS to develop initiatives for further raising the profile of the SACs and encouraging applications for membership.

### **Developing the Chief Scientist's Head of Profession Role**

- 4.4 The Chief Scientist as Head of Profession for Agency scientists will produce an action plan meeting the aspirations of Agency Scientists and strengthening the Agency's science base. As part of this work, the Chief Scientist will focus on encouraging Agency scientists to undertake and benefit from the cross government Continuing Professional Development (CPD) arrangements. The CS will work with other Departmental Heads of Profession to ensure that the opportunities presented by CPD are relevant to the needs of Agency scientists.
- 4.5 The integrated structure of the Agency ensures that non-scientists do not have to go far to find help with scientific issues. Nonetheless, they may find it helpful to have an idea of what science can do for policy-making and to have a basic understanding of scientific issues. During 2006/07, courses have been

introduced on Statistics for Non-Statisticians and on Market Research techniques. This needs to be developed further during the coming year, perhaps through a bursary for non scientists to study science relevant to the Agency's business.

### **Developing Horizon Scanning**

4.6 Annex E of the Science Strategy 2005-2010 sets out the Agency's horizon scanning programme. Some progress has been made since its publication but the recent self-assessment against OSI's 8 attributes showed that this is an area for further development.<sup>11</sup> It is also interesting to note from the OSI Science Reviews of Defra and HSE that it is an area presents challenges to other government departments.<sup>19</sup>

4.7 In addition to working with GACS to improve the Agency's scientific horizon scanning, the Chief Scientist is recommending that the Agency and the SACs undertake a systematic review of the potential impacts of climate change on food safety and quality.

### **Developing Links with the Wider Science Community**

4.8 The Chief Scientist will build on the progress made this year on explaining the Agency's science to as wide an audience as possible. A priority is to develop engagement with scientists themselves – options being considered include increasing Agency participation in key science events and activities as well as activities organised by the Agency itself.

### **Performance Indicators**

4.9 The Agency made a commitment in the Science Strategy to develop performance indicators (PIs) for its scientific work. Over the coming year, a start will be made on this working with other organisations to identify meaningful metrics relevant to the Agency's aims and that can be used to measure progress over time.

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<sup>19</sup> <http://www.dti.gov.uk/science/science-in-govt/works/science-reviews/review/page24792.html>

### WHERE WE'RE GOING: PROGRESS ON THE SCIENCE STRATEGY

- 5.1 The Agency's Science Strategy was published in June 2006. It sets out a framework for the science the Agency will do during the period 2005-2010, and indicates how it will do it. It shows how our science supports the strategic objectives set out in the Strategic Plan 2005-2010 and also addresses emerging scientific issues, thus helping development of the next Strategic Plan.
- 5.2 The Science Strategy has 5 aims:
- Identifying the scientific evidence we need
  - Obtaining scientific evidence
  - Interpreting scientific evidence
  - Using scientific evidence
  - Communicating evidence
- For each aim, indicators of success have been developed.
- 5.3 This Annex reports progress under each of the five aims of the strategy. The reader will be able to judge how we are performing against the indicators of success.

#### **Identifying the Scientific Evidence We Need**

##### ***Extending the range of disciplines***

- 5.4 The Strategic Plan 2005-2010 signalled the Agency's intention to develop the range of sciences upon which it draws. Over the last few years capabilities in economics, statistics and operational research have been developed and outputs used in policy development. For example, much of the **economists'** work feeds directly into the Agency's Regulatory Impact Assessments. Recently cost benefit analysis techniques incorporating Quality and Disability Adjusted Life Years have been used to enable us to estimate the health benefits associated with interventions in dietary health. These have fed into

Ofcom's work on advertising to children<sup>20</sup>, and also in assessing the benefits of folic acid fortification.<sup>21</sup>

- 5.5 The Agency's **statisticians** have played a major part in modelling options for the amounts of folic acid in the diet of a cross section of British adults, to identify which foods might contribute most to folic acid levels and what the overall levels of folic acid would be if flour was fortified. Statisticians are also heavily involved in the design of surveys carried out by the Agency, for example advising on the sampling frame for measuring Salmonella in Imported Eggs.<sup>22</sup>
- 5.6 The more recently established **Operational Research** unit also provides support across the Agency. Recent work has included risk assessment models for foodborne diseases (to assess the interventions that could have the greatest impact in reducing risks from foodborne disease), supporting work in the targeting of communications towards high risk consumer groups for the salt campaign and developing models to help target inspections more towards high risk premises. This modelling has informed thinking on the current review of the approach we should take to risk assessment of food premises.
- 5.7 The need for a **social sciences** capacity was identified during preparation of the Strategic Plan 2005-2010. In-house social sciences expertise is being recruited and a new Social Sciences Research Committee is being set up (para. 4.2).

### ***Horizon Scanning***

- 5.8 Scientific horizon scanning (HS) feeds into the Agency's wider HS activities (Annex E of the Science Strategy). We continue to work with funders groups<sup>23</sup> to analyse the state of evidence and gaps and priorities for future work.

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<sup>20</sup> <http://www.food.gov.uk/news/newsarchive/2007/mar/tvads>

<sup>21</sup> <http://www.food.gov.uk/consultations/ukwideconsults/2006/folate>

<sup>22</sup> <http://www.food.gov.uk/multimedia/pdfs/nonukeggsreport.pdf>

<sup>23</sup> Funders Groups aim to improve co-ordination and exchange of information on publicly funded research in key areas, including microbiological safety of food, TSEs, nutrition and nanotechnology.

- 5.9 The SACs have undertaken regular HS activities for some years. However, we had identified the need for a more proactive and joined-up approach. Responsibility for achieving this will lie with the new General Advisory Committee on Science. GACS is tasked with identifying new sciences and scientific developments which will impact on the Agency's and committees' work and advising on any additional information which will be needed to allow the Agency to assess the implications for its work.
- 5.10 In March 2007, the Agency in co-operation with the European Food Safety Authority (EFSA) organised a workshop in London to consider food incident prevention and horizon scanning to identify emerging food-safety risks. The main conclusion was that there is no single network or information source that identifies the shape of the future. The future approach must be to collect information intelligently from a variety of sources, analyse it in a less narrow way than we do at the moment, identify the possible impacts on food safety, and then, crucially, share this information. The Agency is now planning a programme of practical work based on the recommendations of the workshop.

### ***Prioritisation***

- 5.11 The Agency has been working a means of prioritising its work on science for sometime.<sup>24</sup> Priorities for science are determined as part of business planning but, to date, a common methodology has not been used. During 2006/7, the Agency has progressed to running a large scale pilot of a prioritisation methodology. If successful, this assessment will become an integral part of business planning cycle and thus help demonstrate how proposed work links to the Agency's current and future business needs.
- 5.12 As this work develops, we will consider how to introduce 'sensitivity analysis'— i.e. identifying priorities to be taken forward (or deferred) if budgets increased (or decreased) by a certain %. This should encourage more creative thinking and support a more strategic view to allocating resources.

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<sup>24</sup> <http://www.food.gov.uk/science/ouradvisors/ACR/>

## **Obtaining Scientific Evidence**

### ***Science Commissioning***

5.13 The Agency's current science commissioning procedures were based on recommendations arising from the 2002 review of the Agency's research portfolio and management systems (the Arbutnott Report).<sup>25</sup> These procedures are well embedded within the Agency. A recent internal audit identified some areas where practice does not always reflect documented procedure and actions have been recommended to address this. However, the Agency wants to ensure that procedures remain fit for purpose and reflect wider developments in procurement legislation and practice. Thus a series of interim measures to streamline procedures has recently been implemented, pending the outcome of a wider Agency review on procurement.

### ***Collaboration***

#### *Progress on Framework Programmes 6 and 7<sup>26</sup>*

5.14 The Agency is providing £1.2m of co-funding to 4 projects in FP6. The total value of these projects is some £48m, illustrating the added value of co-funding in FP. The Commission will pay up to 75% of research costs for public bodies in FP7, compared with 50% in FP6. Such bodies would thus require a proportionately lower contribution from the Agency, which should help to develop co-funding in FP7.

5.15 The Agency is joint UK policy lead with Defra on the Food, Agriculture & Fisheries, and Biotechnology theme in FP7. First calls for proposals reflect several of the Agency's priorities, demonstrating that the Agency has been successful in arguing its case. Discussions are now underway on the second round of calls – again, the preliminary drafts include several topics of potential interest to the Agency.

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<sup>25</sup> <http://www.food.gov.uk/multimedia/pdfs/research-arbutnott.pdf> , July 2001

<sup>26</sup> The EU launched the seventh Framework Programme (FP7) in December 2006. FP7 will provide funding of €55 billion (around £37 billion) from 2007-13 for European research to promote innovation and competitiveness and provide evidence to inform policies in priority areas for Europe. Most funds in FP7 go to collaborative research under ten priority themes, including one on Food, Agriculture & Fisheries, and Biotechnology with a budget of 1.9 billion euros (around £1.3 billion). *Food, health and well-being* is one of three activity areas in the theme

### *Post Graduate Scholarship Scheme (PGSS)*

- 5.16 Four new PGSS scholarships were funded from the 3<sup>rd</sup> (2006) round, all with a strong social sciences element.<sup>27</sup>
- 5.17 Nine proposals were received in the 2007 round for scholarships to start in October 2007, and are currently being evaluated. We expect to fund up to 3 new scholars in this round, in the areas of 'food allergy and intolerance' and 'transcriptomics, proteomics, metabolomics ('omics') in food safety'. The 5<sup>th</sup> call will be advertised in October 2007 for scholarships to start in October 2008.
- 5.18 The 3<sup>rd</sup> round brings the PGSS up to 'full complement' and the first round of scholars will complete their research by October 2007. We will review the PGSS in 2009 to evaluate its performance against its objectives and to identify any recommendations for Agency funding of postgraduate training and development of the future science skills base.

### *ERA-NET project with funders across Europe*

- 5.19 ERA-NET is an EU funded scheme which aims to facilitate closer working and coordination between funders in Member States. The Agency is a partner in one of the largest ERA-NET projects, SAFEFOODERA, covering food safety (see [www.safefoodera.net](http://www.safefoodera.net)). Initial work identified huge potential for coordination of efforts. However it also demonstrated that funding is often fragmented, both in terms of its organisation and in the range of organisation types responsible for funding.
- 5.20 Nevertheless, the ERA-NET has been able to launch a pilot joint call. The Agency has committed modest funds to this, contributing towards 3 projects in the area of microbiological safety of food. We will also be taking a central role in the evaluation of the process of the joint call and its outputs, to see what we

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<sup>27</sup> PG1012: Enhanced nutrition communications - making the best of food labels (Ninewells Medical School, Dundee); PG1013: Young adults and healthy lifestyles: food, alcohol and exercise - a total lifestyle approach (University of Newcastle); PG1014: Analysis of co-regulatory approaches to food safety and quality (University of Kent); PG1015: A study of consumer behaviour and associated change drivers in the consumption of fruit and vegetables in children (University of Reading)

can learn from this experiment, to inform future possibilities for transnational working that are likely to emerge both from within and outside the ERA-NET.

- 5.21 The ERA-NET project has helped the Agency develop strong working relationships with a range of organisations funding food safety research within Europe. The proposal to engage members from outside Europe in the future will be beneficial to us.

#### *Support for the Science Base*

- 5.22 The Agency does not maintain core academic expertise in key science. However, we do discuss with potential funding partners (for example, the Research Councils) where we see the need for support for particular disciplines/expertise, and we also support particular projects through the PGSS (see above).

#### ***Consumer Exposure Assessment***

- 5.23 Consumer exposure assessment involves consideration of chemical/nutrient levels in food (normally obtained by chemical analysis) and the consumption patterns of those foods (usually derived from dietary surveys). The data are combined using a custom made statistical software package. Exposure assessment plays a vital role within the framework of food chemical risk analysis.
- 5.24 The main source of consumption data used by the Agency is the National Diet and Nutrition Survey Programme (NDNS).<sup>28</sup> The Agency has been proactive in providing EFSA with food consumption information for incorporation into a European concise database. This will allow EFSA's scientific panels to carry out preliminary risk assessments that encompass UK dietary data. The Agency is likely to extend its international role by providing similar information to WHO. The Agency is also working with an EU project, EuroFIR, which aims to develop a pan-European food information resource by linking databases to allow effective management, updating, extending and comparability.

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<sup>28</sup> <http://www.food.gov.uk/science/dietarysurveys/ndnsdocuments/>

## **Interpreting Scientific Evidence**

### ***Ensuring Good Quality Science***

- 5.25 Good quality science is essential to maintaining the integrity of the Agency's evidence base. The quality of research is maintained through (i) rigorous initial evaluation of research proposals, and (ii) the Joint Code of Practice on Quality Assurance in Research<sup>29</sup>, which improves the quality of the research process (e.g. traceability of samples, calibration of instruments).
- 5.26 To ensure the quality of science more generally, the Agency has developed The Science Checklist (Annex 5) to provide a framework for challenge of the science used in the policy-making process and the Good Practice Guidelines (Annex 6), which set out the way in which the scientific advisory committees work.

### ***General Advisory Committee on Science***

- 5.27 The Board agreed to establish GACS and to disband the Advisory Committee on Research, in February 2007.<sup>1</sup> The GACS will provide independent, strategic advice on the Agency's interpretation and use of science, including in horizon scanning and advising on sources of expert advice and challenge in new areas or those that cut across the remits of existing SACs.
- 5.28 A recruitment exercise for the Chair and members of the GACS (other than the Chairs of existing SACs, who be members of GACS *ex officio*) will be launched in May 2007. The aim is to complete new appointments and establish the GACS formally by the end of 2007.

### ***Social Sciences Research Committee (SSRC)***

- 5.29 The Social Sciences Research Committee will provide independent advice on the needs, nature and quality of the Agency's social sciences research. The Committee will be recruited following the appointment of an in-house Social Research Team Leader and will hold at least one meeting by March 2008.

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<sup>29</sup> <http://www.food.gov.uk/multimedia/pdfs/coponresearchqa.pdf> , from May 2003

### **Using Scientific Evidence**

5.30 Individual projects and programmes are evaluated by Agency staff and independent scientists and advisors at key points during their lifetime. These reviews evaluate the scientific quality of the work, how it has met its objectives, and how it is used by the Agency or others. However, we need to build on these approaches to give a more systematic assessment of how effectively the Agency is using the science.

### **Communicating Scientific Evidence and Advice**

5.31 Agency science is also communicated through:

- Policy announcements cite the supporting science.
- Details of funded projects, emerging results of interest and summary of final outputs are published on the Agency website.
- Final reports of Agency projects are placed in Agency library for public access and work is published in peer reviewed journals.
- There is a regular FSA News research supplement, with details of finished projects.
- The Annual Report on Research and Surveys gives an overview.
- The Agency is currently examining the possibility of its research reports being made more easily available electronically through open access publishing.

### ***New Format of the Annual Report on Research***

5.32 The 2006 Annual Report on Research and Surveys has a new format which more closely reflects the style of other Agency publications such as the Strategic Plan and the Science Strategy. It also aims to show more clearly how the work that we fund supports the Agency's strategic aims and objectives. It highlights work which has either finished or is under way during the year covered by the report. All of the work funded by the Agency in that year is also listed in data tables in the report, with links enabling readers to find more comprehensive information on the website.

### ***Website Developments***

5.33 New research projects are listed on the Agency website and completed work is reported both on the web and in FSA News, where we highlight how science has been used to inform policy and benefit consumers. In 2006/07 summaries of 86 new projects and results of 50 completed projects were published.

### ***Online Communications***

5.34 The Chief Scientist's blog went live in November 2006.<sup>30</sup> It is used to 'humanise' (through focussing on an individual) and demystify science within the Agency, comment on food-related stories in the media, update stakeholders on meetings attended by the Agency's Chief Scientist, and communicate in more detail the science behind major Agency initiatives. The launch of the blog was marked with a press release issued to national and regional media, some online marketing activity, and links from the FSA website's homepage and Science and Research sections. In the first few months the FSA website's news subscriber list (with over 7000 contacts) was alerted by email each time the blog was updated.

5.35 The blog's success is due in part to the Chief Scientist's readiness to engage with people who reply to his blog postings, and the fact that Agency staff, including non-scientists, understand the blog's potential to promote the work they do. Early indications suggest that many blog readers are consumers, a key target audience. The most popular blog entries so far have been on traffic light labelling and on organic foods, both from January 2007, with 31 and 18 comments submitted respectively. Because of its success (46,127 visits to date), it was decided to extend the blog's life beyond February 2007 (the original review date) and continue into the autumn, at which time a decision will be taken on whether to make it a more permanent feature.

### ***Advisory Committee Websites***

5.36 The Agency's web team is delivering on plans to give the expert scientific committees that advise the Agency (and whose secretariats are FSA-based)

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<sup>30</sup> <http://www.fsascience.net/>

their own online branding and design to communicate their independence to website users. A prototype site for the Advisory Committee on Novel Foods and Processes ([www.acnfp.gov.uk](http://www.acnfp.gov.uk)) went live in late 2005. Design and builds for the advisory committees covering microbiological safety, animal feed and toxicity are currently underway. It is hoped that these will go live later in 2007.

### ***Peer Reviewed Publications***

5.37 The Agency encourages research contractors to publish results from Agency projects in peer reviewed publications. FSA News lists the peer-reviewed articles that have arisen from Agency research. In 2006/07, 94 articles were listed (compared with 83 and 64 in the previous two years)

### ***Improving Access to Results***

5.38 The Agency is considering how we can improve access to results of our science work. This includes exploring making full reports and supporting data of our research freely accessible through 'open access' digital publishing in an on-line repository (this also facilitates cross-referencing to work subsequently published in peer reviewed journals). We are also looking at good practice in other funders, for example in using IT and web tools, to facilitate searching of research information and to web-based sharing of information and dialogue on science results.

## GETTING IT RIGHT: PROGRESS ON THE GOVERNANCE OF SCIENCE

### The Governance of Science

*“The methods by which the Board assures itself that scientific evidence is being sought, obtained, interpreted, used and communicated appropriately and effectively by the Food Standards Agency”*

### **Introduction**

- 6.1 Following the Board's agreement at its meeting in February 2006, a number of changes were made to the science governance processes<sup>8</sup>:
- A direct link was created between the Board and the scientific advisory committees, with the committee Chairs coming to the table at Board meetings and briefing the Board if required.
  - A 'Science Checklist' (Annex 5) has been developed. Its aim is to act as a *guide* to the points to be considered (primarily by the Executive and the scientific advisory committees) when presenting scientific evidence to the Board.
  - Andrew Wadge was appointed to develop the distinct role of the FSA Chief Scientist, bringing together the governance of science work and to further develop the assurance role of the Chief Scientist.
- 6.2 Over the subsequent year, the Chief Scientist has led a programme of work to improve the Agency's governance processes and to ensure that all staff are committed to delivering a high quality scientific foundation to policy-making. Key developments are described in the following sections.

### **Challenge to the Agency's Science**

- 6.3 Board members are not appointed specifically for their scientific expertise. There needs to be a variety of skills and experience among Board members but it is the job of the Executive, advised by the scientific advisory committees, to ensure that all appropriate expert advice and evidence is

before the Board to enable members to challenge it and reach a decision. The direct contact between the Chairs of the committees and the Board has been beneficial in two ways. Firstly, the committees have been able to see directly how their advice is used and to understand better how to express their advice to make it useful to the Board. Secondly, the Board has been given an independent route of assurance that the Executive has presented and interpreted the committees' advice in an appropriate way in support of the policy options.

- 6.4 The **Science Checklist** (Annex 5) stimulated a debate across the Agency about how science is used in policy-making and made explicit the different types of information which may need to be fed into the process. Thus it guides all the scientists in the Agency. It has also formed the basis of the **Good Practice Guidelines** (Annex 6) which have been jointly developed by the scientific advisory committees. Again, these provide the Board with a means of checking that the advice that comes forward to them complies with a set of agreed standards and gives the committees themselves a tool against which to audit their own performance.
- 6.5 The Chief Scientist uses the Science Checklist to assure himself that the Agency's policy divisions are adhering to best practice and seeking out all the necessary information. All policy divisions are involved in ensuring that the Chief Scientist is aware of potentially contentious issues so that he can ensure that the correct procedures are followed to guarantee the quality of the science.
- 6.6 A Universal Ethical Code for Scientists was launched by the Government's Chief Scientific Advisor in March 2007.<sup>31</sup> It is a public statement of the values and responsibilities of scientists. The Agency fully endorses the Code and has incorporated it into its governance of science framework.
- 6.7 As part of the process of ensuring that he has access to the best advice, and that this is available across the Agency, a Chief Scientist Team has been established to support the Chief Scientist and a larger team of analysts

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<sup>31</sup> [http://www.dti.gov.uk/science/science-and-society/public\\_engagement/code/page28030.html](http://www.dti.gov.uk/science/science-and-society/public_engagement/code/page28030.html)

(including economics, statistical, operational research and social sciences expertise) has been brigaded under his command. The Chief Scientist is also establishing a Steering Group (drawing its membership from across the Agency) facilitating cross Agency communication and working on science, making sure that staff understand what is expected of them and, more importantly, providing feedback on whether the system works in practice.

### **External Assessment of the Agency's Performance**

6.8 House of Commons Science and Technology Committee Report on 'Scientific Advice, Risk and Evidence Based Policy Making' November 2006.<sup>10</sup> The Agency submitted written evidence, and the Chair and Chief Scientist gave oral evidence for this inquiry. The report made 69 recommendations over a range of areas, not all of which were directly relevant to the Agency. In general, the Agency's practice is in line with the Committee's recommendations and indeed the Agency's performance is favourable commented upon in a number of places.<sup>32</sup> The committee strongly endorsed the principle of having an over-arching scientific advisory committee – which the Agency was already setting up by the time the report was published. There are some other recommendations which the Government has undertaken to consider through its 2007 review of scientific advisory committees.<sup>33</sup> The Agency will play a full part in this and the Chief Scientist has not identified any need for additional initiatives on science governance.

6.9 Assessment against the Eight Attributes developed by the Office of Science and Innovation (OSI).<sup>11</sup> This government-wide science MOT provides a very useful way for departments to assess and benchmark their own performance in using science. The FSA has carried out this self-assessment exercise using OSI's 8 performance criteria based on progress in 2006 and intends to repeat the process annually. In April 2007, the Agency received informal feedback from the Office of Science and Innovation (OSI) on its self-assessment

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<sup>32</sup> Examples of FSA Good Practice include our integrated structure (para. 57), the Science Checklist (para. 114) and our scientific advisory committees approach to uncertainty, as described in the Review of Scientific Advisory Committees (para. 177)

<sup>33</sup> <http://www.publications.parliament.uk/pa/cm200607/cmselect/cmsctech/307/307.pdf> published February 2007

against the Eight Attributes. OSI found the self-assessment to be credible, showing a good level of performance across the attributes, with helpful examples of good practice that can be shared with others (such as the adoption of the Science Checklist, which is to be used in the preparation of papers dealing with science-based issues). Nonetheless, we are taking steps to further strengthen our performance in all of these areas, particularly in relation to ensuring that horizon scanning is fully embedded within the Agency.

- 6.10 Board Discussion of Openness.<sup>34</sup> The Board agreed action in February 2007 to ensure that the FSA continues to live up to its core value of being open and independent. The Agency's scientific advisory committees (SACs) have established a good reputation for openness but the Chief Scientist agreed to consider further the openness of SAC meetings and of scientific and technical briefings to the Board and advise how to deliver a consistent approach to openness.
- 6.11 Science Reviews.<sup>19</sup> The Office of Science and Innovation has recently published Science Reviews for both Defra and HSE. The reviews highlighted a number of similarities in the way we work (policy-driven, aiming for behaviour change and focussing on policy through delivery). The reviews are thus a useful guide to what the scientific community defines as good practice for Government departments.
- 6.12 The Agency is already doing a very significant proportion of the good practice identified. The areas for development are generally common to all. For example, the reviews of both Defra and HSE note those departments' intention to utilise more fully social sciences expertise, and the challenge they are finding it. The Agency will be able to learn from their experience.
- 6.13 The review of HSE highlighted *internal* knowledge transfer as an area which needed improvement. Whilst the Agency's more integrated structure and encouragement of transfer of staff between Divisions means we do not face

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<sup>34</sup> FSA 07/02/07

quite the same problems as HSE, there is still much that can be done to improve our performance and further thought will be given to this.

- 6.14 **Benchmarking.** One of the benefits of having open discussions about improving the Agency's governance of science processes is that other organisations are aware of the work we are doing and seek our advice when they are reviewing their own operations or setting up new ones. The Agency has been asked to talk about our experiences and to share the tools that we are developing with a range of organisations, including EFSA.
- 6.15 We also take the opportunity to benchmark our performance in specific areas of Agency business. A recent example was our participation in the Environment Research Funders' Forum 'Using Research to Inform Policy: the Role of Interpretation' study.<sup>35</sup> Its aim was to look at how interpretation is provided and to identify improvements to make interpretation more efficient and effective. The Agency's approach is very close to what the report defines as best practice.

### **Performance Indicators**

- 6.16 The Science Strategy 2005-2010 set out clear indicators of success for each of the strategic aims. The RCU is responsible for monitoring whether these indicators are met. We are aware that other organisations are also beginning to address the question of performance indicators for their scientific activities and we are beginning to work with them. More work is needed in this area to identify meaningful metrics, which link into our aims and can be used to measure progress over time.

### **Strengthening the Role of the Scientific Advisory Committees**

- 6.17 An important part of the Chief Scientist's role is to ensure that the Agency's network of SACs covers the areas for which the Agency needs advice and carry out their roles effectively. One aspect of this is a periodic review of the need for and remit of each committee. In 2006, the Chief Scientist commissioned a review of the Advisory Committee on Research. The Board

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<sup>35</sup> <http://www.erff.org.uk/reports/reports/reportdocs/interpretstudy070326.pdf> published March 2007

agreed with his assessment that the committee had largely fulfilled its remit and should be disbanded.<sup>1</sup> The Spongiform Encephalopathy Advisory Committee will be undergoing independent review during 2007. Details of the SACs can be found at Annex 3.

- 6.18 The Secretariats of the SACs hold a great deal of experience in working with their committees and ensuring that they deliver high quality advice to the Agency. An internal Working Group of Secretariats has been set up to harness this experience. One of its first tasks has been to consider how to increase the field of applicants for committee membership and Chair. As a first step, the 'From the Chief Scientist' column in the Research Supplement to FSA News has been used as a means of showcasing the contribution the SACs make to the work of the Agency.
- 6.19 The Government response to the House of Commons Science and Technology Committee report (para. 6.8) explains that during 2007, OSI will be carrying out a major review of how the Government's scientific advisory committee network (which includes those which advise the FSA) operate. The Secretariats Working Group provides a mechanism to focus the Agency's input into that exercise.

### **Head of Profession for Scientists**

- 6.20 46% of FSA staff have a scientific background, in other words have at least one degree in a scientific subject. Of these, more than 67% have a postgraduate experience and qualifications. The Agency is an integrated organisation with scientists working on most aspects of the Agency's business from internationally known experts through to managers and leaders. Science is at the heart of the Agency's culture and scientific literacy is embedded throughout the organisation, not only amongst 'scientists'.
- 6.21 A key achievement of the Chief Scientist as Head of Profession (HoP) has been to consult staff to get a clear definition of what is expected of him as HoP. Work will be undertaken over the coming year to put this into practice.

## **Developing Internal Expertise**

- 6.22 The Agency introduced a revised Competency Framework in April 2006 for staff outside the Senior Civil Service. This was partly to reflect the competencies needed to deliver our 2005-2010 Strategic Plan, but also to reflect and embed Professional Skills for Government (PSG). One of the 8 key skills is “Analysis and use of evidence – collecting, analysing and using information and evidence; assessing risks and taking decisions” which relates directly to the Agency’s science governance work. The framework reflects the various PSG skills framework including that for scientist/engineer profession. It has four levels (AA/AO, EO/SO, HEO/HSO/SEO/SSO, and grade 6/7) with criteria for each level in terms of the skills, knowledge, behaviours and personal attributes people require to perform effectively in their jobs.
- 6.23 The framework is used to inform selection and recruitment, performance management, our corporate learning and development programme as well as personal development including Continuous Professional Development (CPD). We encourage CPD in the Agency and individuals from various professional backgrounds, including science/engineer, undertake it. Our roll-out of PSG has taken account of the PSG Framework for Scientist and Engineers to a good degree. That said, there is always room for improvement and as an initial step we will gather information about qualifications, professional membership and the extent of CPD in the Agency with a view to ensuring by the end of the coming year that all scientists have the necessary opportunities to undertake CPD.
- 6.24 The Agency mainly recruits scientists at the SO level (that is, early in their careers). We encourage applications from scientists from a wide range of disciplines, not just those (such as nutrition) which obviously link to the work of the Agency and we are looking for those people who can apply their scientific training rather than for specialists. During 2006, the website was used to promote the work of scientists in the Agency and to link in with an SO recruitment campaign. This approach led to a very successful outcome; from 214 applications, 60 candidates were selected for interview and 12 appointed initially from a successful field of 27.

6.25 Specialist scientists *are* recruited on an individual basis as necessary, and the Agency recruits economists, statisticians, etc through the wider government networks.

**THE SCIENTIFIC ADVISORY COMMITTEES**

- 7.1 The Agency is advised by a network of 10 scientific advisory committees (SACs), comprising around 140 independent experts (see below). In addition, each committee has at least one lay member whose role is to challenge, support and ensure effective communication of the risk assessment advice. All members and the chairs are recruited through open competition.
- 7.2 The types of work undertaken vary from committee to committee, and some are required to look at the science in more detail than others. For example, the Advisory Committee on Animal Feedingstuffs (ACAF) is more concerned with the practical application of science whilst the majority of the work of the Advisory Committee on Novel Foods and Processes involves detailed examination of technical dossiers in the context of an EU authorisation regime. The committees on Carcinogenicity (COC), Toxicity (COT) and Mutagenicity (COM) undertake risk assessments for a wide range of chemicals not restricted to those in food, whilst the Scientific Advisory Committee on Nutrition (SACN) advises on wider public health issues where nutrition is one of the risk factors as well as technical aspects of the nutrient contents of foods and the diet as a whole.
- 7.3 Not all scientific issues are referred to the committees. For many of the committees, Agency scientists undertake much of the routine work themselves. The need for external scrutiny of that work is decided on a case by case basis. Sometimes no external views are sought. In some instances there will be a general consultation with all stakeholders; sometimes a small ad-hoc group is convened – this is useful for a very specialist topic. The Chairs of the committees are consulted when we need independent advice in a hurry – for example, when there is a food incident. A formal opinion from a committee is sought when the advice is fundamental to a policy decision to be taken by the Board, where information suggests that there might be a risk but this information has not been peer-reviewed or where an opinion on the balance of evidence is needed. We also take advice from a committee in areas of developing science where the level of uncertainty is significant.

## SCIENTIFIC ADVISORY COMMITTEES OVERVIEW

### **General Advisory Committee on Science (GACS)**

GACS is currently being established. It will provide independent challenge and advice to the Agency on issues relating to general science. In addition, it will both support and challenge the work of the Chief Scientist and the FSA Board in the areas of science governance and strategy. This committee will provide advice and undertake horizon scanning on issues not covered by those other committees described below.

### **Social Sciences Research Committee (SSRC)**

This committee is currently being established. It will provide the Agency with access to social sciences expertise and challenge that will complement the work of the other scientific advisory committees.

### **Advisory Committee on Animal Feedingstuffs (ACAF)**

ACAF advises on the safety and use of animal feeds and feeding practices, with a particular emphasis on protecting human health. The Committee also covers animal health aspects and a wide range of contemporary issues including advice on the UK negotiating line on new European Community proposals, animal feed ingredients including genetically modified organisms, and labelling and information for purchasers of animal feed.

### **Spongiform Encephalopathy Advisory Committee (SEAC)**

SEAC advises on Transmissible Spongiform Encephalopathies (TSEs) such as BSE, CJD and scrapie. It provides independent scientific advice and risk assessments on food safety, public and animal health issues relating to TSEs. This includes advising on the introduction or the reduction/phasing out/withdrawal of control measures put in place to protect human and animal health from TSEs.

### **Scientific Advisory Committee on Nutrition (SACN)**

SACN advises on scientific aspects of nutrition and health with specific reference to the nutrient content of individual foods and the diet as a whole, including the definition of a balanced diet. This committee also advises on issues which affect wider public health issues where nutritional status is one of the risk factors (such as cardiovascular disease) and on the nutrition of vulnerable groups (e.g. infants and the elderly)

### **Advisory Committee on the Microbiological Safety of Food (ACMSF)**

ACMSF provides advice on microbiological issues regarding food. The committee assesses the risk to humans of micro-organisms which occur on or in food, this work has included assessing the risk of infant botulism from chilled and frozen baby foods.

### **Advisory Committee on Novel Foods and Processes (ACNFP)**

ACNFP advises the Food Standards Agency on matters relating to novel foods (including genetically modified foods) and novel processes (including food irradiation). The committee carries out safety assessments of any novel foods or processes submitted for EC approval under the novel food regulations.

### **Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT)**

This committee advises Government Departments and Agencies on all aspects of toxicity of chemicals in food, consumer products and the environment, including possible chemical causes of ill health in humans. In terms of food safety, COT assesses the risk to human health from chemicals that may enter the human food chain either deliberately or inadvertently. Dossiers for new food additives are generally not presented to COT, as these are more likely to be submitted to EFSA for EU-wide authorisation. Where relevant, chemical substances used or manufactured in industry, used in consumer products, or likely to result in environmental pollution are also assessed by the Committee. Evaluations may include assessment of mutagenicity and carcinogenicity, provided by COM and COC, respectively. The COT also advises on general principles and new scientific discoveries in relation to chemical toxicity.

### **Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC)**

This committee provides advice to Government Departments and Agencies on matters concerning the potential carcinogenicity of chemicals in food, consumer products and the environment, including consideration of possible chemical causes of cancer in humans. Dossiers for new food additives are generally not presented to COC, as these are more likely to be submitted to EFSA for EU-wide authorisation. However COC opinion is sought if there is particular UK concern relating to emerging evidence in this area. COC also assesses chemicals used in industry or consumer products, or likely to result in environmental pollution. The committee also advises on carcinogenic risks in connection with new scientific discoveries and general science issues. COC opinions frequently include advice on mutagenicity from the COM.

### **Committee on Mutagenicity of Chemicals in Food, Consumer Products and the Environment (COM)**

COM provides advice on matters concerning the potential mutagenicity of a wide range of chemicals. They assess the mutagenic risk to man of substances used or proposed for use in foods, household goods, pharmaceuticals, by industry and that occur as environmental pollutants. COM advice is often sought by other scientific committees, especially the COT, COC and the Advisory Committee on Pesticides. COM also advises on important general principles or new scientific discoveries in connection with mutagenic risks, and on testing methods and strategies for assessing mutagenicity.

## AGENCY RESEARCH AND SURVEYS

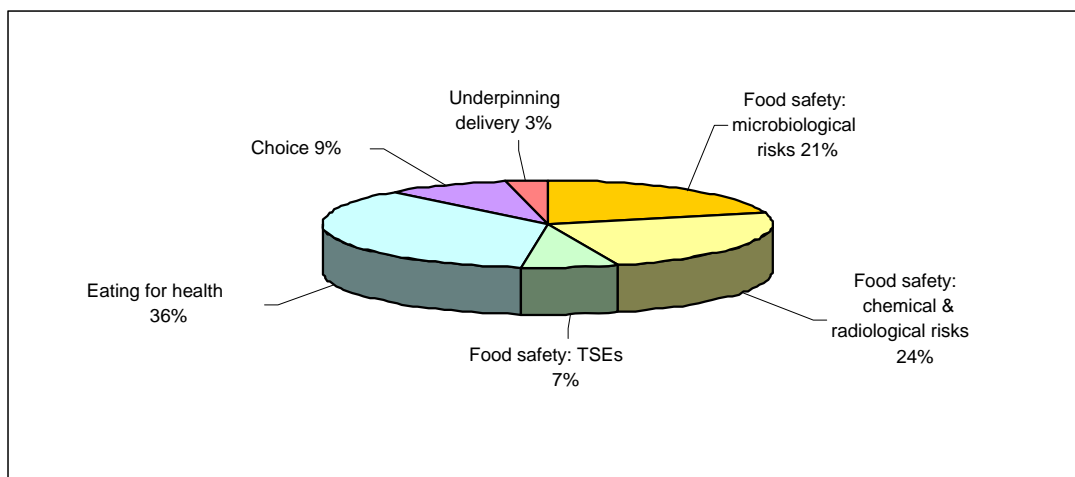
8.1 The Agency's research is structured in six **themes**, that map onto and support high-level Agency objectives:

- Food safety: foodborne illness;
- Food safety: chemical and radiological risks
- Food safety: TSEs
- Eating for Health
- Choice
- Underpinning delivery.

In addition, FSA Scotland commissions and manages a theme addressing issues particularly relevant to Scottish (rather than UK-wide) interests, using funds provided by the Scottish Executive. The work of this seventh theme is co-ordinated closely with the six centrally funded themes.

8.2 Each theme comprises one or more **programmes**, each addressing a strand of work in the theme; for example, the Choice theme includes programmes on food allergy, labelling, authenticity & fraud, and novel & GM foods. Each programme contains a number of individual **projects** commissioned to address specific questions – these may be research projects, surveys or other studies (such as literature reviews). There are some 300+ projects active at any time.

8.3 The Agency spends between £20m and £25m each year on its research and survey programmes, which aim to provide evidence to inform and help us evaluate our policies and advice. In 2006/07, this spend was split between the Agency's strategic science themes as shown below (this split takes account of the contribution of the FSA Scotland research theme to each of the centrally funded themes).



8.4 The Agency produces an Annual Report on the Agency's research and surveillance programmes. The report for 2005/06 was published in April 2007 and the report for 2006/07 will be published in October 2007. New projects are highlighted on the Agency website and completed work is reported both on the web and in FSA News, where we highlight how the science has been used to inform and benefit consumers.

### **Research**

8.5 Examples of Agency-funded research are given in the body of the report. However, the following work provides an illustration of how we are increasing funding and carrying out work which will widen our previous definition of research.

#### **A multi-disciplinary seminar on food choice in families (March 2007) to inform the future direction of the Agency's food choice behaviour research**

The Agency's *Food Acceptability and Choice (N09)* and *Food Choice Inequalities (N14)* research programmes examine the psychosocial basis of food choice behaviour and how barriers to making healthy choices can be overcome. An important feature of these programmes is the production of practical outputs (interventions) that can help health professionals and other influential individuals and groups encourage dietary change at both individual and population levels.

Since its establishment in 2000, the Agency has commissioned research projects in key settings such as schools (e.g. *Five a day the Bash Street Way*, *Fruit Tuck Shops*, *Be Smart, Dish it Up!*, *Smart lunchbox template*) and families (e.g. *Family Food and Health*) and concerning disadvantaged population groups (e.g. *Cookwell, understanding food deserts*)<sup>1</sup>. In 2003, as a prelude to considering the future direction of these research programmes we commissioned a literature review of the relative effectiveness of various types of interventions, in different settings and for different population groups<sup>1</sup>; the report identified a number of gaps in the evidence base.

After discussing the report's recommendations with our external research advisor we concluded that we should focus on the food choice behaviour of children in the family context and that such research could benefit from input from experts in fields other than nutrition. We therefore convened a multi-disciplinary seminar, involving international contributors from a range of fields within the social sciences, in order to come to an up-to-date view of the influences on children's food choices within the family and to identify specific pieces of research the Agency could commission in the near future. This approach is in keeping with the Agency's commitment to including information from the social sciences in the evidence base for its policy making. A report of the seminar will be published on the Agency website and research calls flowing from it will be published in future research requirements documents.

## Surveys

- 8.6 Data from surveys are an important component of the Agency's work and the information obtained is used in a number of ways. Primarily, surveys allow the safety, authenticity and nutritional quality of food available to consumers to be monitored and in turn allow consumers to make informed choices about what they eat. The data is also used to inform European and worldwide discussions on setting and reviewing statutory limits for contaminants in food, and in carrying out accurate exposure assessments. In 2006/07 the Agency completed 20 surveys.
- 8.7 The majority of surveys carried out by the Agency are analytical in nature, where physical samples are obtained and analysed for the substance of interest. A recent survey of non-UK eggs, produced overseas but sold in England, showed that one in 30 boxes of imported eggs is contaminated with salmonella.<sup>22</sup> Samples of eggs originating from eight European countries were taken and both the shell and the contents were analysed for the presence of salmonella. The survey results indicated where contamination was occurring and how to target interventions to reduce salmonella problems in the UK. The FSA has produced guidance aimed at the catering industry on the safe handling and cooking of eggs, emphasising the additional precautions to be taken with non-UK eggs which have been found to have a higher proportion of salmonella contamination.
- 8.8 There are also a smaller number of non-analytical surveys funded by the Agency, where market research or information on diet is being obtained. The Low Income Diet and Nutrition Survey is one example of a non-analytical survey.<sup>36</sup> In this survey, due to be completed in 2007, the food consumption and nutrient intake of 3,600 people will be collected, along with other relevant demographic and health related information. This will then provide a robust, nationally representative baseline of the nutrient intake and nutritional status of low income consumers. The information obtained from this survey will inform the work of the Agency, other government departments and non-government organisations.

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<sup>36</sup> <http://www.food.gov.uk/science/dietarysurveys/lidnsbranch/>

## ***Survey Guidelines***

- 8.9 On 30 November 2006 the FSA published revised guidelines for those carrying out its non-statutory food surveys.<sup>37</sup> The Survey Guidelines (formerly known as the Guidelines for Technical Surveys) are principally designed to be an internal document for use by Agency Project Officers, and are intended to provide information and guidance on the procedures for planning and conducting surveys and reporting their results. The Survey Guidelines aim to ensure that Food Standards Agency surveys are as consistent, fair and representative as possible across the whole of the Agency's Food Survey Programme, and comply with the principles of openness and transparency.
- 8.10 The Guidelines were published on the Agency website to make the process by which the Agency conducts its non-statutory food surveys more transparent. Parts of the document will be useful to current and potential survey contractors in identifying the responsibilities of the various parties involved in a Food Standards Agency survey. The Survey Guidelines will continue to be developed in the light of experience to ensure that they are a distillation of best practice.

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<sup>37</sup> The Survey Guidelines were last formally revised in October 2003 following internal and external consultation. Since the last revision there have been several legal and other requirements that have arisen which required amendments to be made to the existing Guidelines.

## **SCIENCE CHECKLIST**

### **Introduction**

The FSA has defined the governance of science as the methods by which the Board assures itself that scientific evidence is being sought, obtained, interpreted used and communicated appropriately and effectively by the Food Standards Agency. The attached checklist is one of the tools that has been developed to support the governance of science. It will be used to guide the Executive and Scientific Advisory Committees.

In this context, 'science' includes:

- the natural, physical, earth and social sciences, and may also cover other types of evidence (egg market research) where this is felt to be appropriate; and
- science from all sources, not just that commissioned by the Agency.

### **Aim**

The aim of the checklist is to make explicit the points to be considered in the preparation of papers dealing with science-based issues which are either assembled by the Executive or which draw on advice from the Scientific Advisory Committees. It addresses:

- the processes to be followed and whether these are comprehensive;
- what the science says and what its limitations are;
- whether there are controversies and what weight to give to alternative views; and
- whether those providing the risk assessment have clearly set out their conclusions.

The checklist relates primarily to the risk assessment process. It has been developed from the 'Post Phillips Framework' which the FSA published in 2002. It is important to maintain the formal separation of responsibility for risk assessment and risk management in line with Lord Phillips' recommendation but the Agency may wish on

occasion to ask the scientific advisory committees whether a particular risk management option is consistent with their risk assessment.

### **Criteria of Success**

Further work with the Chairs of the Scientific Advisory Committees will be needed to develop appropriate means of demonstrating how the points set out in the checklist have been addressed, but success criteria for the checklist are that:

- the Board is assured that the specified work has been done, and to an acceptable standard;
- the Board has the confidence that the science-base is comprehensive and has been interpreted correctly; and
- trust is built up within the Board about the Agency's collection and interpretation of scientific evidence.

## **SCIENCE CHECKLIST**

### **Defining the problem**

1. Has the problem been clearly defined?
2. Does the problem require a scientific answer?
3. Have different stakeholder views been taken into account when framing the issues and questions to be addressed?

### **Gathering and assessing the evidence**

4. What steps have been taken to ensure that all available and relevant scientific evidence has been considered by the committee?
  - Has a comprehensive literature survey been undertaken? Have external scientific experts been consulted who may know of relevant unpublished data? What steps have been taken to ensure that these data are reliable? Has evidence been sought from stakeholders, and has this been assessed?
  - Is further research required?
  - Is there a need for different data sets for different regions of the UK?

5. Has the appropriate methodology been used?
6. What is the strength of the quantitative scientific evidence, e.g. is it relatively weak such as anecdotal or from a single case study or relatively strong as from a double-blind controlled study?
7. Is qualitative evidence robust\*?
8. Has the quantitative evidence base (if relevant) been reviewed by a statistician either within the Agency or externally?
9. If evidence was collected outside the UK, has the relevance to the UK situation been assessed?
10. Are the conclusions of the paper consistent with the quantitative and/or qualitative evidence, both in character and emphasis?
11. Is the scientific evidence base transparent to stakeholders, and is it clear which evidence has been peer-reviewed?

### **Risk Assessment**

12. What are the facts underpinning the risk assessment? What are the assumptions?
13. Has an assessment been made of the likely impact and probability of occurrence?
14. Are all key scientific uncertainties highlighted? Has any indication been given about the degree of uncertainty or consensus involved?
15. Are significant gaps in the current evidence base noted?
16. How have the areas of uncertainty been handled when reaching final conclusions and how do they impact on the advice?
17. Did the risk assessment consider the views of experts in all relevant disciplines, either as members of the committee or additional invited experts?
18. Is it clear how the conclusion is reached, based on the evidence presented to the committee? In particular, is the extent to which judgement has been used clear?
19. Are there any other hypotheses which fit the same evidence? Have they been considered? Why were they rejected?

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\* We are aware of guidance issued under the auspices of the Government's Social Research Unit and the Chief Social Researcher's Office (Quality in Qualitative Evaluation: A Framework for assessing research evidence. August 2003. [www.strategy.gov.uk/downloads/su/qual/ex\\_summary.htm](http://www.strategy.gov.uk/downloads/su/qual/ex_summary.htm) and The Magenta Book. [www.gsr.gov.uk/professional\\_guidance/magenta\\_book/guidance.asp](http://www.gsr.gov.uk/professional_guidance/magenta_book/guidance.asp)). In the longer term, we will consider how to adapt this material for use in the Science Checklist.

20. How has the committee taken account of any conflicting views? Have any risk assessments carried out by others been cited? To what extent are there consensus/differing views?
21. Has the committee or Agency consulted on the draft conclusions?
22. Are the Committee's conclusions/advice expressed in clear, simple terms, and can it 'stand alone' i.e. is the meaning changed if supporting caveats and explanations are omitted?

### **Interpretation**

23. Is the committee's advice correctly presented and represented in the Board paper?
24. Are any significant limitations clearly explained?
25. If this is a review, have external influences changed since the last consideration such that assumptions should have been challenged?
26. Would it be helpful to have the advisory committee's view on whether (any of) the risk management options are consistent with the risk assessment?
27. If the issue falls between scientific advisory committees or to more than one, has a satisfactory mechanism been put in place to ensure that all players have been involved and that each committee is aware of the views of the others?
28. If both risks and benefits were considered, are both addressed with the same rigour?
29. Has the committee indicated whether the evidence base is changing or static, and when it may need to be reviewed?
30. Has a picture of the external environment been given so that the Board knows whether it needs to understand the context or educate consumers?

**Chief Scientist Team**

**May 2006**

**GOOD PRACTICE GUIDELINES FOR THE INDEPENDENT  
SCIENTIFIC ADVISORY COMMITTEES**

**PREAMBLE**

*Guidelines 2000: Scientific Advice and Policy Making*<sup>38</sup> set out the basic principles which government departments should follow in assembling and using scientific advice, thus:

- think ahead, identifying the issues where scientific advice is needed at an early stage;
- get a wide range of advice from the best sources, particularly where there is scientific uncertainty; and
- publish the scientific advice they receive and all the relevant papers.

The *Code of Practice for Scientific Advisory Committees*<sup>39</sup> (currently being updated) provided more detailed guidance specifically focused on the operation of scientific advisory committees (SACs). The Agency subsequently commissioned a *Report on the Review of Scientific Committees*<sup>40</sup> to ensure that the operation of its various advisory committees was consistent with the remit and values of the Agency, as well as the Code of Practice.

The Food Standards Agency's Board has adopted a **Science Checklist** (Board paper: FSA 06/02/07) to make explicit the points to be considered in the preparation of papers dealing with science-based issues which are either assembled by the Executive or which draw on advice from the Scientific Advisory Committees.

The Board welcomed a proposal from the Chairs of the independent SACs to draw up **Good Practice Guidelines** based on, and complementing, the **Science Checklist**.

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<sup>38</sup> Guidelines on Scientific Analysis in Policy Making, OST, October 2005. *Guidelines 2000: Scientific advice and policy-making*. OST July 2000

<sup>39</sup> Code of Practice for Scientific Advisory Committees, OST December 2001

<sup>40</sup> Report on the Review of Scientific Committees, FSA, March 2002

## THE GOOD PRACTICE GUIDELINES

These Guidelines have been developed by 9 advisory committees:

Advisory Committee on Animal Feedingstuffs <sup>41</sup>
Advisory Committee on Microbiological Safety of Foods
Advisory Committee on Novel Foods and Processes
Advisory Committee on Research
Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment <sup>42</sup>
Committee on Mutagenicity of Chemicals in Food, Consumer Products and the Environment <sup>43</sup>
Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment <sup>44</sup>
Scientific Advisory Committee on Nutrition <sup>45</sup>
Spongiform Encephalopathy Advisory Committee <sup>46</sup>

These committees share important characteristics. They:

- are independent;
- work in an open and transparent way; and
- are concerned with risk assessment not risk management.

The Guidelines relate primarily to the risk assessment process since this is the committees' purpose. However, the Agency may wish on occasion to ask the independent scientific advisory committees whether a particular risk management option is consistent with their risk assessment.

Twenty eight principles of good practice have been developed. However, the different committees have different duties and discharge those duties in different ways. Therefore, not all of the principles set out below will be applicable to all of the committees, all of the time.

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<sup>41</sup> Joint FSA/Defra Secretariat, FSA lead

<sup>42</sup> Joint FSA/HPA Secretariat, HPA lead

<sup>43</sup> Joint FSA/HPA Secretariat, HPA lead

<sup>44</sup> Joint FSA/HPA, FSA lead

<sup>45</sup> Joint FSA/DH Secretariat

<sup>46</sup> Joint Defra/FSA/DH Secretariat

This list of principles will be reconsidered by each committee annually as part of the preparation of its Annual report, and will be attached as an Annex to it.

## **Principles**

### **Defining the issue**

1. The FSA will ensure that the issue to be addressed is clearly defined and takes account of stakeholder expectations. The committee Chair will refer back to the Agency if discussion suggests that a re-definition is necessary.

### **Seeking input**

2. The Secretariat will ensure that stakeholders are consulted at appropriate points in the committee's considerations and, wherever possible, SAC discussions should be held in public.
3. The scope of literature searches made on behalf of the committee will be clearly set out.
4. Steps will be taken to ensure that all available and relevant scientific evidence is rigorously considered by the committee, including consulting external/additional scientific experts who may know of relevant unpublished or pre-publication data.
5. Data from stakeholders will be considered and weighted according to quality by the committee.
6. Consideration by the secretariat and the Chair will be given to whether expertise in other disciplines will be needed.
7. Consideration will be given by the Secretariat or by the committee to whether other scientific advisory committees need to be consulted.

### **Validation**

8. Study design, methods of measurement and the way that analysis of data has been carried out will be assessed by the committee.

9. If qualitative data have been used, they will be assessed by the committee in accordance with the principles of good practice, e.g. set out in guidance from the Government's Chief Social Researcher<sup>47</sup>.
10. Formal statistical analyses will be included wherever possible. To support this, each committee will have access to advice on quantitative analysis and modelling as needed.
11. When considering what evidence needs to be collected for assessment, the following points will be considered:
  - the potential for the need for different data for different parts of the UK or the relevance to the UK situation for any data originating outside the UK; and
  - whether stakeholders can provide unpublished data.
12. The list of references will make it clear which references have either not been subject to peer review or where evaluation by the committee itself has conducted the peer review.

### **Uncertainty**

13. When reporting outcomes, committees will make explicit the level and type of uncertainty (both limitations on the quality of the available data and lack of knowledge) associated with their advice.
14. Any assumptions made by the committee will be clearly spelled out, and, in reviews, previous assumptions will be challenged.
15. Data gaps will be identified and their impact on uncertainty assessed by the committee.
16. An indication will be given by the committee about whether the database is changing or static.

### **Drawing conclusions**

17. The committee will be broad-minded, acknowledging where conflicting views exist and considering whether alternative hypotheses fit the same evidence.

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<sup>47</sup> There is of guidance issued under the auspices of the Government's Social Research Unit and the Chief Social Researcher's Office (Quality in Qualitative Evaluation: A Framework for assessing research evidence. August 2003. [www.strategy.gov.uk/downloads/su/qual/downloads/qqe-rep.pdf](http://www.strategy.gov.uk/downloads/su/qual/downloads/qqe-rep.pdf) and The Magenta Book. [www.gsr.gov.uk/professional\\_guidance/magenta\\_book/guidance.asp](http://www.gsr.gov.uk/professional_guidance/magenta_book/guidance.asp)).

18. Where both risks and benefits have been considered, the committee will address each with the same rigour.
19. Committee decisions will include an explanation of where differences of opinion have arisen during discussions, specifically where there are unresolved issues and why conclusions have been reached.
20. The committee's interpretation of results, recommended actions or advice will be consistent with the quantitative and/or qualitative evidence and the degree of uncertainty associated with it.
21. Committees will make recommendations about general issues that may have relevance for other committees.

### **Communicating committees' conclusions**

22. Conclusions will be expressed by the committee in clear, simple terms and use the minimum caveats consistent with accuracy.
23. It will be made clear by the committee where assessments have been based on the work of other bodies and where the committee has started afresh, and there will be a clear statement of how the current conclusions compare with previous assessments.
24. The conclusions will be supported by a statement about their robustness and the extent to which judgement has had to be used.
25. As standard practice, the committee secretariat will publish a full set of references (including the data used as the basis for risk assessment and other committee opinions) at as early a stage as possible to support openness and transparency of decision-making. Where this is not possible, reasons will be clearly set out, explained and a commitment made to future publication wherever possible.
26. The amount of material withheld by the committee or FSA as being confidential will be kept to a minimum. Where it is not possible to release material, the reasons will be clearly set out, explained and a commitment made to future publication wherever possible.
27. Where proposals or papers being considered by the Board rest on scientific evidence, the Chair of the relevant scientific advisory committee (or a nominated expert member) will be invited to the table at Open Board meetings to provide this assurance and to answer Members' questions on the science. To maintain

appropriate separation of risk assessment and risk management processes, the role of the Chairs will be limited to providing an independent view on how their committee's advice has been reflected in the relevant policy proposals. The Chairs may also, where appropriate, be invited to provide factual briefing to Board members about particular issues within their committees' remits, in advance of discussion at open Board meetings.