

# **Department for Business, Innovation and Skills: Guidelines on Scientific Analysis in Policymaking – a consultation**

EVIDENCE SUBMITTED BY THE SOCIETY FOR GENERAL MICROBIOLOGY  
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## **Introduction**

The Society for General Microbiology (SGM), founded in 1945, is an independent learned and professional scientific body dedicated to promoting modern microbial science. It has established itself as one of the two major societies in its field globally, with some 5,000 members in the UK and abroad. Further information about SGM is provided in Appendix 1.

## **Part One: Consultation questions**

**Question 1:** The provision of science and engineering advice to government has continued to develop since 2005, for example the appointment of Chief Scientific Advisers (CSAs) to all the major science using government departments.

- Are the Guidelines still necessary or relevant to the current context of science and engineering advice?

**Yes, the guidelines are still necessary to ensure that the government is open about the ways it collects advice.**

- In revising these Guidelines, are there additional issues that could be usefully covered?

**In paragraph 4 a fourth bullet point could be added as follows:**

- **Clarify how the policy decision is based on the evidence or where it may deviate and why.**

**Question 2:** Adequate dialogue with experts, stakeholders and the public is crucial to allow early identification of issues that require specialist advice.

- Are there other methods for identifying issues that require specialist advice that could usefully be highlighted in this section?

**The government should have more of a presence at scientific conferences and in universities to help identify emerging issues and potential expert advisors. A government poster presentation or exhibition stand would facilitate this. Departments that are involved in science- or evidence-based issues should possess a sufficiently robust science base to enable them to spot the need for advice**

**sooner rather than later. It may be useful to seek the advice of outside ad hoc consultants.**

- How and when might advice at the strategic level (for example from Scientific Advisory Committees and Science Advisory Councils) be usefully distinguished from advice at the individual policy level?

**SAC advice may be sought for policies that will have a major public impact and that have a high degree of novelty. This is particularly true for policies requiring a firm science base.**

**Question 3:** Critical to the formulation of robust, high-quality policy is that the full range of evidence and advice is taken into account.

3a) On the evidence base

- Is there anything more that can be said about ensuring an appropriate, adequate evidence base and the role of expert advice in identifying gaps and weaknesses?

**Experts should be directly approached to identify gaps and weaknesses**

- What key indicators might policy makers use as guidance on when it is necessary to commission new research/expert advice?

**A key indicator for the need to commission expert advice is the degree of novelty an intended policy will contain (e.g. advice on procedures to prevent Foot-and-Mouth Disease in domestic animals where vaccination under particular circumstances was considered and advised). There may also be an opportunity to use theoretical predictive exercises perhaps based on early indications of public unrest.**

3b) On expert advisors

- When developing policy, how can the Government ensure that a full spectrum of evidence is heard, from across government and externally?

**The policy must be showcased in its early stages of development to ensure relevant parties are aware and more likely to contribute.**

- What mechanisms should government use to identify expert advisors? What role should the National Academies and other learned societies play?

**Potential expert advisors could be identified through specialist institutions and learned societies, publication history scanning or through those receiving funding in relevant areas.**

- The independence of science and engineering advisors, and of advice to government, is critical. How might independence be defined? Can we ensure “independence” is delivered in practice?

**Independence can be achieved by strict adherence to the Principles of Scientific Advice to Government. More than one peer review of the evidence is essential.**

3c) On government advisory structures

- How might individual advisory structures determine whether a lay member/consumer representative/ethicist would add value to its working?
- How might government better draw upon established sources of expert advice (Science Advisory Councils and Scientific Advisory Committees, for example)?

**Volunteers should be sought to take part more widely,**

3d) On external opinion and public dialogue

- How should policy-makers manage a situation where public opinion ran contrary to expert evidence-based advice?

**The evidence should be presented clearly and positively to the public to facilitate understanding. Policy-makers should effectively engage with the press to showcase the evidence for and against decisions. This is especially important where public opinion is misguided or ill informed.**

- What, if any additional items on public dialogue should be included in the guidelines?

**Question 4:** The Government is committed to evidence-based policy-making, and the provision of independent science and engineering advice is key to underpinning this aim.

- Academics and other external sources of research-based evidence can provide input at different times in the process of policy development, including policy formation and evaluation. How can the Government identify at what stages input would be most effective?

**Input at an early stage should be sought to allow the government to respond on evidence base. This is particularly important and effective when a new policy has large consequences for the public.**

- When in the policy making process should the Government publish the evidence base for a given policy decision?

**The evidence for a policy should be published ahead of the decision, for consultation. Otherwise, evidence should be published simultaneously with the decision at the latest.**

- On what occasions, if any, might it be appropriate for the Government or advisers to withhold advice provided/the evidence base for a policy?

**Policies without a solid evidence/advice foundation will normally backfire. Government should not withhold evidence/advice for any policy, except on issues of national security (although these cases should be rare). However, evidence in these cases should still be provided as quickly as possible.**

- Should further distinction, if there is one to make, be made between advice in a crisis and advice delivery where the timescales are longer?

**Advice in a crisis will need to be provided much more quickly, often with insufficient time for explanation. However, explanation should be provided as soon as possible.**

**Question 5:** Peer review and quality assurance can play an important role in assessing the evidence-base for a policy.

- How might departments identify when peer-review of the evidence-base is warranted?

**Peer review of evidence on which policy decisions are based should be the norm. It is particularly warranted in cases where the evidence is contrary to public opinion, is offered by a single expert or goes against current policy. Emerging knowledge still lacking appropriate peer review should be clearly identified as such, especially when findings are controversial.**

- What kind of quality assurance is needed in different circumstances and at different stages of the policy-making process?

**The level of quality assurance required for evidence should be matched to the importance of the policy that it is based upon. Peer**

**review should be applied wherever possible to avoid bias. All evidence should be double-checked, e.g. ensure citations cover what is presented.**

- What other quality assurance processes might usefully be highlighted in the updated Guidelines?

**Evidence should be taken from robust sources.**

**Question 6:** Scientific evidence does not always provide a clear cut answer, and sometimes there are differing schools of thought on a subject. New research can valuably provide different perspectives on an issue, but managing the impact of this may be particularly challenging in the case of novel and emerging issues.

- How should policy-makers deal with a situation where experts disagree on the interpretation of a body of evidence?

**Radical changes in policy should not be based on evidence when there is strong disagreement between reviewing experts. Where experts disagree on a body of evidence, policy-makers should either delay a decision on the issue or, if a decision has to be made, get additional opinions on the controversial issue from a wider panel of experts. The scientific opinion on which decisions are based should be clearly identified.**

- How should policy makers respond to changes in the balance of evidence?

**Peer review of the evidence should be undertaken. Changes in the balance of evidence should lead to changes in policy if the new evidence is convincing and contradicts the policy. The reasons for this change need to be identified (e.g. more modern techniques, increased numbers of studies, studies based on UK rather than non-UK populations, etc). These facts should be communicated as efficiently as possible. Alternatively, policy decisions on controversial issues should have been delayed (see above).**

- How might public opinion be taken into account in a context of rapid evidential change?

**In cases of rapidly changing evidence, public opinion may be useful, particularly from individuals affected by the policy, or those who have detailed knowledge of groups affected by the policy. Surveys could be a useful method for gathering public opinion and also increasing public awareness, for example if the evidence was presented as part of the survey.**

- How do we ensure the ability or competence of policy advisers and decision makers to interpret advice and reach sound decisions, particularly when given conflicting advice?

**Valid points to employ able advisers may be:**

- **past track record of well balanced decisions which have stood the test of time**
- **appropriate and continuous training on controversial cases (similar to lawyers' and doctors' training)**
- **originality of thoughts and 'lateral thinking' in difficult situations.**

**To assist decision making, policy makers should go into the community to learn about the situation first-hand. Peer review should be broadened to ensure that balanced advice from a variety of well-qualified sources can be evaluated. The policy adviser and decision maker's reports should also be expertly reviewed.**

**Request for information:** In updating the Guidelines we will be reviewing the publications signposted in the document. We would appreciate suggestions for documents that might usefully be referenced in addition to/other than those in the reference section.

### **Sources**

This response has been prepared from written evidence provided by Dr Ulrich Desselberger, former General Secretary of SGM, Dr Kim Hardie and Dr Karen Robinson, both University of Nottingham.

## **Part Two: Principles of Scientific Advice to Government**

The principles are laudable as principles, however there are issues in detail requiring further exploration.

### **Section 1: *Principles of Scientific Advice to Government***

Paragraph 2: ‘ .... should also be understood to apply to other independent scientific advice commissioned by the government, but not to departmental Chief Scientific Advisers, or other civil servants that provide scientific advice.’

In the light of what is said in the following on trust and respect, independence, transparency and openness, this sentence can be misinterpreted. If this group of individuals employed by the Government is regarded separately from ‘independent scientific advisors’, their rights and claims should also be properly described.

### **Section 2: *Trust and respect***

This should contain the notion used in section 3 that trust and respect should be maintained irrespective of whether or not the independent scientific advice is liked or disliked by Ministry/Government or at odds with Government policy.

### **Section 3: *Independence***

Those principles appear to be acceptable.

### **Section 4: *Transparency and openness***

- Bulletpoint:
- 1 acceptable
  - 2 the timing of publication of independent advice by the advisory body should be part of the agreement.
  - 3 acceptable
  - 4 A sore point. Scientific evidence can be graded, or a statement of lack of knowledge be made. Government communications may contain political judgements. Thus this topic should be dealt with under 2 separate bulletpoints.
  - 5 the wording is not optimal. Scientific evidence should be underpinned by appropriate references/data etc. Lack of evidence or ignorance should be openly declared.
  - 6 acceptable
  - 7 This statement should be firmer. ....the relevant minister will meet with.... [omit ‘normally’]

### **Section 5: *Applying the principles***

The Code of Practice for Scientific Advisory Committees (CoPSAC) should be carefully screened/amended to reflect the recognition and validity of the Principles.

### **Sources**

This response has been prepared from written evidence provided by Dr Ulrich Desselberger, former General Secretary of SGM.



## Appendix 1

The Society for General Microbiology (SGM) was founded in 1944/1945 and is now the largest microbiological society in Europe. It has over 4500 individual members of whom 75% are resident in the UK. The remainder are located in more than 60 countries throughout the world. Almost all full members are qualified to doctoral or higher level; there are 1000 postgraduate student members. More than 700 schools and a number of companies are corporate members.

The Society provides a common meeting ground for scientists working in academic centres and in a number of fields with applications in microbiology (medicine, dentistry, veterinary medicine, pharmaceuticals, numerous industries, agriculture, food and beverages, the environment and education). The majority of Society members are employees of universities, research institutes, health services, government agencies and small to multinational companies.

The science of microbiology covers a great diversity of life forms: disease-related molecular structures such as prions and viruses, archaea, bacteria, fungi, protozoa and algae. Microbes are of crucial importance in a number of processes affecting all life on Earth: the cause and control of disease, fertility of soils and aquatic environments, fermentation, biodegradation of waste materials and dead biomass, bioprocessing steps in drug and antibiotic production, and molecular biotechnology.

The Society's objective is to advance the art and science of microbiology. It does this by:

- Organizing regular scientific meetings at centres throughout the UK and abroad, where microbiologists meet to hear and discuss the latest research findings. The largest meetings last 4 days and involve up to 1400 participants.
- Publishing four major international learned journals: *Microbiology*, *Journal of General Virology*, *Journal of Medical Microbiology* and *International Journal of Systematic and Evolutionary Microbiology*. The journals are available on-line through HighWire Press (<http://www.sgmjournals.org>).
- Representing the science and profession of microbiology to government and the media. The Society is represented on a number of biological and biomedical committees and organizations, in the UK and internationally, thereby exerting influence on science policy and education, regulatory affairs and international collaboration.
- Promoting microbiology as a career for young people, by increasing awareness of microbiology in schools and aiding the development of teaching

resources. The Society also provides grants for young scientists to attend scientific meetings and training courses.

- Keeping members informed of current developments in professional and scientific matters in microbiology, through publication of the magazine *Microbiology Today* and other means.

The Society is a Charity registered in England and Wales (No. 264017) and in Scotland (No. SC039250) and a Company Limited by Guarantee, registered in England and Wales (No. 1039582). It is governed by a Council drawn and elected from the membership. The Society employs a staff of over 30 at its headquarters.

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