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## Scientific advice on GM foods

*A response to the inquiry by the House of Commons Science and Technology Committee*

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### Introduction

The House of Commons Science and Technology Committee launched an inquiry in February 1999 requesting comments on the current advisory framework for overseeing developments in genetically modified (GM) foods. The Royal Society welcomes the opportunity to comment and would like to stress the importance of providing sound scientific advice to policy makers.

The Society has already produced statements on genetically modified plants for food use (September 1998), biotechnology regulation in the UK (February 1999) and the scientific advisory system (June 1998). This document draws on recommendations already made in these publications. It covers the adequacy of the current advisory system and its ability to respond to scientific developments, transparency of scientific advice to Government and the proposal for an over-arching body. The response has been endorsed by the Council of the Society, and was prepared by a group chaired by Professor Brian Heap FRS (Foreign Secretary and Vice-President, Royal Society). The other members were Professor Ted Cocking FRS (University of Nottingham), Professor Don Grierson (University of Nottingham), Dr Terry Rabbitts FRS (Cambridge University), Professor Chris Leaver FRS (Oxford University) and Dr Rebecca Bowden (Secretary).

It is particularly important to take account of public values, and how these are formed, at all stages in any process of setting standards, as was outlined in the report of the Royal Commission on Environmental Pollution, published in 1998. Biotechnology has many potential applications to food production and agricultural practice and as a result it may also have immense industrial potential. Nevertheless, it is necessary to have adequate regulatory procedures in place to ensure all aspects of the technology are addressed.

The main issues that the Society recommends be addressed by Government in order to improve the current advisory framework are as follows:

1. A presumption that scientific advice to Government will be made publicly available unless it is demonstrably against the national interest to do so
2. Use of an overarching body, to which specialist advisory committees would report, to take a broad overview of developments and concerns related to biotechnology
3. Increased use of *ad hoc* working parties to enable greater flexibility and rapid adaptation to scientific advances and to provide advice on specific issues of concern

In the remainder of the document the Society lists its responses to the specific questions raised in the enquiry.

## **1. The adequacy and quality of scientific advice at present**

The specialist advisory committees have a major role to play in providing a very high standard of expert advice to the policy makers on many complex issues. They represent the primary committees for the provision of an advisory system which has worked satisfactorily for the limited number of GM products submitted for marketing to date, but we have concerns about wider ecological implications.

The Society has already stated that the present system of regulation and advisory committees is inadequate in the face of likely future developments in biotechnology. We have recommended the formation of an overarching body to monitor wider issues (see question 4), in addition to an extension of the remits of relevant advisory committees. Such an overarching body should also monitor the membership of advisory committees to ensure adequate representation of environmental and consumer issues at all stages of the regulatory process. It is also important to take into account public values at all stages of the process, which necessitates a means of determining such values. We recommend that there is an obligation on those seeking advice to consult widely in order to obtain a suitable breadth of knowledge.

Nevertheless, there are currently several overlaps in the advisory system, most notably between those advising on applications to market different GM products such as foods, feeds and medicinal products. There is a great potential for repetition and overlap unless there is strict top-down co-ordination of the regulatory process.

Matters are further confused by the existence of separate legislation for different types of products containing GMOs, and the proposal for further vertical legislation such as that governing GM seeds. Any such overlaps would be easier to identify if there were an overarching body monitoring the development of governmental policy on biotechnology as a whole.

## **2. The role and framework of advisory committees**

Regarding the provision of scientific advice on GMOs to policy makers, the current use of a number of specialised advisory committees could be more efficiently co-ordinated if the Chairmen of such committees had an official forum in which to discuss concerns raised by their committees with respect to individual applications. It is also important for such issues to be reported to any overarching body responsible for monitoring developments as a whole. This would be possible if advisory committee Chairmen reported to such a body. It is

equally important for the overarching body to have a means of communicating any concerns to the relevant advisory committees so that they may take action. The overarching body will

also need to include consumer and environmental representatives, to ensure a suitable breadth of knowledge to monitor wider issues and long term developments. Such a body could then give advice to the Ministerial committee set up to monitor Government policy in biotechnology. If the committee were able to advise on cross-departmental issues then they could co-ordinate both the funding of biotechnology research and the regulation of the end-products of such research.

In addition, the current system of advisory committees could be simplified in the ways set out in sections 1 and 3 by removing overlaps in advisory committee remits and ensuring that there is the ability to co-opt experts or form working groups to enable rapid adaptation to scientific progress.

We welcome indications that the current Government is seeking to conduct its affairs more openly and support the approach set out by the Chief Scientific Advisor in 'The use of scientific advice in policy making' regarding transparency. We strongly endorse the recommendation that there should be a presumption that scientific advice to Government will be made openly available, unless it is demonstrably against the national interest to do so.

We also welcome moves by the Advisory Committee on Novel Foods and Processes (ACNFP) and the Advisory Committee on Releases to the Environment (ACRE) to increase transparency in the regulatory system by the publication of agenda and minutes, and ACNFP's initiative to convene open meetings. We recommend that other advisory committees involved in the regulation of biotechnology, such as those advising on pesticides, consider such measures.

### **3. The ability of the current system to respond to rapid scientific developments**

In addition to the areas of concern mentioned in 4, there is a degree of discrepancy in both membership and remit of the advisory committees. For example, the Advisory Committee on Novel Foods and Processes (ACNFP) currently has a member to provide advice on consumer issues, whereas the Advisory Committee on Release to the Environment (ACRE) does not. Also, members are occasionally common to more than one non-departmental public body. Whilst this has obvious advantages for the coordination of advice (eg membership of both ACNFP and ACRE), it has the disadvantage of limiting the number of independent advisors and hence narrowing the breadth of expertise available. We recommend increased use of co-opted members of advisory committees on an *ad hoc* basis, with individuals appointed on a personal basis to provide advice on specific issues, which would allow greater flexibility to respond to new scientific developments. In addition, advisory committees should make use of *ad hoc* working groups reporting to the main committee on specific issues of concern. We also recommend that membership of advisory committees is limited to a fixed term, perhaps three years, which will increase both flexibility and transparency.

We also recommend the consultation of independent bodies of international reputation and widespread consultation for specific purposes such as determining the degree of public confidence in the current regulatory framework.

#### **4. To what extent there is value in the proposal for an overarching body to advise on and oversee all genetically modified food issues?**

Although genetic modification and the release of GMOs are tightly regulated in the UK, concerns have been expressed that there is no overarching body (as distinct from the primary specialist advisory committees), to monitor the impact of GM crops on agronomic practices or to look at the cumulative effects of such crops, since applications are reviewed on a case by case basis. In 1994 the Biotechnology and Biological Sciences Research Council (BBSRC) held a Consensus Conference on plant biotechnology at which a cross-section of lay persons considered the implications of these technologies. We agree with the recommendation of this panel that the regulatory authorities should address the wider issues surrounding the introduction of GM commodity crops by putting in place a monitoring mechanism or overarching organisation (as set out in our recent publication *Genetically Modified Plants for Food Use*).

We welcome recent moves by the Government to establish a Ministerial committee to oversee biotechnology. It is likely that such a committee will provide vital co-ordination of policy across departments. However, it will also be necessary to ensure that there is also some mechanism for taking a broad, well informed overview of developments and concerns.

The reliance on a case by case approach in obtaining expert advice for policy makers may result in a lack of analysis of the overall impact of the technology on agriculture and the environment, and of the long-term effects of GMOs. In particular, the following points are not adequately covered by the current advisory committee system:

- review of enforcement mechanisms for current regulations
- review of mechanisms by which GM crop plants could be monitored in the environment and recommendations for long-term monitoring of impact on ecosystems
- review of current guidelines for isolation of certified seed crops and high erucic acid oilseed rape and provision of recommendations regarding isolation of specific GM crops of concern and possible statutory provisions
- review of available methods for minimising gene transfer to crops and recommendations regarding further research
- consideration of possible positive and negative effects of insect tolerant crops on the ecosystem and provision of guidelines for growth of such crops and recommendations for further research, as applicable
- consideration of current guidelines for growth of GM and non-GM herbicide tolerant crops and the potential for statutory measures
- regular review of advisory committee membership
- analysis of the current regulations, with particular attention to consideration of whether allergenicity and toxicity of GM food receives adequate consideration
- applications for herbicide use on a crop should be considered in conjunction with applications for release of herbicide tolerant crops. There should also be a mechanism by which the long-term impact of such crops on agricultural practices could be monitored
- consideration of the potential effects of GM crops in comparison with the effects of current agricultural practices in general on ecosystems and the environment as a whole.

We therefore recommend that these issues be covered via extending the remit of the appropriate advisory committees. In addition, an overarching body is needed to have an ongoing role in monitoring the wider issues associated with the development of biotechnology in agriculture and food production. Such a body should consider those of the above issues that cannot be considered by individual advisory committees for practical reasons. In addition, the Food Standards Agency and Ministerial Committee will have an overseeing role to play on some aspects of biotechnology. We acknowledge that many of the concerns raised cannot be addressed without the information gained from long-term small-scale field trials and laboratory work.

Suggestions for structure and membership of the overarching body are listed under section 2.

## **5. The capacity of Government to be an 'intelligent customer' for the advice it receives**

We have welcomed the formation by the Government of the Ministerial Committee on Biotechnology which will have an overseeing role to play in biotechnology policy as a whole. Nevertheless it is important that policy decisions made by this group are informed by a suitably broad basis of knowledge. The overarching body which we have recommended report to the Ministerial Committee, will need to contain consumer and environmental representatives, and experts on ethics and legal issues as appropriate, in addition to adequate scientific expertise. Such a body would provide a suitable breadth of knowledge to monitor wider issues and long term developments.

In addition, we have previously made several recommendations to government regarding its use of Chief Scientific Advisors (CSAs) as a tool to inform policy formation in such complex areas. Departmental CSAs were established as part of reforms in the 1970s, to ensure that Departments could act as intelligent customers for, and users of, the research and advice they commissioned. However in many Departments it has become increasingly difficult for them to raise issues with Ministers at their own initiative. A key role for CSAs is to convey problematic issues to Ministers on which it is necessary to seek scientific advice. To be effective, CSAs must therefore participate in all critical policy groups. They must also maintain extensive networks with the scientific community outside Government departments in order to be alert to current issues and advice. CSAs must also be able to guide Ministers and Permanent secretaries on the range of policy options available to them in the light of scientific understanding of a given issue.

We recommend increased openness and a fuller involvement of the Chief Scientific Advisor in scientific issues within each Government department. To enable that to happen, the CSA should routinely be involved in meetings of appropriate Cabinet Committees, and should be alerted by the Cabinet Secretary to all science and technology issues being considered at Cabinet level. The CSA should also be copied the papers on science and technology related issues emanating from within departments and from specialist advisory committees.

In addition, we recommend that key issues arising within as well as across Government departments should be raised at the Committee of Departmental Chief Scientists chaired by the CSA, although we recognise that a useful start has been made on trans-departmental co-ordination already.

## **Additional information**

The Society would like to draw attention to the following Royal Society publications which are of relevance to this subject: *The Scientific Advisory System (June 1998)*, *Genetically Modified Plants for Food Use (September 1998)*, *Regulation of Biotechnology in the UK (Feb 1999)* and *GMOs and the environment (April 1999)*. Additional copies of this response and the above publications are available from The Science Advice Section at the Royal Society (rebecca.bowden@royalsoc.ac.uk tel: 0171 451 2588 fax: 0171 451 2692).