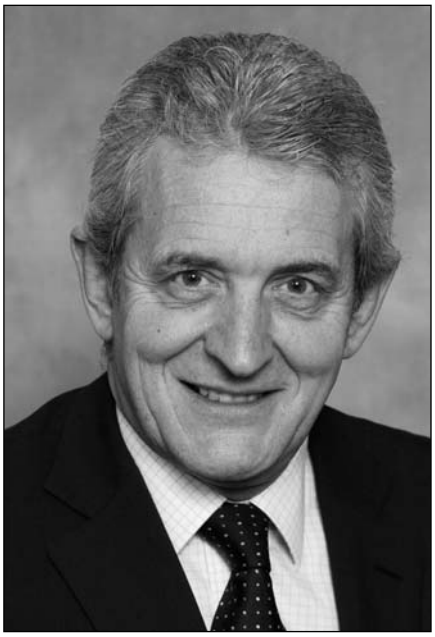
# Science in the Home Office:

## The Role of the Chief Scientific Advisor Fighting the Bad Guys

*Professor Paul Wiles*

*Chief Scientific Advisor and Director, Research Development and Statistics, Home Office*



To most people science in the Home Office probably relates to using DNA or finger prints in forensic science. Yet despite this, science is playing a broader role in the fight against crime, counter terrorism, developing identity management systems and managing migration.

Science in the Home Office is remarkably diverse and I suspect unique in government with an almost equal divide between physical, social and statistical sciences. The science we fund includes research to protect the public against explosives and chemical, biological, radiological or nuclear (CBRN) threats, technology to support the police and other agencies, including setting standards for protective body armour and less lethal weaponry and investigating new technologies to detect drugs, pioneering the use of biometrics to assure identity, understanding the extent of crime, the effectiveness of measures to reduce crime and the behaviour of those wishing to perpetrate crimes, understanding the drivers and impacts of migration and so on. We fund research both to help evidence-based policy decisions and to support the delivery of policies. For example, our scientists have been involved in designing the security arrangements at Heathrow's new Terminal 5, preparing the security arrangements for the 2012 Olympics in London and provide technological assistance to the police in sensitive, covert operations.

The Home Office also has two important functions regulating the use of science. We are responsible for implementing the Animals (Scientific) Procedures Act 1986, which regulates the use of animals in science, and we have recently appointed a Forensic Science Regulator, whose role is to ensure the scientific quality of forensic evidence in the Criminal Justice System.

With this wide remit it is impossible for me to be an expert in all science relevant to the Home Office or to be intimately involved in each research programme. My role is to be an advocate for the department's science both internally and externally, to be a 'critical friend' of the department's scientists through challenge and assuring quality and to provide a strategic direction to the department's science and ensure we are funding science in the right areas that meets both our immediate and longer-term requirements. Critical to my role is the support I receive from our expert scientific committees. The department has an overall Scientific Advisory Committee and specialist committees that provide advice on the misuse of drugs, the use of biometrics, CBRN research, statistics, economic advice on migration and animal scientific procedures. These committees provide the in-depth advice the department needs often on very challenging issues, and I am always indebted for the time and commitment that committee members give to the department.

I also have a wider role as Government Chief Social Scientist. This UK-wide function is both to champion good social science and its use in government and also to support and develop the government social science community and the quality of its work.

With science and innovation increasingly becoming important in all our lives, the challenges to ensure ministerial advice is based on the latest scientific evidence and that policies are implemented using the most appropriate up-to-date technologies are greater than ever before. This is particularly so in the Home Office, as whilst the majority of science is a force for good, there are those that use the latest technologies and information to subvert the course of justice and disrupt our way of life – therefore it is vital that we, through policies and law enforcement agencies, stay one step ahead.

To achieve this I consider there are three major challenges facing Home Office science, if not all government science, in the next few years: the challenge of integrating the scientific disciplines; the challenge of integrating across government departments; and the challenge of promoting the use of scientific evidence amongst parliamentarians.

The challenge of integrating scientific disciplines is one that has been brought to the fore in recent years, not least since the 2001 outbreak of foot and mouth disease. It was all too easy to see this as purely an animal disease problem, but in retrospect it is clear that it was a wider issue about managing the rural economy, encompassing a much wider range of expertise. Only by thinking more broadly, about whole 'systems', and

integrating the scientific disciplines around such issues will departments be able to provide comprehensive advice to ministers. Most government departments have now published Science and Innovation Strategies and at best these cut across the scientific disciplines to describe the evidence base for developing policies in the future. The Home Office will be preparing its second Science and Innovation Strategy later this year, and this is a theme I want to ensure is embedded in the department's strategy.

I also look forward to developing the integration of the scientific disciplines further through my role as Head of Government Social Research, working closely with the heads of other scientific disciplines and the cross-government Heads of Analysis Group.

However, cross-discipline working is not only challenging for government, but requires changes by scientists: the challenge of working in unfamiliar groupings, and the need to overcome the barriers of language and culture of the different scientific disciplines. Government alone cannot effect change in the wider scientific community and it is important that we work together with other science funders and learned societies. The Research Councils have set an example by establishing RCUK as a means of working more collaboratively.

In addition, most major issues facing the government in the near future will require a cross disciplinary response and I cannot think of a major issue that, at least scientifically, will not require a cross-government response. For example, climate change has long been seen as an environment issue, or at best an environment and development issue. However, climate change will have wide impacts, for example, is likely to have considerable implications for immigration and we are only just beginning to look at its implications for security and crime.

Cross-government working is where I have seen one of the largest improvements during my time in government. The community of departmental Chief Scientific Advisors has grown and strengthened over recent years and has become a positive forum to promote cross-government science. The Security and Counter Terrorism Science and Innovation Strategy is an example of a significant success in this area and is probably the only truly cross-government Science and Innovation Strategy. However, there are many other areas of science that could benefit from this approach. For example, the Home Office is working to develop a co-ordinated cross-government research programme on drug misuse. There needs to be a significant increase in such cross-government research programmes in the future.

Government scientists also need to go beyond co-ordinating within government. To achieve really effective solutions to today's big issues, government will have to work closely with the Research Councils and others to deliver the fundamental research upon which policy-related research can build, and more closely with industry to scale-up research and provide innovative solutions. The latter is particularly important to ensure that new technologies are successfully transferred into on-the-ground implementation and that innovation benefits the UK economy. This is why at the Home Office we work closely with industry suppliers to promote innovation in a wide range of technologies, be it scanners for use in airports, protective equipment for the police, detectors for explosives and so on. It is too early to say how successful the new Technology Strategy Board will be in assisting government in such innovation – but it is a step in the right direction and, I hope, will be influential in promoting exciting private sector innovation for use in the public sector.

The final challenge I see, and perhaps a perennial one in Whitehall, is to ensure that good quality science and evidence feeds consistently into policy development. As I have already mentioned the work of the Chief Scientific Advisors network has helped raise the profile of science. However, as the need to understand how science can improve policy making and delivery has increased, Whitehall has not been immune from the broader decline of scientific education. There are few policy makers who have a sound training in science. This leads to scientists within government having to promote their expertise more vociferously, and having to explain the results of research with more care, particularly when data are equivocal and can be easily misrepresented. The new programme of training in professional skills for government has to ensure that policy makers have a better grasp of using scientific evidence, are more numerate, and understand why innovation is essential for effective government and our global competitiveness and international standing. Not understanding how scientists can support ministers (particularly in the social and statistical sciences) is of real concern and can only be done if scientists, or those with a good understanding of science, are positioned at the highest level of decision making throughout government.

*Taking a swab sample to test for possible explosive contamination*

The challenges ahead are both difficult and exciting. The role for scientists in government can only increase, as technology and information plays an ever greater part in our lives. However, scientists in Whitehall, must continue to work together to resolve the issues of the day, and they must be prepared to work at senior levels, often outside their scientific-comfort zone, to ensure key decision makers are aware of how science can improve policy making.