



**International Symposium on Biosafety and Biosecurity: Future Trends and
Solutions
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**THE RESPONSIBLE CONDUCT OF SCIENCE
SAFETY, SECURITY AND ETHICS**

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I am delighted to be here in the Cusani Palace again and I am most grateful to the organisers of the International Symposium on Biosafety and Biosecurity: Future Trends and Solutions for inviting me to participate in this important event. I am pleased too that the International Council for the Life Sciences (ICLS) is among the sponsoring organizations for the symposium. I am grateful too to be given the opportunity to speak on the topic of the Responsible Conduct of Science -- although I am rather daunted to be the first speaker at this event.

For purpose of this talk the scope of what I mean by the responsible conduct of science embraces safety, security and ethics – and within ethics I include what is often referred to as research integrity. This last point tends to dominate the international discussions of the responsible conduct of sciences. I will come back this later. To speak about a topic that includes the full range of science is an excellent way to begin this conference: the focus of which is biosecurity and biosecurity. By the way, I am glad that the symposium organizers use both terms together since the two subjects overlap so much that it does not make practical sense to deal with them separately. In any case the struggle to define them separately is in large part a problem of the English language. To return to my main point, the biological sciences – or to use the term I prefer - the life sciences, embraces all the physical scientific disciplines: and most social science disciplines too. As we will hear in a later session at this symposium, the rapid and dynamic advances in areas such as synthetic biology and nanotechnology in particular, are bringing people from a wider range of disciplines into the life science field. Therefore, this topic of the responsible conduct of science is a fundamental issue that has to be dealt with in the academic, governmental and private sectors - and in communications with the public at large - if confidence in, and support for science, is to be maintained. While it is vital that in basic

education the topic is included explicitly in curricula, science and technology is moving ahead so quickly that it cannot rest there as, particularly in the life science area, safety, security and ethical boundaries are constantly under pressure and timely guidance and decisions will be needed, most often at the local level, in order that opportunities can be exploited to great humanitarian and economic advantage - and are not ruined by misadventure or even deliberate misuse. It is all very well to make high-minded statements - just like I am doing now – but the decisions have to be taken at the front line, often in the face of the unexpected, in laboratories and research institutions (private and public), in a direct way affecting practices and which may have far-reaching implications. At an international conference on research integrity in July last year I heard Dr Tony Meyer, of the European Science Foundation, express the challenge in this simple way “research is global, integrity is local”.

The conference at which Dr Meyer made this remark was the Second World Conference on Research Integrity which took place in Singapore from 21 to 24 July 2010. The challenge of addressing this topic at the global level was evident at this conference. There were over 350 participants from 50 countries that included researchers, university leaders, policy makers, representatives from funding institutions, journal editors and publishers. You can imagine the diverse social, cultural and religious backgrounds from which these people came. However, at this second global gathering a valiant effort was made to draft a declaration that was published soon after the conference ended. The declaration, intended to help those responsible within their institutions to give guidance to staff, contained some fundamental precepts and listed fourteen points requiring specific attention. However, the focus of attention of the declaration was very much on the publication of results and little to do with work in the laboratory. I can remember, Dr Gerald Epstein, of the American Association for the Advancement of Science, drawing attention to this point at last year’s symposium. I make no apology for repeating it. The only place where there was some reference to safety and security was in point number fourteen, which stated:

“14. Societal Considerations: Researchers and research institutions should recognize that they have an ethical obligation to weigh societal benefits against risks inherent in their work.”

(The full statement can be seen at <http://www.singaporestatement.org/>.)

In this text you can see the reference to safety and security is rather oblique. However, I do not want to belittle the importance of this conference, rather it illustrates how difficult it is at a global level, in a declaratory statement, to reach down to the level at which a practical effect is needed. The other point worth noting is that 350 people from 50 countries attending – mostly at their own expense – shows how important this topic is considered to be and that it needs urgent international attention. The reputation of institutions, and branches of science, can suffer serious setbacks as a result of research misadventure or serious misconduct. The research environment is very competitive, often with the expectation of quick successes and large grants or investment at stake, which can create conditions that can lead to misconduct.

It is fairly easy to describe the problem but, as is often the case, more difficult to prescribe solutions. One point is obvious, while there is a need for global consideration and sharing of experiences and raising awareness, the most effective actions lies at the local level. This can be at the institution, national or even sub-regional level where common, or at least full understanding of local social, cultural and religious conditions prevail. In the interest of time, for the purpose of this talk, I will give one example of which I have direct experience. This is in Pakistan where, flowing from a local initiative, a national effort is being made to promote the Responsible Conduct of Science. Two conferences have been held so far, the first in Islamabad in June 2010 and the second in Lahore in February this year. The Lahore conference produced a statement to guide future deliberations and action. The Lahore conference outcome can be found at a website dedicated to the project at www.respscience.org. Their future plans include drawing up a code of conduct. City chapters are being set up in Islamabad, Lahore and Karachi. The Karachi chapter will host the next conference at the Karachi Institute for Biotechnology and Genetic Engineering (KIBGE) on 14 and 15 November 2011. The topics are focused on safety and security and the participants come from all disciplines (including engineering) along with policy makers, science journalists and religious leaders. At Lahore scientists from India participated by videoconference and in Karachi there is a plan to bring scientists to the meeting from Bangladesh and Sri Lanka.

To sum up, the conduct of responsible science lies in the first instance with the scientists themselves. They not only have a duty to themselves but also to society as a whole - that is to say to governments, academia, private companies, and to the public at large. At the most basic level science should be conducted to bring benefits to humanity requiring a conscious calculation of the risks involved in any endeavour. The boundaries between scientific disciplines have become increasingly blurred, for positive reasons, making it harder for specialist societies and other organisations to bring rigour to codes of conduct and other methods that help assure the safe, secure and ethical conduct in their respective disciplines. It is an urgent matter that a multi-disciplinary dialogue between scientists and policy makers takes place to help chart better ways to assure the responsible conduct of science without hindering its advance and dissemination. One way to promote this dialogue is at the global level. I very much hope that there will be a Third World Conference on Research Integrity. However, action needs to be taken at the local, national, or sub-regional level if there is to be practical progress. It cannot be successful through purely a top-down process. Scientists need to find better ways to connect with policy makers and the public at large to build confidence that scientists well understand their responsibilities. This is a vital element in assuring that science is properly funded and social, cultural and religious obstacles do not block progress towards reaping the true benefits of science in health, social and economic terms. One way to meet this objective is to build and sustain multi-disciplinary networks of scientists, at a national and, where appropriate, at a regional level, which meet, discuss and publish on issues related to the conduct of responsible science. Such networks need to be sensitive and responsive to the cultural, religious and other national characteristics of the country or region concerned.