



Scientist Reaction to a Code: DOE National Laboratories Example

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Overview

- **Initial Assumptions**
- **Context for Scientific Oversight**
- **Survey Process**
- **Findings of Discussions with Scientists**
- **Recommendations**



Initial Assumptions

- **Public:** A code would be an effective vehicle for assuaging public concerns regarding the pernicious use of scientific discoveries
- **Scientific Community:** A code would raise awareness among scientists of the BWC, its obligations, and the dual-use nature of the life sciences
- **International:** A code would extend responsibility for helping implement the provisions of BWC to the level of individual scientists



Context for Scientific Oversight

International Organizations/ Agreements

Biological Weapons Convention (BWC)
National Confidence Building Measures (CBMs)

National Organizations

Dept. Health & Human Services
NSABB (*Code of Conduct*), rDNA Advisory Committee (RAC)

Professional and Industrial Associations

Biotech and Pharma Associations
Code of Conduct

Editorial Boards for Journals
Security Review Guidelines

Research and Development Organizations

Universities
Institutional BioSafety
Committees, Codes

Private Industry
Institutional BioSafety
Committees, Codes

Government Laboratories
Institutional BioSafety
Committees, Codes

Individual Professionals



Survey of National Laboratories



- Office of Science
- National Nuclear Security Administration
- Office of Nuclear Energy, Science & Technology

June 2005

United States Delegation
BWC Experts Group Meeting



Survey Sample

- Interviews and seminars across multiple levels, including managers and bench-scientists
- Spoke with scientists representing a variety of disciplines within the life sciences, including staff working in/on:
 - Fundamental sciences (environmental, molecular, chemical)
 - National security (biodefense)
 - Internal Review Boards / Internal Review Committees (IRBs / IRCs)



Overview of Findings

- **Weak understanding of the implications of dual-use capabilities posed by research in the life sciences**
- **Lack of clarity as to how a code would mitigate bioweapons proliferation and reduce the threat posed by bioterrorism**
- **Questions regarding the impact on ability to publish and freedom to pursue research**
- **Code application to only life sciences seemed discriminatory**
- **Resistance to more government regulation of research**



BWC and Dual-Use Issues

- **Scientists have minimal control over long-term use of research**
- **Need efficient mechanism for judging what is dual-use**
- **Are there any areas of research in the life sciences that are not seen as being inherently dual-use?**
- **Dual-use education of those pursuing careers in the life sciences must begin at the university level and be continually reinforced**



Costs and Benefits of a Code

- **Do the costs to scientists of introducing a code balance the benefits to society?**
- **Is the potential loss to society of scientific advancement balanced by a quantifiable reduction in the BW threat?**
- **Scientists need to be convinced that the impact of a code of ethics could deter would-be proliferators**
- **A consideration of costs and benefits is especially relevant if considering restricting publications**



Application and Enforcement

- A code cannot be applied uniformly across all life science disciplines and across all countries
- Scientists preferred implementation through professional organizations or societies rather than government
- Does the burden of determining what research has weapons applicability fall on individuals or on organizations?



Application and Enforcement (cont.)

- **Scientist concerns that a code would create a “domino effect” with increasingly stringent enforcement mechanisms**
- **What is an appropriate mechanism for protecting those who call out unethical behavior?**
- **How to ensure that a code does not result in overzealous public scrutiny of science?**



Recommendations

- **Involve scientists and representative organizations early on and throughout the process**
- **Get the assistance and support of organizations to whom scientists look for leadership (e.g., American Society for Microbiology)**



Recommendations (cont.)

- **Provide clear evidence that there is a need/problem that a code of ethics could help solve**
- **Demonstrate the benefits derived from formulating and adopting a code**
- **Frame the code around responsibility in the biological sciences**
- **Avoid alienating scientists by implying they need to be convinced to conduct responsible research**



Recommendations (cont.)

- **Need to provide sufficient detail about scope, approach, and implementation of a code to enable realistic estimates of costs**
- **Broad-based outreach must accompany the process to develop a code**



Conclusion

- In general, scientists agreed that there could be awareness raising and educational benefits to developing a code of ethics
- Including other stakeholders, such as industry, NGOs, and the public, is necessary to enable decision on whether and how to move forward with a code