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Item 6 of the provisional agenda

**Consideration of oversight, education,  
awareness raising, and adoption and/or  
development of codes of conduct with the  
aim of preventing misuse in the context  
of advances in bio-science and bio-technology  
research with the potential of use for  
purposes prohibited by the Convention**

**OVERSIGHT, EDUCATION, AWARENESS RAISING,  
AND CODES OF CONDUCT FOR PREVENTING THE  
MISUSE OF BIO-SCIENCE AND BIO-TECHNOLOGY**

Submitted by Japan<sup>1</sup>

**I. Introduction**

1. There is no doubt that advances in biotechnology in recent years have brought about tremendous benefits in medical care, pharmaceuticals, agriculture, food processing, the chemical industry and environmental protection. On the other hand, however, the dual-use aspects of advanced biotechnologies - in which accident or design could lead to the development of biological weapons or harmful pathogens - cannot be overlooked. Given the reality today that relevant information may be found on the internet related to sophisticated technology, it has also become increasingly necessary to pay attention to these risks associated with the dual-use aspects of biotechnology in order to prevent the misuse of biotechnology.

2. Considering the dual-use aspects of biotechnology, even well-intentioned research could bring about harmful results through its misuse. We recognize that with awareness and appropriate guidance, scientists can apply their own expertise to judge the wider ramifications of their research and other activities. Safeguards policies and oversight mechanisms that require all

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<sup>1</sup> This paper was prepared in consultation with Japan, Australia, Canada, Republic of Korea, Switzerland, Norway and New Zealand (JACKSNNZ)

scientists to take responsibility for biosafety / biosecurity should be promoted. At the same time, however, we do not consider it to be effective, efficient or equitable to place the burden of responsibility for any harmful events that may transpire solely on well-intentioned scientists. All relevant actors must be mindful of their responsibilities. In order to prevent the misuse of biotechnology, it is necessary to examine appropriate measures involving not only the scientists, who are obviously the principal actors, but also all other stakeholders, including the policy-makers, regulators, administrators of universities and research institutions, together with academic associations and the private sector.

## **II. Three effective means for the prevention of the misuse of biotechnology**

### **A. Oversight/Management and control**

#### **Significance and effect**

3. Although oversight is an effective way for preventing misuse, if it is implemented in an ill-conceived manner, scientific development can be unduly hindered. It is important to institute an oversight mechanism which is meaningful and does not create unnecessary burden. This is essential to make it acceptable for scientists and to forge ownership.

4. As far as is practicable, research institutions and associations that are associated with the work of the life sciences should have appropriate oversight mechanisms.

5. In any event, life scientists themselves need to be actively involved in constructing and instituting such oversight mechanisms in order to make it effective. Therefore, it is desirable to develop a program for education and awareness raising swiftly, which is set out in the below (2).

#### **Points to be examined**

##### **Scope**

6. Within the scope of oversight, the following elements need to be included: appropriate management of personnel, appropriate management of pathogens and toxins; appropriate management of sensitive information and knowledge about research information and research outcomes; research funding; and the modalities of governance over research programs in universities, research institutions and academic associations.

##### **Oversight of pathogens & toxins and oversight of information & knowledge**

7. It is mainly life scientists who may be required in the course of their work to handle pathogens and toxins, and since these biological agents could be also directly used maliciously, it is necessary to institute a legally-binding oversight mechanism over these agents. On the other hand, with regard to the management of research information, knowledge and outcomes, there is a concern that a similar legally-binding oversight mechanism may not be appropriate since such measures could obstruct scientific development.

8. In shaping an oversight mechanism for research information, knowledge, and outcomes, including the modality of communicating research results, it is considered as essential

to involve all relevant stakeholders including scientists and administrators in universities, research institutions and companies, as well as stakeholders in government and the media when appropriate. In this regard, it is also important to study the establishment of a mechanism that enables scientists to consult on their research and to expand the opportunities where the scientific and security communities can communicate with each other.

### **Research funding and the state of governance**

9. It should be encouraged for scientific research institutions to monitor voluntarily, with the help of academic association when necessary, whether research grants are being used for legitimate purposes and whether research projects are properly managed. In this regard, whistleblower systems can be of great importance to support such voluntary monitoring.

### **B. Education and awareness raising**

#### **Significance and effect**

10. Programs for education and awareness raising among scientists are a basic means for preventing the misuse of biotechnology.

11. In this light, since these means are different to legally-binding rules or externally imposed norms, they are extremely important in the interest of respecting the autonomous responsibility of scientists without obstructing scientific development. Their role and effect are also significant since they can guide scientists to adopt responsible conduct by themselves voluntarily.

12. Through the efforts to strengthen programs for education and awareness raising, those scientists with advanced technical expertise may take an interest in and provide greater cooperation to not only the oversight of pathogens and toxins, research information, knowledge and outcomes, but also to the various activities that contribute to the strengthening and thorough implementation of the BWC.

13. The direct effects gained through programs for education and awareness raising may vary depending upon the integrity of the scientific community, which is underpinned by the conscience of individual scientists and their mutual trust. Therefore, from the viewpoint of ensuring the effectiveness of such programs, it is necessary to reflect and institutionalize the outcomes of these programs in an oversight mechanism and the contents of codes of conduct.

#### **Points to be examined**

##### **Content**

14. In developing the content of programs for education and awareness raising, it is important to deal with the following subjects: ethical and moral principles; awareness of the dual-use risks of biotechnology; management of sensitive research information, knowledge and outcomes; and legal obligations under the relevant treaties and associated domestic legislation.

### **Targets of education**

15. Targets of education must include students (both in universities and secondary schools), researchers at universities, research institutions and private companies, health care workers, etc., who are/will be involved in science now and in the future. It would be also important to include the managers and administrators of universities, research institutions and private companies.

### **Education practitioners**

16. Since the effectiveness of educational programs can be significantly influenced by the quality of the education practitioners, it is essential to secure personnel with appropriate qualifications. In this light, it is also important to examine what qualifications are required and how to train personnel as education practitioners.

### **Educational material**

17. Since the content of education should cover many topics, it is necessary to include not only the views of scientists but also the views of other relevant stakeholders.

18. In this regard, even though the development of educational programs at the government level has not seen great progress, joint research to develop an educational module for life scientists has been underway between the University of Bradford of the United Kingdom and the National Defense Medical College of Japan. Their joint research is expected to generate important outcomes.

## C. Codes of Conduct for Scientists

### **Significance and effects**

19. Codes of conduct can serve as a guideline for scientists to prevent the misuse of biotechnology, and are expected to play a unique role since they confer greater respect to the autonomy of scientists than oversight mechanisms. In order to make codes of conduct effective, it is important when formulating and propagating codes to emphasize the positive impact of “protecting legitimate research activities of well-intentioned scientists”.

20. It is viewed of great significance to encourage the participation of as many scientists as possible in the process of drafting codes of conduct so that they will share and enhance awareness of the issues mutually through discussions.

### **Points to be examined**

#### **Content**

21. The contents of codes of conduct cannot be established independently of oversight mechanisms and programs for education and awareness raising, but rather need to be closely associated with the latter two means. When formulating codes of conduct, it is important to emphasize in particular the necessity of incorporating skillfully the two aspects of improving the

awareness of scientists and establishing procedures and rules for the management and control of pathogens and toxins, as well as sensitive research information, knowledge and outcomes.

22. Inevitably, the activities of scientists are likely to be covered by several “layers” of codes of conduct representing various national, institutional, professional and other stakeholder communities. These codes will complement rather than compete with each other. We consider it desirable that stakeholders be encouraged to develop their own codes, applicable to their own circumstances, and articulated to their own audiences.

### **Universality**

23. A variety of rules and regulations related to codes of conduct for life scientists already exist, and the contents of these codes vary among countries and organizations. Therefore, it would be difficult to develop an over-arching “universal code of conduct” concerning all activities outlined by the BWC. Alternatively, forming a common understanding among the States Parties on the important elements of codes of conduct may be more effective.

### **III. Conclusion**

24. Oversight, programs for education and awareness raising and codes of conduct are all effective means to prevent the misuse of biotechnology. Yet, as it has been made evident in this working paper, the significance and effects of each measure are mutually different. Accordingly, by grasping the unique characters and combining them all together in a well-balanced manner, it is expected that all these means can mutually complement one another and produce synergistic effects.

25. Bearing this in mind, it is important to examine how to apply and implement these means appropriately through national and international cooperation and coordination, in order not to hinder the development of science and technology, which have become a vital part of our lives, but to protect the scientific activities of well-intentioned scientists.

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