

**Third Meeting
Geneva, 5-9 December 2005**

**Meeting of Experts
Geneva, 13-24 June 2005**

Item 5 of the agenda

**Consideration of the content, promulgation, and
adoption of codes of conduct for scientists**

**ETHICAL PRINCIPLES IN GENE TECHNOLOGY, ENVIRONMENTAL
ETHICS AND THE BIOLOGICAL WEAPONS CONVENTION —
IS THERE A LINK?**

Prepared by Australia

Background

1. In Australia, certain ‘dealings’ with genetically modified organisms (GMOs) are regulated by the Gene Technology Regulator (the Regulator) under the *Gene Technology Act 2000* (the Act). The object of the Act is ‘...to protect the health and safety of people, and to protect the environment, by identifying risks posed by, or as a result of, gene technology and by managing those risks through regulating certain dealings with GMOs’. The legislation is focussed upon the protection of both human health and the environment.

2. The Act establishes three advisory committees — the Gene Technology Technical Advisory Committee (GTTAC), the Gene Technology Community Consultative Committee (GTCCC) and the Gene Technology Ethics Committee (GTEC). The last of these advises the Regulator on ethical matters relating to the Australian gene technology regulatory system. A key activity for GTEC has been the drafting of a Statement of ethical principles in gene technology (the Statement). The Statement is undergoing revision and is in draft form.

About the draft GTEC Statement

3. The Statement will be a non-prescriptive, aspirational document that aims to identify and establish values and principles that are most relevant in ethical debates about the use and

development of gene technology, GMOs and products derived from GMOs (GM products). Specifically, the Statement is intended to identify fundamental ethical concepts at stake in gene technology which form the basis upon which guidelines and codes of practice may be developed at a later stage.

4. The Statement notes that well-established values and principles from medical research relating to human health and safety and animal welfare also apply to GMOs, GM products and the gene technology regulatory system. In doing so, the Statement recognises the Codes and Guidelines of international bodies, other Australian Government agencies, and organisations that cover these human-centric values and principles.

5. The existence of such a wealth of material that is closely integrated into recognised best practice highlights that, relative to other ethics sub-disciplines, the values and principles of environmental ethics are less developed. Few codes appear to have been developed with respect to environmental ethics, despite an evolving interest in this sub-discipline over the last 20-30 years. Consequently, and to avoid duplication and to develop the ethical discussion surrounding gene technology where guidance is most needed, the Statement places deliberate emphasis on environmental ethics.

6. The Statement aims to inform ethical debate by defining the ‘values’ and ‘principles’ espoused in the document in easily accessible terms. Further, it is anticipated that the establishment of clear links between the values and principles will help resolve ethical dilemmas that may arise from the development and application of gene technology. Finally, it is intended that the purpose of the Statement and its audience will be clearly stated, early in the document.

Environmental ethics and gene technology

7. Simply stated, ethics helps to determine whether actions are ‘right’ or ‘wrong’. There are several schools of ethics which approach this question from different perspectives. With respect to gene technology and environmental ethics, the utilitarian school, for example, might ask ‘will the GMO benefit the environment’; natural law ethics might ask of the same GMO ‘is it natural for this to occur’ and aretaic ethics might query the character of the GMO’s proponent, or the decision-maker, to help establish whether releasing the GMO is appropriate.

8. Implicit in a response to any of these questions are the values and principles of the respondent. Brown (1987)¹ has argued that, despite administrative requirements to separate ‘facts’ from ‘values’, it is often challenging to do this, particularly in highly technical disciplines [such as gene technology]. He further argues that ‘cost-benefit’ analyses based on ‘fact’ disguise that ‘values’ ultimately affect the conclusions drawn from such analyses: should construction of a dam which would increase the abundance of an endangered micro-crustacean proceed, despite causing adverse impacts on an iconic mammal such as a panda, tiger or koala?

9. Cost-benefit analyses are excluded from the decision-making process under Australia’s regulatory scheme for gene technology. Nevertheless, personal values are also likely to affect advice provided to the Regulator by policy analysts and scientists alike. This is both recognised and explored more fully in recent revisions to the Regulator’s *Risk Analysis Framework*

¹ D.A. Brown (1987). Ethics, science and environmental regulation. *Environmental Ethics* 9:331-349.

(<http://www.ogtr.gov.au/pdf/public/raffinal2.1.pdf>). That there are divergent views among the public with respect to different applications of gene technology, consumer rights and the labelling of GM products, the ethics of patenting genes, the commercial beneficiaries of the introduction of genetically modified crops, and the socio-cultural consequences of particular technologies (e.g. ‘terminator genes’ in some GM crops) among numerous other examples, underscores that personal values are important elements of the gene technology debate.

Links between environmental ethics and the BWC

Environmental impacts of biological warfare agents

10. Biological warfare agents (biological agents) principally, but not exclusively, target humans. While this may be considered ‘wrong’ ethically and, for State parties, legally, this conclusion reflects a human-centric ethic that is primarily concerned with human welfare.

11. In contrast, an ‘eco-centric’ ethic may result in broader consideration of adverse environmental consequences if biological agents are deployed. This ethical approach considers that all organisms are equally deserving of protection, on the basis that they have an intrinsic or inherent value, independent of human uses for them. Further, damage to environments that are not, and cannot, be owned directly by any one socio-political grouping, such as oceans and the atmosphere, where, for example, nuclear testing might occur, may be unacceptable to eco-centrism. In addition, biological agents with potential to harm crop species could, potentially, impact adversely on ‘non-target’ plant species; similarly, many potential biological agents are zoonoses (pathogens that are shared between humans and animals) and these, clearly, could impact on non-target animals. Finally, many biological agents are living organisms with capacity to increase in number and spread beyond an initial infection point. The environmental impacts of such spread are difficult to predict but could have consequences for a range of environmental values and services, including beyond the political borders in which the biological agent was deployed. In this context, environmental ethics may promote a regional and, perhaps ultimately, a global perspective to ethical debate, which is important in relation to the BWC. Nonetheless, it is important to emphasise that, irrespective of the environmental consequences of deployment, human ethics and morals determine whether biological agents are developed and used.

Threats to the Environment and the Justice Tradition

12. One example of a well-established method in ethics relevant to the potential environmental consequences of biological weapons is the tradition of the Just War. In the Western tradition, doctrines of the ‘just war’ were formed against the background of myths of a golden age of peace. The Greek word, eirene, signified order and coherence; the Hebrew word, shalom, signified well-being, wholeness and the harmony of contented people in a fruitful land. Both the ancient cultures agreed that, if eirene and shalom could not be restored afterwards, the war would not have been justified.

13. In that tradition, a war was justifiable only if it were a policy of last resort and, even then, only if it met several conditions. There had to be a right intention: the restoration of peaceable order, for example, or to restrain or reform the enemy but not to kill him as a matter of policy. The means had to be proportionate to the ends: the war itself must produce a good greater than

the evil involved in waging it and there must be no unnecessary destruction. Fourth, there must be a reasonable hope of success: it would be as important to have a vision of what kind of peace the post-war settlement could deliver as it would be to know whether the generals had sufficient fire power.

14. Environmentally, Just War theory may suggest that the deployment of biological agents would be unjust because, as noted above, biological agents may have impacts in space and time beyond the war zone. Under these circumstances the consequences of biological agents may be 'disproportionate', in impacting in regions distant to the actual theatre of war.

Overarching ethical principles

15. Ethics has developed a variety of sub-disciplines including bioethics and environmental ethics. Some of the values and principles that are common to many of these sub-disciplines include aspirations that action will be taken with knowledge, wisdom, caution, respect, trust, integrity and so on.

16. In fact, these aspirations transcend the various ethics sub-disciplines and are relevant to the resolution of all ethical dilemmas. In this context, environmental ethics have further relevance to activities covered by the BWC.

Conclusions

17. Human-centric ethics are typically invoked in relation to decisions about research on, and the deployment of, biological warfare agents. Environmentally, however, biological agents can also have adverse consequences and environmental ethics provides an alternative frame of reference that may be well-placed to help resolve associated dilemmas. In this context, environmental ethics has a place in discussions relating to ethical conduct under the BWC.

18. The GTEC Statement highlights that, relative to human-centric ethics, environmental ethics appears to be less developed, but is maturing as a sub-discipline. However, the development of appropriate codes of practice for environmental ethics will inevitably and constructively draw upon previously established overarching ethical principles and values that underpin the analysis and resolution of all ethical dilemmas, irrespective of their specific context.

19. Consideration of these matters should inform the development of code(s) relevant to scientists working on biological agents and generally, activities related to the BWC.
