



Review of the Gene Technology Regulations 2001

Overview of Proposals for Amendment (2010)

The Gene Technology Regulator (the Regulator) is inviting submissions on proposed changes to the Gene Technology Regulations 2001 (the Regulations) in the draft Gene Technology Amendment Regulations 2010 (the draft Amendment Regulations).

Pursuant to section 142 of the *Gene Technology Act 2000* (the Act), the Regulator is seeking comment on whether the proposed amendments to classification of certain dealings with GMOs as Notifiable Low Risk Dealings (NLRDs) or exempt dealings are commensurate with any risks to the health and safety of people and the environment posed by the dealings.

The Regulator is also seeking comment on other changes proposed in the Draft Amendment Regulations, whether or not related to the classification of dealings with GMOs as exempt or NLRDs.

Submissions on the proposed amendments should be received by **18 June 2010**.

Introduction

The Act, which came into effect on 21 June 2001, is the Australian Government's component of the nationally consistent regulatory scheme for gene technology. The object of the Act is to protect the health and safety of people, and the environment, by identifying risks posed by or as a result of gene technology, and managing those risks by regulating certain dealings with genetically modified organisms (GMOs).

The Regulations support the implementation of the Act by providing technical details, including the categorisation of different dealings with GMOs, and specifying administrative processes and procedures.

The Regulations are being reviewed by the Regulator, in accordance with his statutory functions, drawing on operational experience from administering the regulatory system and input from regulated organisations. The review is primarily focussed on ensuring that the Regulations remain up-to-date with advances in scientific knowledge, in line with the recommendations of the 2005/6 *Statutory Review of the Gene Technology Act 2000 and the Gene Technology Agreement* (the Statutory Review). The review aims to:

- ensure that dealings with GMOs continue to be classified appropriately according to current understanding of risks which they may pose;
- improve the efficiency and effectiveness of the system; and
- assist users to better understand and comply with their legislative obligations.

The purpose of this paper is to provide an overview of the five areas of amendment.

1. Matters addressed by the Regulations

The Regulations give effect to and support the operation of the Act through:

- providing further information about definitions in the Act;
- describing exemptions under the legislation;

- defining the dealings with GMOs that are NLRDs and the conditions that apply to these dealings;
- providing additional detail about the processes that must be followed by the Regulator to assess applications for licences to deal with GMOs;
- providing details of the operation of the two advisory committees established under the Act;
- prescribing time limits within which the Regulator must consider and decide on applications; and
- prescribing the information that must be included on the record of GMOs and GM Product Dealings.

2. Scope and basis of this review

One of the Regulator's functions under the Act (Section 27 (g) (ii)) is to provide advice to the Gene Technology Ministerial Council (GTMC) on possible amendments to legislation. Sections 140 to 143 of the Act further provide that the Regulator may review the classification of exempt dealings and NLRDs. The Regulations have previously been reviewed by the Regulator, culminating in the Gene Technology Amendment Regulations 2006.

The scope of this review of the Regulations is strictly limited to issues which do not affect the policy settings of the regulatory scheme and which are consistent with achieving the object of the Act. In particular:

- reconsideration of the four categories of dealings described by the Act is beyond the scope of this review; these categories, each with different regulatory requirements, are the basis on which dealings with GMOs are regulated to an extent commensurate with the risks they pose;
- matters relating to guidelines issued by the Regulator, such as certification or accreditation guidelines, other documents prepared by the OGTR and other legislation relating to gene technology are beyond the scope of this review; these are dealt with through separate processes.

Ongoing experience suggests that some dealings with GMOs are subject to greater regulation than may be warranted by any associated risks. Conversely, improved scientific understanding of risks indicates that some dealings may warrant higher classification.

3. Review Process

This review of the Regulations was initiated by the Regulator in October 2008. Organisations accredited under the Act and Institutional Biosafety Committees (IBCs) were invited to communicate issues that should be considered or possible amendments that might be made to improve the operation of the Regulations. Comment was sought on specific issues identified through the operational experience of the OGTR. Submissions were also invited from State and Territory Governments and Commonwealth Government agencies prescribed under the Act.

The review identified five areas for potential amendment on the basis of submissions received and the regulatory experience of the OGTR:

- types of dealings classified as Exempt by Schedule 2 of the Regulations
- types of dealings classified as NLRDs by Schedule 3 of the Regulations
- days to be counted in the statutory timeframes

- oversight of NLRDs
- correction of internal cross references.

In 2009 the GTMC gave policy approval for drafting of amendments to the Regulations. The Regulator also sought advice from the Gene Technology Technical Advisory Committee (GTTAC) to inform finalisation of risk assessments prepared for proposals dealing with the classification of exempt dealings and NLRDs.

The Office of Legislative Drafting and Publishing (OLDP) has prepared draft Amendment Regulations in consultation with scientific and legal staff of the OGTR.

In line with the Government's regulatory impact analysis requirements, the OGTR has conducted a preliminary assessment of potential impacts of the proposed amendments on business and individuals or the economy. The impacts of the proposed amendments were assessed as low.

4. The Draft Gene Technology Amendment Regulations 2010

The specific proposals for amendments are described in five separate discussion papers, which are summarised in the following section. The recommendations contained in these papers provide the basis for the draft Amendment Regulations, which must be read in conjunction with the current Regulations. An unofficial compilation of these two documents has been prepared by OGTR to enable the recommended changes to be read in context. The discussion papers, draft Amendment Regulations and compilation are available at the OGTR website, or by contacting the Office.

5. Overview of the Discussion Papers

The following sections of this paper provide an overview of the recommendations detailed in each discussion paper. Readers interested in the technical considerations underpinning the recommended amendments are encouraged to read the relevant discussion paper(s), which analyse the issues and operational considerations in more detail.

5.1 Discussion paper No. 1 – Review of the Classification of Exempt Dealings

The Act provides for certain dealings with GMOs to be exempt from the requirement for licensing. Exempt dealings represent the lowest risk category of dealings with GMOs, which are classified in this category only after they have been assessed over many years as presenting negligible biosafety risks to public health and safety. The only legislative requirement for the conduct of exempt dealings is that there be no intentional release of GMOs into the environment. Dealings classified as exempt are defined in Schedule 2 of the Regulations. Following the consideration of risks, the following amendments are proposed to Schedule 2:

a) Host/vector systems

New Hosts

A host/vector system is an experimental system using a vector to facilitate introduction of a foreign gene or nucleic acid sequence into the host organism. Schedule 2, Part 2 of the Regulations lists host/vector systems which may be classified as exempt dealings. The list comprises hosts and corresponding vectors that have been extensively studied and are considered to present negligible biosafety risk to public health and safety or to the environment. A number of submissions to the review proposed additions to the list of exempt host/vector systems. It is proposed to add six hosts to the list:

- *Escherichia coli* Nissle 1917
- *Lactococcus lactis*
- *Streptococcus thermophilus*
- *Synechococcus* strains PCC 7942, PCC 7002 & WH 8102
- *Synechocystis* sp. strain PCC 6803
- *Yarrowia lipolytica*.

Removal of Avipox vectors

Avipox vectors have been included in the list of host/vector systems for exempt dealings since the Regulations were made in 2001, in combination with animal or human cell culture hosts. However, because these viral vectors are replication competent and have the ability to transduce human cells, inclusion in the list of exempt host/vector systems is not consistent with current classification of other viral vectors under the Regulations. It is proposed to remove avipox vectors from the list of host/vector systems for exempt dealings, resulting in dealings with these vectors being regulated in the same way as for other replication competent viral vectors able to transduce human cells, ie as NLRDs or Dealings Not Involving Intentional Release depending on the characteristics of the inserted nucleic acid.

Clarification of tissue culture hosts

It is proposed to clarify that where tissue culture is mentioned as an exempt host, it includes isolated cells and tissues, provided they are not able to spontaneously regenerate a whole animal or plant.

b) Non vector systems

It is proposed to amend the definition of a non-vector system to include situations where a vector was used but is no longer present in, or able to be remobilised from, the host. The proposed amendment would result in consistent categorisation of dealings which do not involve vectors which can be remobilised, whether this is because no such vector was used, or because the vector is no longer present.

c) Animals with modified somatic cells

It is proposed to classify as exempt dealings with animals which have had somatic cells genetically modified *in vivo* by a replication defective viral vector, if the vector is not able to be remobilised from the somatic cells after the viral vector is cleared from the animal. These dealings are currently classified as at least PC2 NLRDs. This proposal would provide for such dealings to be classified consistently with dealings with animals into which modified somatic cells have been introduced (provided that the somatic cells are not capable of giving rise to an infectious agent, and the animal is not infected with a virus that is capable of recombining with the genetically modified nucleic acid in the somatic cells). The proposed amendment would result in consistent classification of dealings with animals carrying modified somatic cells from which vectors cannot be remobilised, whether the modification occurred *in vivo* or *in vitro*.

d) Volume of GMO culture

Currently the maximum volume of culture of an exempt host/vector system that can be used in exempt dealing is 10 litres per single vessel. Following consideration of regulatory experience and of the extent to which certification guidelines for various facilities are designed for containment and management of culture spills, it is proposed to increase this limit to 25 litres per vessel.

e) Inclusion of oncogenic modifications in exempt dealings

The regulation of dealings involving oncogenic modifications has historically been guided by the need to protect laboratory workers. In particular, dealings involving both oncogenic modifications and viral vectors able to transduce human cells have previously been excluded from the exempt category on the basis that the particular risks these dealings may pose warrant greater regulatory oversight.

However, for dealings that do not involve vectors able to transduce human cells, there is no pathway to adverse effects resulting from entry of the vector and expression of oncogenic modifications in humans.

With the proposed exclusion of avipox vectors from the list of host/vector systems for exempt dealings, none of the host/vector systems permitted for use in exempt dealings will be able to transduce human cells. As a result, it is proposed that dealings with GMOs involving oncogenic modifications in listed host/vector systems be allowed to be conducted as exempt dealings.

5.2 Discussion paper No. 2 – Review of the classification of Notifiable Low Risk Dealings

NLRDs are dealings that do not involve the intentional release of a GMO into the environment and have been assessed over time as posing minimal risk to the health and safety of people and the environment. NLRD proposals must be assessed by an IBC to ensure dealings are properly classified, personnel are appropriately trained, dealings will be conducted in appropriate certified facilities, and that the NLRD will be notified to the Regulator.

Schedule 3, Part 1 of the Regulations lists NLRDs that are suitable for containment in facilities certified by the Regulator to at least PC1. Schedule 3, Part 2 lists NLRDs that are suitable for containment in PC2 certified facilities. Dealings that do not meet the requirements for classification as exempt dealings or NLRDs, or that are listed in Schedule 3, Part 3, must only be conducted if authorised by a licence issued by the Regulator. The following amendments are proposed to the scheduling of dealings as NLRDs, as commensurate with risk:

a) GM Rabbits and Guinea Pigs as NLRDs

It is proposed that dealings involving GM laboratory strains of rabbits and GM guinea pigs be classified as NLRDs suitable for containment in PC1 facilities, provided that the genetic modification does not confer an advantage on the animal or lead to the production of infectious agents. This is already the case for dealings involving GM mice and GM rats.

Certification requirements for PC1 facilities are such that it is highly unlikely that a rabbit or guinea pig could escape containment, even during handling. Additionally, laboratory strains of rabbits and guinea pigs have poor competitive ability in the environment. Dealings with these animals in containment are considered to pose minimal risks to the environment.

b) GM Plants

Most dealings with GM plants in containment are currently classified as NLRDs. Schedule 3 Part 2 requires specific containment measures for plant propagative material, such as using a facility designed to prevent escape of pollen, or bagging of inflorescences. Given the requirement that dealings be conducted in *appropriate* facilities, it is proposed to remove references to specific containment measures from Schedule 3 and to provide these requirements through the guidelines and certification instruments for the relevant plant containment facilities.

c) Volume of GMO culture

It is proposed to increase the GMO culture volume limit from 10 to 25 litres per vessel for exempt dealings (see corresponding proposal 5.1 d above) and dealings other than exempt host/vector systems in the NLRD category. This proposal is made following consideration of regulatory experience and of the extent to which certification guidelines for various facilities are designed for containment and management of culture spills.

d) Introduction of GM somatic cells into a human (somatic cell gene therapy)

Currently any dealings involving the intentional introduction of a GMO into a human being are excluded from the NLRD category, making all such dealings licensable. However, when human somatic cells are isolated from a patient, genetically modified and reintroduced into the patient (somatic cell gene therapy), and when the modified cells are not capable of secreting infectious agents, negligible risk is posed by the GMO. In addition, the definition of GMOs in Section 10 of the Act excludes humans who have undergone somatic cell gene therapy.

It should be noted that clinical trials involving human somatic cell gene therapy are overseen by Human Research Ethics Committees and/or the Therapeutic Goods Administration, who must consider patient safety and efficacy.

It is proposed to amend Schedule 3 Part 3 to remove dealings of this kind from the requirement to be licensed. Dealings involving the introduction of a GMO to a human, other than GM somatic cells, will still require authorisation by a licence and be subject to case by case risk assessment and management by the Regulator.

e) Classification of dealings with GM Risk Group 3 and 4 microorganisms as DNIRs

Standard *AS/NZS 2243.3 Safety in laboratories – microbiological aspects and containment facilities* (published jointly by Standards Australia and Standards New Zealand) is widely recognised as best practice for safety in microbiological laboratories. It is adhered to by the majority of Australian research institutions, clinical facilities and pathology laboratories. Physical containment requirements described in the Standard form the basis of the Regulator's certification guidelines for facilities.

The Standard classifies microorganisms into four risk groups (RG1-4) and indicates that work with RG3 and RG4 microorganisms, which may pose significant risks to the health and safety of laboratory workers and the community should be conducted in PC3 and PC4 facilities, respectively. However, an unintended consequence of the current scheduling clauses is that dealings with GM RG3 and RG4 microorganisms might be classified as PC2 NLRDs, provided the GMO posed no increased risk compared to the parent organism.

It is proposed that dealings with GM Risk Group 3 and 4 microorganisms be excluded from the NLRD category, to ensure that appropriate containment requirements can be imposed upon such dealings. This change would provide clarity to the regulated community about appropriate containment of such dealings.

5.3 Discussion paper No. 3 – Viral Vectors

Viral vectors are used extensively as a gene delivery system in gene technology research. Under the current Regulations undertaking many dealings involving viral vectors would require a licence from the Regulator.

Ongoing development of replication defective viral vectors has improved their safety profiles, reducing their ability to cause disease in people. Regulatory experience and increased scientific understanding suggest that the level of regulation currently required for some viral

vectors is not commensurate with the risks they pose. The current review of the Regulations therefore included a detailed consideration of the classification of viral vectors.

A number of amendments are proposed to the classification of viral vectors under the Regulations, including reclassification of dealings with some viral vectors from requiring a licence to be NLRDs (Schedule 3) or exempt (Schedule 2). The review and the proposed amendments build on the previous review undertaken by the Regulator which resulted in the Gene Technology Amendment Regulations 2006.

5.4 Discussion paper No. 4 – Oversight and Conduct of Notifiable Low Risk Dealings

Dealings with GMOs classified as NLRDs do not require a licence and therefore may be undertaken without the case by case assessment by the Regulator required for licensed dealings.

Current regulations 13 and 13A provide the framework for oversight of the conduct of dealings with GMOs classified as NLRDs.

A key aspect of NLRD oversight is the requirement for assessment by a properly constituted IBC **prior** to undertaking GMO dealings classified as NLRDs. The IBC assesses NLRD proposals to confirm that proposed dealings with GMOs are properly classified as NLRDs (ie the dealings are listed in Part 1 or Part 2 of Schedule 3 of the Regulations). However responsibility for complying with the requirements of the legislation for the conduct of NLRDs rests with the persons or organisations conducting those dealings.

Based on feedback from IBCs and accredited organisations and operational experience of the OGTR, a number of amendments are proposed to regulations 13 and 13A. The purpose of these amendments is to clarify the respective responsibilities of persons, organisations, and IBCs in the conduct of NLRDs. The amendments are in four key areas:

- Requirements for assessment and conduct of NLRDs
- Introducing a five year time limit on the authority to undertake an NLRD pursuant to an IBC assessment and notification to the Regulator
- Clarifying the requirements for NLRD proposals and the connection between the proposal assessed by an IBC and the dealings actually undertaken
- Introducing an explicit requirement that persons undertaking NLRDs do not compromise containment of the GMOs.

5.5 Discussion paper No. 5 – Timeframes and administrative matters

The time within which the Regulator must vary or refuse an application to vary a licence is 90 days from receipt of the application. It is proposed amend this timeframe to 90 working days, excluding days when the Regulator is waiting for information requested in writing from the applicant. The 90 day statutory timeframe was introduced by the Gene Technology Amendment Regulations 2006 following the Statutory Review. All other timeframes for applications are expressed in working days and the recommendation of the Statutory Review was actually for 90 working days. This amendment would make operation of timeframes consistent for all applications.

It is proposed to add to the list of days not counted in the decision-making timeframe for DIR licences days on which the Regulator cannot proceed with the decision-making process because he is waiting for advice from GTTAC. It is anticipated that operation of this proposed regulation would be rare, eg instances when advice from GTTAC is required in the interim between expiration and reappointment of GTTAC membership.

It is also proposed to make corrections to cross references which were not updated in the Gene Technology Amendment Regulations 2007.

6. Request for Comment

Comment on the proposed amendments is being sought from the public, organisations subject to regulation under the gene technology legislation, State and Territory governments, Australian Government agencies and GTTAC.

The Regulator's proposed amendments are formally laid out in the draft Amendment Regulations prepared by OLDP. OGTR has also provided an unofficial compilation with the current Regulations to enable the recommended changes to be read in context. To assist interested individuals and groups to understand the proposed amendments and participate in the consultation process, further information about the proposed amendments is provided in separate discussion papers explaining of the rationale for changes proposed under each of the five areas of amendment.

A set of Questions and Answers is also provided.

Pursuant to Section 142 of the Act, the Regulator is seeking advice from the public, the regulated community, States and Territories, GTTAC and prescribed Commonwealth agencies on whether proposed changes to classification of certain dealings with GMOs as exempt, NLRD or licensable are commensurate with, and provide for adequate management of, any risks to the health and safety of people and the environment.

The Regulator is also seeking feedback from stakeholders on other amendments proposed with the Draft Amendment Regulations, as outlined in the discussion papers.

In addition to inviting submissions on the proposed amendments to the Regulations, the Regulator would also welcome comment regarding any potential regulatory impacts that may result from the amendments. Feedback on this issue should consider direct impacts as well as consequential impacts resulting from the proposed regulatory changes.

The closing date for written submissions on the proposed amendments is **18 June 2010**.

7. Finalisation of the Amendment Regulations

Following consultation, the Amendment Regulations will be finalised taking into account matters raised. The Regulator will then recommend to the GTMC that the Regulations be amended. Subject to GTMC agreement, it is anticipated that the proposed Amendment Regulations will be considered by Executive Council and made by the Governor General in late 2010. As regulations are Legislative instruments, once made they will be tabled for consideration by the Australian Parliament. Regulated organisations will be informed of finalised amendments before they commence, to enable preparation for the changes, including assessment of the implications and taking appropriate action. It is anticipated that the Amendment Regulations will commence in the first quarter of 2011.

It is important to note that these Draft Amendment Regulations are published for the purpose of consultation only, they have no force and the proposed amendments are subject to change.