



Environmental
Protection Authority
Te Mana Rauhi Taiao

GMOs in New Zealand:

Recent Changes in the “Not GMO” Regulations

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THE HSNO ACT



The Hazardous Substances and New Organisms Act 1996

The HSNO Act gives the EPA the authority to determine whether any organism is or is not a new organism to New Zealand

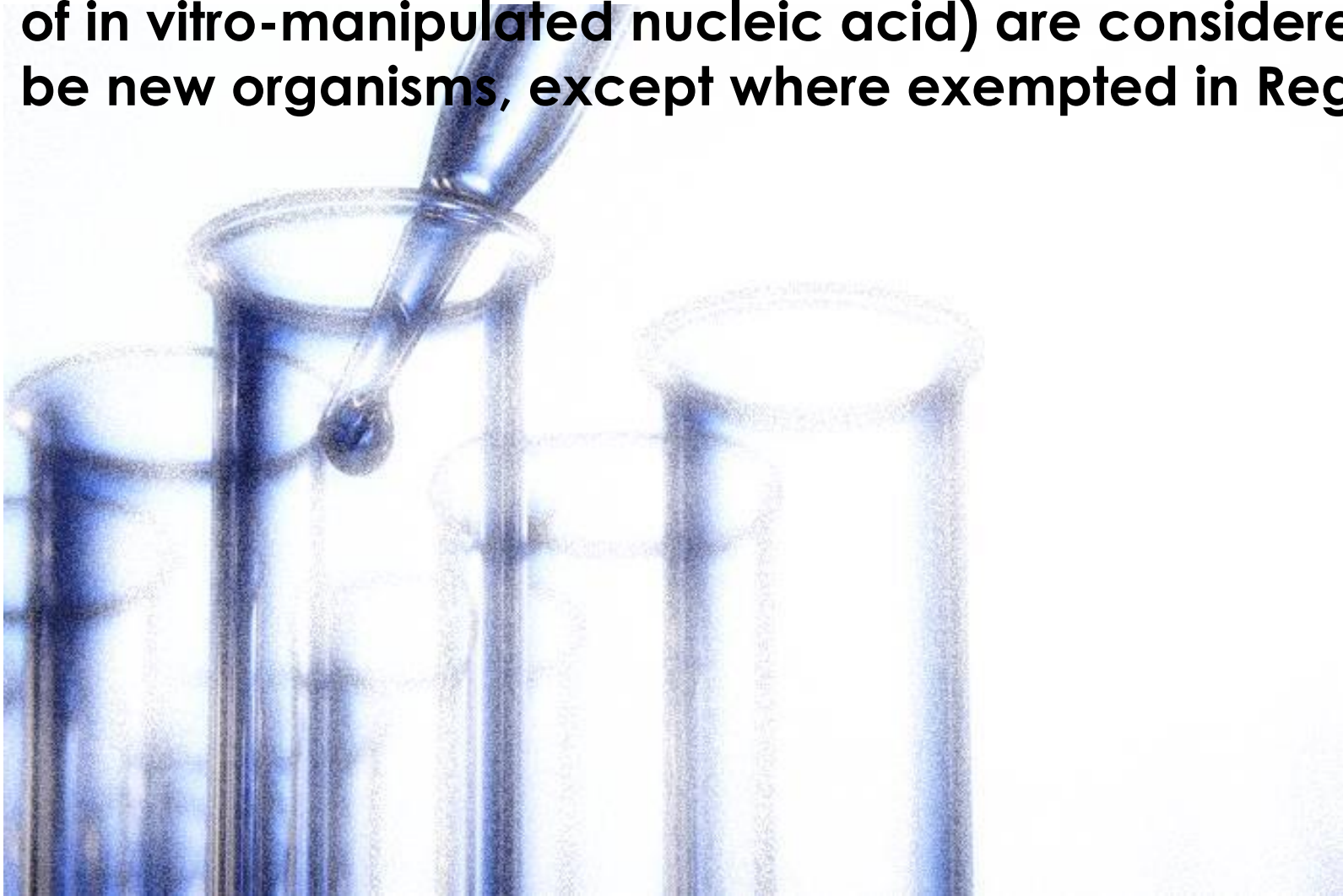
NEW ORGANISMS AND THEIR STATUS IN NEW ZEALAND

New organisms (any organism not present in New Zealand on or before 29 July 1998, or any GMO) are illegal in New Zealand, without EPA approval to be held in containment, or for release




WHAT IS A GMO IN NEW ZEALAND?

All GMOs (defined as any organism resulting from the use of in vitro-manipulated nucleic acid) are considered to be new organisms, except where exempted in Regulation



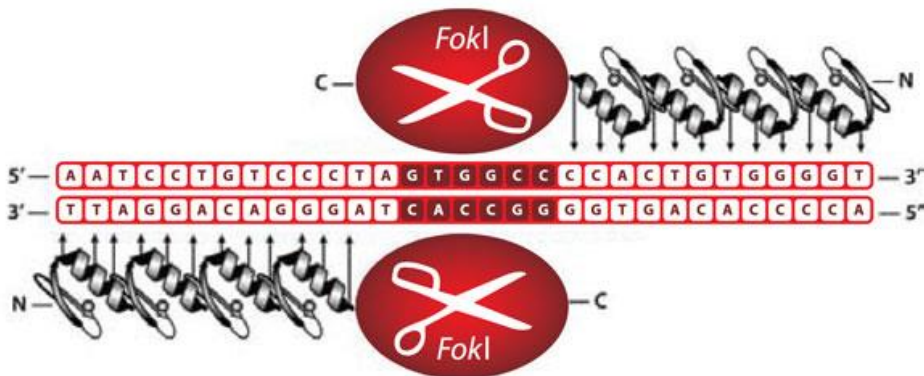
GMO EXEMPTIONS

The “Not GMO” regulations

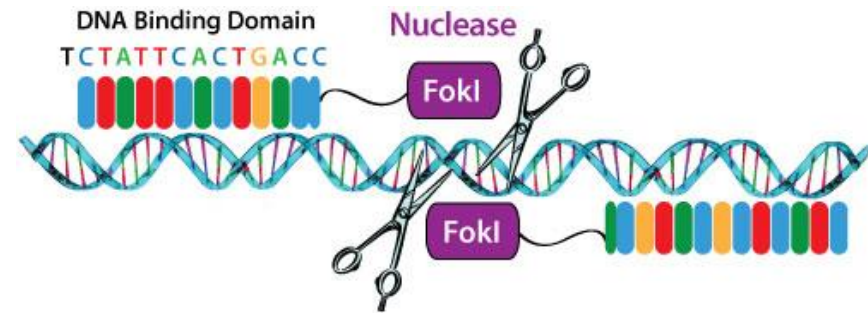
- Selection, natural regeneration, hand pollination
 - Regenerated from organs, tissues or cells, somaclonal variants, cell fusion
 - Chemical, radiation mutagenesis causing chromosomal rearrangements
 - Artificial insemination, superovulation, embryo transfer or splitting
 - Physiological nucleic acid movement (eg, conjugation)
 - Spontaneous deletions or rearrangements
- 

HSNO “NOT GM” REGULATIONS & SDN-1

SDN-1 genome editing was determined by EPA to be not GM in 2013 (Did not include CRISPR-Cas)



Zinc finger nuclease (ZFN)



Transcriptional activator-like effector nuclease (TALEN)

THE HIGH COURT RULING

Decision was challenged in the High Court, which ruled in 2014 that the exemptions must be viewed as an exhaustive list.

Since ZFN-1 & TALENs were not on the list, they must be considered to create GMOs.

Ruling called into question any technique that created point mutations



CHANGES TO REGULATIONS RESTORE THE STATUS QUO

EPA and MfE undertook a review of technologies and the regulations and conducted public consultation

In 2016, the regulations were changed to state that all techniques not in use before 29 July 1998 are considered to create organisms that are GMOs



CURRENT OUTDOOR USES OF GM ANIMAL AND PLANT BIOTECHNOLOGIES IN NZ

Field trials of GM cattle, sheep and goats



High casein milk
Hypoallergenic milk
Biopharming



cattle
cattle
Cattle, goats



Casein overexpression
BLG knockdown
mAB production

Field trial of GM radiata pine



Wood density
Growth rate
Wood quality traits (strength, stiffness, dimensional stability)

CURRENT APPROVALS OF MEDICINES AND VETERINARY MEDICINES IN NZ

GM oncolytic virus liver cancer therapy



Pexa-Vec (Global Phase 3 clinical trial)

GM equine flu vaccine



Proteqflu (horses for export only)



Determination of non-GMOs under section 26 of the HSNO Act

Replication-defective viral vectors (retrovirus, adenovirus, adeno-associated virus) are not organisms, therefore cannot be GMOs

Animals treated with these vectors are not GMOs, as they do not become part of the germline

Has enabled gene therapy research on large animals (impractical under containment conditions)



NEW DEVELOPMENTS

Predator-Free 2050 (July 2016)

A \$28 M initiative to rid New Zealand of rats, stoats and possums by 2050



<https://www.beehive.govt.nz/release/new-zealand-be-predator-free-2050>
<http://predatorfreenz.org/>

NEW DEVELOPMENTS

New Zealand's Parliamentary Commissioner for the Environment issued a report on the conservation status of New Zealand's native/endemic birds

<http://www.pce.parliament.nz/publications/taonga-of-an-island-nation-saving-new-zealands-birds>



Taonga of an island nation:
Saving New Zealand's birds

May 2017



Parliamentary Commissioner
for the **Environment**
Te Kaitiaki Taiao a Te Whare Pāremata

RECOMMENDATION

P. 103: “I recommend that the Minister for the Environment, the Minister of Conservation, and the

Minister of Science and Innovation direct officials to begin developing a programme of staged engagement with the general public on the potential uses of genetic techniques to control predators.”

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Thank you for listening!

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