



APPLICATION SUMMARY

Application number	ERMA200833
Application type	Notified, Non-GM release, Full Release
Applicant	LanzaTech New Zealand Limited Parnell 24 Balfour Road Auckland
Purpose	To release from containment the anaerobic microorganism <i>Clostridium magnum</i> to allow scale up from laboratory scale research into a pilot scale plant
Date formally received	3 November 2011

Application summary prepared by LanzaTech New Zealand Limited

LanzaTech was founded in 2005 to further the research and development of technology that promises to help meet the increasing global demand for affordable, low carbon transport fuels and sustainably produced chemical intermediates. Today LanzaTech's processes have proven capable of converting carbon-based waste gases (produced by industries such as steel manufacturing, oil refining and chemical production), and other gases (like those generated by gasification of forestry and agricultural residues, municipal waste and coal), into valuable fuels (including ethanol) and chemical products.

LanzaTech wishes to use the anaerobic bacterium *Clostridium magnum* to convert carbon-based gases to acetic acid. We have already carried out HSNO Act-approved contained laboratory-scale research. We now wish to scale up to a pilot plant in New Zealand, which necessitates this application for the organism to be released from the restrictions of a containment facility.

Benefits of its release

The initial benefit of the release of *C. magnum* will be the scientific knowledge gained from the operation of the pilot plant and honing the process for commercialisation. The establishment of the pilot plant will require capital investment and create work in the design and building industries as well as those jobs required to operate the plant. LanzaTech's technology could also deliver economic benefit from the sale of the acetic acid produced by *C. magnum*. In the future, assuming the technology works at an industrial scale and is adopted by industry, the release of this microorganism could result in the reduction of greenhouse gas (CO₂) emissions and a consequential reduction in the environmental impact of industrial processes.

LanzaTech respects the Maori tradition of kaitiakitanga, or guardianship of the environment.

Risks of its release

We have not identified any risks associated with the release of this organism. *Clostridium magnum* is unable to survive in air and dies in the presence of oxygen thus is termed a strict anaerobic bacteria. It is not known to cause any disease in humans, animals or plants.