

Achievement Standard

Subject Reference	Chemistry 3.3		
Title	Demonstrate understanding of chemical processes in the world around us		
Level	3	Credits	3
		Assessment	Internal
Subfield	Science		
Domain	Chemistry		
Status	Registered	Status date	04 December 2012
Planned review date	31 December 2019	Date version published	17 November 2016

This achievement standard involves demonstrating understanding of chemical processes in the world around us.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Demonstrate understanding of chemical processes in the world around us. 	<ul style="list-style-type: none"> Demonstrate in-depth understanding of chemical processes in the world around us. 	<ul style="list-style-type: none"> Demonstrate comprehensive understanding of chemical processes in the world around us.

Explanatory Notes

- 1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 8. The standard is aligned to the Nature of Science achievement objectives:

Understand that scientists have an obligation to connect their new ideas to current and historical scientific knowledge.

Develop and carry out investigations that extend their science knowledge, including developing their understanding of the relationship between investigations and scientific theories and models.

Use accepted science knowledge, vocabulary, symbols, and conventions when evaluating accounts of the natural world and consider the wider implications of the methods of communication and/or representation employed.

and the Material World achievement objective:

Apply knowledge of chemistry to explain aspects of the natural world and how chemistry is used in society to meet needs, resolve issues, and develop new technologies.

It is also related to the material in the *Teaching and Learning Guide for Chemistry*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of *Te Marautanga o Aotearoa* achievement objectives to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

- 2 *Demonstrate understanding* involves processing and interpreting given information to identify, describe, and give an account of chemical processes occurring in the natural world or developed in response to an issue or need. The account given must be supported by the use of chemistry vocabulary, symbols, conventions, and equations.

Demonstrate in-depth understanding involves making and explaining links between chemical processes, and the consequences of the chemical processes for the environment or people. This requires explanations that integrate chemistry vocabulary, symbols, conventions, and equations.

Demonstrate comprehensive understanding involves an evaluation of the impact of, and issues that have arisen from, the chemical processes. This involves elaborating on, comparing and contrasting, or analysing the links between the chemical processes and their consequences. This requires the consistent integration of chemistry vocabulary, symbols, conventions, and equations.

- 3 *Chemical processes in the world around us* include either the chemistry related to an environmental issue or the chemistry involved in the development of new technology to meet a societal need. Examples of environmental issues may include an aspect of the greenhouse effect, ozone depletion, acidification of oceans, acid rain, volcanic eruptions, or pollution. Examples of technologies may include an aspect of polymers, energy production, pharmaceuticals, or food production.

- 4 Conditions of Assessment related to this achievement standard can be found at www.tki.org.nz/e/community/ncea/conditions-assessment.php.

Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.