Achievement Standard

Subject Reference	Chemistry 2.6				
Title	Describe thermochemical and equilibrium principles				
Level	2	**Credits**	5	**Assessment**	External
Subfield	Science				
Domain	Chemistry				
Status	Expiring	**Status date**		17 November 2011	

This achievement standard is expiring. Assessment against the standard must take place before the expiry date set out below.

Expiry date	31 December 2011	**Date version published**	17 November 2011

This achievement standard involves the understanding of principles of chemical reactivity by describing and using simple thermochemical and equilibrium information.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Describe thermochemical and equilibrium principles.	• Interpret information about thermochemical and equilibrium systems.	• Discuss information about thermochemical and equilibrium systems.

Explanatory Notes

1 This achievement standard is derived from achievement objectives 7.1, 7.2 and 7.3 in *Chemistry in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1994, p. 23.

2 Thermochemical principles are limited to:
- classification of reactions as exothermic and endothermic
- determination of enthalpy changes
- factors affecting rates of reaction – restricted to changes in concentration, temperature, surface area, and the presence of a catalyst.

3 Equilibrium principles are limited to:
- the dynamic nature of equilibrium and the effect of changes to the system. This is restricted to changes in temperature ($\Delta_r H$ given), concentration, pressure, or addition of a catalyst

- equilibrium constant expressions for homogeneous systems and the significance of the magnitude of *K*
- the nature of acids and bases in terms of proton transfer
- calculations involving K_w and pH
- properties of aqueous solutions of strong and weak acids and bases including ionic species such as NH_4^+. The properties are restricted to conductivity, rate of reaction, and pH.

4 Terms:
- *Describe* requires the student to identify, name, draw, give characteristics of, or an account of.
- *Interpret* requires the student to provide reasons for how and why.
- *Discuss* requires the student to show understanding as to how or why something occurs by linking chemistry ideas/principles. It may involve students in justifying, relating, evaluating, comparing and contrasting, analysing.

Replacement Information
This achievement standard has been replaced by AS91166.

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.

Consent and Moderation Requirements (CMR) reference 0226