

**Field Sciences****Review of *Chemistry* unit standards**

<b>Subfield</b>	<b>Domain</b>	<b>ID</b>
Science	Chemistry	8435-8439, 8443-8453, 8455-8457, 8459-8465, 8469, 8470, 9242, 12363, 16565-16568

NZQA National Qualifications Services (NQS) has completed the review of the unit standards listed above.

**Date new versions published**

**June 2010**

**Planned review date**

**December 2015**

**Summary**

These unit standards were reviewed as they had passed their planned review date of November 2003.

Prior to the review, feedback from users of these unit standards indicated a need to increase their practical component for them to be nationally endorsed and fit for purpose.

The review panel (made up of representatives from moderators, industry and tertiary sector) met in May and July 2009 and the unit standards were reviewed. The review panel considered feedback in finalising draft unit standards.

Changes were made to the unit standards and drafts were distributed to the consultation network for comment in October 2009. The consultation network included all accredited providers and those that signalled an interest in this review. There was no objection to the changes made to, and no issues identified with, the reviewed unit standards.

**Main changes**

- Unit standards were updated to include the assessment of practical skills, where applicable.
- Special notes relating to legislation, references and Australian/New Zealand standard 2243 were updated.
- Titles of unit standards 8436, 8439, 8443, 8444, 8446, 8449, 8451, 8456, 9242 and 16566 were amended to align with changes made to elements and/or to better reflect the main outcome of the standard.
- Elements, performance criteria, range statements and special notes were updated to clarify assessment requirements.

- Unit standards 8437, 8438, 8447, 8460-8465, 8469, and 16568 were designated expiring and were not replaced.
- Unit standard 8435 was replaced by two unit standards 26341 and 26342 to perform analysis using titrimetric, and gravimetric, techniques.
- Unit standard 8449 increased in level from 4 to 5 to better reflect its outcomes against the NQF level descriptors. Accreditation for assessing unit standard 8449 will not be extended to the Base Scope of Accreditation for Schools (BSAS), as it is now in advance of the requirements of the school curriculum for Chemistry. It is also noted that it was only ever used once by a secondary school (in 2001).
- Unit standard 16567 decreased in level from 5 to 4 to better reflect its outcomes against the NQF level descriptors.
- Unit standards 8436, 8449, 8450, 8453, 8457, 8470, 9242, and 16567 increased in credits to better reflect the time spent on learning, practice, and assessment.
- New unit standards 26343, 26344, 26345, 26346 and 26347 were developed within this domain for the assessment of contemporary techniques and skills in sustainability, LIMS, and technical reporting.

### Category C and D unit standards will expire at the end of December 2012

#### Impact on existing accreditations

Current Accreditation for			Accreditation extended to		
Nature of accreditation	Classification	Level	Nature of accreditation	ID	Level
Field	Sciences	4	Standard	8449	5
Subfield	Science	4	Standard	8449	5

#### Impact on registered qualifications

Key to type of impact	
<b>Affected</b>	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
<b>Not materially affected</b>	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

The following table identifies qualifications developed by other SSBs that are impacted by the outcome of this review. The SSBs have been advised that the qualifications require revision. The standards that generated the status *Affected* are listed in **bold**.

Qualification Title and Reference	ID	SSB Name
National Certificate in Design (Draughting) (Level 2) [Ref: 0640]	<b>8449, 8450, 8451</b>	InfraTrain New Zealand Limited
National Certificate in Hazardous Waste (Processing and Disposal) (Level 4) [Ref: 1403]	<b>8436</b>	NZ Extractives Industries Training Organisation

## Detailed list of unit standards – classification, title, level, and credits

Key to review category	
A	Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number
B	Changes made, but the overall outcome remains the same - the new version of the standard carries the same ID and a new version number
C	Major changes that necessitate the registration of a replacement standard with a new ID
D	Standard will expire and not be replaced

## Sciences &gt; Science &gt; Chemistry

ID	Title	Level	Credit	Review Category
8435	Perform analysis using classical analytical techniques	4	6	C
<b>26341</b>	<b>Perform titrimetric analyses</b>	<b>4</b>	<b>6</b>	
<b>26342</b>	<b>Perform gravimetric analyses</b>	<b>4</b>	<b>4</b>	
8436	Perform laboratory solvent and distillation separation techniques	4	3	B
	<b>Demonstrate laboratory solvent and distillation separation techniques</b>		<b>5</b>	
8437	Perform electro-chemical analysis	6	4	D
8438	Apply knowledge of thermal analysis	6	3	D
8439	Perform titrimetric analyses	5	5	B
	<b>Perform titrations</b>			
8443	Determine physical properties of matter	4	3	B
	<b>Evaluate physical properties of matter</b>			
8444	Perform inorganic analysis of waters	6	6	B
	<b>Perform analysis of water</b>			
8445	Demonstrate knowledge of the composition and analysis of polluted and unpolluted air	6	5	B
8446	Perform common spectroscopic analyses	6	6	B
	<b>Demonstrate spectroscopic techniques</b>			
8447	Demonstrate knowledge of the use of specialised instrumental techniques for chemical analysis	6	8	D
8448	Demonstrate knowledge of acid-base pH measurement and equilibria	4	5	B
8449	Demonstrate knowledge of atomic structure	4	2	B
	<b>Demonstrate knowledge of atomic electronic structure</b>	<b>5</b>	<b>4</b>	
8450	Demonstrate knowledge of thermodynamics	5	2	B
			<b>3</b>	
8451	Demonstrate knowledge of reaction rates and mechanisms	5	5	B
	<b>Demonstrate knowledge of reaction rate and mechanisms</b>			
8452	Demonstrate knowledge of the behaviour of gases	4	2	B
8453	Perform qualitative anion and cation analysis	4	2	B
			<b>3</b>	
8455	Describe organic structures and synthesise organic compounds	5	6	B

ID	Title	Level	Credit	Review Category
8456	Demonstrate knowledge of aromatic chemistry <b>Demonstrate knowledge of, and synthesise, aromatic compounds</b>	5	3	B
8457	Apply knowledge of the chemistry of carbohydrates, lipids and proteins	5	5 8	B
8459	Perform gas chromatography	6	4	B
8460	Demonstrate knowledge of alloy formation	6	2	D
8461	Demonstrate knowledge of surface chemistry	6	5	D
8462	Demonstrate knowledge of silicates and allied materials and perform analysis	6	5	D
8463	Demonstrate knowledge of colligative properties	5	3	D
8464	Demonstrate knowledge of metallic corrosion	6	2	D
8465	Demonstrate knowledge of flow methods for analysis	5	2	D
8469	Demonstrate knowledge of phase equilibria	5	3	D
8470	Demonstrate knowledge of electrochemistry	5	2 4	B
9242	Perform titrimetric analyses using colour indicators <b>Perform titrimetric analysis using colour indicators</b>	4	2 5	B
12363	Demonstrate knowledge of chromatography systems	5	4	B
16565	Demonstrate knowledge of organic compounds	4	5	B
16566	Perform organic chemistry functional group analysis and interconversion <b>Perform organic chemistry functional group analysis</b>	4	3 5	B
16567	Demonstrate knowledge of the periodic table and properties of selected elements	5 4	5 7	B
16568	Demonstrate knowledge of inorganic chemistry and its industrial applications	5	3	D
<b>26345</b>	<b>Demonstrate knowledge of an issue in a sustainable chemistry context</b>	<b>5</b>	<b>4</b>	<b>New</b>

## Sciences &gt; Science &gt; Science - Core

ID	Title	Level	Credit	Review Category
<b>26344</b>	<b>Use a laboratory information management system</b>	<b>4</b>	<b>2</b>	<b>New</b>
<b>26346</b>	<b>Write a scientific report based on results of a scientific process in an industrial or research laboratory</b>	<b>5</b>	<b>10</b>	<b>New</b>
<b>26347</b>	<b>Write, and present orally, a scientific report in an industrial or research laboratory</b>	<b>6</b>	<b>30</b>	<b>New</b>