

Our ref: AS/NQ/Apr07

4 April 2007

To: Directors of Education  
Head Teachers  
SQA Co-ordinators  
Customer Account Managers  
Principal Teachers of Science  
Principal Teachers of Chemistry

**For the attention of all staff responsible for the delivery of National Qualifications in Chemistry**

Action by Recipient	
	Response required
✓	Note and pass on
	None — update/information only

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Dear Colleague

**National Qualifications update — Chemistry**

This letter provides centres with information on developments in National Qualifications in Chemistry.

**1. Principal Assessor reports**

Centres are reminded that the Principal Assessor reports for the 2006 examination diet are available on the NQ Chemistry subject-specific page of SQA's website ([www.sqa.org.uk](http://www.sqa.org.uk)).

The Principal Assessor reports contain important information on candidate performance, statistical information on candidate entries and grade boundaries, and advice to centres for preparing future candidates.

It is recommended that centres download these reports as the information they contain may be used to inform teaching and learning.

**2. Senior Moderator reports**

Centres are reminded that the Senior Moderator reports for 2006 moderation events are available on the NQ Chemistry subject-specific page of SQA's website.

The Senior Moderator reports contain important information on issues regarding internal assessment for the following areas:

- ◆ Standard Grade Chemistry
- ◆ National Units in Chemistry

◆ Advanced Higher Chemistry ‘daybooks’

It is recommended that centres download these reports.

The Chemistry Assessment Panel has asked me to clarify the position regarding graphs in the ‘daybook’ and final report. Where a candidate has graphed results, a photocopy or second printout — if done using graphing software — is acceptable in the ‘daybook’.

### 3. Marking instructions

The detailed marking instructions for Chemistry (Standard Grade, Intermediate 1, Intermediate 2, Higher and Advanced Higher) are available to download from the NQ Chemistry subject-specific page of SQA’s website.

Please note that the marking instructions for the Advanced Higher Investigation, which were previously available from the secure website, are now available on our main website.

### 4. Chemistry Data Booklets

The Chemistry Data Booklets for Access 3 & Intermediate 1, Standard Grade & Intermediate 2, and Higher & Advanced Higher have been reissued to centres. There were no changes to the content of the Access 3 & Intermediate 1 Data Booklet.

In the main, changes to the other booklets have been limited to correcting any inaccurate data or typographical errors. Some additional information has been added where it was thought appropriate. In addition, at Higher and Advanced Higher, some of the information in the tables has been reordered and the NMR Correlation Spectra has been replaced. The covers have also been redesigned. A full list of the changes is provided in Appendix 1.

There will be two bulk issues of the new booklets. The first will be for classroom and internal assessment use; the second will be as part of the examination diet stationery. The new editions of the Data Booklets are already available to download from the NQ Chemistry page of SQA’s website.

**Since these are the editions that will be used in the 2007 examination diet, it is imperative that all Chemistry candidates are given opportunities to familiarise themselves with them.**

A couple of minor issues have been brought to my attention that were missed during proofing of the Higher & Advanced Higher booklet. On page five, in the key for the Periodic Table, the word ‘covalent’ has been misspelled as ‘convalent’. On page six, in the table of Melting and Boiling Points of Selected Oxides, the formula for dinitrogen tetroxide has been entered as  $N_2O_2$  — it should be  $N_2O_4$ .

## **5. Chemistry formulae**

The Chemistry Assessment Panel has received correspondence from teachers requesting that Chemistry formulae be made available in the same way that Physics candidates now have access to Physics formulae for assessment purposes.

The Panel members have asked me to seek the views of the Chemistry community on whether such a change should be made. Interested parties are invited to submit their views to myself either in writing or via e-mail by 18 June 2007. I would request that views both for and against such a move are supported by reasoned argument. The Chemistry Assessment Panel will then consider all responses in order to make a decision on this issue.

## **6. Review of NQ Servicing Units**

SQA is currently rationalising and modernising the portfolio of NQ Units, known as servicing Units, which are not component Units of NQ National Courses.

A consultation exercise was undertaken by SQA with centres that currently utilise servicing Units in the cognate area 139 (Chemistry). As a result of this consultation, some servicing Units, with little or no uptake in the past three years, will be removed from the NQ catalogue as from August 2008. Other Units will be updated in terms of content and/or assessment over the next two to three years. Further consultation was undertaken with the Scottish Wider Access Programme (SWAP) organisations and with Nurse Training Institutions, to determine the impact of the removal of servicing Units from the portfolio. The outcome of this consultation was that component Units of National Courses can be used to replace the deleted service Units.

A full list of Units to be removed from the catalogue and a proposed timetable of when Units will be updated is given in Appendix 2 of this letter. Please note that the proposed timetable for the updating of the servicing Units is for guidance only.

## **7. Progression statistics**

Appendix 3 of this letter gives statistics showing the progression of candidates in NQ Chemistry courses. These tables are included as information for centres. Centres should note that some of the tables are based on small numbers, in particular the Intermediate 1 to Intermediate 2 progression, so caution should be used when attempting to draw conclusions from the data.

## **8. Professional Development Workshop**

A Professional Development Workshop on the standards applied to the marking of the 2006 Advanced Higher Chemistry question paper and investigation report took place in November 2006 at Napier University in Edinburgh. Fifty delegates from across Scotland attended the event. SQA wishes to thank both the Principal Assessor and Advanced Higher Chemistry examiner who prepared and delivered a very successful workshop.

Plans are already underway for events in 2007 and details will be posted on our website and notified to SQA Co-ordinators in due course.

## 9. Appeals

Centres are advised that an updated and revised edition of the document *Estimates, Absentees and Assessment Appeals: Guidance on evidence requirements* (October 2006) is available on SQA's website. Links to download the document can be found on all NQ subject-specific pages.

Centres are reminded that, when submitting evidence for appeals, the evidence **must demonstrate candidate attainment across the whole Course**. This applies to all levels of qualifications, including Standard Grade.

For Intermediate 1, Intermediate 2, Higher and Advanced Higher, a high scoring NAB can be submitted as additional evidence for an appeal at grade C, but it is not valid evidence for an appeal at either grade A or grade B.

At Standard Grade, where a centre is submitting an appeal for Credit level from a result of Grade 4 or below, they should consider including evidence at General as well as Credit level. This would allow the examiners to see if a partial upgrade was possible where the evidence does not justify an upgrade to Credit level.

## 10. Multiple-choice question writing

Each year SQA holds multiple-choice question writing events, where teachers are invited to attend a weekend training and writing event (this may be Friday evening and Saturday or Friday evening through to Sunday), after which they are asked to produce a set number of questions for possible inclusion in the Chemistry Item Bank, from which the examination questions are selected.

Participants are paid for attending the training events and writing the questions. I am seeking to extend the pool of writers we use, so if any Chemistry teacher is interested in becoming involved they should complete the application form in Appendix 4 and return it to me. I would ask that applicants give full details of teaching experience including levels taught and the years in which these were taught. Please avoid generalisations such as 'All levels — 1990 onwards'.

You do not need to have worked for SQA as a marker, examiner, etc, and new or recent recruits to Chemistry teaching are as welcome to apply as established teachers. I cannot guarantee that everyone who applies will be selected but we will hold your details for events in the future.

## 11. Review of Chemistry National Qualifications Courses

After a two year hiatus, two meetings of the Chemistry Subject Advisory Group recently took place. The group met to discuss the proposals made in 2004/05 for reviewing Higher and Advanced Higher Chemistry. It was agreed that further work is required on the proposals for change before widespread consultation is carried out.

I trust that the contents of this letter are helpful to you. Please do not hesitate to contact me if you require further clarification.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'A. Shield', written in a cursive style.

Andrew Shield  
Qualifications Manager  
NQ Directorate

## Appendix 1

### Amendments to Chemistry Data Booklets

#### Access 3 and Intermediate 1

No changes to content.  
Cover redesigned.

#### Intermediate 2 and Standard Grade

Cover redesigned.

Page 5: Silver nitrate entry corrected.

Page 6: Missing values of mp for sodium chloride and bp for calcium oxide in ionic compounds table added.

Page 8: Elements 104 to 109 added to periodic table.

#### Higher and Advanced Higher

Cover redesigned.

Page 6: Values of mp and bp for Nitrogen corrected in the Selected Oxides table.

Page 11: Standard Reduction Potential added for  $2\text{H}_2\text{O}(\ell) + 2\text{e}^-$  and  $\text{O}_2(\text{g}) + 2\text{H}_2\text{O}(\ell) + 4\text{e}^-$ .

Page 12:  $\text{pK}_a$  values now given to 2 decimal places.  
Entries reordered into a more logical sequence.  
Values added for methylammonium and phenylammonium ions.

Page 15: New Proton NMR Spectra Correlation Chart.

Page 16: Standard Entropy Values reordered into a more logical sequence.  
Values added for  $\text{Cs}(\text{s})$ ,  $\text{H}_2\text{O}(\ell)$  and  $\text{H}_2\text{O}(\text{g})$ .

Page 17: Electron Affinities of Selected Elements table moved to page 18.  
Standard Molar Enthalpies of Atomisation added for H, N, O, F, Cl and Br.

Page 18: Electron Affinities rounded to whole numbers.  
All values for Hydration Enthalpies of Selected Ions amended to reflect most up-to-date data.

Entries for  $\text{Co}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Cu}^+$  and  $\text{O}^{2-}$  removed.

Entries for  $\text{OH}^-$ ,  $\text{Cs}^+$ ,  $\text{Rb}^+$  and  $\text{Al}^{3+}$  added.

Page 19: Units removed from ionic product of water.

## Appendix 2

Table 1: Units to be deleted from the NQ catalogue from August 2008

<i>Unit number</i>	<i>Unit title</i>	<i>Cognate group</i>	<i>Comments</i>
EB1B 13	Inorganic Chemistry: Structure and Reactions	139	
EB1A 13	Organic Chemistry: Reactions and Synthesis Pathways	139	
EB6Y 13	Techniques Prior to Analysis	139	
EC2X 13	Instrumental Chemical Analysis	139	
EB1C 13	Chemical and Instrumental Techniques	139	
E8EM 13	Clinical Chemistry	139	
EA45 12	Using Avogadro's Constant	139	
EA46 12	Interpreting Chemical Reactions	139	
EA47 12	The Nature of Organic Compounds	139	

Table 2: Units to be reviewed from April 2007 until March 2010

<i>Unit number</i>	<i>Unit title</i>	<i>Cognate group</i>	<i>Comments</i>
EB71 12	Laboratory Safety	139	Levelling check
EB75 11	Introduction to Chemistry	139	Amend assessment
EB76 11	Introducing Quantitative Chemistry	139	Amend assessment
EA43 11	Introducing Metals and Electrochemistry	139	Amend assessment
EA44 11	Introducing Petrochemicals and Fertilisers	139	Amend assessment
EB19 13	Physical Chemistry: Thermodynamics and Chemical Equilibrium	139	Amend assessment
EB75 11	Introduction to Chemistry	139	Review

Table 3: Units to be retained without amendment

<i>Unit number</i>	<i>Unit title</i>	<i>Cognate group</i>	<i>Comments</i>
D935 12	Experimental Procedures: Chemistry	139	

## Appendix 3

### Progression Statistics

#### Standard Grade to Higher

Progression from SG (1:1) to Higher		
Result	Total	%
A	1,718	51.9%
B	989	29.9%
C	469	14.2%
D	78	2.4%
Fail	57	1.7%
Total	3,311	100.0%

Progression from SG (2:2) to Higher		
Result	Total	%
A	32	2.6%
B	165	13.3%
C	429	34.5%
D	236	19.0%
Fail	381	30.7%
Total	1,243	100.0%

Progression from SG (1:2) to Higher		
Result	Total	%
A	71	10.1%
B	232	33.0%
C	250	35.6%
D	77	11.0%
Fail	73	10.4%
Total	703	100.0%

Progression from SG (2:3) to Higher		
Result	Total	%
A	1	0.8%
B	5	3.8%
C	30	22.9%
D	24	18.3%
Fail	71	54.2%
Total	131	100.0%

Progression from SG (2:1) to Higher		
Result	Total	%
A	33	5.5%
B	159	26.4%
C	247	41.0%
D	81	13.5%
Fail	82	13.6%
Total	602	100.0%

Progression from SG (3:2) to Higher		
Result	Total	%
A	1	0.5%
B	4	2.0%
C	37	18.4%
D	31	15.4%
Fail	128	63.7%
Total	201	100.0%

## Intermediate 2 to Higher

Progression from Int 2 (A1) to Higher		
Result	Total	%
A	208	85.2%
B	31	12.7%
C	3	1.2%
D	0	0.0%
Fail	2	0.8%
Total	244	100.0%

Progression from Int 2 (B4) to Higher		
Result	Total	%
A	3	2.1%
B	12	8.5%
C	50	35.2%
D	24	16.9%
Fail	53	37.3%
Total	142	100.0%

Progression from Int 2 (A2) to Higher		
Result	Total	%
A	77	24.6%
B	103	32.9%
C	100	31.9%
D	17	5.4%
Fail	16	5.1%
Total	313	100.0%

Progression from Int 2 (C5) to Higher		
Result	Total	%
A	1	1.7%
B	1	1.7%
C	8	13.8%
D	12	20.7%
Fail	36	62.1%
Total	58	100.0%

Progression from Int 2 (B3) to Higher		
Result	Total	%
A	1	1.0%
B	18	18.0%
C	39	39.0%
D	21	21.0%
Fail	21	21.0%
Total	100	100.0%

Progression from Int 2 (C6) to Higher		
Result	Total	%
A	0	0.0%
B	2	4.7%
C	5	11.6%
D	9	20.9%
Fail	27	62.8%
Total	43	100.0%

## Higher to Advanced Higher

Progression from Higher (A1) to Adv Higher		
Result	Total	%
A	374	59.9%
B	159	25.5%
C	63	10.1%
D	12	1.9%
Fail	16	2.6%
<b>Total</b>	<b>624</b>	<b>100.0%</b>

Progression from Higher (B4) to Adv Higher		
Result	Total	%
A	3	1.1%
B	33	12.2%
C	90	33.3%
D	47	17.4%
Fail	97	35.9%
<b>Total</b>	<b>270</b>	<b>100.0%</b>

Progression from Higher (A2) to Adv Higher		
Result	Total	%
A	111	16.0%
B	268	38.7%
C	195	28.1%
D	51	7.4%
Fail	68	9.8%
<b>Total</b>	<b>693</b>	<b>100.0%</b>

Progression from Higher (C5) to Adv Higher		
Result	Total	%
A	0	0.0%
B	9	9.6%
C	24	25.5%
D	15	16.0%
Fail	46	48.9%
<b>Total</b>	<b>94</b>	<b>100.0%</b>

Progression from Higher (B3) to Adv Higher		
Result	Total	%
A	12	4.5%
B	67	25.2%
C	96	36.1%
D	44	16.5%
Fail	47	17.7%
<b>Total</b>	<b>266</b>	<b>100.0%</b>

Progression from Higher (C6) to Adv Higher		
Result	Total	%
A	0	0.0%
B	2	3.8%
C	13	24.5%
D	9	17.0%
Fail	29	54.7%
<b>Total</b>	<b>53</b>	<b>100.0%</b>

## Intermediate 1 to Intermediate 2

Progression from Int 1 (A1) to Int 2		
Result	Total	%
A	18	52.9%
B	11	32.4%
C	1	2.9%
D	2	5.9%
Fail	2	5.9%
Total	34	100.0%

Progression from Int 1 (B4) to Int 2		
Result	Total	%
A	0	0.0%
B	0	0.0%
C	3	14.3%
D	0	0.0%
Fail	18	85.7%
Total	21	100.0%

Progression from Int 1 (A2) to Int 2		
Result	Total	%
A	6	8.2%
B	14	19.2%
C	24	32.9%
D	5	6.8%
Fail	24	32.9%
Total	73	100.0%

Progression from Int 1 (C5) to Int 2		
Result	Total	%
A	0	0.0%
B	1	5.9%
C	1	5.9%
D	0	0.0%
Fail	15	88.2%
Total	17	100.0%

Progression from Int 1 (B3) to Int 2		
Result	Total	%
A	0	0.0%
B	1	3.6%
C	4	14.3%
D	2	7.1%
Fail	21	75.0%
Total	28	100.0%

Progression from Int 1 (C6) to Int 2		
Result	Total	%
A	0	0.0%
B	0	0.0%
C	0	0.0%
D	0	0.0%
Fail	10	100.0%
Total	10	100.0%

## Appendix 4

### Multiple-choice Writer Application Form (Chemistry)

<b>Name</b>			
<b>Address</b>			
<b>Contact e-mail</b>			
<b>Contact telephone no.</b>			
<b>Centre details</b>			
<b>Teaching experience</b>	<b>Presenting centre(s)</b>	<b>Presenting year(s)</b>	
<b>Intermediate 1</b>			
<b>Intermediate 2</b>			
<b>Higher</b>			
<b>Advanced Higher</b>			
<b>Standard Grade</b>			
<b>O Grade</b>			
<b>CSYS</b>			
<b>Signature</b>		<b>Date</b>	

Continued on next page

Please provide details of one referee:

<b>Referee:</b>	
<b>Are you currently an SQA appointee?</b>	<b>YES / NO</b> (delete as applicable) <b>Marker / examiner / verifier / other</b>
<b>Any other relevant information</b>	