NQ Verification 2017–18
Key Messages Round 2

01 Section 1: Verification group information

Verification group name:	**Chemistry**
Verification event/visiting information	**Event and visiting**
Date published:	**May 2018**

National Courses/Units verified:

H21M 74	National 4	Chemistry Assignment (Added Value Unit)
H4KK 76	Higher	Researching Chemistry
H7XR 77	Advanced Higher	Researching Chemistry

02 Section 2: Comments on assessment

Assessment approaches

Almost all centres verified had used the published unit assessment support packs (UASPs) which meant that there were generally few problems concerning the approach to assessment.

H21M 74 Chemistry Assignment (Added Value Unit)

For this session the National 4 added value unit must be assessed using the criteria exemplified in the '*Understanding the next steps for session 2016–17*' document published in August 2016. This document exemplifies how marks are allocated to each of the five assessment standards giving a total mark out of 14. Candidates must achieve 7 marks or more to pass. The most recent UASP (published April 2018) for the added value unit is now available on the SQA Secure website and exemplifies how marks are allocated.

Of the centres verified this year there were common topics relating to a key area of the National 4 course. This included energy from fuels, fertilisers, rates of reaction and electrochemical cells.

Centres are reminded that a National 5 assignment can be used as evidence for the National 4 added value unit. If a centre does use a National 5 assignment for

a candidate's evidence for the added value unit then an assessor must judge this evidence using the marking criteria for the added value unit, applying marks out of 14. If a candidate fails to achieve 7 marks or more they can be given the opportunity to re-draft their report.

Where a centre is assessing a National 5 assignment for the National 4 added value unit and submitting the National 5 assignment for external assessment purposes, the evidence cannot be assessed until after the National 5 assignment has been submitted. This ensures the conditions of assessment are maintained, ie no teacher and/or lecturer feedback on the report and no re-drafting.

During verification there was some evidence that centres were giving candidates the opportunity to re-draft their National 5 assignment reports even though candidates had achieved at least 7 marks. Centres should only re-assess candidates when they fail to achieve at least 7 marks. There were examples of candidates failing to achieve a mark for an appropriate structure in the added value unit criteria, due to attempting a re-draft of their National 5 assignment report.

H4KK 76 Researching Chemistry (Higher)

There are two outcomes for this unit at Higher: outcome 1 (assessment standard 1.1) which involves candidates gathering and recording information from two sources related to their research topic, and outcome 2 (assessment standards 2.1 and 2.2) which involves planning and carrying out practical research.

The chosen research topic should draw on one or more key area(s) of the Higher Chemistry course. Research topics included: the concentration of vitamin C in fruit juices, the combustion of alcohols, and the viscosity of alcohols related to hydroxyl groups.

All centres verified this session for the Researching Chemistry unit had used the most up to date SQA UASP and there were no issues with the approach to assessment.

H7XR 77 Researching Chemistry (Advanced Higher)

There are two outcomes for this unit: outcome 1 and outcome 2.
Visiting verification focused on outcome 1, which has three assessment standards (1.1, 1.2 and 1.3).

At Advanced Higher there was a wide variety of research topics although some are common to several centres such as aspirin synthesis, calcium carbonate content of antacid tablets, calcium carbonate content of shells, copper in coins, wine analysis, and the ethanoic acid content of vinegars. All topics verified were appropriate to Advanced Higher Chemistry.

All centres verified this session for the Researching Chemistry unit had used the most up to date SQA UASP and there were no issues with the approach to assessment.

Assessment judgements

On the vast majority of candidate evidence there were clear annotations by assessors and also internal verifiers showing where individual assessment standards had been achieved. Overall assessment judgements at all three levels were accurate and reliable.

H21M 74 Chemistry Assignment (Added Value Unit)

Assessment standard 1.1 requires candidates to clearly state what is being investigated and why the issue is relevant to the environment/society. Assessment judgements for this assessment standard were often reliable.

Assessment standard 1.2 requires candidates to select at least two relevant sources and record at least two sources in such a way that they can be retrieved by a third party. Assessors should ensure that information is relevant to the issue before awarding a mark for a source. Although no formal referencing system is required, assessors should only award a mark where a reference to an internet source is complete and retrievable. If one of the sources is a practical then the title and aim should be recorded. A mark should not be awarded where a list of URLs is stated but no information/data is included.

Assessment standard 1.3 requires candidates to present information/data from one of their sources in a different way. Candidates must include the correct headings, labels and units. In addition, almost all (90%) of the processing must be correct for a candidate to be awarded all 3 marks for this assessment standard. There were examples of candidates being awarded marks where units were missing and where one bar out of four on a graph was incorrectly plotted. Points or bars on graphs should be plotted to within plus or minus a half box tolerance. Centres should ensure that if a graph is used as source data then it requires labels and minor gridlines to allow candidates to fully access the marks available for assessment standard 1.3.

Assessment standard 1.4 requires candidates to explain/describe underlying chemistry which relates to the issue. In addition, candidates should explain/describe at least one impact on the environment/society using some underlying chemistry. There were examples of candidate evidence being presented which had little or no underlying chemistry and therefore candidates were not accessing any marks allocated to this assessment standard. Overall assessment judgements relating to underlying chemistry were reliable although a small number of candidates were being penalised for including chemistry at National 5 level. Candidates can still be awarded marks for underlying chemistry at National 5 level if it is relevant to a key area in National 4 Chemistry.

Assessment standard 1.5 requires candidates to communicate their findings clearly and concisely in an appropriate structure. There were examples of reports, posters and PowerPoint slides. Overall judgements on this assessment standard were reliable. A mark should only be awarded for summing up findings when the findings are backed up by evidence included in the report. Assessors should only award the structure mark where the report has clear sections. Additional information added to the report as part of a re-assessment can mean

candidates are not awarded the mark for structure, as the additional information is inserted out of sequence. For example, if further underlying chemistry is inserted after references rather than being included in the body of the report the report may no longer be appropriately structured.

H4KK 76 Researching Chemistry (Higher)

Assessment standard 1.1 requires candidates to give a clear description of the chemistry appropriate to their research topic. Most centres verified this year had made use of a 'day book' approach where candidates had recorded key terms including appropriate chemical equations and structures. References were either contained within the description of the chemistry or in a separate reference section. Assessment judgements for this assessment standard were often reliable with candidates including sufficient chemistry and referencing sources which could be retrieved by a third party.

Assessment standard 2.1 requires candidates to plan their practical investigation. Assessment judgements were generally reliable for this assessment standard. Most candidates included clear instructions in their plan. Where candidates were working in a group, details of the roles of each group member were provided. In a few cases candidates were not including sufficient detail of how the practical was to be carried out in their plan. Centres should ensure that candidates include details on the apparatus and materials required. Some candidates had not included a record of work showing how they had progressed through the unit. Candidates should be encouraged to include dates stating what was achieved on specific dates.

Assessment standard 2.2 requires candidates to follow procedures safely and record observations/measurements. Assessment judgements for this assessment standard were generally reliable. Most candidates verified had included observations and/or raw data in their day book/class jotter. Centres should ensure that candidates repeat procedures where appropriate. It would be appropriate to repeat titrations with a fresh sample of fruit juice when determining the vitamin C content. For candidates to achieve assessment standard 2.2 all raw data must be recorded including initial and final burette volumes for each titration.

H7XR 77 Researching Chemistry (Advanced Higher)

Assessment standard 1.1 requires candidates to demonstrate a clear understanding of the chemistry related to their research topic. Judgements for this assessment standard were reliable. Candidates tend to include sufficient underlying chemistry explaining techniques employed in their practical.

Assessment standard 1.2 requires candidates to plan/design their practical giving a detailed description of how the practical should be carried out including risk assessments and a record of work. Assessment judgements for this were generally reliable. Since the plan must have sufficient detail for another person to follow, it should include volume and concentrations of the chemicals used. Centres should also ensure that candidates include concentrations in risk

assessments since the hazard for a particular solution can depend on the concentration being used.

Assessment standard 1.3 requires candidates to follow procedures safely, record observations/measurements and maintain a record of work. Assessment judgements for this were generally reliable. Centres can either provide an observation checklist for the experimental stage or include a statement that a particular candidate was observed to have performed all procedures safely. Centres should ensure that candidates record all raw data to achieve assessment standard 1.3.

03 Section 3: General comments

The majority of centres verified in round 2 this session had a good understanding of the national standard. There were many examples of clear annotations on candidate evidence, which aids the process of external verification.

There was some evidence of candidates being reassessed orally, in particular for National 4. If a candidate is reassessed orally the candidate response must be noted.

Almost all centres verified had evidence of internal verification activity and it was clear that discussions within centres are helping to share an understanding of assessment requirements across National 4, Higher and Advanced Higher Chemistry. Where cross-marking leads to a difference of judgement between assessors and internal verifiers it should be clear what the final assessment judgement was. It is helpful if discussions between assessors and internal verifiers are noted, as this often provides evidence of good practice.