

## P401 Practical Examination

### Samples Selection, Marking Verification & Quality Assurance Procedures

#### 1 Introduction

Sample sets of six materials are provided by BOHS for the examination.

Training providers are **NOT** permitted to open sample sets and must keep the sample sets secure. **Only** Specialist Invigilators are authorised to open sample sets.

Each sample set is designed to be sufficient for five to six candidates and should contain enough diversity to fully test the candidates' abilities.

Each individual sample is labelled with a BOHS sample number and is sealed in a laminated pack. Six of these samples are placed in a polythene bag and sealed. This constitutes a set of samples.

Where samples have other numbers on the package these should be ignored. The BOHS number is the essential number to record.

Where more than eight candidates are being examined at the same time then a second set of samples will be supplied.

To control the consistency of the practical examination process, all identification samples have been classified as follows:

<b>A</b>	<b>More than two components present (usually three)</b>
<b>B</b>	<b>Contains rare type plus another common component or is more difficult to analyse</b>
<b>C</b>	<b>Contains one component only (C (R) is used for single component of the less common types)</b>
<b>D</b>	<b>Contains two components</b>
<b>E</b>	<b>Contains no asbestos</b>

To make up a sample set, one sample in category A or B, two from each of categories C and D and one in category E are normally selected.

All sample sets should normally have one sample with no asbestos.

Normally sample sets will only contain one sample containing the rare types of Asbestos (Actinolite, Anthophyllite or Tremolite).

Samples with C (R) designation may be used as normal category C samples but only one is normally used per sample set. These may be used in place of categories A or B if necessary.

The number of samples in category D may be increased within a set from two to three, with a reduction in the number in category C from two to one, but this is normally only implemented when samples in categories A or B have also been substituted by a sample from C (R).

## **2 Routine Examination Quality Checks**

The first check is the Quality Check sheet to confirm or not that the sample set make up follows the standard guidance - especially checking for any samples that have previously caused problems in preceding examinations.

The reported results in the marking schedule are then checked through against the candidate script and the Quality Check data sheet.

ADDITIONAL species found on the sample must be checked using procedures outlined in section 5 below.

Species NOT found need to be checked for depletion issues as per section 4 below.

Should the additional species not be present in any of this examination set, then it is normal to assume analytical error.

## **3 Determination of Sample Suitability**

All samples used for the P401 practical exam are duplicate samples supplied by HSL Buxton, from their AIMS scheme. They have all been analyzed by circa 300 plus analysts who report their results as part of the AIMS scheme.

Samples reported as wet or require further drying are rejected for P401 practical examination as there may also not be appropriate drying facilities at the examination location and there is insufficient time.

Drying of Asbestos samples requires a non-fan assisted oven, mounted in a suitable ventilated enclosure.

On the basis of the AIMS round report, a significant proportion is defined by the analysis frequency in the AIMS scheme results being in excess of 66.6% of all of that sample's AIMS results.

Where the AIMS result is less than 66.6% (i.e. false positives and /or false negatives in excess of 33.3%) then the sample is deemed to have a less than a significant proportion (is non-significant for example).

Failure to detect a non-significant proportion of asbestos in a single sample would be regarded as only a critical error scoring 12 points.

Any sample that shows difficulties during the AIMS round will not normally be selected for P401 Examinations.

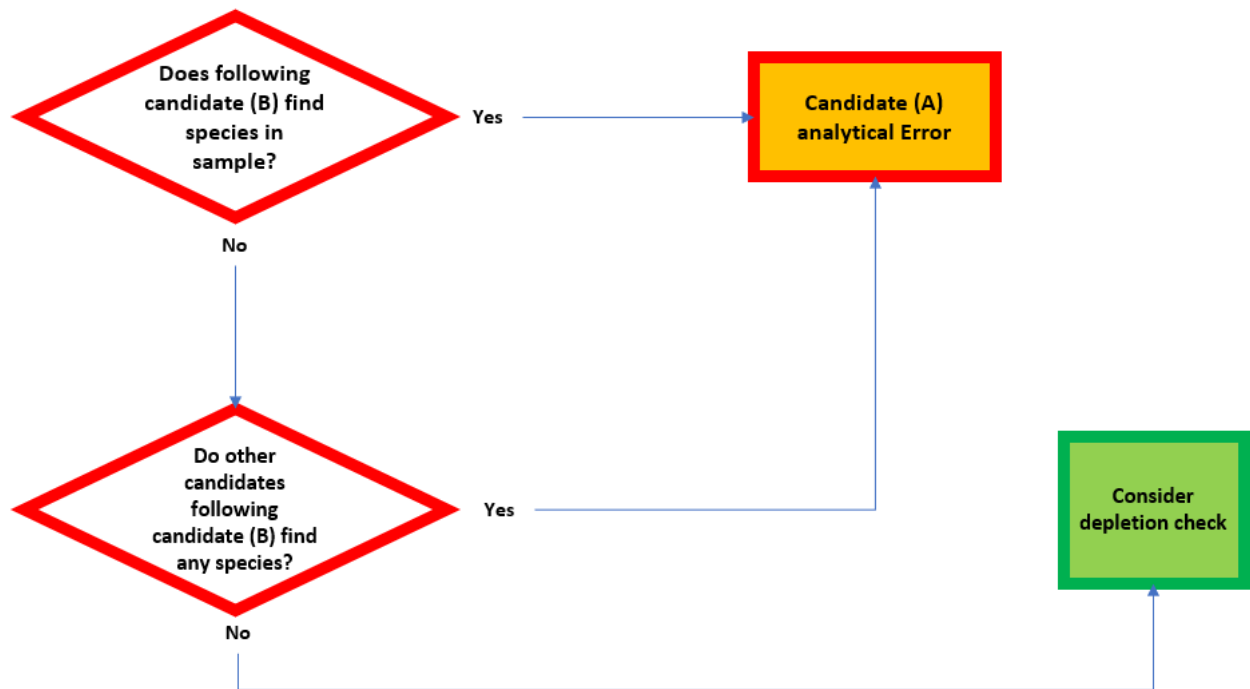
Samples that could lead to depletion of an Asbestos species in the sample during the sequence of analysis (up to 8) are not selected. This includes samples where Asbestos is in the paint layer and any one candidate could unknowingly remove all the asbestos on their analysis attempt.

#### 4 Potential Depletion Tracking

Where candidates do not find an Asbestos type known to be present, on the basis of the AIMS scheme, the following procedure needs to be followed to ensure that the result given for that candidate is fair.

This procedure is normally carried out immediately after completion of the examination as part of routine quality assurance procedures and needs to be completed before examination results are released to candidates:

**Candidate (A) does NOT find species in sample:**



If Candidate (A) does not find an asbestos type in a sample known to contain that type, then does the next candidate (B) according to the sample utilization log, maintained by the specialist invigilator, find that asbestos type?

If so, then candidate (A) has made an analytical error. However, if no subsequent candidate has found this asbestos type, then the depletion procedure check will need to be initiated.

Samples, post examination, are retained by the course provider, and in such circumstances, they will be asked if they can arrange for a qualified analyst to check the residue of the sample for the presence of the asbestos type concerned.

Depending on the result of this analysis check, the results may be amended accordingly.

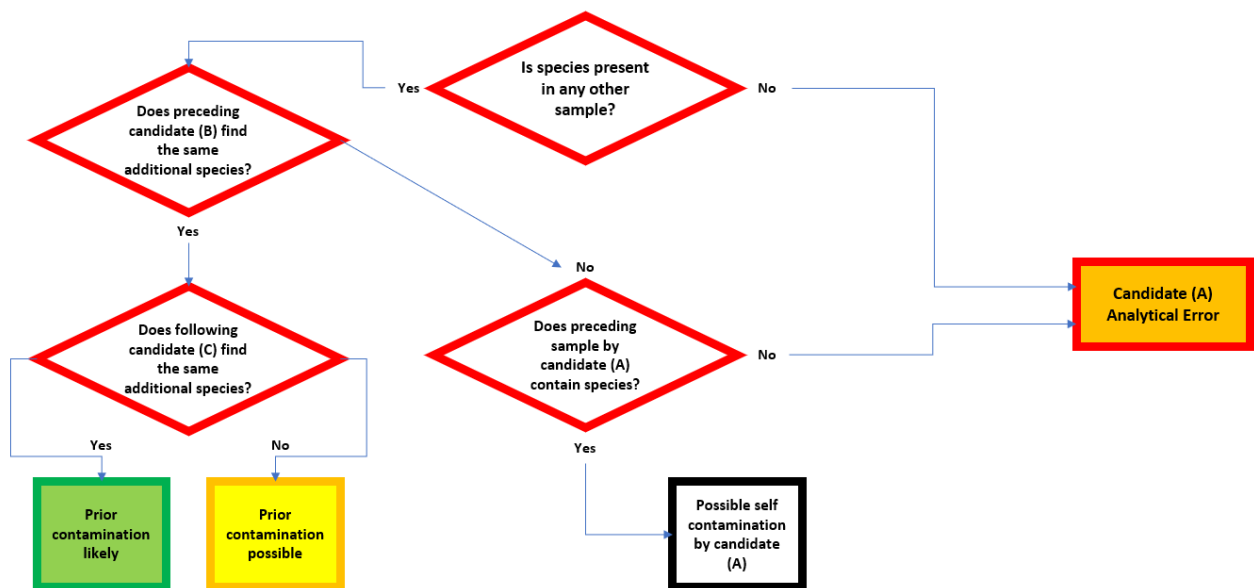
Where the course provider is unable to provide expert analysis, the sample residue should be returned to BOHS who will arrange for an analysis check.

## 5 Potential Contamination Tracking

Where candidates find an additional Asbestos type other than those known to be present, on the basis of the AIMS scheme, the following procedure needs to be followed to ensure that the result given for the candidate is fair.

This procedure is normally carried out immediately after completion of the examination as part of routine quality assurance procedures and needs to be completed before examination results are released to candidates:

**Candidate (A) finds ADDITIONAL species in sample:**



If candidate (A) finds an additional asbestos type, check to ascertain if that type is present in any sample as in the QC report from the marker. If not, the result reported is an analytical error.

If the type is present, did the preceding candidate (B) for this sample, according to the sample utilization checklist maintained by the Specialist Invigilator, also find additional species?

If not, did candidate (A) have the additional species type in the immediate previous sample that they handled? If so, they may have self-contaminated the sample. But whether they did or not, they will have scored an analytical error.

If subsequent candidates also find the same additional type, then contamination of the sample must be considered which may include expert analysis of the sample residue after the examination.

Under these circumstances a much wider range of possibilities must be considered. This can include withdrawing analytical errors for some candidates and possibly increasing the error values where a candidate can be confirmed as the source.

Great care must be taken with these decisions as they will inevitably have to be based on the balance of probabilities. Fortunately, this problem has rarely occurred since the start of this practical examination as candidates are trained to be scrupulous in their cleaning procedure and this is also observed by the Specialist Invigilator who is normally a qualified and experienced analyst.

## 6 Sample Damage or Destruction Procedure

If a sample is contaminated or destroyed to such an extent that it is no longer useable for examination purposes, the Specialist Invigilator should contact BOHS head office to advise of the relevant sample number.

BOHS will advise the Specialist Invigilator of the category of the sample concerned, and the Specialist Invigilator should then try to obtain a similar sample from the course provider or from the examination sets supplied as stock at the provider's premises (e.g. a new sample from the examination sets stock would be best) or alternatively, a previously used AIMS sample of a similar category.

If an AIMS sample is used, the Specialist Invigilator should advise of the AIMS number in their report.

If a BOHS exam sample is not available, the sample used must be returned to BOHS who will arrange for it to be independently analysed to give a reference analysis and hence a result.

If the independent analysis agrees with the candidate result, then the result is accepted. However, if they disagree, a further two independent analyses are required, and the majority decision of the three analyses becomes the agreed result. This result is then used to mark the candidate's script.

The Specialist Invigilator must report the circumstances of the loss or destruction of a sample and if a candidate is deemed negligent, they will receive a supercritical error for that sample.