

Title: Determination of Analyte Specific Instrument Detection Limit (IDL)		Copy No: ##
SOP No.: 5.08/1.2/S	Effective Date: October 21, 2005	Location: ###

QSM Approval: _____

Determination of Analyte Specific Instrument Detection Limit (IDL)

1. Introduction

The following procedure is used for the determination of the IDL for specific target compounds. This procedure applies to the following target compounds: PAH, CB, HCB, CP, OCS, PASH, PCB (total and WHO) and DBD/DBF. The IDL is verified periodically as a quality control measure. Detection limit solutions must be analysed using the same procedures as for samples.

2. Standard preparation

Dilutions of the daily calibration standard are prepared at known concentrations typically between 0.001 and 0.02 ng/μL. These solutions can then be further diluted to achieve lower concentrations when required.

3. Analysis

The dilutions are loaded on the autosampler starting with a solvent blank followed by the dilution of lowest concentration to end with the most concentrated to avoid potential cross-contamination. The solution with the lowest concentration of analyte, which satisfies the following criteria, confirms the IDL:

- 3.1 Response of the two most abundant characteristic ions must exceed the background noise level by a minimum ratio of 3:1.
- 3.2 The peak maxima for the specified characteristic ions must coincide within 2 scan units (3 seconds maximum).
- 3.3 Partial resolution must be achieved between closely eluting compounds.
 - 3.3.1 For PAH, benzo(b)fluoranthene and benzo(k)fluoranthene must be resolved by 50% (peak valley to peak height) and chrysene and triphenylene must be resolved by at least 5%. The same applies to indeno(1,2,3-cd)pyrene and dibenzo(ah)anthracene, the parent ion and first qualifier respectively.

4. Report

The report must contain the following information:

- Project Name (Instrument Detection Limit is suggested)

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- Analysis Date
- Column used (along with the serial number of column used)
- Sample ID
- Result Unit
- Target compound and IDL result
- IDL range
- Instrument name
- Name of analyst

5. Revisions

- Nov 2003: Small changes made to all sections in order to reflect current procedures and to correct grammar/spelling mistakes
- Oct 2005: Small changes for clarification e.g. Section 1 change coplanar to WHO and Section 3.3 changes largely semantical. Change 'should' to 'must be resolved by' for chrysene and triphenylene.

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