UNITED NATIONS INTERNATIONAL DRUG CONTROL PROGRAMME

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PROTOCOL TO THE

INTERNATIONAL COLLABORATIVE

EXERCISES

WITHIN THE

INTERNATIONAL QUALITY ASSURANCE

PROGRAMME

V.98-55524 (E)

CONTENTS

I. THE NEED FOR QUALITY ASSURANCE IN DRUG ANALYSIS

1. It is vital to have reliable information on the identity and purity of seized drugs of abuse for a variety of reasons, including the following:

(a) To support law enforcement through the courts because:

(i) Different drugs carry different penalties;
(ii) Different levels of drugs carry different penalties;

(b) To provide intelligence to investigating agencies for:

(i) Linking offences;
(ii) Linking back to source;
(iii) Identifying distribution networks.

2. It is also vital to have reliable information on the identity and concentration levels of drugs of abuse in body fluids in order to be able:

(a) To monitor individuals in drug rehabilitation programmes;

(b) To carry out drug-screening programmes in the workplace;

(c) To monitor offenders (prisoners, drivers, traffickers and users);

(d) To establish cause of death.

3. Reliable information must be available for a wide range of drugs and can only be obtained by laboratories working to internationally accepted quality standards and using:

(a) Validated methods that are appropriate and practicable with respect to cost, time, equipment, facilities and training constraints;

(b) Effective procedures for quality control and quality assurance;

(c) Competent analysts.

4. Laboratories also need to participate in inter-laboratory testing programmes in order to determine how much allowance must be made for variability among laboratories when exchanging analytical results.

II. AIM OF THE INTERNATIONAL QUALITY ASSURANCE PROGRAMME

5. The aim of the international quality assurance programme is to assist managers of drug testing laboratories in improving and monitoring the performance of their laboratories in drug analysis and in achieving analytical results that are internationally valid by:

(a) Providing a collaborative exercise programme to assess the performance of laboratories;

(b) Providing advice on setting up a quality management system;

(c) Providing advice on methods that have been validated as fit for certain purposes;

(d) Identifying training needs and supporting training for analysts to achieve the required competence;

(e) Providing a programme for testing proficiency;

(f) Providing support where required to enable laboratories to move towards internationally accepted standards.

III. AIM OF THE INTERNATIONAL COLLABORATIVE EXERCISES

6. The international collaborative exercises (ICE) are part of the international quality assurance programme, which will lead to the development of a proficiency testing scheme. The aim of the ICE programme is to help define the internationally accepted standard of performance and to support laboratory managers by:

(a) Providing test samples to laboratories and requesting them to determine their composition;

(b) Providing authenticated reference samples of drugs of abuse;

(c) Giving laboratories an assessment of the methods and/or procedures used;

(d) Providing laboratories with the means of assessing their own performance and comparing it with that of other laboratories carrying out similar analysis;

(e) Providing feedback to laboratories on their performance in relation to the test samples and the results obtained by the reference laboratories;

(f) Advising laboratories on the effectiveness of their methods and/or the competence of their analysts;

(g) Encouraging laboratories to use quantitative methodology that has improved the performance of laboratories in terms of both skill and quality;

(h) Promoting good laboratory practices;

(i) Providing recommendations to the United Nations International Drug Control Programme (UNDCP) where support is needed, as identified by performance in the exercises;

(j) Encouraging the participation of all laboratories engaged in the analysis of drugs of abuse;

(k) Improving and promoting contact between laboratories at the national, subregional and regional levels and with UNDCP;

(l) Monitoring the effectiveness of UNDCP technical assistance projects.

IV. ORGANIZATION

7. The UNDCP Laboratory at Vienna will act as the coordinating centre for the international quality assurance programme, including the ICE programme. In addition, there will be a standing panel of the international quality assurance programme that will evaluate, advise and oversee the programme.

V. PARTICIPATION

8. The ICE programme is open to any laboratory, public or private, as long as it is recognized in its own country by the appropriate governing body, such as the Government, courts or other professional institutions, for the analysis of drugs of abuse.

9. To encourage the widest participation possible, at present the programme is free of charge to participating laboratories.

10. Laboratories participate in the ICE programme on a voluntary basis. Laboratories are not compelled to perform every type of analysis, even if it is recommended. No penalties result from opting not to perform selected analyses.

VI. INTERNATIONAL COLLABORATIVE EXERCISES

11. The ICE programme has been running for three years. It covers both seized drugs and drugs in biological specimens. Over 100 laboratories are currently participating. Six rounds of test samples of seized materials and biological specimens have been distributed to date. Laboratories are encouraged to participate in every round. There is no requirement for them to carry out any more work on the test samples than they would normally expect to do routinely on casework samples.

12. Before participating in the ICE programme, laboratories are provided with a copy of the present protocol and are expected to comply with its requirements.

13. Participating laboratories are also given samples of all necessary reference substances, including drugs and metabolites, when they are given their first set of samples and, thereafter, every two years.

14. The ICE programme consists of two rounds per year. Four test samples of each type—seized material and biological specimens—are prepared for each round.

15. Each round of the programme consists of the following stages:

(a) Preparation and characterization of the test samples by the validating reference laboratories;

(b) Distribution of test samples to participating laboratories in accordance with the protocol;

(c) Analysis of samples by the participating laboratories;

(d) Return of results within the deadline set by the coordinator (the UNDCP Laboratory);

(e) Evaluation of results by the coordinator and provision of a report to each laboratory containing an evaluation of its performance;

(f) Statistical analysis of the results by the coordinator and provision of an anonymous report on the performance of all participating laboratories (summary report);

(g) Provision of information and advice to individual participating laboratories about their performance where opportunities for improvement have been identified.

A. Sample preparation and characterization

16. All samples are analysed and the levels of controlled drugs present are quantified by designated validating reference laboratories prior to being issued. The validating reference laboratories are listed in annex I.

Seized materials

17. Most test samples are prepared for the ICE programme by a reference laboratory; however, if at all possible, one of the samples in each round is taken from an actual seizure. The samples contain amounts of controlled drugs in the range of 10-200 mg. Blank samples may also be included.

18. The list of substances that may be present in the test samples is shown in annex II. A supplementary list, containing other substances, will be developed to reflect international and regional trends in the illicit use of controlled substances, and appropriate reference substances will

be provided. One of the test samples in each round may contain a substance selected from the supplementary list.

Biological specimens

19. Test samples for analysis of the biological specimens are made up in urine from healthy volunteers and supplied as freeze-dried samples to be reconstituted locally to 50 ml. Before adding the substances and/or their metabolites, the urine is checked to ensure that it contains no drugs of abuse or any other substances that could interfere with the analytical results. The substances are selected from the core list in annex III. They are provided at concentrations and proportions similar to those found in real casework and at levels in excess of the cut-off concentrations routinely used.

20. The concentrations in the test samples are in the following ranges:

	Range ng/ml
Opiates	350-2,000
Cannabinoids	120-600
Cocaine metabolites	350-3,000
Amphetamine-type stimulants (ATS)[a]	500-3,000

[a]For methamphetamine samples, amphetamine is also present at a concentration higher than 200 nanograms per millilitre ng/ml. For methylenedioxymethamphetamine (MDMA) samples, tenamphetamine (methylenedioxy-amphetamine (MDA) is also present at a concentration higher than 200 ng/ml).

21. A supplementary list, containing other substances, will be developed to reflect international and regional trends in the illicit use of controlled substances, and appropriate reference substances will be provided. One of the test samples in each round may be selected from the supplementary list. Blank samples may also be included.

B. Distribution of test samples

22. The test samples of seized materials contain controlled substances, so each participating laboratory has to obtain the required import certificates and provide them to the coordinator.

23. The names of the controlled substances must be disclosed on export certificates, in line with the provisions of international drug control conventions. If the samples were to be sent directly to participating laboratories it would be possible for their composition to become known to the analysts. The United Nations Development Programme (UNDP) representative in the country or the national coordinator should therefore normally be named as the importer. If that is not possible, the laboratory manager should be named as the importer, care of (c/o) the

UNDCP/UNDP representative, the national coordinator or some other named representative who is independent of the participating laboratory.

24. Once the import certificates have been provided, UNDCP obtains all the necessary export certificates for distributing the test samples to participating laboratories. UNDCP sends the samples to the laboratories by mail or courier through the offices of UNDCP/UNDP or other appropriate representatives in participating Member States and makes sure that they know what to do with the samples when they have arrived and that they are aware of the need to maintain confidentiality and to return the export certificates to UNDCP at Vienna.

25. Import and export certificates are not required for the distribution of test samples of biological specimens. Such samples are sent directly by mail or courier to the participating laboratories.

26. The participating laboratory is notified by UNDCP at Vienna when the test samples have been dispatched. The laboratory manager should acknowledge receipt of the notification and of the samples when they arrive. The laboratory manager should also notify UNDCP at Vienna if the samples have not been received within three weeks of the notification that they have been dispatched, preferably by telefax.

C. Analysis of samples by participating laboratories

27. No particular methods are prescribed for the analysis of test materials. The methods regularly applied in the laboratory should be used and participants should do the same amount of work on the test samples that they would routinely do on casework samples.

28. The analysis should be carried out in a manner that does not give special attention to the ICE samples. Where batch processing is used, the ICE samples should ideally be inserted at random positions into the sequence of samples constituting a routine batch.

29. For both seized materials and biological specimens, participants should be able to identify at least one of the controlled substances present. They should also be able to measure the amount of at least one of the controlled drugs and/or their metabolites present if quantitative analysis forms part of their normal work.

30. UNDCP encourages laboratory managers to develop the capability to carry out quantitative analysis, as quality assurance programmes have shown that such laboratories perform consistently better.

D. Return of results to the coordinator

31. Laboratories are allowed up to eight weeks (after being notified that the test samples have been dispatched) to carry out the analysis and report the results. Laboratories should report their results on the forms provided with the test samples (see annexes IV and V) and return the completed forms by mail, courier or telefax for evaluation to UNDCP at Vienna, before the deadline. If telefax is used, the forms should also be sent by mail or courier.

E. Data evaluation

32. After the deadline for the return of results from participating laboratories is over, the coordinator notifies the laboratories of the evaluation of their qualitative results. If confirmation of the constituents of the test samples is performed using alternative techniques, the results obtained using both techniques are evaluated. Details of the results obtained by the validating reference laboratories are also provided.

F. Summary report on the performance of all participating laboratories

33. The summary report includes the results received from the validating reference laboratories and the results from all participating laboratories, together with an analysis of the following:

(a) The techniques used;

(b) The numbers of false positive and negative results obtained;

(c) The performance of the different methods employed;

(d) The evaluation of the quantitative results from the reference laboratories;

(e) The evaluation of the quantitative results from the participating laboratories, using the results from the reference laboratories as reference values;

(f) The difficulties encountered with specific samples.

34. The report is provided by the coordinator within two months of the deadline for the receipt of results from participating laboratories.

35. The report preserves the anonymity of the participating laboratories. Each laboratory is referred to using a unique code number that is known only to that laboratory.

G. Provision of information and advice to individual participating laboratories

36. The UNDCP Laboratory is available for providing advice and support to participating laboratories that wish to improve their performance.

H. Certificates of competence

37. A certificate of competence in the analysis of seized materials or biological specimens are provided each year to participating laboratories that have fulfilled the following criteria:

(a) They have returned the results for all samples in both rounds of the ICE programme for the year in question;

(b) They have correctly identified at least one controlled drug (and/or its metabolite where appropriate) in all samples that contained controlled drugs;

(c) At least 90 per cent of the results obtained by them are correct.

38. Participating laboratories who returned quantitative results are further recognized as competent in quantifying the amount of drugs present if their results fall within ± 2 z (where z equals the z score) of the mean of the results of the validating reference laboratories.

VII. ANNUAL REVIEW OF THE INTERNATIONAL COLLABORATIVE EXERCISES

39. The effectiveness and future strategy of the ICE programme are reviewed annually by the standing panel, taking into account the results and comments of participating laboratories.

Annex I

LIST OF VALIDATING REFERENCE LABORATORIES

Argentina

J. C. García Fernández, Laboratorio de Toxicología y Química Legal Corte Suprema de Justicia, Poder Judicial de la Nación, Viamonte 2151, 1026 Buenos Aires, Argentina

Australia

Ray Kazlauskas, Australian Government Analytical Laboratories, 1, Suakin Street, Pymble, NSW 2073 Australia

Bermuda

Shirley Bane, Government Analyst, Central Government Laboratory, Department of Health, P.O. Box HM1195, Hamilton 5 HM EX, Bermuda

Canada

S. C. Chan, Director, Centre for Toxicology, Heritage Medical Research Building, University of Calgary, Faculty of Medicine, 3330 Hospital Drive NW, Calgary, Alberta T2N 4N1, Canada

China (Hong Kong Special Administrative Region)

D.G. Clarke, Assistant Government Chemist, Head, Forensic Science Division, Government Laboratory, Ho Man Tin Government Offices, 88 Chung Hau Street, Ho Man Tin, Kowloon, Hong Kong SAR, China

Finland

Pirjo Lillsunde, Laboratory of Pharmacology and Toxicology, National Public Health Institute, Mannerheimintie 166, FIN-00300 Helsinki, Finland

Luxembourg

R. Wennig, Director, Laboratoire national de santé, Div. Toxicologie, Centre Universitaire de Luxembourg, 162A, avenue de la faiencerie, L-1511 Luxembourg, P.O. Box 1102, L-1011 Luxembourg

Malaysia

Haji Mohd. Zaini Bin Abdul Rahman, Senior Consultant Pathologist, Head, Department of Pathology, Kuala Lumpur Hospital, Jalan Pahang, 50586 Kuala Lumpur, Malaysia

Kee Sue Sing, Director, Quality Assurance, Training, Research and Development Division, Jalan Sultan, 46661 Petaling Jaya, Malaysia

Republic of Korea

Jongsei Park, Director, Doping Control Center, Korea Institute of Science and Technology, P.O. Box 131, Cheongryang, Seoul 130-650, Republic of Korea

South Africa

P.R.B.D. de Bruin, Chief Director, Forensic Science Laboratory, 270 Pretoria Road, Silverton, Private Bag X620, Pretoria 0001, South Africa

Spain

R. de la Torre, Department of Pharmacology and Toxicology, Municipal Institute for Medical Research (IMIM), Doctor Aiguador 80, 08003 Barcelona, Spain

C. Lora-Tamayo, National Institute of Toxicology, Department of Madrid, Ministry of Justice, Luis Cabrera 9, 28002 Madrid, Spain

Trinidad and Tobago

Yolanda Thompson, Director, Trinidad and Tobago Forensic Science Centre, Barbados Road, Federation Park, Port-of-Spain, Trinidad and Tobago

United Kingdom of Great Britain and Northern Ireland

Leighton Jones, Manager, QA Group, Forensic Science Service, Priory House, Gooch Street North, Birmingham, B5 6QQ, United Kingdom

Forensic Science Service, Washington Hall, Euxton, Chorley, PR7 6HJ, United Kingdom

Forensic Science Service, Sandbeck Way, Audby Lane, Wetherby, West Yorkshire, LS22 4DN, United Kingdom

Forensic Science Service, 109 Lambeth Rd., London, SE1 7LP, United Kingdom

Forensic Science Service, Usk Road, Cheptow, NP6 6YE, United Kingdom

Forensic Science Service, Hinchingbrooke Park, Huntingdon, Cambs., PE18 8NP, United Kingdom

Annex II

SUBSTANCES THAT MAY BE PRESENT IN THE TEST SAMPLES OF SEIZED MATERIALS

Group of substances	*Substance*
Opiates	Heroin Morphine Codeine Acetylcodeine 6-monoacetylmorphine 3-monoacetylmorphine Thebaine Papaverine Narcotine
Cannabinoids	?^{8}-tetrahydrocannabinol ?^{9}-tetrahydrocannabinol Cannabinol Cannabidiol
Cocaine	Cocaine Benzoylecgonine Methylecgonine Ecgonine
Amphematime-type stimulants	Amphetamine Methamphetamine 3,4-methylenedioxymethamphetamine (MDMA) *N*-ethylmethylenedioxyamphetamine (MDEA) *N*-methyl-1-(3,4,-methylenedioxyphenyl)-2-butanamine (MBDB) Cathine
Hallucinogenic drugs	Lysergide (lysergic acid diethylamide (LSD))
Benzodiazepines	Diazepam Temazepam Flunitrazepam

Barbiturates	Phenobarbital
Adulterants/Diluents	Lactose Caffeine Ephedrine Paracetamol (Acetaminophen) Procaine Lignocaine (Lidocaine)

Annex III

SUBSTANCES THAT MAY BE PRESENT IN THE TEST SAMPLES OF BIOLOGICAL SPECIMENS

Substance	*Target metabolites*	*Additional substances/metabolites*
Opiates	Morphine	Morphine-3-*O*-glucuronide
	Codeine	
	6-Monoacetylmorphine	
Cannabinoids	11-nor-?^{9}-THC-9-carboxylic acid	
Cocaine	Benzoylecgonine	Methylecgonine
Amphetamine-type stimulants	Amphetamine Methamphetamine	Phenylpropanolamine Amphetamine
	Tenamphetamine (MDA)	
	3,4-methylenedioxy-methamphetamine (MDMA)	Tenamphetamine (MDA)
	N-ethyl methylenedioxy-amphetamine (MDEA)	
	N-methyl-1-(3,4-methylenedioxyphenyl)-2-butanamine (MBDB)	
Benzodiazepines	Diazepam	
	Nordiazepam	
	Oxazepam	
	Temazepam	
	7-aminoflunitrazepam	
Barbiturates	Phenobarbital	

Annex IV

ANALYTICAL RESULT FORM FOR THE TEST SAMPLES OF SEIZED MATERIALS

United Nations International Drug Control Programme

INTERNATIONAL QUALITY ASSURANCE PROGRAMME

INTERNATIONAL COLLABORATIVE EXERCISES

Laboratory code No. ..... ***— Round -***

Laboratory name .....

Address .....

P.O. Box ..... City .....

Country ..... Telephone .....

Telefax .....

INSTRUCTIONS

This batch comprises four sample bottles containing a mixture of controlled drugs and/or adulterants/diluents. Their code numbers are: --/-/SM-1; --/-/SM-2; --/-/SM-3; --/-/SM-4.

Routine analytical procedures should be used, and international collaborative exercise (ICE) samples should be treated as normal samples.

For each group of substances, indicate the code number of the screening technique used (see the list of analytical technique codes below).

Follow the same procedure if specific substances are confirmed/identified.

Techniques based on different chemical principles should be used for screening and confirmation. If thin-layer chromatography (TLC) is used with two different solvent systems for screening and confirmation, it should be specified under the heading "Comments" at the end of the present form.

Indicate each time whether the substance was present (P), the substance was absent (A) or the analysis was not performed (ANP) (circle as appropriate). Boxes in the form need to be completed only if they are relevant to the laboratory's normal practices. The samples may contain one, several, all or none of the substances included in the menu of substances of the ICE programme, described in annex II of the protocol to the programme. Indicate the presence of only those substances included in the menu of substances of the programme.

Make a photocopy of this form to keep in your records.

Corrections will not be accepted once the results have been received by the coordinating laboratory.

Part one of the form is intended for primary screening, part two is intended for the confirmation or identification of specific substances and part three is intended for quantification.

ANALYTICAL TECHNIQUE CODES

140 Colorimetric reactions (CR)
141 Marquis (sulphuric acid, formaldehyde)
142 Cobalt thiocyanate
150 Thin-layer chromatography (TLC)
160 High-Performance Liquid Chromatography (HPLC)
170 Gas chromatography (GC/NPD)
171 Gas chromatography (GC/FID)
172 Gas chromatography (GC/ECD)
180 Gas chromatography/mass spectrometry (GC/MS)
190 Fourier transformed infra-red spectrometry (FTIR)
200 Spectrophotometry (visible, ultraviolet)
210 Others (specify): _____
211 Nuclear magnetic resonance (NMR) spectrometry
220 Microcrystal test

Analytical results, part one: screening

(A = absent; P = present; ANP = analysis not performed)

Group	**Analytical technique code**[a]	**Sample code**			
		--/-/SM-1	**--/-/SM-2**	**--/-/SM-3**	**--/-/SM-4**
Opiates	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Cannabinoids	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Cocaine	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Amphetamine-type stimulants	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Hallucinogenic drugs	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Benzodiazepines	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Barbiturates	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP

[a]For each group of substances, insert the appropriate analytical technique code from the list on page 17.

Analytical results, part two: identification/confirmation

(A = substance absent; P = substance present; ANP = analysis not performed)

Substance	**Analytical technique codes**[a]		**Sample code**			
			--/-/SM-1	**--/-/SM-2**	**--/-/SM-3**	**--/-/SM-4**
Heroin	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Morphine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Codeine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Acetylcodeine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
O^6-monoacetyl-morphine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
O^3-monoacetyl-morphine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Thebaine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Papaverine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Narcotine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
$?^9$-tetrahydro-cannabinol	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Cannabinol	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Cannabidiol	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Cocaine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP

Substance	Analytical technique codes[a]		Sample code			
			--/-/SM-1	--/-/SM-2	--/-/SM-3	--/-/SM-4
Benzoylecgonine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Methylecgonine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Ecgonine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Amphetamine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Methamphetamine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
3,4-methylenedioxy-methamphetamine (MDMA)	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
N-ethyl-methylenedioxy-amphetamine (MDEA)	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
N-methyl-1-(3,4-methylenedioxy-phenyl)-2-butanamine (MBDB)	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Cathine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Lysergide (LSD)	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Diazepam	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Temazepam	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Flunitrazepam	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP

Substance	Analytical technique codes[a]		Sample code			
			--/-/SM-1	--/-/SM-2	--/-/SM-3	--/-/SM-4
Phenobarbital	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Lactose	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Caffeine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Ephedrine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Lignocaine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Paracetamol	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Procaine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP

[a]For each substance, insert the appropriate analytical technique code or codes (maximum of two) from the list on page 17.

Analytical results, part three: quantification

(Percentage by weight)

Substance	Analytical technique code[a]	Sample code			
		--/-/SM-1	--/-/SM-2	--/-/SM-3	--/-/SM-4
Heroin	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _
Morphine	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _
Codeine	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _
?^{9}-tetra-hydrocannabinol	_ _ _	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_
Cocaine	_ _ _	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_
Benzoylecgonine	_ _ _	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_
Methylecgonine	_ _ _	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_
Amphetamine	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _
Methamphetamine	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _
3,4-methylenedioxy-methamphetamine (MDMA)	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _
N-ethyl methylenedioxy-amphetamine (MDEA)	_ _ _	_ _ _	_ _ _	_ _ _	_ _ _
N-methyl-1-(3,4-methylenedioxy-phenyl)-2-butanamine (MBDB)	_ _ _	_ _ _	_ _ _	_ _ _	_ _ _
Cathine	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _
Diazepam	_ _ _	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_

Substance	Analytical technique code[a]	Sample code			
		--/-/SM-1	--/-/SM-2	--/-/SM-3	--/-/SM-4
Temazepam	_ _ _	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_
Flunitrazepam	_ _ _	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_	_ _ _ ·_
Phenobarbital	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _
Lysergide (LSD)	_ _ _	_ _ _ · _	_ _ _ · _	_ _ _ · _	_ _ _ · _

[a]For each substance, insert the appropriate analytical technique code from the list on page 17.

Date of receipt of the ICE samples: day _____ month _____ year _____

Comments:

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.....
.....

Name: .....
.....

Title: .....
.....

Signature:.....
.....

Date: .....
.....

Annex V

ANALYTICAL RESULT FORM FOR THE TEST SAMPLES OF BIOLOGICAL SPECIMENS

United Nations International Drug Control Programme

INTERNATIONAL QUALITY ASSURANCE PROGRAMME

INTERNATIONAL COLLABORATIVE EXERCISES

Laboratory code No. ..... ***---- Round -***

Laboratory name .....

Address .....

P.O. Box ..... City .....

Country ..... Telephone .....

Telefax .....

INSTRUCTIONS

This batch comprises four 50 ml bottles of freeze-dried urine containing controlled drugs. Their code numbers are: --/-/BS-1; --/-/BS-2; --/-/BS-3; --/-/BS-4.

Routine analytical procedures should be used, and international collaborative exercise samples should be treated as normal samples.

For each group of substances, indicate the code number of the screening technique used (see the list of analytical technique codes below).

Follow the same procedure if specific substances are confirmed/identified.

Techniques based on different chemical principles should be used for screening and confirmation. If thin-layer chromatography (TLC) is used with two different solvent systems for screening and confirmation, it should be specified under the heading “Comments” at the end of the present form.

Indicate each time whether the substance was present (P), the substance was absent (A) or the analysis was not performed (ANP) (circle as appropriate). Boxes in the form need to be completed only if they are relevant to the laboratory's normal practices. The samples may contain one, several, all or none of the substances included in the menu of substances of the ICE programme, described in annex III of the protocol to the programme. Indicate the presence of only those substances included in the menu of substances of the programme.

Make a photocopy of this form to keep in your records.

Corrections will not be accepted once the results have been received by the coordinating laboratory.

Part one of the form is intended for primary screening, part two is intended for the confirmation or identification of specific substances and part three is intended for quantification.

Indicate, where appropriate, the cut-off value used in your laboratory (i.e. the value serving as the threshold for evaluating a result as positive) for the different groups and substances.

ANALYTICAL TECHNIQUE CODES

100 Agglutination techniques (AT)
110 Enzyme immunoassay techniques (EIA)
120 Fluorescence polarization immunoassay (FPIA)
130 Radioimmunoassay (RIA)
140 Colorimetric reactions (CR)
141 Marquis (sulphuric acid, formaldehyde)
142 Cobalt thiocyanate
150 Thin-layer chromatography (TLC)
160 High-performance liquid chromatography (HPLC)
170 Gas chromatography (GC/NPD)
171 Gas chromatography (GC/FID)
172 Gas chromatography (GC/ECD)
180 Gas chromatography/mass spectrometry (GC/MS)
190 Fourier transformed infra-red (FTIR) spectrometry
200 Spectrophotometry (visible, ultraviolet)
210 Others (specify): _____
211 Nuclear magnetic resonance (NMR) spectrometry
220 Microcrystal test

Analytical results, part one: screening

(A = absent; P = present; ANP = analysis not performed)

Group	Analytical technique code[a]	Cut-off group	Sample code			
			--/-/BS-1	**--/-/BS-2**	**--/-/BS-3**	**--/-/BS-4**
Opiates	_ _ _	_ _ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Cannabinoids	_ _ _	_ _ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Cocaine and/or metabolites	_ _ _	_ _ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Amphetamine-type stimulants	_ _ _	_ _ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Benzodiazepines	_ _ _	_ _ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Barbiturates	_ _ _	_ _ _ _	A P ANP	A P ANP	A P ANP	A P ANP

[a]For each group of substances, insert the appropriate analytical technique code from the list on page 26.

Analytical results, part two: identification/confirmation

(A = substance absent; P = substance present; ANP = analysis not performed)

Substance	Analytical technique codes[a]		Sample code			
			--/-/BS-1	--/-/BS-2	--/-/BS-3	--/-/BS-4
Morphine and/or metabolites	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Codeine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
O^6-monoacetylmorphine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
11-nor-?^{9}-THC-9-carboxylic acid	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Benzoylecgonine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Methylecgonine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Amphetamine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Methamphetamine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Tenamphetamine (MDA)	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
3,4-methylenedioxy-methamphetamine (MDMA)	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
N-ethylmethylenedioxy-amphetamine (MDEA)	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
N-methyl-1-(3,4-methylenedioxyphenyl)-2-butanamine (MBDB)	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP

Substance	Analytical technique codes[a]		Sample code			
			--/-/BS-1	--/-/BS-2	--/-/BS-3	--/-/BS-4
Phenylpropanolamine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Diazepam	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Nordiazepam	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Oxazepam	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Temazepam	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
7-aminoflunitrazepam	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Phenobarbital	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Ephedrine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP
Procaine	_ _ _	_ _ _	A P ANP	A P ANP	A P ANP	A P ANP

[a]For each substance, insert the appropriate analytical technique code from the list on page 26.

Analytical results, part three: quantification
(ng/ml)

Substance	**Analytical technique code**[a]	**Sample code**			
		--/-/BS-1	**--/-/BS-2**	**--/-/BS-3**	**--/-/BS-4**
Free morphine	_ _ _	_ _ _ _ ._	_ _ _ _ ._	_ _ _ _ ._	_ _ _ _ ._
Total morphine	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Codeine	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
O^6-monoacetylmorphine	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
11-nor-?^{9}-THC-9-carboxylic acid	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Benzoylecgonine	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Methylecgonine	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Amphetamine	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Methamphetamine	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Tenamphetamine (MDA)	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
3,4-methylenedioxy-methamphetamine (MDMA)	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
N-ethyl-methylenedioxy-amphetamine (MDEA)	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
N-methyl-1-(3,4-methylenedioxyphenyl)-2-butanamine (MBDB)	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Phenylpropanolamine	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Diazepam	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _

Substance	Analytical technique code[a]	Sample code			
		--/-/BS-1	--/-/BS-2	--/-/BS-3	--/-/BS-4
Nordiazepam	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Oxazepam	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Temazepam	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
7-Flunitrazepam	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _
Phenobarbital	_ _ _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _	_ _ _ _. _

[a]For each substance, insert the appropriate analytical technique code from the list on page 26.

Date of receipt of the ICE samples: day ___ month _____ year ___

Comments:

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Name: .....
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Title: .....
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Signature: .....
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Date: .....
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