



# International Federation of Clinical Chemistry

## Scientific Division

### Committee on Nomenclature, Properties and Units (C-NPU)

Minutes of meeting, Copenhagen March 17 – 20, 2000

Revised version, May 9, 2000

- 0.0 – **The meeting opened at 13:00 PM.** – Present for the opening of the meeting were the following titular members for the C-NPU (TM): Urban Forsum (UF) chairman of the C-NPU, Pedro Soares de Araujo (PSA) secretary of the C-NPU, Antonin Jabor (AJ) Gunnar Nordin (GN), René Dybkaer (RD) and Wolf R. Külpmann (WRK). Dr. Henrik Olesen (HO), former chairman of C-NPU, now an associate member was also present.
- 1.0 – **The minutes from the Berlin meeting** – August 8-10, 1999 – were discussed and a few corrections were proposed, specially concerning the format of the document.
- 2.0 – **Members' reports** – Several members raised the point of distributing C-NPU documents to the various societies that collaborated with the C-NPU in preparing C-NPU reports. UF reported that he tried to establish contact with the Vancouver group, 3 months ago, without any answers from the secretariat up to date. RD will try to contact Poul Riis to improve the chances of contact with the Vancouver group. HO pointed that the public for C-NPU papers is in the clinical laboratories, and the way to reach them is through Journal of IFCC (J-IFCC), which is read, in thousands of laboratories. It was suggested that short papers should be prepared and sent to several journals. Among the journals suggested, International Journal of Systematic Microbiology (paper to be prepared by UF and HO) and Journal of the American Medical Informatics Association received the greatest support.
- 3.0 – **Review of projects** – (abbreviations in bold indicate the project leader)
- 3.1 – Project 18/87 Properties and units in the Clinical Laboratory Sciences  
VII – Properties and units of Markers in Inborn Errors of Metabolism (GH, DK, **HO**) – The part of this subject pertaining to the clinical biochemistry was just published, in Danish, in the C-NPU web site. The part related to Molecular Biology will wait until project 25/95 is finalised.
- 3.2 – Project 25/95 Properties and units in Medical Molecular Biology (**PSA**, BZ, PAR, ABF, XFA) – Following a suggestion from UF, for an inversion of the agenda, a vigorous discussion of the structure of the project was undertaken. It was agreed that draft 3 of the report will be an introductory paper on this subject. Several additions covering the various fields in which Molecular Biology methods are currently being used will be prepared. GN will collect a comprehensive list covering several areas, while PSA and HO will prepare a new draft emphasising the syntax used in Medical Molecular Biology.
- 3.3 – Project 18/87 Properties and units in the clinical laboratory sciences  
VIII – Properties and unit in Clinical Microbiology (**UF**, **HO**, WF, BP) – Pure and Applied Chemistry (PAC) will publish the whole paper; J-IFCC will publish the first 5 pages and the remainder will be published electronically. The whole paper will be placed in the C-NPU web site. It was agreed that part VIII was finalised.

X – Properties and units in General Clinical Chemistry (**HO**, II, IB, DK, RD, XFA, GH, PSA, CM) It is finalised. It was published and added to the C-NPU database. RD, GN, UF and HO made comments on acid base status and headers. A new proposition is to be forwarded by GN, RD and UF to change the syntax of acid base status in the database. The current status of the remaining parts of Project 18/87 are listed in the annex – Review of projects, dated April 22, 2000. It was agreed that Project 18/87 was finalised.

- 3.4 – Project 26/95 – Properties and units in Flow Cytometry, was confirmed as abandoned. Project 27/95 – C-NPU Internet Homepage, will be transferred to the IUPAC web site at earliest convenience. Project 32/97 – Properties and units for Dynamic Function Tests, a description of the basis for constructing the structure of the various Function Tests was presented by AJ following the already present entries in the C-NPU data base. This project is still in stage 0, and AJ and co-authors will prepare a written draft.
- 3.5 – Project 33/97 – Petition to Comité Consultatif des Unités about the unit name katal. – RD report that Resolution 12 of the 21<sup>st</sup> Conférence Générale des Poids et Mesures approved in September 1999 the use of katal for the expression of catalytic activity.
- 3.6 – Project 36/98 – Concepts for requests in Clinical Laboratories. – This topic caused a very interesting discussion on the use of headers. C-NPU database entries can have systematic headers, however, locally people can use headers to suit their needs was the final conclusion on this subject. Discussion of the current draft was deferred.

4.0 – **Proposed topics for discussion** – Following a request by AJ it was agreed that C-NPU will not double entries in its data base, and therefore will not have codes related to mass in Drug Monitoring. The items covered in entries 4.1 to 4.3 of the agenda dealt with the general implications of articles like the one that appeared in Ann. Clin. Biochem. **37**: 16-19, 2000 and a new series of quality standards (ISO 15189, ISO 15195, etc). It was agreed that C-NPU needs to further publicise its work, most probably through manuscripts sent to the journals where these articles were published.

#### 5.0 – **Organisations: contacts and meetings**

5.1 LOINC – UF presented a report on his recent meeting with people from LOINC on HL-7.

5.2 JCGM –WG 1 (GUM) and JCGM –WG 2 (VIM) – RD reported on the meetings held in March 7-10, 2000. Future tasks for JCGM-WG 1 were discussed for one and a half-day and 10 items were agreed. VIM was discussed for two full days, and RD conclusion is that now WG 2 is on the right track, but there is much to do on principles and detail.

6.0 – **New projects** – UF reported that there was no progress in the project proposed during the meeting in Berlin which will cover Properties and Units in Transfusion Medicine and Tissue Typing. WRK reported on contacts with Dr. John Duffus, chairman of IUPAC's ComTox, about the interdivisional project proposed on the use of the NPU concept system for properties in the field of Environmental Chemistry. According to Dr. Duffus the best time to launch this joint project will be the next IUPAC General Assembly in Brisbane in 2001.

7.0 – **Recent Publications on Properties and Units.** – The text of the short paper on “Coding scheme for Properties in Laboratory Medicine (Project 18/87) which will appear in J-IFCC was revised and its final form was approved.

8.0 – **Budget** – UF informed that the budget for this meeting in Copenhagen is 10 000 Swiss francs provided by IFCC. It was a general consensus that IUPAC will provide the needed funds for our

next meeting scheduled to Prague. RD will attend the JCGM meetings in Paris, GUM in September 9-13 and VIM in November 11-14, with support from IFCC.

9.0 – **Membership** – There was a general consensus that the open position for a titular member should be filled by a molecular biologist due to the explosive growth of this field and to the need for this kind of expertise in the C-NPU. UF and GN will start the search for colleague with the required profile.

10.0 – **Future meeting** – The next meeting of C-NPU will be sponsored by IUPAC and it was proposed that it will be held in Prague in the Czech Republic. The first choice is the 39<sup>th</sup> week of 2000, from September 29 to October 2. A second possibility is October 13-16.

11.0 – **Other business** – No issue was raised under this topic.

12.0 – **Closing** – The meeting was closed at 13:00, March 20,



# Review of projects

Last modified: 2000-04-28

{PL} following a name indicates the project leader

**Quantities and units in clinical chemistry: nebulizer and flame properties in flame emission and absorption spectrometry.** R Hermann, C Onkelinx.

IUPAC: J Clin Chem Clin Biochem 1985; 23: 365-71

IFCC: Clin Chim Acta 1985; 148: 277F-85F

Medilab 1985; 89: 17-24

**Finalised.**

**Approved recommendations (1984) on physicochemical quantities and units in clinical chemistry with special emphasis on activities and activity coefficients.** O Siggaard-Andersen, RA Durst, AHJ Maas.

IFCC: Ann Biol Clin 1987; 45: 89-109

Labmedica 1986; 3: 33-7

**Finalised.**

**A protocol for the conversion of clinical laboratory data to IFCC/IUPAC recommended units.**

HP Lehmann, HGJ Worth, O Zinder.

IFCC: JIFCC 1989; 1: 106-10

**Finalised.**

Project 2/81. **Nomenclature of derived quantities. Recommendation 1991.** JC Rigg, BF Visser, HP Lehmann.

IUPAC: Pure & Appl Chem 1991; 63: 1307-1311

IFCC: JIFCC 1994; 6: 153 (abstract; recommendation)

**Finalised.**

Project 10/81. **A special unit for the quantity: number (of entities)**

**Abandoned.**

Project 11/81. **Quantities and units for metabolic processes as a function of time. Recommendation 1992.** G Féraud.

IUPAC: Pure & Appl Chem 1992; 64: 1569-1575

IFCC: Biochim Clin 1992; 16: 1209-1212

J Automat Chem 1992; 14: 231-234

Clin Chim Acta 1992; 211: S5-S11

Eur J Clin Chem Clin Biochem 1992; 30: 901-905

Ann Biol Clin 1992; 50: 731-734

JIFCC 1993; 5:18-21

**Finalised.**

Project 12/83. **Quantities and units in clinical chemistry: Classification, quantities and units for 'Binding Assays' in the clinical laboratory.** DR Bangham. Technical Report.

IUPAC: No further action.

IFCC: Basic Features of Biomedical Assays. JIFCC 1993; 5: 8-15.

**Finalised.**

Project 13/84. **Glossary of terms in quantities and units in clinical chemistry.** HP Lehmann, X Fuentes-Arderiu, L Bertello. Technical Report.

IUPAC: Pure & Appl Chem 1996; 68: 957-1000.

IFCC: Biochimica Clinica 1995; 19: 471-502.

**Finalised.**

Project 15/85. **Protein binding and biological assays.** DR Bangham. Technical Report.

IUPAC: No further action.

IFCC: Aspect by which assays may be characterised. Scand J Clin Lab Invest 1989; 49 (suppl. 193): 11-19.

**Finalised.**

Project 16/87. **"Semi-Quantitative" clinical analyses.** M Lauritzen.

IUPAC: Practical part incorporated in Project 18/87.

IFCC: Ut supra.

**Finalised.**

Project 17/87. **Quantities and units for centrifugation in the clinical laboratory. Recommendation 1994.** M Lauritzen.

IUPAC: Pure & Appl Chem 1994; 66: 897-907

Chem Internat 1994; 16: 185 (abstract)

IFCC: Clin Chim Acta 1992; 205: S5-S15

J Automat Chem 1992; 14: 93-96

Ann Biol Clin 1992; 50: 45-49

Acta Bioq Clin Latinoam 1993; 27: 267-73

JIFCC 1994; 6: 143 (abstract; recommendation)

**Finalised.**

Project 18/87. **Properties and units in the clinical laboratory sciences.**

**Preamble - Quantities and units - Aspects**

IUPAC: Chem Internat 1994; 16:229

IFCC: JIFCC 1995; 7: 43

**Finalised.**

**I. Syntax and semantic rules. Recommendation 1995.** H Olesen.

IUPAC: Pure & Appl Chem 1995; 67: 1563-74

IFCC: Eur J Clin Chem Clin Biochem 1995; 33: 627-36

Clin Chim Acta 1996; 245: S5-S21

**Finalised.**

**II. Kinds-of-property. Recommendation 1996.** D Kenny, H Olesen.

With translation into Catalan (X Fuentes-Arderiu); Czech ( A Jabor); Chinese (Zhai Lin) Danish (R Dybkær); German (JC Rigg); Dutch (J Lindemans, JC Rigg); Finnish (E Leskinen, R Tenhunen, G Sievers); French (G Férard & R Zender); Norwegian (J Kofstad); Portuguese (P Soares de Araujo); Spanish (X Fuentes-Arderiu); Swedish (A Kallner, CH de Verdier); Welsh (G Gold)

IUPAC: Pure & Appl Chem 1997; 69:1015-42

IFCC: Eur J Clin Chem Clin Biochem 1997; 35 (4): 317-44

**Finalised.**

**III. Elements (of properties) and their code values.** I Bruunshuus, W Frederiksen, H Olesen, I Ibsen. Technical Report.

IUPAC: Pure & Appl Chem 1997; 69: 2577-82

IFCC: Internet server in extenso 1998-02; 1998-11; 1999-07

**Finalised.**

**IV. Properties and their code values.** H Olesen, D Kenny, I Bruunshuus, I Ibsen K Jørgensen, R Dybkær, X Fuentes-Arderiu, G Hill, PS de Araujo, C McDonald. Technical Report.  
IUPAC: Pure & Appl Chem 1997; 69: 2583-91  
IFCC: Internet server in extenso 1998-02; 1998-11; 1999-07  
**Finalised.**

**V. Properties and units in Thrombosis and haemostasis. Recommendation 1995.** M Blombäck, R Dybkær, K Jørgensen, H Olesen, S Thorsen.  
ISTH/SSC International Society of Thrombosis and Haemostasis: Thrombosis and Haemostasis 1994; 71(3): 375-94  
IUPAC: Pure & Appl Chem 1997; 69: 1043-79  
IFCC: Eur J Clin Chem Clin Biochem 1995; 33: 637-60  
Clin Chim Acta 1996; 245: S23-S28  
**Finalised.**

**VI. Properties and units in IOC prohibited drugs.** H Olesen, D Cowan, I Bruunshuus, K Klempel, G Hill. Collaboration of IFCC/SD/C-LDA, IUPAC/VII/C-QUCC and IFCC/SD/C-QU.  
IUPAC: Pure & Appl Chem 1997; 69: 1081-1136. Technical report  
IFCC: Eur J Clin Chem Clin Biochem 1997; 35: 805-31. **Recommendation 1997.**  
IOC: J Chromatogr B 1996; 687: 157-82  
**Finalised.**

**VII. Properties and units in Inborn Errors of Metabolism.** H Olesen, D Kenny. Technical report 2000  
IUPAC: To be send for acceptance 2000-04  
IFCC: To be send for acceptance to IFCC/SD 2000-04  
**Finalised.**

**VIII. Properties and units in Clinical Microbiology.** U Forsum, H Olesen, W Frederiksen, B Persson. Technical report 2000.  
IUPAC: For publication in Pure and Applied Chemistry in the spring of year 2000  
IFCC: eJIFCC 2000; 12-1  
**Finalised.**

**IX. Properties and units in Trace elements.** R Cornelis, X Fuentes-Arderiu, I Bruunshuus, D Templeton. Technical report 1997.  
IUPAC: Pure & Appl Chem 1997; 69: 2593-606  
IFCC: Eur J Clin Chem Clin Biochem 1997; 35: 833-43  
**Finalised.**

**X. Properties and units in General Clinical chemistry.** H Olesen, I Ibsen, I Bruunshuus, D Kenny, R Dybkær, X Fuentes-Arderiu, G Hill, PS de Araujo, C McDonald. Technical report 2000.  
IUPAC: For publication in Pure and Applied Chemistry in the spring of year 2000  
IFCC: eJIFCC 2000; 12-1  
**Finalised.**

**XI. Coding systems - structure and guidelines.** H Olesen, D Kenny, R Dybkær, I Ibsen, I Bruunshuus, X Fuentes-Arderiu, G Hill, PS de Araujo, C McDonald. Technical report.  
IUPAC: Pure & Appl Chem 1997; 69: 2607-20  
IFCC: Accepted as Technical report by SD 1997-10. Internet homepage  
**Finalised.**

**XII. Properties and units in Clinical Pharmacology and Toxicology.** H Olesen, D Cowan, R de la Torre, I Bruunshuus, M Rohde, D Kenny. Technical report 2000  
IUPAC: For publication in Pure and Applied Chemistry in the spring of year 2000  
IFCC: eJIFCC 2000; 12-1  
**Finalised.**

**XIII. Properties and units in Reproduction and fertility.** H Olesen, A Giwercman, DM de Kretser, D Mortimer, H Oshima, P. Troen. Technical report 1997.  
INT SOC ANDROL: For publication and Internet 1997-08-20.  
IUPAC: Pure & Appl Chem 1997; 69: 2621-28  
IFCC: Clin Chem Lab Med 1998; 36(1): 57-65  
Clin Chim Acta 1998 271/2: S5-S26  
**Finalised.**

**XIV. Properties and units in Tumor markers.** R Molina, X Fuentes-Arderiu.  
IUPAC: Incorporated into project 18/87 part X  
IFCC: Ut supra  
**Finalised**

**XV. World Wide Web databases.**

This part of project 18/87 has been transferred to project 27/95 as a separate entity (1998-03).

**XVI. Properties and units in Clinical Allergology.** I Bruunshuus, LK Poulsen, H Olesen.  
Technical report 2000.  
Endorsed by the American Academy of Allergy, Asthma and Immunology  
IUPAC: For publication in Pure and Applied Chemistry in the spring of year 2000  
IFCC: eJIFCC 2000; 12-1  
**Finalised.**

**XVII. Properties and units for Urinary Calculi.** A Jabor {PL}, T Bulkova, M Zamecnick  
IUPAC: Revised 2000-03-20 and transferred to project 38/2000  
IFCC: Ut supra  
**Ongoing.**

**XVIII. Properties and units in Molecular Biology.** PS de Araujo {PL}, B Zingales, P Alia-Ramos, A Blanco-Font, X Fuentes-Arderiu.  
Transferred to Project 25/95 (2000-03-20)

Project 19/89. **Terms and symbols for human body fluids and cells in laboratory medicine.** G Hill.  
Technical Report.  
IUPAC: Incorporated in Project 18/87. No further action.  
IFCC: JIFCC 1991; 3: 140-141 and incorporated in Project 18/87, Part I.  
**Finalised.**

Project 20/89. **Quantities and units for electrophoresis in the clinical laboratory.**  
**Recommendation 1994.** G Féraud.  
IUPAC: Pure & Appl Chem 1994; 66: 891-896  
Chem Internat 1994; 16: 185  
IFCC: Clin Chim Acta 1992; 205: S17-S23  
Ann Biol Clin 1992; 50: 51-54  
J Automat Chem 1992; 14: 1-4  
JIFCC 1992; 4: 122-126  
Acta Bioq Clin Latinoam 1992; 26: 455-460

**Finalised.**



Project 21/90. **Application of IUPAC-IFCC recommendations on quantities and units to the WHO biological reference materials for diagnostic use. Recommendation 1994.** R Dybkær, P Storrø.

IUPAC: Pure & Appl Chem 1994; 66 (4): 909-913

Chem Internat 1994; 16: 185

IFCC: JIFCC 1994; 6: 101-103

Eur J Clin Chem Clin Biochem 1995; 33: 623-5

**Finalised.**

Project 22/91. **Compendium of terminology and nomenclature of properties in clinical laboratory sciences. The Silver Book. Recommendations 1995.** JC Rigg, SS Brown, R Dybkær, H Olesen.

IUPAC-IFCC: Blackwell Science, 1995.

**Finalised.**

Project 24/95. **Basic metrological concepts and definitions in clinical laboratory sciences.** X

Fuentes-Arderiu, R Dybkær.

**Abandoned** (1999-08-07/09)

Project 25/95. **Properties and units in Medical Molecular Biology.** PS de Araujo {PL}, B Zingales, P Alia-Ramos, A Blanco-Font, X Fuentes-Arderiu.

IUPAC: Draft discussed 2000-03-20.

IFCC: Ut supra

**Ongoing.**

Project 26/95. **Properties and units in Flow cytometry.**

**Abandoned** (99-08-07/09)

Project 27/95. **C-NPU Internet Homepage (www.ifcc-iupac.suite.dk).** H Olesen, I Ibsen, U Forsum, X Fuentes-Arderiu, PS de Araujo, G Hill, C McDonald, R Dybkær, I Bruunshuus.

IUPAC: Active 1996-11-05. Restructured 1998-11. Restructured 1999-07

IFCC: Ut supra

**To be transferred to IUPAC at earliest convenience**

**Ongoing.**

*This activity among others encompasses a compilation of NPUCodes for properties and other international codes for elements. It summarises codes for all the above domains of clinical laboratory sciences mentioned. The number of codes for properties is presently about 10 000, and if lists of properties are included, the number of lines is about 15 000. The number for elements is about 12 000. This compilation is of general interest for clinical laboratories, whether the NPUCodes are actually used or not.*

*It is visualised as an ongoing activity of general interest.*

Project 28/97. **Intensional definitions of basic concepts in human health.** R Dybkær, WR Külpmann.

**Abandoned** (99-08-07/09)

Project 29/97. **Compilation and clarification of Quality Assurance related nomenclature.** R Dybkær.

Collaboration with IUPAC div. V, IFCC, ISO, EURCHEM, AOAC, CITAC, WHO

**Abandoned** (99-08-07/09)

Project 32/97. **Properties and units for dynamic function tests.** A Jabor {PL}, M. Zamecnick

IUPAC: Draft discussed 2000-03-20.

IFCC: Ut supra

## Ongoing

Project 33/97. **Petition to Comité Consultatif des Unités about the unit name katal.** R Dybkær. Firstly, a paper on the outcome will be sent to Metrologia. Subsequently, IUPAC and IFCC will receive texts.

### Finalised

**Project 34/97. Metrological concepts and terms in toxicology.** X Fuentes-Arderiu.

**Abandoned** (99-08-07/09)

Project 35/97 **Harmonisation of coding schemes between IUPAC and LOINC.** C MacDonald and H Olesen

**Abandoned** (99-08-07/09)

Project 36/98 **Concepts for request in clinical laboratories.** U Forsum {PL}, A Jabor, G Nordin  
IUPAC: Draft discussed 2000-03-20.

IFCC: Ut supra

### Ongoing

Project 37/98 **Properties and Units in Clinical Virology.**

IUPAC: Incorporated into project 18/87 part VIII

IFCC: Ut supra

### Finalised

Project 38/2000 **Properties and units for Urinary Calculi.** A Jabor {PL}, T Bulkova, M Zamecnick

IUPAC: Revised 2000-03-20

IFCC: Ut supra

### Ongoing

## New projects

Project 39/2000 **Properties and units for Transfusion Medicine and Tissue Typing.** U Forsum {PL} It is envisaged that this project will cover a large area of interests in the Clinical Laboratory Sciences with applications also for the in vitro diagnostic industry.

IUPAC: In the planning stage

IFCC: Ut supra

A new interdivisional project is proposed on the use of the NPU concept system for properties in the field of Environmental Chemistry. The project should be prepared by the collaborative effort of the two divisions. W R Külpmann and J H Duffus

IUPAC: To be launched in 2001

IFCC: Ut supra