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1999-06-08

Dear Dr Jost,

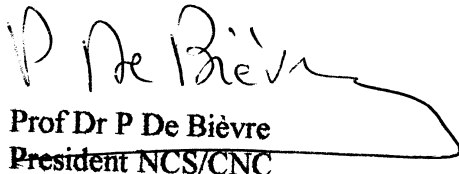
Consistent with the request from IUPAC to NAOs to express their opinion on the IUPAC "Strategic Plan" before the end of June 1999, I have the honour to submit as attachment the opinion of the Belgian NAO to the IUPAC, the National Committee on Chemistry of the Royal Academies of Belgium.

The opinion was formed during a special meeting of the National Committee with the Belgian Members of IUPAC Commissions and Committees on 1999-03-25. It was duly circulated to all before becoming final.

We have made a considerate attempt to contribute to IUPAC's existence justification, which we truly believe in.

We would like to congratulate IUPAC on the big efforts it is making to restructure its way of working.

Yours sincerely,

  
Prof Dr P De Bièvre  
President NCS/CNC

c Prof Dr P Claes  
Secretary NCS/CNC

Opinion of the Belgian NAO  
on the IUPAC Strategic Plan

1. The Belgian NCS/CNC, NAO to IUPAC, approves in principle the intention of IUPAC for a reorganisation of its activities, subject to several considerations given hereafter and some of which are considered rather fundamental.
2. The first and most important observation, is that the title "Strategic Plan" is misleading at best and not covering the subsequent text at worst. A "Strategic Plan" should describe a plan for a series of systematic approaches to fulfill a Mission stated a priori. Hence, keeping the title as is now, implies writing down a series of such approaches. Alternatively, keeping the present text requires a change in the title into something like "Reorganizing IUPAC's Structure" or, "Reorganizing IUPAC's Way of Operating". The better solution would probably be a "Strategic Plan to carry out IUPAC's Mission".
3. The Belgian NAO has examined IUPAC's activities very much in the light of the likely answers to the question: "*If we would not have had an IUPAC, would we have to set it up?*" Some of the objectives which passed this (severe) test "*magna cum laude*", are commented upon hereafter. Suggestions for improvement are given.
  - 3.1 Databases with reliable, evaluated values for use by industry, researchers, publishers, governments and regulatory authorities. The Belgian NAO DOES NOT MEAN: compilations where reliable, mediocre and unreliable values are simply assembled and edited, all values carrying the same weight. The chemical world must come up, all by themselves, with *scientifically evaluated data*, *SELECTED* from the wide spectrum of published values, where some are better underpinned than others or not at all. Examples of superb IUPAC data sets are the "Table of Atomic Weights of the Elements", the "Isotopic composition of the Elements". Equally of great value, are the Solubility Data sets.
  - 3.2 Nomenclature for Chemistry for use by industry, researchers, publishers, governments, regulatory authorities and in law. The various initiatives for unifying nomenclature are essential to international communication in chemistry. *They should be elevated from the status of voluntary projects in the different fields of chemistry* (inorganic, organic, physical, clinical, ...) - however useful and commendable that has been in the past - *to Bureau-instructed and -supervised tasks*. Also the titles should be selected in agreement with current needs (and interests) in the various domains of chemistry. IUPAC owes its very existence justification to such duties. It should thereby be obvious that IUPAC should be involved in - and supervise - proper translation of terms in other languages in a world which has gone "global" in virtually every respect and therefore needs "harmonized" tools for communication.
  - 3.3 Units and Symbols for common use by industry, researchers, *publishers*, governments, regulatory authorities and in law. The use of common symbols and units is of key importance in a world where "comparability" of measurement results (ie the

ability to be *compared*, even if they are of different size), is of paramount importance. More and more do results of measurements form the basis of decisions on the values of goods, on the implementation of border-crossing regulations, on -since quite some time - medical diagnoses, on diet decisions, and even on the detection of unauthorized nuclear activities. Claiming to be the highest professional society in its field, IUPAC owes it to the world - and to itself - not only to come up with a coherent system of symbols and units in chemical measurement, which the Union has done, but also with rather clear if not imperative recommendations of their effective use in oral and written communication. Again the communication issue across borders, languages and cultures is of paramount importance for IUPAC in a world gone "global".

- 3.4 "White Books" for use by the public, governments, environmental organisations and industry ("Chlorine" - "Endocrine Disruptors"). The Belgian NAO sees those books as a realization of part of the Mission of IUPAC which must be to provide the most independent and objective scientific authority in various and/or disputed areas of chemistry. Chemical industry is almost continuously challenged by well - or less well - inspired environmental worries of the world today. Governments as well as the citizen must be informed on the scientific, objective state-of-the-art in matters of chemistry because of its socio-economic impact. The image of chemistry is declining enough because of the extent of the chemical waste problem, the pollution of the environment, and, yet to come, the sometimes less than thrilling reliability of chemical measurement results. It is therefore a professional and logical duty of an *International Union of Pure and Applied Chemistry* to provide totally bias-free, best scientific knowledge, being seen as coming from a totally independent scientific authority exclusively speaking from a scientific basis. This task is to be considered by the Union as a return-of-investment on the money the taxpayer has invested in the Union.
- 3.5 Chemical Safety. The Belgian NAO commends very highly the training possibilities IUPAC has created at the initiative of its Committee on Chemistry and Industry, COCI. This initiative, which is of special benefit to developing countries, is following the only logical path possible towards approaching 100 % safety in (large) chemical plants: provide well-trained operating staff with the best possible knowledge available to avoid unsafe environments in chemical plants and to prevent outright disasters in chemical plants as have occurred in the past.
- 3.6 Teaching Chemistry This issue is the subject of great worry because of the decline, in many parts of the EU and of the world, in the interest of (candidate-)students in the study of chemistry. This decline finds one of its major roots in the decline of the perceived image of chemistry. IUPAC should therefore not only generate a renewed, vigorous and enthusiastic approach to create a better image of chemistry, but at the same time spend great efforts in raising the level of teaching of chemistry. That goes from paying *more attention to the personal competence in teaching of the "teacher" at any level*, to a more inspiring way of communication of the "teachers" with his/her students, to the upgrading of tools for teaching chemistry, to the systematic and logical construction in courses of knowledge in chemistry. It appears more and more that the obligation to earn own budgets for own research projects are shifting quality-education into 2nd or lower priority. Would it not deserve attention as to identify more clearly the objectives of IUPAC's CTC (Committee on Teaching of Chemistry) since the prime responsibility for teaching (of chemistry) is with schools and universities? In

this context, it should be stressed that the *secondary school level* is the most important one.

#### 4. Conclusions

4.1 The Belgian NAO recommends that IUPAC inscribes in its present "reorganisation intentions", plans to achieve pre-set objectives aiming at "realizing" its Mission. Objectives should thereby not be considered as achieved unless specific "deliverables" can be shown, ie until visible, well-identifiable end-products are offered.

4.2 IUPAC Bureau is encouraged to watch carefully that the new intentions and "formats" of projects are not misused to simply "package the same old wine in new bags". The Belgian NAO has already knowledge of a project which requests money in the "new approach", for work which, by its very nature, does not require IUPAC funds or attention!

4.3 IUPAC has to go a little back from a "democratic" fully decentralized bottom-up approach to a more consistent carrying out of its Mission under the supervision of Bureau adding a bit of top-down approach.

4.4 The present plan aims at too much, too general at once. It would improve if it had much more focussed objectives.

4.5 The electronic availability of evaluated data bases should be considered to be of high priority.

#### 5. Additional remarks

5.1 It is recommended that, for every objective, the question is asked: "would we have to set up an IUPAC to attain the objective if we didn't have one?". This question should be in the mind at each decision point in the history of a "project": selection, set-up, intermediate evaluation, final evaluation.

5.2 Pure "research projects" are not to be considered as of very high priority for IUPAC, especially not if funding is sought, and certainly not before international harmonization in matters of nomenclature, reference data and independent, authoritative opinions on chemical problems of (big) interest to governments and public, have been delivered by IUPAC

- 5.3 The attainment of several objectives may well be helped by a close cooperation with UNESCO. This is all the more easy as formal channels exist already.
- 5.4 A brief enquiry within an important Belgian chemical industry, revealed that not only IUPAC was unknown, but that no bid or tender for chemical services ever contained anything recommended by IUPAC (nomenclature, symbols, units, data). That tendency should be radically reversed.
- 5.5 Continuity of knowledge should be maintained by the Union *in knowledge functions* which she must carry out in typical fields of her domain. That will require the difficult search of a carefully balanced act between keeping well-established experts on board, and gaining the services of promising new collaborators.
- 5.6 Ways of disseminating "Chemistry International" should become more appropriate.
- 5.7 Duplication. Special attention is drawn on the need for IUPAC to carefully examine duplication, not only between its Divisions but with also with work done in other international organisations as well. Cases to be investigated are the areas of activity of Commissions I.6, VI.5 and VI.6 where part of the possible IUPAC functions may drain away (to ISO).
- 5.8 Follow-up. The intention in the present plan for the IUPAC secretariat to give specific help in the follow-up of projects, is much welcomed. Interdivisional work at present is very difficult: requests for opinions from other Divisions do take months or are not answered at all (examples can be found in Commission VII.C)