

IUPAC's New Vision

Kevin Thurlow LGC

The International Union of Pure and Applied Chemistry (IUPAC) has had a number of functions since its inception in 1920. Amongst these has been the provision of rules and recommendations for chemical nomenclature. IUPAC split its various work functions into different areas or 'Commissions', but eventually there was a feeling that some of these Commissions attended the biennial meetings faithfully but never published anything. This was certainly not the case with nomenclature, but IUPAC took the somewhat draconian step of announcing that the Commissions would be dissolved in 2001, and replaced with specific projects. These would be set up as and when necessary, with appropriate funding and milestones. This is not a bad idea in theory, but one of the problems in the field of nomenclature is that a general overview is required. If groups work in isolation on different problems of nomenclature, relating to similar compounds, then they might take completely different views on how to name the compounds. Analytical chemists and biochemists have become very inventive at making new compounds. If someone produces a compound with a fullerene attached to a sugar attached to a steroid, deciding which rules to use in naming the beast is a bit tricky. So it is nice if the rules bear some sort of similarity of approach. Accordingly the nomenclature experts made it clear to the powers that be at IUPAC that some sort of general overview was essential or chaos would ensue. IUPAC recognised the force of this argument and set up a 'Division of Chemical Nomenclature and Structure Representation'. This will oversee all work on chemical names, not just systematic names, but approved 'trivial' names. The 'structure representation' part in the title refers to the project to produce a chemical identifier¹.

It is particularly impressive that IUPAC has carefully considered the needs of the chemical community. The new Division committee has experts in nomenclature of course, but also experts in software, especially that related to nomenclature. In the past, IUPAC has been accused of bumbling along producing rules without considering what the users really need. IUPAC has now made it very clear that that they are aware that if you produce rules that people do not like, then the rules will just be ignored. IUPAC did well to sort out the rather unseemly wrangle that developed over the names of recently created chemical elements, where self-interest rather overtook scientific endeavour. Hence elements 104 and 105 appear under a variety of names in the literature, which is most unsatisfactory.

There has always been some confusion over systematic nomenclature, because both IUPAC and CAS (Chemical Abstracts Service) produced their own rules. Although these rules sprang from the same seed, there were two entirely different approaches. IUPAC liked to consider new rules and eventually publish what they considered was the definitive set of rules. However, if CAS saw a new chemical in the literature, then they had to give it a registration number, along with a name, and this had to be done quickly! Naturally, this has led to major differences in the two forms of systematic nomenclature. Once CAS has a system in place, changes are (not surprisingly) unwelcome, because it will affect previous decisions. IUPAC and CAS are working together to try to iron out these difficulties, and it is good to see active cooperation between the two bodies.

The new division is backed up by an 'Advisory Subcommittee', which will suggest and take part in projects, as well as comment on other draft rules. This subcommittee communicates mainly by electronic means, which is just as well, because the 36 members come from 17 different countries, with South America the only continent not represented so far. There is an enormous breadth of expertise. Apart from

nomenclature specialists, there are experts in patents, publishing, computers, linguistics, and representatives of chemical companies. The 17 professors, 17 doctors and 2 misters share a great deal of expertise. It is clear that IUPAC have made a very serious attempt to produce the best nomenclature systems possible. The current format is experimental and will be amended as necessary.

It is encouraging to see that trivial names will also be considered. For many years, IUPAC primarily concerned itself with systematic names. Trivial names are popular because they are easier to use, but if they are not properly regulated, problems arise. People glibly refer to 'AA' or 'Smith's Reagent', which is fine if only a few people are involved. But names like that turn up in the literature without being defined! There is a very real risk that the wrong reagent will be used, and that could destroy the quality of the work – or even the laboratory itself! If IUPAC can advise on trivial names as well, there are splendid opportunities for improved quality of analysis. Abbreviations and trivial names are particularly confusing if you think you know what they mean. ABS means acrylonitrile-butadiene-styrene, which happens to be a polymer used in the manufacture of cars. A former author of this column once pointed out that it was rather strange that advertisements were ranting on about cars having 'ABS'. "Who cares what plastic they use?" he would say. Then one day, 'ABS' was actually defined as 'Anti-lock Braking System', and it began to make sense. This is one of those cases where being an expert works against you.

IUPAC has produced an exciting new plan and it is good to see so many different people and organisations trying to work together to produce optimum results.

For advice on chemical nomenclature, contact The VAM helpdesk.

REFERENCES

1. Thurlow, K, *VAM Bulletin* 23, 32-33