



# Australian Nuclear Forum Inc.

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([www.netSPACE.net.au/~oznucforum](http://www.netSPACE.net.au/~oznucforum))

8/7/06

Dr John Bennett  
General Manager  
NSW Board of Studies  
GPO Box 5300  
Sydney 2001  
NSW Australia

Your Ref 06/2053

Dear Dr Bennett,

**RE: Science Years 7 to 10 Syllabus**

Thank you for your letter enclosing a copy of the above syllabus. A member of ours, a retired science head of a local NSW high school and an experienced former nuclear safety officer at the AAEC, examined this document and provided us with the attached Commentary 1 - which I enclose for your information. This person also previously provided us with some general comments on teaching nuclear science in secondary schools and pertinent parts are attached as Commentary 2.

We realise that the education process is a difficult one to map out to everyone's satisfaction, but as regards science education it is clear that the level of national technological development must be raised and fundamental to this must be improved science education. In the instance of nuclear science education we have found that at the post-graduate specialist level the situation is generally good but this diminishes toward the other end of the scale - where the general public, has been left almost completely in the dark.

As a pointed example of this situation, after retirement from ANSTO, I took on the position of site tour guide. In this I found by talking to the public that they generally were completely unaware that our environment and our bodies are naturally radioactive! For another example, one of our members recently has given nuclear technology lectures on 3G courses and found the participants became quite upset over the way the education system had shortchanged them in this subject area.

You note in your letter that "extensive consultation with academics and educators" in developing the 7-10 Syllabus. A cynic might respond to this by saying that such advice would only be useful for training people to be teachers and university lecturers, but our (hopefully) more constructive comment is that such consultation should also include those from industry, and the professional organisations.

Thank you again for your attention on this matter.

Sincerely

Jim Brough, President

## Commentary 1

### on Science Years 7 to 10 Syllabus by ex-science head NSW public schools, (5/6/06)

Hi Jim

The following are the direct references to content -

Compulsory Content - Years 9-10 5.6.5 nuclear energy: a) identify that energy and particles may be released from the nuclei of atoms.

Optional Content - Years 9-10 Nuclear energy - discuss similarities and differences between nuclear fission and fusion and explain radioactivity in terms of release of particles and energy.

Compulsory Content - Years 9-10 5.12 technology:

- a) describe some everyday uses and effects of electromagnetic radiation, including applications in communications technology
- b) discuss the benefits and problems associated with medical and industrial uses of nuclear energy

Section 5.12 (b) does mean that uses of nuclear energy must be addressed and could be quite wide ranging. Obviously, as with all content, the depth of treatment will vary widely between teachers and schools. In view of the breadth of this syllabus I don't think it is realistic for you to expect that nuclear issues should get any more detailed coverage. There are other places in the syllabus where the issues may be used as examples but this, of course, is not compulsory. The treatment of topics in any syllabus is affected by media coverage and the political agenda. If nuclear issues continue to be covered by the media then teachers will probably include more where the syllabus is flexible.

Eduspeak is indeed a language of its own. Basically the only part that relates to what is actually taught is the content section and the compulsory items are the only parts that every school has to cover and could be audited on. All the rest is related to how the content is organised, delivered and assessed.

I hope this is helpful.

## Commentary 2

by ex-science head NSW public schools, (5/2/04)

"Very brief mention is made of nuclear science in the Junior Science Syllabus in NSW. The most relevant point is "give examples of medical and industrial uses of nuclear energy and discuss the benefits and problems associated with these uses". This could be taught in a variety of contexts with widely varying levels of detail. The junior syllabus in South Australia is set out in terms of big themes and ideas with the potential for individual schools and teachers to teach quite differing content. The extent to which nuclear issues are dealt with probably depends largely on the interests/politics of individual teachers. In both states there is a big emphasis on teaching critical, objective thinking. From personal experience this is an admirable goal but quite difficult to achieve with a large number of students who are convinced that science is not relevant to their lives.

"The extent to which nuclear science is taught/learnt in the senior years depends on the subjects chosen and also choice of electives within those subjects. The most extensive coverage is in some of the NSW Physics options but these are only going to be studied by a very few students.

**"I estimate that the majority of students emerging from secondary education in NSW or SA will have spent about 1 hour being taught any concrete facts directly related to an understanding of nuclear science.** Some will have spent much more time but it is difficult for me to assess what direction the content might take. It will certainly be influenced by the political leanings of individual teachers and by the extent to which they keep themselves informed of current trends.

**"The Australian population as a whole has a very low level of knowledge of nuclear science. The amount currently being taught in schools as far as I am aware is unlikely to change that. Consequently a great deal of misinformation is easily spread and will continue to influence people's decisions.** I don't think there is any overwhelmingly anti-nuclear agenda held by teachers but there is a full range of views both held and shared with students. Teachers may be as misinformed as the general public.

"Ideally I think everyone should have some appreciation of the levels of background radiation and of the widespread use of nuclear devices in industry. This knowledge would help to put discussions about nuclear issues into better perspective. It would appear to me, however, that the vast majority of scientifically well educated people do not even have this appreciation so my ideal is way out of reach. This does not mean that you should not try to change the status quo. You will need to decide if you think it does matter and how hard you are prepared to work to bring about change."