

Senate Standing Committee on Economics
ANSWERS TO QUESTIONS ON NOTICE
Innovation, Industry, Science and Research Portfolio
Budget Estimates Hearing 2010-11
31 May 2010

AGENCY/DEPARTMENT: AUSTRALIAN NUCLEAR SCIENCE AND TECHNOLOGY ORGANISATION

TOPIC: Synroc

REFERENCE: Written Question – Senator Eggleston

QUESTION No.: BI-42

Can the Department explain the hot isostatic pressing process that has been mooted as a new method of storing radioactive waste? (*Sydney Morning Herald* 16/4/2010, *The Age* 16/4/2010, *Canberra Times* 16/4/2010)

ANSWER

ANSTO has developed a material for radioactive waste encapsulation called *Synroc* which uses a technology called hot isostatic pressing.

The hot isostatic pressing process involves applying high pressure (by means of inert gas or elevated temperature) to a composition of minerals and radioactive waste that has been sealed in metal containers of a special design. This process reduces the volume of waste by over half and produces a synthetic rock material that safely “locks-up” the radioactive waste in a way that mimics natural rocks. By comparison with competing technologies, the ANSTO process has advantages in both the level of volume reduction and the chemical stability of the final waste form, especially for intractable nuclear waste.

This technology has the potential to ensure the long-term safety of radioactive waste storage and disposal, and reduce waste volumes significantly. The net savings for a number of candidate nuclear wastes have been independently estimated to be in the order of billions of dollars.