

AUSTRALIAN NUCLEAR SCIENCE
& TECHNOLOGY ORGANISATION

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Dr Neil Byron
Presiding Commissioner, ESD Inquiry
Productivity Commission
Locked Bag 2
Collins Street East
MELBOURNE VIC 8003

Dear Dr. Byron

**RE: INQUIRY INTO IMPLEMENTATION OF ECOLOGICALLY
SUSTAINABLE DEVELOPMENT BY COMMONWEALTH DEPARTMENTS
AND AGENCIES**

The Australian Nuclear Science and Technology Organisation (ANSTO) is pleased to provide a submission - -response to the Discussion Paper issued as part of the above inquiry.

I sent you of our most recently published Annual Report (for the 1996-97 financial year) with ANSTO's response to your questionnaire. I would appreciate you referring to this report because it provides details on ANSTO's activities, including those that relate to Ecologically Sustainable Development (ESD).

About ANSTO

ANSTO is Australia's national nuclear organisation and its centre of Australian nuclear expertise. ANSTO's functions are defined in section 5 of the *Australian Nuclear Science and Technology Organisation Act 1987*. These functions include:

- to undertake research and development in relation to: nuclear science and nuclear technology; the production and use of radioisotopes, and the use of isotopic techniques and nuclear radiation, for medicine, science, industry, commerce and agriculture; and
- to encourage and facilitate the application and utilisation of the results of such research and development;

· to condition, manage and store radioactive materials and radioactive waste, arising from:

- the Organisation's activities (including the production of radioactive materials for other persons); or

- the activities of companies in which the Organisation holds a controlling interest (including the production of radioactive materials for other persons); or

- the use by other persons of radioactive materials produced by the Organisation or such companies; or

- the activities of other persons who are specified in the regulation;

· to provide advice on aspects of nuclear science and nuclear technology and other matters related to its activities;

· to co-operate with appropriate authorities of the Commonwealth, the States and the Territories, and with other organisations and institutions in Australia or elsewhere, in matters related to its activities, and

to arrange for training, and the establishment and award of scientific research studentships and fellowships, in matters related to its activities.

It is clear from the above list of functions that ANSTO is not a Commonwealth Government agency with a primary responsibility for achieving the Government's Ecologically Sustainable Development (ESD) objectives. However part of ANSTO's vision is for "nuclear science and technology to be accepted as benefiting all Australians". Achieving this vision requires ANSTO to develop new knowledge in areas where nuclear science has the potential for generating future socio-economic benefits, as well as using existing knowledge and knowhow to deliver quality services and products to our customers and to enable effective management of a wide range of industrial, environmental and medical problems. A considerable amount of ANSTO's research and development activities are aimed at achieving the goals of ESD.

While ANSTO believes that nuclear science and technology can be used to improve the quality of life for all Australians, ANSTO recognises that achieving this goal requires careful management of its activities to ensure that doses of radiation to humans and the environment are as low as reasonably achievable. ANSTO therefore incorporates the precautionary principle throughout its activities including waste management, environmental monitoring, occupational health and safety and the handling and use of radioactive materials.

Incorporation of ESD principles into ANSTO's project approval process

ANSTO employs a rigorous project approval process when deciding what activities it will and won't undertake in any given year. The factors considered when assessing a project proposal include ANSTO's charter as defined in the *Australian Nuclear Science and Technology Organisation Act 1987*; its Corporate Mission and Vision; its *Strategic Plan*; and its *Business Guidelines* which includes procedures for assessing the scientific and business cases for undertaking a project. The result of this process is a portfolio of projects whereby ANSTO believes it can maximise its potential to deliver future socio-economic benefits to Australia with the resources it has available.

ANSTO's Board has established a Technical Advisory Committee (TAC) to provide it with independent advice on the research undertaken by ANSTO. The TAC consists of four people: two from Australia and two from overseas, who are recognised as science and technology leaders within the academic, industrial and scientific communities. The TAC advises ANSTO's Board on:

whether the topics being researched are relevant, given the mission and core science businesses of ANSTO;

whether the projects being undertaken are nationally or internationally important and realistic, given the resources of ANSTO; and

whether the results of the research work are of world standing, timely, relevant and cost effective.

The project approval process used by ANSTO, and the scrutiny provided by the TAC, ensure that the principles of ESD, ie maintaining a balance of economic, social and environmental factors, are incorporated in all projects undertaken by ANSTO.

ANSTO's activities that contribute to ESD

After consultations with its main stakeholders, ANSTO reorganised its activities into five core areas of science business in 1996. Three of ANSTO's core business areas, namely the Treatment and Management of Man-made and Naturally Occurring Radioactive Substances (TMRS), the Application of Nuclear Science and Technology to the Understanding of Natural Process (NSTN) and the Competitiveness and Ecological Sustainability of Industry (CESI), contribute to the goals of ESD.

The objectives of the TRMS core business area include:

To provide government with expert scientific and technical advice on nuclear waste management, including environmental impacts of uranium mining;

To refine or develop new approaches to immobilise and dispose of radioactive waste and to minimise environmental contamination from the nuclear and mining industries; and

To provide environmentally sensitive and cost-effective waste management in accordance with relevant standards and appropriate risk management strategies.

Some of the major activities being conducted under the TMRS core business area include the development of titanate ceramic wasteforms (Synroc) for radioactive waste; wasteforms for low-level and intermediate-level radioactive waste; and ANSTO's Waste Management Action Plan (WMAP). The objective of the WMAP is, by the year 2000, to be in full conformance with the new waste management standards being developed by the International Atomic Energy Agency (IAEA). The WMAP is an inter-Divisional activity outside ANSTO's routine waste management activities that include spent fuel management, and solid and liquid waste management.

The objective of the NSTN core business area is to apply nuclear-based techniques to research projects in support of national and international programs. Activities conducted under this core business area contribute to ESD primarily through the understanding of environmental processes that is gained through the application of nuclear science and technology. Improving our understanding of these processes will enable us to minimise the anthropogenic causes of environmental degradation. Examples of NSTN projects include the application of nuclear techniques to studies of environmental dynamics and global climate change.

One of the main objectives of the CESI core business area is to contribute to the development of critical technologies aimed at enhancing the competitiveness and ecological sustainability of selected industry sectors by applying nuclear science and technology and ANSTO's unique mix of technical capabilities. A major project in ANSTO's CESI core business area is Managing Mine Wastes. This project aims to develop technologies and methodologies for managing mine wastes to minimise their environmental impacts in a cost effective manner. Outcomes from other CESI environmental projects include:

Novel geochemical and geophysical solutions for the detection, transport and control of radioisotopes and contaminants; An innovative process to oxidise and remove contaminants from water based on photochemical and other advanced oxidation technologies.; and Demonstration of ANSTO - CRC for Waste Management and Pollution Control technology to remove arsenic from water in Bangladesh.

Monitoring and controlling ANSTO's impact on the environment and human health

Specific initiatives by which ANSTO incorporates the precautionary principle and intergenerational equity into its activities include:

ANSTO's Waste Management Action Plan (WMAP - described above).

- ANSTO has promulgated its Health, Safety and Environment Policy that states that the Organisation will undertake its activities in a manner that protects human health

and the environment. Under the policy, ANSTO is committed to provide verifiable evidence of fulfilment of the policy.

- ANSTO has established an Environmental Monitoring Committee to overview the implementation of its Environment Policy.

- ANSTO regularly conducts environmental monitoring on and around its site at Lucas Heights (this includes taking water, sand and soil samples from the river and various creeks, and sediments from stormwater drains), and at the sewer outfall at Potter Point (seawater, fish, barnacles and algae) where treated effluent from ANSTO's site is discharged into the Pacific Ocean. In conducting this monitoring ANSTO uses the appropriate regulatory criteria for human health and the environment and/or criteria recommended by such bodies as the National Health and Medical Research Council (NHMRC) and the Australian and New Zealand Environment and Conservation Council (ANZECC). ANSTO's Annual Environmental Survey Report is made available to the public through local libraries.

ANSTO has a Safety Assessment Committee which reviews the safety of ongoing activities at ANSTO as well as the safety of all new proposals that might have potential for harm to humans or the environment, and recommends changes to monitoring and control proposals to ensure high safety standards.

Other bodies that ensure that ANSTO's activities protect human health and environmental impacts include:

The Reactor Safety Committee, which reviews the safety operations of ANSTO's nuclear research reactor (HIFAR). The Chairperson of this Committee is external to ANSTO.

The Nuclear Safety Bureau, whose functions include the monitoring and review of the safety of nuclear plant owned or operated by ANSTO, and reporting on these matters directly to the responsible Federal Government Minister. The reports of the NSB are public and tabled in Federal Parliament.

The NSB has powers to place conditions and restrictions on the operation of ANSTO's nuclear plant and may, on safety grounds, require nuclear plant to be shut down.

The Safety Review Committee, which includes government and university health experts and the Sutherland Shire Council, reviews and assesses the effectiveness of the standards, practices and procedures adopted by ANSTO to ensure the safety of its operations, both for workers and for public health and safety beyond the Lucas Heights Research Laboratories site.

The Safety Review Committee advises the responsible Federal Minister and the ANSTO Board on these matters and prepares reports that are public and tabled in Parliament.

Program monitoring and review

ANSTO Submission

When ANSTO reviews the performance of the various activities it undertakes, it does not, in general, refer explicitly to the objectives of ESD. Examples of the types of reviews of activities and performance that are undertaken by ANSTO include:

The various health, safety and environment committees that operate at ANSTO review the relevant monitoring data and provide recommendations on how ANSTO's performance in these areas can be improved, if necessary.

The Technical Advisory Committee (TAC) advises ANSTO's Board on the quality and relevance of ANSTO's research. The recommendations of the TAC are an important factor in improving the effectiveness of ANSTO's research.

Individual projects at ANSTO are subject to a rigorous review process to ensure that the objectives and milestones of projects are met, and that any opportunities that arise are pursued.

The main indicators ANSTO uses to assess the effectiveness of its programs include the results published in its Environmental Survey Report, and the level of uptake of ANSTO developed know-how and technologies. With the exception of monitoring its own activities, ANSTO is a provider of goods and services that contribute to the goals of ESD and therefore ANSTO does not measure, directly, the impact of its programs on achieving ESD.

In summary, ANSTO is strongly committed to contributing to the Government's objectives for ESD through the development and application of knowledge derived from its research and development activities in nuclear science and technology. In addition, ANSTO is committed to adopting best management practices to ensure that the environmental and human health impacts associated with its activities are reduced to levels as low as reasonably achievable. ANSTO seeks to achieve these goals through a rigorous project approval and review process that takes economic, social and environmental factors into consideration; and through the establishment of several committees, some of which are independent of ANSTO, to monitor the human health and safety and environmental aspects of ANSTO's activities.

I hope you find the above comments useful for your inquiry. Should you have any further questions, or if you need clarification of any of the answers provided, please do not hesitate to contact either Mr. Peter Duerden on (02) 9717-3288 or Dr. Craig Blundell on (02) 97179320.

Yours sincerely

PROFESSOR HELEN M GARNETT
Chief Executive