

## Safety of National Radioactive Waste Repository assured

The proposed facility for the disposal of Australia's low and short-lived intermediate level radioactive waste planned for the central north region of South Australia is far from unique.

It will be one of more than 100 repositories for low and intermediate level waste either operating or being established in 30 countries including France, the United Kingdom, Japan, the United States, Poland, Hungary and Spain.

Such facilities, using near-surface disposal, (burial usually within about 20 metres of the ground surface), have been operating safely overseas for more than 30 years, with many situated in far less ideal hydrological and geological conditions than in Australia, and in areas of much higher population densities.

France, Japan and the United Kingdom\* have repositories many times larger than the one proposed for Australia in heavily farmed areas and close to major population centres. A number are in high rainfall areas with water tables within a few metres of the surface.

### French repository in Champagne region

France produces about 20,000 cubic metres of low level waste each year, and the waste is disposed of safely in near-surface repositories. The Centre de L'Aube is located in



The Nevada Test Site near-surface repository, similar to the one proposed for the Central North.

a 500 - 1000 mm or 20 - 40 inch rainfall area in the Champagne region. This is an agricultural area about 145 kilometres east of Paris which, as well as producing world famous sparkling wine, also produces cereals, vegetables, and has an extensive cattle grazing industry.

The region being investigated in Australia also rates very highly in comparison with countries with ideal dry climate sites. Repositories in desert areas in the USA contain much greater volumes of low level waste than exist in Australia.

### U.S. repositories

The near-surface repositories in the Nevada Test sites are about 150 kilometres north of Las Vegas, a city of more than one million people, and have proven to be safe. The waste is disposed of in boxes in unlined trenches with very little engineering.

Near-surface repositories have also been constructed at the Envirocare facility in Utah, located about 120 kilometres from Salt Lake City. The facility has a capacity of over 12 million cubic metres. Trenches have different designs depending on the type of wastes being disposed of.

A similar concept is used at the US Ecology facility near Richland, Washington, where trenches have dimensions of 8 x 280 x 15 metres. Waste with a low level of radioactivity is disposed of in metal boxes or drums, and is backfilled and covered with sand, while more active waste is buried in concrete containers.

A similar concept of varying engineering design, depending on the type of waste to be disposed of, will be used at Australia's National Radioactive Waste Repository.

## No threat to clean green image

Australia's foods are among the least contaminated in the world by any source of radioactivity and the National Radioactive Waste Repository will have no impact on Australia's 'clean green' image.

There will be no release of radiation from the repository, but to reassure farmers and exporters, foodstuffs from the region can be routinely checked on request and certified as safe through Australia's well established surveillance program.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), operates a long-running monitoring program around Australia to detect releases of radioactivity into the environment.

The program monitors:

- Air sampling stations
- Rainfall testing stations
- Regular analysis of milk from major dairying areas
- Routine environmental radiation levels at stations

To support the monitoring program, ARPANSA maintains sample preparation and radiochemical facilities and a range of measurement systems for the detection and determination of low levels of natural and artificial radiation.

Another important aspect of the monitoring program is the analysis of radioactivity in various Australian foodstuffs, primarily for export certification, as well testing background radioactivity levels of a wide range of foods in the Australian diet.

Once the repository has been established, certification by ARPANSA would confirm the fitness of food for both the local and export markets and that there has been no leakage of radioactivity from the repository into the food-chain.

continued on page 3

# Progress report on the repository site

An investigation is being conducted of the sites short-listed for the repository to determine whether they contain areas of heritage significance under the South Australian Aboriginal Heritage Act.

The Commonwealth requested the South Australian Minister for Aboriginal Affairs, Dorothy Kotz, to conduct the investigation after Aboriginal groups inspected the sites listed for the repository last November.

Jeff Harris, of the Department of Industry, Science and Resources, said that in addition to the four sites remaining from the October 1999 site announcement, Minister Kotz's views had been requested on four additional sites, all in the Woomera Prohibited Area (see map).

"The sites are alternatives in case any sites are ruled out for further study on heritage grounds," Mr Harris said.

"The alternatives could be viewed as replacements for

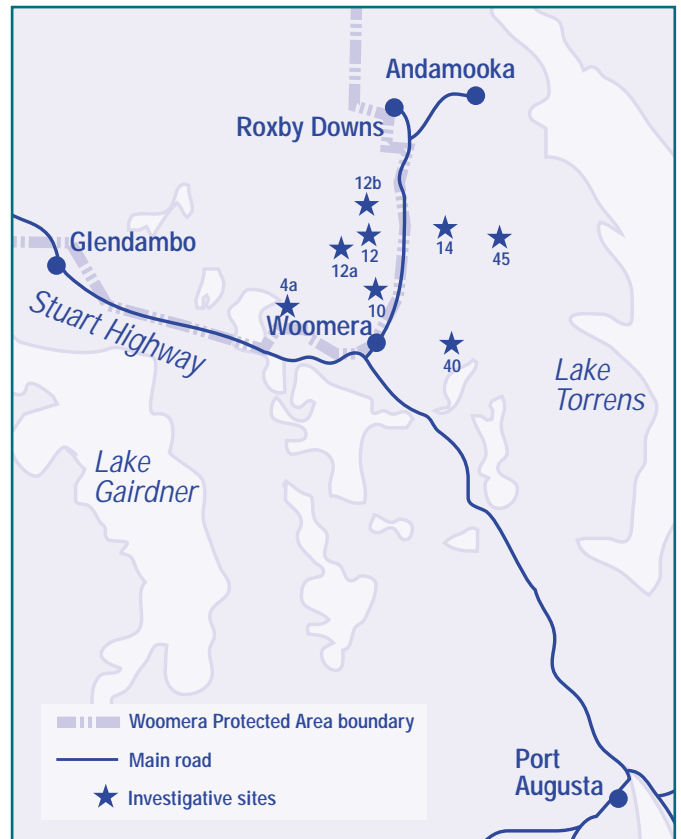
site 33 located in the Woomera Prohibited Zone, which was withdrawn as a result of the consultation process."

Mr Harris said the consultation period for the investigations under the South Australian Aboriginal Heritage Act had been extended to give all relevant Aboriginal groups full opportunity to comment, and was now expected to finish on May 5.

Mr Harris said if required, a further request would be made to Minister Kotz for assessment of the heritage value of additional sites.

He said the Commonwealth had always intended to drill five sites in Stage 2, and the assessment of the alternatives, as well as the four sites remaining from those identified last October, would allow continuation of the planned drilling program.

Stage 2 drilling is expected to start shortly after Minister Kotz makes her decision on the heritage value of the sites.



Investigative sites in the central north region of South Australia for the National Radioactive Waste Repository.

Further consultation will follow the drilling and three sites will be selected for further investigation.

A preferred site and alternatives are expected to be identified later this year.

## Why place the repository in the central-north?

Many people are still asking why the central-north region of South Australia was chosen for the repository site.

The simple answer is that after a long and extensive scientific study of the entire Australian continent, the central north was found to be the safest possible area to site a repository.

The site selection process began in 1992 when the Commonwealth Government initiated the Australia-wide search.

The process has been conducted in three phases.

In the first phase, experts assessed the entire continent against internationally-based technical and social selection criteria using computer-based geographic information.

After the receipt of public comment on the Phase 1 discussion paper, scientists reapplied the computer system in Phase 2 using updated information. They identified six regions around

Australia, including the central-north and Olary regions of South Australia, that contained suitable areas for a near-surface repository.

Two other regions, Maralinga and Mt Isa, were added to the list as a result of public comment.

In Phase 3, the central-north region was identified as the best possible site for the repository as it contained the largest area of suitable land, particularly in respect to the geology, low rainfall and

poor underground water quality. Olary had a smaller area assessed as being suitable and the relevant locations were more dispersed than in the central-north.

Maralinga was assessed as being unsuitable because its limestone geology meant it was not as easy to find a suitable site in this region than the central-north.

# Monitoring the repository

A comprehensive monitoring program will begin at the site (once it is chosen) well before any radioactive material is placed in the repository.

The monitoring will continue throughout the life of the repository. A detailed survey of background radiation will provide the basis for assessing the results of later surveys and an action plan will be developed to review monitoring results and for any remedial action if it is required.

Although the specific monitoring requirements cannot be determined until the particular characteristics of the site are known, the

monitoring would include:

- Collection and testing of vegetation samples from the site, and buffer zones for radioactive materials
- Collection and testing of soil samples
- Installation of air samplers at the site boundaries to collect upwind and downwind samples for testing
- Monitoring of ground water using sampling bores on the site and buffer zone
- Monitoring of surface water after major rains
- Monitoring of flood drains beneath the waste for the presence of water, and if found, testing for radioactive materials

The monitoring program for the repository will have to satisfy a range of government processes:

- The background radiation environmental studies will be first assessed by Environment Australia
- This will be followed by a licensing application to the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)
- There will be ongoing regulation by ARPANSA

All these processes will establish the most appropriate means of monitoring the air, soil and water at the repository.

## No additional legislation required to ban overseas waste coming to Australia

The Commonwealth Government has reaffirmed that it will not allow any type of nuclear waste from other countries into Australia and says further legislation to assure the ban is unnecessary.

The Minister for Industry, Science and Resources, Senator Nick Minchin, says the government has no intention of changing its policy.

He says additional legislative control is unnecessary to specifically prohibit the acceptance of nuclear waste from overseas or the establishment of an international high level waste facility as proposed by Pangea Resources.

Radioactive substances, including wastes, are already a prohibited import under Regulation 4R of the Customs (Prohibited Imports) Regulations.

Under this regulation, radioactive substances, including wastes, may only be imported with the written approval of the Minister for Health and Aged Care and/or a licence issued by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

Senator Minchin says government policy and regulations also ensure that Australia has the flexibility to responsibly manage its own waste and allow the return of reprocessed wastes resulting from the operation of the HIFAR reactor at Lucas Heights.

## Safety of National Radioactive Waste Repository assured

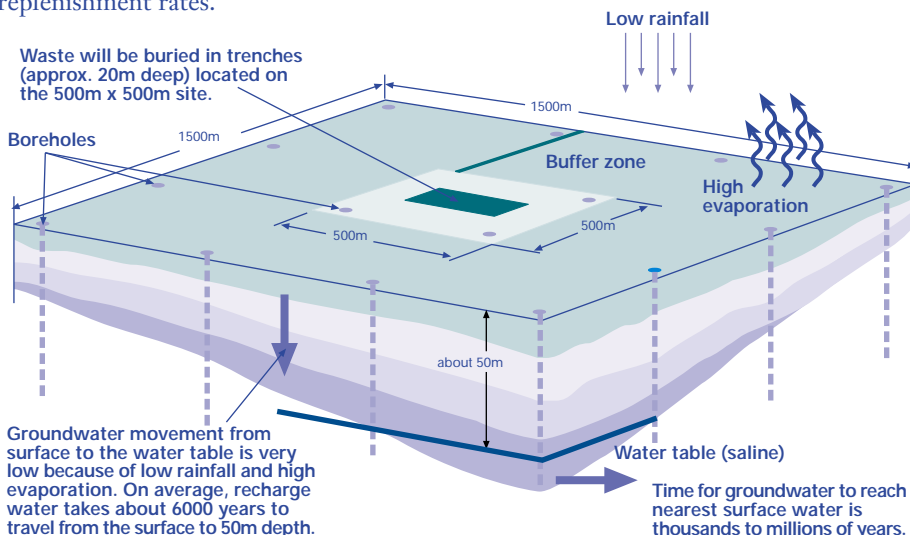
continued from front page

The investigative sites for the proposed Australian repository are all located on raised plains well above major creek lines and the salt lakes into which rainfall run-off is directed. Even in the event of very heavy rainfall, as some have suggested with climate change, the prospective repository sites would remain well above areas that could be flooded. The sites are also located in areas where the water table is deep, with very low supply and replenishment rates.

The diagram below illustrates the general hydrological, or ground water flow characteristics being sought for the repository. It demonstrates how the selection criteria combine to meet the requirements of near surface disposal. In addition, together with special engineering of the trench, the various packaging methods for the waste will restrict the movement of radioactive material. The following characteristics all contribute

to assure isolation of the disposed waste:

- Low rainfall
- High evaporation
- Soils that slow and bind water and radio active material
- Deep water table
- Very low ground water supply rate
- Slower travel time for radioactive material through soil, compared with water
- Saline groundwater that is unsuitable for humans or agriculture and difficult to use for mining.





## Minister hears community views

Listening to the people of the central-north - that was the purpose of a recent visit to the area by Senator Nick Minchin, Barry Wakelin MP and officers of the Department of Industry, Science and Resources.

Between 1 and 3 March, Senator Minchin and his colleagues travelled to Woomera, Roxby Downs, Andamooka, Coober Pedy, Whyalla, Port Augusta and Port Pirie, talking to community groups and individuals about radioactive waste management.

### Woomera

At Woomera, Senator Minchin met with the South Australian Farmers Federation and local pastoralists. Senator Minchin undertook to ensure that pastoralists were not adversely affected by test drilling and other activities at possible repository sites.

### Andamooka

The Opal Hotel/Motel at Andamooka was the venue for a lively open meeting in which Senator Minchin responded to many of the questions of the local community. The principal question from the Andamooka community was, "why here?"

Senator Minchin explained that it was independent scientific advice which had recommended the central north as the best region in Australia for a radioactive waste repository. This was based on a number of criteria including the region's stable geology, deep water table and unusable, salty water, dry climate and good transport links.

### Coober Pedy

In Coober Pedy, Senator Minchin met with the Mayor and other Council members about a range of issues such as regional tourism and economic development. In relation to the repository, Senator Minchin explained that the repository was completely safe as the radioactive material was solid and could not leak either into the groundwater or into the atmosphere.

### Port Augusta/Whyalla

The major question raised in Port Augusta and Whyalla was about the safety of transporting radioactive waste. Senator Minchin responded that transport of waste was conducted under very strict rules. And with only one or two shipments of waste to the repository every year, the chance of there



Senator Nick Minchin, left, with the Mayor of Coober Pedy, Eric Malliotis and the Member for Grey, Barry Wakelin M.P.

being any accident was far lower than the risks involved in petrol tankers travelling through the centre of Port Augusta every day.

In Port Augusta, Senator Minchin also met with representatives of all the Aboriginal groups affected by the repository. The discussion centred on the extent of Aboriginal heritage concerns at the repository sites and how those concerns could be addressed.

The visit to the central-north was just one part of the Department of Industry, Science and Resources' ongoing consultation with the central-north community. It proved to be a great opportunity for Senator Minchin to hear first-hand the questions and concerns of the local community.

## We welcome your views

The Department of Industry, Science and Resources welcomes your views about the newsletter and the National Radioactive Waste Repository project. Your comments help us in assessing the impact of the newsletter and ensuring that it remains relevant and informative.

### Want to know more?

For more information on issues covered in The Monitor:

Internet site  
<http://www.isr.gov.au/resources/radwaste>

Email  
Repository@isr.gov.au

Postal  
National Radioactive Waste Repository

Coal and Mineral Industries Division

Department of Industry, Science and Resources  
GPO Box 9839  
Canberra ACT 2601

Tollfree message  
1800 682 704 (further information can be requested by leaving a message on this number).

## How radioactive waste is classified

There is world-wide consensus on the classification of radioactive waste into low, intermediate and high-level waste as proposed by the International Atomic Energy Agency (IAEA).

The classification is based on how much radiation the material emits and the length of time it will continue to emit radiation.

Australia follows these international guidelines, but

the United States does not. The definitions it uses have been driven by waste from the production of nuclear weapons and nuclear power. Australia does not have these types of waste.

**Low level waste**, the type of waste to be held at the repository in South Australia, contains enough radioactive material to require action for the protection of people, but not so much that it requires shielding in handling or

storage. It can be safely disposed of by near-surface burial in a repository.

**Intermediate level waste**, which falls into the categories of short and long-lived, requires shielding. The short-lived category of this waste will be held at the repository. The long-lived waste (about one tonne of this waste would have the same amount of radioactivity as one hectare of normal soil), requires more sophisticated handling and

disposal and is not suitable for a near-surface repository.

**High level waste** is sufficiently radioactive to require both shielding and cooling. It generates more than two kilowatts per cubic metre of heat (about the same power as an electric kettle) and has a high level of long-lived alpha emitting isotopes. Australia produces no high level waste and has banned the entry of such waste from overseas.