

Yellowcake Country?

Australia's uranium industry.



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Australia's uranium industry.

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Front cover illustration based on a photograph of Olympic Dam tailings by Jessie Boylan.

Introduction.

Mine, mine, all mine.

In August 2005, federal Resources Minister Ian Macfarlane declared the Northern Territory “open for business” to the uranium mining industry. It was a dramatic gesture, and made front-page news. In fact, the Commonwealth already owns Territory uranium but has no power to licence, approve or regulate proposed new mines. It remains to be seen if the NT Labor Government has the political will to honour its ‘no new mines’ election promise.

Macfarlane’s announcement drew attention to a wave of uranium exploration — underway since 2004 in the NT, Western Australian, South Australia and Queensland — driven by a sharp increase in uranium prices.

Meanwhile, influential federal ministers have encouraged a debate about nuclear power and climate change. A domestic nuclear power industry is a distant reality. As Clive Hamilton from the Australia Institute said, “By having this debate in Australia, although we’re not going to have nuclear power plants here, we are softening public attitudes to nuclear power elsewhere. And so, why shouldn’t we export uranium to them?”

Let’s encourage a public debate, instead, about uranium mining and exports.

Australia holds an estimated 40 per cent of the world’s uranium deposits. Since the early 1980s, the Labor Party’s opposition to any new uranium mines, as well as a sluggish market, has largely kept mining companies away. Since 1996, the current federal government has actively supported the development of new mines (in addition to existing mines Ranger, in the NT, and Olympic Dam (Roxby Downs) in SA). However, only one new uranium mine has opened in the past decade — Beverley, also in SA.

Labor’s policy is under pressure from

within, in the lead-up to the party’s April 2007 national conference. Labor currently holds power in all states and territories; this internal policy debate is of great significance to the future of uranium mining in Australia.

In April 2006, the Howard Government concluded a uranium export deal with the Chinese Communist regime. Since then, it has threatened to use Commonwealth trade or foreign affairs powers to wrest control of uranium mining from the states and territories. The government has also convened a uranium industry steering committee, largely made up of mining company representatives, to advise on removing impediments to industry expansion.

It’s a good time to reflect: Why did the issue of uranium mining inspire hundreds of thousands of Australians to take the streets with banners and bad haircuts in the 1970s and 80s? What brought thousands of people to the Jabiluka blockade in support of the Mirarr people in 1998?

The environmental track record at existing uranium mines confirms public concerns. In 2002, a Senate committee examined the regulation, monitoring and reporting of environmental impacts at Ranger and Beverley, in response to numerous leaks and spills. Its 2003 report identified “a pattern of under-performance and non-compliance” as well as “many gaps in knowledge and an absence of reliable data on which to measure the extent of contamination or its impact on the environment”. The severity of the shortcomings suggested to the committee “that short-term considerations have been given greater weight than the potential for permanent damage to the environment”.

Consider that, so far, the Ranger mine has

produced over 30 million tonnes of radioactive tailings waste, and Olympic Dam has produced over 60 million tonnes. Serious questions about the long-term management of toxic tailings remain unanswered.

While the Cold War is behind us, the issue of nuclear weapons proliferation is just as troubling today. Howard has even suggested that he may be willing to deal with nuclear weapons state India, which is not a signatory to the Nuclear Non-Proliferation Treaty.

Aboriginal communities have spoken out against uranium mining for decades. The industry’s dealings with Traditional Owners and communities have prompted broader public unease. For example, members of the Adnyamathanha community have described the Beverley consultation process of the late 1990s as top-down, divisive, and engineered to ‘disempower’ the Adnyamathanha people that opposed the mine. In June 2000, the late Mr Artie Wilton, who was the last Wilyaru man, or fully initiated Adnyamathanha man, stated publicly that he was never consulted about Beverley and never agreed to its construction. “The Beverley Mine must be stopped, dead stopped,” Mr Wilton said.

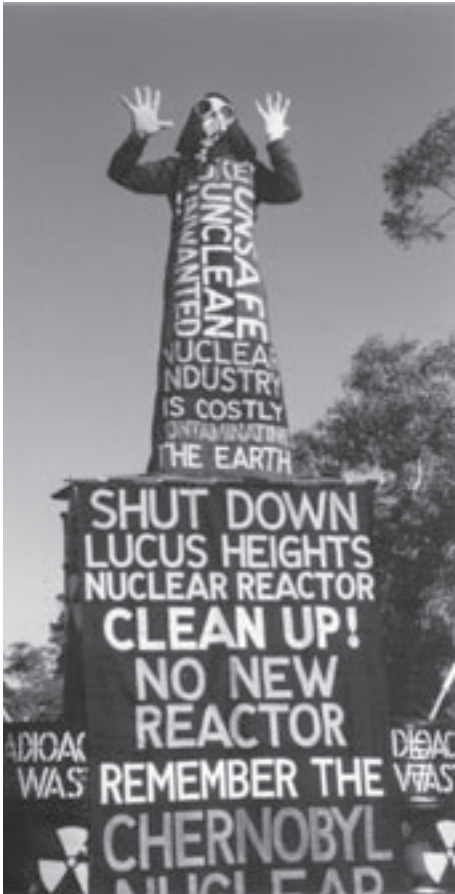
Finally, Australia’s uranium is converted into high-level nuclear waste in nuclear power reactors. There’s pressure on Australia to accept the world’s nuclear waste. If Australia is happy to export the ore, runs the argument, then it needs to also shoulder the responsibility of dumping its detritus.

What can we learn from the past? What are our responsibilities to the future?

Eve Vincent
Beyond Nuclear Initiative, 2006

A people's history.

Snapshots from three decades of passionate protest.



ABOVE, LEFT TO RIGHT: Veteran activist Benny Zable; Jabiluka banner drop in Kakadu National Park, 1998, photo: Sandy Scheltema.

BELOW, CLOCKWISE FROM LEFT: Banners at Movement Against Uranium Mining march, 1978; Lie in at the City Square, part of the Hiroshima Day march from Frankston, 1975; Gate blockade at the Roxby Downs uranium mine protest, 1983, all photos: John Ellis. John Ellis Collection, University of Melbourne Archives.



Three mines.

Australia has three existing uranium mines — Ranger in Kakadu National Park in the Northern Territory, and Beverley and Olympic Dam (Roxby Downs) in outback South Australia.

Ranger

Energy Resources of Australia (ERA), majority owned by mining giant Rio Tinto. Operational since 1981, Ranger may be nearing the end of its life.

The 1977 'Fox Report' decreed that the Mirarr people's opposition to Ranger "should not be allowed to prevail.

Ranger is located in an excised area amongst Kakadu's extensive wetlands, a system of floodplains, swamps, estuaries, mangroves and mudflats. Seasonal flooding underlines concerns about leaks and spills into waterways still used as a traditional food source.

In the 1998-9 wet season, high uranium concentrations were discovered in water discharged into the Coonjimba and Magela Creeks. Contaminated water was released into the creeks for three subsequent seasons before the problem was addressed.

Between December 1999 and April 2000, an estimated two million litres of tailings containing high levels of manganese, uranium and radium escaped from a broken pipe and the Restricted Release Zone. ERA failed to comply with its reporting responsibilities.

In 2004, process water containing uranium levels 400 times higher than the maximum Australian safety standard affected 28 mine workers. Their symptoms included vomiting, gastric upsets, headaches and skin rashes.

In 2005, ERA announced it would continue milling at the almost exhausted deposit by reducing the grade classification it will process; it will now take a tonne of ore to end up with just a kilogram of uranium.

Beverley

Owned by American company General Atomics (GA), managed by its subsidiary, Heathgate Resources. Operational since 2001.

Beverley uses the experimental and controversial in-situ leaching (ISL) mining technique. ISL involves pumping acid into an aquifer. This dissolves the uranium ore and other heavy metals and the solution is then pumped back to the surface. The small amount of uranium is separated at the surface. The liquid waste — which contains radioactive particles, heavy metals and acid — is simply dumped in groundwater. Inert and immobile in the ore body, the radionuclides and heavy metals are then bioavailable and mobile in the aquifer.

Heathgate/GA has no plans to clean up the aquifer; it says the pollution will 'attenuate', that is, the aquifer will return to its pre-mining state over time. This claim is disputed within the scientific community.

Heathgate/GA have never released critical data, which could answer scientific questions concerning contaminant mobility in groundwater.

Heathgate/GA no longer maintains that Beverley is 'isolated' from surrounding groundwater.

No commercial acid leach mine in the USA has ever been given environmental approval. Its use in Eastern Europe and elsewhere has left aquifers heavily polluted.

There have been over 20 spills of radioactive solutions at Beverley. For example, in January 2002, 62,000 litres of contaminated water was spilt after a pipe burst, followed by a spill of 15,000 litres of contaminated water in May 2002.

Olympic Dam (Roxby Downs)

In July 2005, mining giant BHP-Billiton acquired the massive Olympic Dam (Roxby Downs) mine formerly owned by Western Mining Corporation (WMC). Operational since 1988.

BHP-Billiton plans a \$5 billion expansion, which will treble the mine's output and make it the world's largest uranium mine.

Since opening, the mine has produced over 60 million tonnes of radioactive tailings waste, a figure currently growing at a rate of 10 million tonnes per year.

Eighty percent of the radioactivity of the original ore remains in the tailings, as well as a range of other toxic materials. Uranium tailings contain over a dozen radionuclides, the most important being thorium-230, radium-226, radon-222 (radon gas), and the radon progeny including polonium-210.

A large number of bird deaths recorded in a 2004 survey attests to the toxicity of the tailings.

The tailings waste is stored on site at Olympic Dam with no plans for its long-term management.

The radioactive tailings dams were the focus of a 1996 parliamentary inquiry following revelations that five trillion litres of liquid tailings waste had leaked over a period of several years.

The mine's use of Great Artesian Basin water — over 30 million litres per day — has adversely effected the region's fragile mound springs by reducing their water flow.

BHP-Billiton has inherited legal privileges under the SA Roxby Indenture Act. The act overrides the SA Environment Protection Act, the Water Resources Act, the Aboriginal Heritage Act and even the Freedom of Information Act.

Some ethical investment companies hold shares in BHP-Billiton. Is your superannuation invested in a nuclear future?

Hot spots.

It's difficult to predict which uranium deposits are most likely to be next proposed as mines. Any changes to state or federal Labor policies, as well as industry considerations, will come to bear on development proposals. These deposits are ones to watch.

Gavin Mudd

South Australia

Honeymoon

SXR Uranium One (Canadian-owned)

Located 75 km north west of Broken Hill. Federal Resource Minister Ian Macfarlane has stated that he expects Honeymoon to be operational by 2009.

In 1982 and 1998–2000, acid leach in-situ mining was trialled at Honeymoon. Despite known leaks and chemical problems, the full data on the trials' environmental impacts has never been released.

Prominent Hill

Oxiana Ltd

Located about 100 km west of Olympic Dam (Roxby Downs), halfway to Coober Pedy.

The Prominent Hill copper-gold-uranium deposit was discovered in 2001; although it holds much lower grade uranium than Olympic Dam, it could be a uranium producer in the near future.

It is currently planned as a large open cut mine, followed by an underground mine extension.

Oxiana have no known experience with uranium, and currently own the Sepon gold-copper mine in Laos.

Northern Territory

Jabiluka

Energy Resources of Australia (ERA), majority owned by Rio Tinto

One of the world's richest undeveloped uranium deposits.

Traditional owners, the Mirarr people, have a veto on any further development. Jabiluka is currently under a 'care and maintenance' agreement.

The Mirarr have lodged a native title claim over mining service town Jabiru, in Kakadu. In March 2006, Andy Ralph, then chief executive of the Mirarr representative body Gundjehmi Aboriginal Corporation, revealed to the *Age* that the Howard Government has used the claim to pressure the Mirarr to reverse its opposition to mining at Jabiluka. Ralph says that the government consistently implies, "we will give you Jabiru, just give us Jabiluka".

Koongarra

Cogema (French-owned)

Also located within Kakadu.

Traditional Owners have so far refused to grant permission for an exploration licence. At each refusal, a five year moratorium on negotiations is imposed under the Aboriginal Land Rights Act (1976).

Negotiations between the Traditional Owners and Cogema recommenced in April 2005 following a moratorium period; a response is due by May 2006. It's likely that Traditional Owners will again refuse permission.

Rum Jungle

Compass Resources

Australia's and NT's first and dirtiest uranium mine, Rum Jungle opened in 1950 and closed in 1971.

For more than 50 years now, Rum Jungle has discharged toxic acid mine drainage into the Finnis River, killing the river immediately downstream of the mine for nearly 20 km and impacting a further area of some 100 km².

Rehabilitation undertaken in the 1980s partially reduced this impact but this work is degrading and the pollution is set to worsen. Furthermore, Compass proposes to mine base metal ores at Browns, adjacent to the Rum Jungle mine site. The Browns project could extend into the old Rum Jungle workings, destroying the rehabilitation works in place.

Compass Resources have a number of new projects, including Browns, proposed for the Rum Jungle area, and have stated publicly that they want to commence mining uranium by 2009.

One possibility is that the nearby Mt Fitch copper-uranium deposit is mined, and then processed at Browns.

Rum Jungle is on the edge of Darwin's drinking water supply catchment.

Angela-Pamela

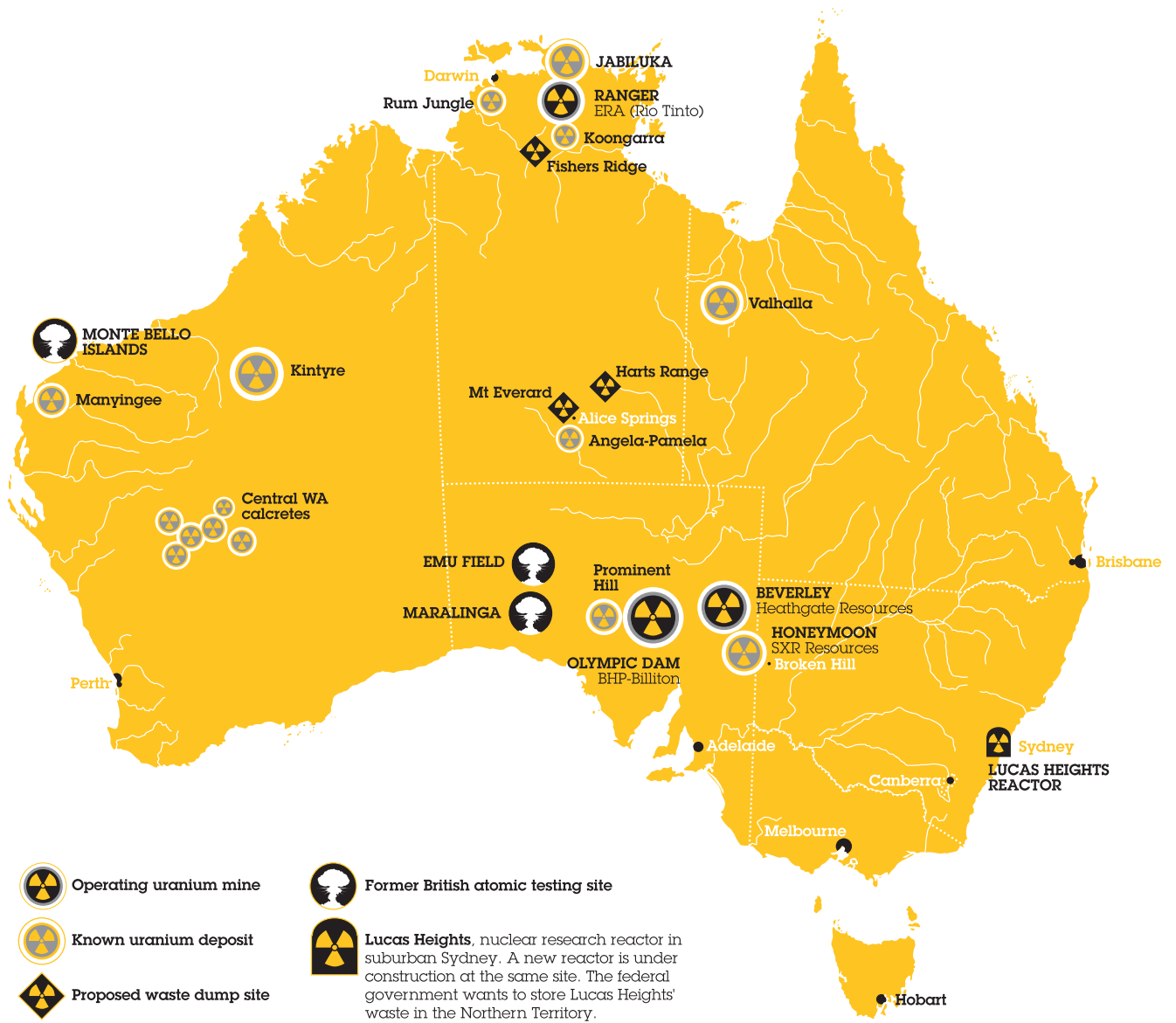
Current owner uncertain

Deposit discovered in 1973, 25 km south of Alice Springs.

This deposit, not fully delineated, is thought to contain about 10,000 t U308, grading around 0.1% U308.

Located within the region of Alice Springs' town groundwater supply.

An in-situ leach mine is proposed.



Western Australia

Central WA calcretes: Yeelerie, Lake Way, Maitland and others

Calcrete uranium deposits — whereby uranium is chemically bound to limestone in the soil — are found across central WA.

Calcrete deposits are often low grade (<0.05% U3O8).

Although cheap to mine, due to their closeness to the surface, calcrete deposits are difficult to mill and process.

Manyingee

Paladin Resources

This deposit, not fully delineated, is thought to contain about 12,000 t U3O8, grading around 0.09% U3O8.

An alkaline in-situ leach mine is proposed.

Kintyre

Rio Tinto

High-grade deposit on the western edge of the remote Great Sandy Desert, within the boundaries of the Karlamilyi-Rudall River National Park.

Traditional Owners, the Martu people, have expressed their opposition to uranium mining.

The vast park encompasses salt lakes, sand dunes and permanent water holes that support an array of frogs, birds, mammals and reptiles.

A former test-mine site, Kintyre is currently under 'care and maintenance'.

Queensland

Valhalla

Summit Resources

Located 40 km north of Mount Isa.

The Valhalla deposit is part of a field that also includes the Skal and Anderson's Lode deposits.

These deposits are known to be quite refractory, meaning they'd be energy intensive and costly to process.

Dr Gavin Mudd is an assistant lecturer in Monash University's Department of Civil Engineering.

Risky business.

Can we really be sure that Australian uranium will not be used in nuclear weapons?

Richard Broinowski

The Howard Government has concluded an unpopular uranium export deal with China, and is sending mixed messages about the possibility of exporting uranium to known nuclear weapons state India. Let's take a look then at the claim that Australia's bilateral safeguards are among the best in the world, and that, together with an effective international safeguards system, they will prevent Australian uranium from being diverted into nuclear weapons programs.

In July 1975, Prime Minister Gough Whitlam commissioned Mr Justice Fox, senior judge of the ACT Supreme Court, to conduct what was and remains Australia's most comprehensive environmental report. The 'Fox Report' examined the effects of mining and exporting uranium from the Ranger mine in the Northern Territory. Fox gave highly conditional approval for mining and sales, subject to the strictest safeguards.

In August 1977, Prime Minister Malcolm Fraser announced these safeguards. They included:

- Buying states must be signatories to the Nuclear Non-Proliferation Treaty (NPT);
- Government-to-government safeguards agreements must be finalised before commercial contracts are worked out;
- Australian uranium must be in a form to attract the fullest International Atomic Energy Agency (IAEA) safeguards by the time it leaves Australian ownership, and all facilities using Australian uranium must be accessible to IAEA and Australian inspectors;
- There must be no transfer, enrichment beyond

20 per cent uranium-235, or reprocessing of any Australia uranium without Australian government consent; and

- Every commercial contract must acknowledge that the transaction is subject to the bilateral safeguards agreement.

They didn't last long.

Fraser adopted a moral position, declaring that Australia was only selling uranium so it could influence peaceful nuclear technology and discourage the development of nuclear weapons. His Trade Minister added that under the terms of the NPT, Australia had a legal obligation to sell it.

Neither claim was true. Commercial considerations governed the whole deal.

And, because of commercial considerations, Fraser's package of safeguards was gutted over the following ten years:

- In June 1977, sales were allowed to France, which had not signed the NPT;
- In October 1977, Australian uranium no longer had to attract IAEA safeguards when leaving Australian ownership (we started shipping it as uranium oxide, or U3O8, which did not attract IAEA safeguards, rather than as uranium hexafluoride, or UF6, which did);
- By October 1977, we told Japan that we wouldn't insist that Australian uranium be subject to the prior consent rule on transfer, enrichment or reprocessing;
- Then in January 1981, Australia abandoned the consent provision altogether, in favour of a much weaker system;
- In January 1979, the government, overriding

the objections of Department of Foreign Affairs and Trade, allowed contracts to be negotiated **before** bilateral safeguards agreements were in place;

- And by November 1982, we were even allowing uranium sales from offshore warehouses outside Australian jurisdiction and through offshore brokers.

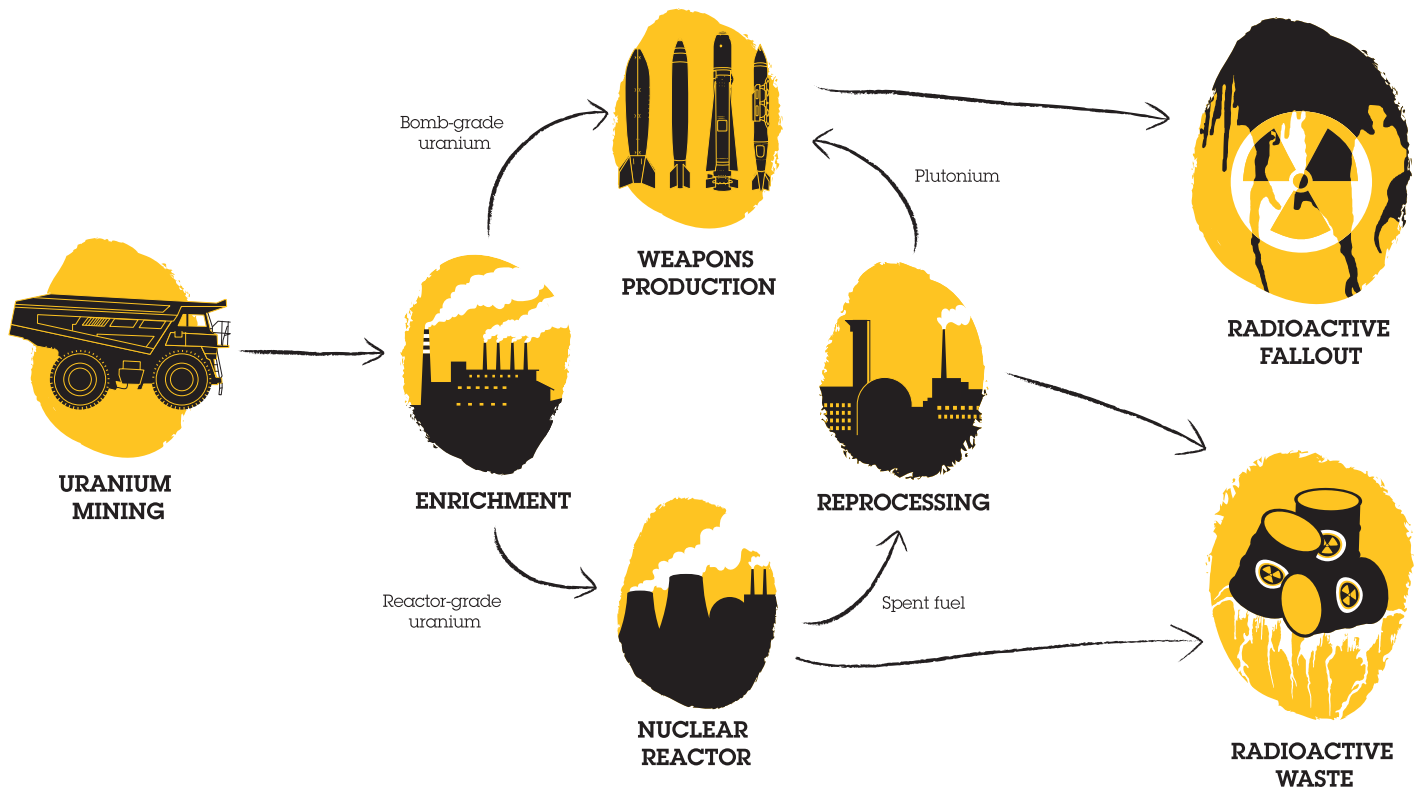
The Hawke Government further relaxed the original system through a series of complex, cynical manoeuvres. For example, in May 1986, Hawke introduced the principle of 'equivalence'. This meant Australian uranium could in practice be used in unauthorised ways, provided that an amount of uranium equivalent to the original shipment from Australia could be seen to be used in approved activities.

The erosion of our safeguard standards, in a world where such weapons have increasing appeal to more and more countries, has increased the likelihood that Australian uranium will find their way into nuclear weapons.

Consider first that thousands of tonnes of Australian uranium are now held around the world in various enriched and unenriched forms, and with various degrees of security or lack thereof.

Then consider:

- In March 2006, US President George Bush agreed to share nuclear technology with India, a nuclear weapons state, which refuses to sign the NPT.
- It's a very real possibility that Japan, South Korea and maybe Taiwan will soon build and



declare the existence of their own nuclear weapons.

- The NPT Review Conference in New York in May 2005 failed to reach any substantial agreement about anything. In particular, no agreement could be found on the idea that the nuclear weapons states promise to begin reducing their nuclear arsenals if the non-nuclear weapons states promise never to develop or obtain nuclear weapons of their own.
- Iran is insisting on completing its enrichment plant, which, it argues with some justification,

is legal under the terms of the NPT (of which it remains a signatory).

These are very dangerous times to flood the international market with fresh supplies of uranium. But like the Fraser, Hawke and Keating governments before it, the Howard Government (and some elements in the Parliamentary Labor Party) seem seduced by the expectation of vast profits from Australian uranium exports.

Professor Richard Broinowski is an adjunct professor at the University of Sydney and a former Australian ambassador to Vietnam, Republic of Korea, Mexico, the Central American Republics and Cuba. He is the author of Fact or Fission — the Truth about Australia's Nuclear Ambitions (Melbourne: Scribe, 2003).

In April 2006, the Howard Government and China's Premier Wen Jiabao agreed to a lucrative uranium export deal.

By 2020, China plans to build up to 30 new nuclear power reactors. As well as buying uranium, China has indicated that it is interested in conducting its own exploration and mining ventures.

The Australian Government insists that Australian uranium will only be used for peaceful purposes. Madame Fu Ying, China's ambassador to Australia, told a Melbourne Mining Club luncheon in December 2005 that China has insufficient uranium for both its

civil and military nuclear programs. Anthony Phillips, writing on crikey.com.au says, "So shouldn't we ask 'if Australian uranium is not used to manufacture weapons, won't it free up other Chinese uranium for the same use?' This question was put to Premier Wen at a press conference on April 3 but he astutely evaded it."

As the deal was being negotiated the Taipei Times editorialised on January 21, 2006: "Whether or not Aussie uranium goes directly into Chinese warheads — or whether it is used in power stations in lieu of uranium that goes into Chinese warheads — makes little difference."

In the Sydney Morning Herald, Chinese writer and human rights advocate Yu Jie criticised Australian authorities "blithely planning to export uranium to this highly dangerous regime". The Chinese Communist Party regime continues to flout international conventions, persecute dissidents, and deny freedom of the press. Yu Jie concluded, "Australia should not export uranium ore to China. This short sighted behaviour can in the short-term bring economic benefit. But in the long-term it will inevitably endanger world peace."

Look after country, look after people.

We Mirarr People have a long experience with uranium exploration and mining on our traditional lands.

Yvonne Margarula



Yvonne Margarula

Along with other Aboriginal people the Mirarr opposed uranium mining when the government approached us in the 1970s. The old people were worried about the damage mining would do to country and the problems that mining would bring for Aboriginal people.

The government would not listen and forced the Ranger uranium mine on us, but the old people were right and today we are dealing with everything they were worried about.

Uranium mining has completely upturned our lives — bringing a town, many non-Aboriginal people, greater access to alcohol and many arguments between Aboriginal people, mostly about money.

Uranium mining has also taken our country away from us and destroyed it — billabongs and creeks are gone forever, there are hills of poisonous rock and great holes in the ground with poisonous mud where there used to be nothing but bush.

I do not like visiting the Ranger mine and seeing what has happened to my father's

country.

Although the uranium mining at Ranger is taking place on Mirarr country, overall we have not truly benefited from the mine. Mining and millions of dollars in royalties have not improved our quality of life.

Mining made us, the Traditional Owners, feel like outsiders until we established the Gundjeihmi Aboriginal Corporation in 1995. Since then we have developed a strong voice in our own right and have made many important contributions to Kakadu. Some of these include helping establish a process to examine Jabiru's future irrespective of mining, saving and carefully investing royalty money, and arguing for greater Aboriginal involvement in the running of Kakadu National Park.

Everyone started looking at Kakadu's problems only when the government announced the Jabiluka uranium mine should happen. All of a sudden there were many people interested in us and our problems and a lot of money was spent telling the world that more mining could

happen and that things would be different this time.

None of the promises last but the problems always do.

We are very worried about any further mining. We are worried because as Traditional Owners we must both look after country and look after people. If the country is poisoned people's lives could be ruined, if the social problems are not fixed this could also ruin lives.

One of our main worries is the long-term impact of mining at Ranger, how mining could permanently damage the Magela Creek, the nearby billabongs and the water underground. People live on the creek downstream of the mine, they drink the water, and fish and play in it.

Everyone seems to be only concerned with what is happening today or next year, yet no scientist can tell us properly what will happen at the mine site in a hundred years time when they are all gone and no-one cares.

Again it will only be the Mirarr people looking after that place as we have done for thousands of years.

We hope that what we are saying in yet another government inquiry will finally be listened to.

This is an edited version of a statement by Mirarr Senior Traditional Owner Yvonne Margarula. This statement preceded Gundjeihmi Aboriginal Corporation's submission to the 2005-06 parliamentary inquiry into Australia's uranium industry.

Home on the range.

The Australian Government plans to build a national nuclear waste dump in the Northern Territory. “I think people in Canberra looked at a map”, says Central Land Council director David Ross, “and thought it looked remote and empty.” The people in Canberra were wrong

Eve Vincent

I met Julius Bloomfield, an Arrente traditional landowner from Mount Everard, north of Alice Springs, in September 2005. He handed me a yellow felt circle, carefully cut out — an imperfect shape but an eloquent piece of felt. The yellow dot, an attached note explained, is for “the sun on our flag, and renewable energy”. It also symbolises yellow cake, and a target. Bull’s-eye.

In July 2005, Dr Brendan Nelson, then federal Minister for Education, Science and Training, finalised a list of possible sites for a nuclear waste dump: Mount Everard, on the Tanami Road 40 km north west of Alice; Harts Range, on the Plenty Highway 165 km north east of Alice; and Fishers Ridge on the Stuart Highway 47 km south of Katherine. All three sites are on Commonwealth-owned Defence Department land. The three potential sites will be assessed for their suitability over the next three years.

In December 2005, Federal Parliament passed the Commonwealth Radioactive Waste Management Bill, stripping the powers of both the Northern Territory government and the relevant Aboriginal land councils, which represent Traditional Owners, to oppose the dump. The bill decrees that all relevant Aboriginal heritage legislation and the Environmental Protection and Biodiversity Conservation Act 1999 “will not apply to the site investigation phase of the project”. It confers discretionary powers on the responsible minister, who may declare one of the three

sites suitable. The bill also extinguishes all interests — such as Native Title — that the Commonwealth does not already hold in the site.

David Ross explains that the two proposed dump sites in Central Australia “are close to people’s homes and communities”. As Steven McCormack, who lives near the Mount Everard site says, “This land is not empty — people live right nearby. We hunt and collect bush tucker here and I am the custodian of a sacred site within the boundaries of the defence land. We don’t want this poison here.”

Ross notes, “We have all watched the courageous struggle of the Kupa Piti Kungka Tjuta to stop this dump being built on their country. It would seem that the Australian Government has not learnt anything from the defeat of the waste dump proposal in South Australia.”

From 1998–2004, the Kupa Piti Kungka Tjuta, a council of Senior Aboriginal women based in Coober Pedy, SA fought against a proposed nuclear waste dump on their country.

The Kungkas (women) are survivors of the British atomic testing program of the 1950s–60s. Then, the Menzies Government assumed that the desert was an uninhabited blank space. The people in Canberra were wrong.

Indigenous communities in the testing program’s vicinity were severely affected by exposure to ionising radiation.

The Kupa Piti Kungka Tjuta showed the federal government that the desert is home, not remote; filled with sites and stories, not empty;



The Kupa Piti Kungka Tjuta in Coober Pedy, 2003

alive, not dead. In July 2004, the government was forced to abandon the SA site. The Kungkas wrote:

“People said that you can’t win against the government. Just a few women. We just kept talking and telling them to get their ears out of their pockets and listen.

“Government has big money to buy their way out but we never gave up. We told Howard you should look after us, not try and kill us. Straight out. We always talk straight out. In the end he didn’t have the power, we did. He only had money, but money doesn’t win.

“We are winners because of what’s in our hearts, not what’s on paper.”

Talking Straight Out: Stories from the Irati Wanti Campaign (Coober Pedy: Alapaltja Press, 2005) is available in some bookshops or by emailing alapatja@yahoo.com.au

Nuclear future?

Climate change is real, severe and happening now. How should we respond?

Ian Lowe

About 40 years ago I undertook doctoral studies at the University of York, supported by the UK Atomic Energy Authority. At the time, like most young physicists, I saw nuclear power as the clean energy source of the future. My professional experience has led me to reject that view.

There is no doubt that climate change is real, it is happening now and its effects are accelerating.

Climate change already has serious short-term economic effects: reduced agricultural production, and increased costs of severe events like fires and storms. In the longer-term, a 2005 report from the Water Services Association of Australia assumes a 25 per cent reduction in water yields from catchments, due to the likely impacts of climate change. That's a big drop in the drinking water available to Australia's growing cities.

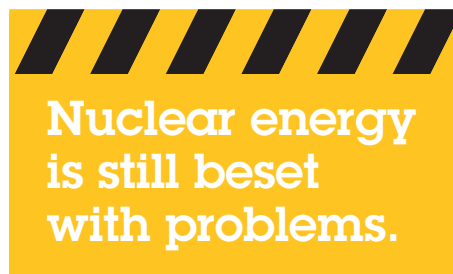
The science is very clear. We need to reduce global greenhouse pollution by about 60 per cent, ideally by 2050. Australia's eventual goal will probably be to reduce our greenhouse pollution by 80 or 90 per cent.

How can we reach this ambitious target?

In terms of carbon emissions, coal-fired electricity is by far the worst offender, so the top priority should be to replace it with cleaner forms of electricity. There is increasing pressure to consider nuclear power as part of the mix. But nuclear power is expensive, slow and dangerous, and it won't stop climate change.

Here's why:

- The economics of nuclear power just don't stack up. The real cost of nuclear electricity is more than for wind power, energy from bio-wastes and some forms of solar energy. In the US, direct subsidies to nuclear energy totalled \$115 billion between 1947 and 1999, with a further \$145 billion in indirect subsidies. In contrast, subsidies to wind and solar during the same period amounted to only \$5.5 billion. That's wind and solar together.



- Nuclear energy is still beset with problems. Reactors go over budget by billions; decommissioning plants is so difficult and expensive that power stations are kept operating past their useful life.
- The number of reactors in Western Europe and the US peaked about 15 years ago and has been declining since. Legislation to phase out nuclear power has been introduced in Sweden (1980), Italy (1987), Belgium (1999) and Germany (2000), and several other European countries are discussing it. Austria,

the Netherlands and Spain have enacted laws not to build new nuclear power stations. By contrast, the amount of wind power and solar energy is increasing rapidly.

- Nuclear power is a slow response to an urgent problem. It would take an estimated 15-25 years before a nuclear reactor could deliver electricity in Australia. We can't afford to wait decades. Wind turbines could be delivering power within a year and energy efficiency measures can cut pollution tomorrow.
- Nuclear power production is not carbon-free. Significant amounts of fossil fuel energy are used to mine and process uranium ores, truck it around, enrich the fuel, and build nuclear power stations.
- As well, nuclear power is only used for electricity generation. Australian Greenhouse Office figures show that only 35 per cent of Australia's greenhouse gas emissions come from electricity production. Sixty-five per cent of emissions come from transport, landfill, industrial process emissions, agricultural processes and land clearing.
- Uranium will run out. High-grade uranium ores are comparatively scarce. The best estimate is that the known high-grade ores could supply the present demand for 40 or 50 years.
- Let's not forget, uranium, like oil, gas and coal, is a finite resource. Renewables are our only in-finite energy options.
- Nuclear power is too dangerous. The risk of

Scientists silenced.

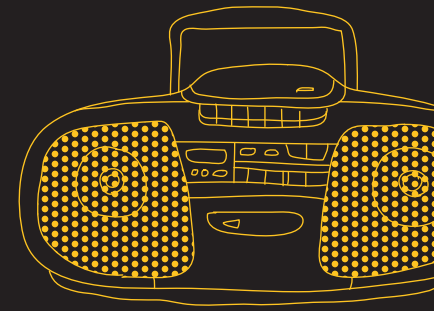
In February 2006, ABC TV's *Four Corners* aired allegations by a former Liberal Party staffer that powerful special interest groups controlled federal government environment policy. Guy Pearse said, "The access that the fossil fuel industry has enjoyed and their influence over greenhouse policy in Australia is extraordinary."

Further investigations revealed that a group of 12 fossil fuel companies were hand-picked by the government to provide advice for the energy policy white paper, 'Securing Australia's Energy Future', which recommended investing in geosequestration: burying CO₂ after it has been produced.

And former CSIRO scientist Mark

Diesendorf says that CSIRO scientists are routinely prevented from speaking out on climate change issues if their findings contradict the federal government's position.

In *The Canberra Times*, Diesendorf said, "The producers and consumers of fossil fuels, and their supporters among public officials, the federal government and CSIRO, are well aware that we already have the technologies to commence a rapid transition to an energy future based on renewable energy and efficient energy, with gas playing the role as an important transitional fuel. The barriers to this transition are not primarily technological or economic, but rather are the immense political power of vested interests."



Standby for climate change.

Did you know that Australian households waste electricity by keeping appliances like TVs and DVD players on standby?

Do away with that remote! Try turning the TV off at the set.

accidents like Chernobyl remains; in turn, enormous government subsidies are needed to underwrite the financial risks to insurance companies.

- The increased risk of nuclear weapons and nuclear terrorism means that embracing the nuclear fuel cycle increases global insecurity.
- Lastly, nuclear power produces radioactive waste. This waste will have to be stored safely for hundreds of thousands of years.

So what should our strategy be?

By far the most cost-effective way to reduce our carbon emissions is to improve energy efficiency. All forms of new supply are more expensive than improving the energy efficiency of the services we want: cooking, washing, lighting, transport and so on. As Amory Lovins put it, people don't want energy, they want hot showers and cold beer.

If your fridge or washing machine is more efficient, that is real money in your pocket as well as a win for the environment. If your house is better insulated, it costs less to heat in winter and you are less likely to turn on air conditioning in summer.

Improving efficiency makes good business sense. The UK-based Climate Group's 2005 report 'Carbon Down: Profits Up', showed that 43 companies had significantly reduced their greenhouse gas emissions, and saved a total of \$15 billion in the process.

Renewables can meet Australia's energy demands. Just 15 wind farms could supply enough power for half the homes in NSW. And that would only use less than half a per cent of the pasture land in the state — without disrupting grazing. Fitting solar panels to half the houses in Australia could supply seven per cent of all our electricity needs, including industry needs, enough for the whole of Tasmania and the Northern Territory.

It's a myth that when the wind stops or a cloud goes across the sun the system collapses! The strongest system is a grid that is fed by various forms of energy. A mix of renewable energies would provide the system with flexibility. Big centralised coal-powered systems require expensive backup in case the largest unit goes down. Diverse sources of energy make an energy system more reliable. In any case, no one is suggesting we switch from coal-dependency to wind and solar quickly. In the short-term gas will have an important place as we wean ourselves off coal.

Renewable energy works. Renewables now account for a quarter of the installed capacity of California, a third of Sweden's energy, half of Norway's and three-quarters of Iceland's. Sweden expects to increase its use of wind and bioenergy so that, by 2010, 60 per cent of its electricity is from renewables.

In China, the city of Beijing plans to build a solar street. The pilot project is part of China's commitment, by law, to use 10 per cent

renewable energy by 2020, and its ambition to become the world's leading producer of solar heat panels.

I would like to see other states follow South Australia's lead and outlaw the installation of new electric water heating in favour of solar, heat pumps or gas. When an average household switches from electric to solar water heating, they cut their household emissions by 20 per cent and save \$300 a year.

We should set a target of at least five per cent for biofuels in the transport sector as well as requiring cars to be more efficient and investing properly in public transport.

In summary, we should make a commitment to the sensible alternatives that produce sustainable cost-effective reductions in greenhouse pollution: wind power, solar water heating, energy efficiency, gas and energy from organic matter such as sewage and waste.

To avoid dangerous further changes to our climate, we need to act now.

Professor Ian Lowe AO is Australian Conservation Foundation (ACF) president, co-patron of The Natural Edge Project, and an emeritus professor in Science, Technology and Society at Griffith University.

This is an edited version of Lowe's National Press Club address, October 19 2005. The full speech is available at www.acfonline.org.au/news.asp?news_id=582

No safe dose.

Radiation is everywhere, right? So why worry about radiation from the nuclear industry?

Bill Williams

Radiation is energy travelling through space: the earth is bathed in this energy, it's a part of our habitat. There is a spectrum of radiation energies, from radio waves, through micro and light waves, to ionising radiation — the radiation emitted by the building blocks of matter, or atoms. Certain atoms, such as uranium, are said to be unstable or radioactive, that means they have excess internal energy which they release in the form of gamma rays, or alpha or beta particles. Through these spontaneous emissions, called decay, the radioactive atom eventually disintegrates into a totally new atom. All the time, the atom is progressing in one or more steps towards a stable state where it is no longer radioactive. This radiation is referred to as ionising because electrically-charged particles called ions are produced in the materials it strikes.

Gamma rays, similar to X-rays, represent energy transmitted in a wave without the movement of material, but they have great penetrating power and can pass through the human body. Thick barriers of concrete, lead or water are used as protection from them.

Alpha particles have a positive electrical charge and are emitted from naturally occurring heavy elements such as uranium and radium, as well as from some human-made elements, such as plutonium. Because of their relatively large size, alpha particles collide readily with matter and lose their energy quickly. That means they have little penetrating power and can be stopped by the first layer of skin or a sheet of paper.

However, if alpha sources are taken into the body, say by breathing or swallowing radioactive dust, they can inflict more severe biological damage than other radiations.

Beta particles are fast moving negatively charged electrons and are much smaller than alpha particles. They can penetrate up to two centimetres of human flesh.

Ionising radiation is well known for its capacity to damage human tissue: at high doses this can result in massive cell death, organ damage — particularly bone marrow and gut — and death.

Even at relatively low doses, ionising radiation can cause damage to the genetic code, or DNA, of living organisms, including humans. If DNA abnormalities caused by radiation are passed onto the next cell generation the abnormal coding can lead to tissue abnormalities, typically cancers. Even at very low doses, cancers have been detected in exposed populations. Because the cancer will take many cell generations to develop, it may be several decades before it is detected. If the damage to the DNA code occurs in the egg or sperm the coding error may be passed onto offspring, potentially resulting in birth defects and even cancers.

So we exist in a naturally radioactive environment, the rocks, mountains and the sun in particular produce a background level. However, human activities in the past century have significantly increased our exposure to ionising radiation, through atomic

weapons development, testing and use, as well as uranium-mining and nuclear electricity generation.

Unfortunately there is no level of radiation exposure below which we are at zero risk: even low-level medical exposures such as chest X-rays carry a quantifiable risk of harm. While high doses of ionising radiation will cause greater health damage, even low doses are associated with adverse environmental and human consequences.

Radiation health authorities use scientific modeling to calculate and set permissible limits for ionising radiation exposure. As the scientific techniques have become more sophisticated, the recommended exposures for the public and the workforce have steadily been reduced — levels once regarded as safe are now known to be associated with cancers, bone marrow malignancies and genetic effects. Current levels of recommended exposure are again under challenge as the techniques of molecular and radiation biology become increasingly refined, revealing micro-damage to intracellular structures.

That means even current permissible levels of exposure are likely to undergo further downward revision. That means, there's simply no safe dose.

Dr Bill Williams is a member of the Medical Association for the Prevention of War (MAPW).

Case study: Chernobyl.

In 1986, the Chernobyl nuclear reactor in Ukraine exploded, spewing forth eight tonnes of radioactive ash. A 2005 World Health Organisation report estimates that the disaster will cause 4,000 cancer deaths among the most highly-exposed — clean-up and emergency workers, evacuees, and residents of heavily contaminated areas.

It's difficult to quantify the likely death toll among the many millions of people exposed to lower levels of radioactive fallout across Belarus, Ukraine and Russia. Using the estimated total dose figure from the

International Atomic Energy Agency (600,000 person-Sieverts over 50 years) and the standard risk estimate from the International Commission on Radiological Protection (0.04 fatal cancers per person-Sievert), an estimated 24,000 people will die from cancer as a result of Chernobyl fallout.

In addition to the death toll, the Chernobyl disaster has had many other adverse effects: economic costs running into hundreds of billions of dollars, the permanent relocation of about 220,000 people, and unusable farmland.



More information.

Australian Conservation Foundation (ACF)

www.acfonline.org.au

ACF submission to 2005-06 parliamentary uranium inquiry

www.aph.gov.au/house/committee/isr/uranium/subs/sub48.pdf

Dr Gavin Mudd's sites

www.sea-us.org.au

civil.eng.monash.edu.au/about/staff/muddpersonal/

Friends of the Earth (FoE)

www.foe.org.au

FoE and other environmental and medical groups, Nuclear Power: No Solution to Climate Change, 2005

www.melbourne.foe.org.au/documents.htm

Medical Association for the Prevention of War

www.mapw.org.au

Nuclear Free Australia

www.nukefreeaus.org

Senate Committee, Regulating the Ranger, Jabiluka, Beverley and Honeymoon uranium mines, 2003

www.aph.gov.au/senate/committee/ecita_ctte/completed_inquiries/2002-04/uranium/report/index.htm

Uranium exports to China and India

www.geocities.com/jimgreen3/chinauran.html

Stay in touch.

No Nukes News

A monthly email newsletter. To subscribe, email jim.green@foe.org.au with 'NNN Subscribe' in the subject line.

Get involved.

Adelaide

FoE's Clean Futures Collective meets each Tuesday, 5.30pm, Conservation Centre, 120 Wakefield St, Adelaide.

Joel Catchlove: joel.catchlove@foe.org.au / 0403 886 951

Peter Burdon: peter.burdon@foe.org.au / 0401 751285

cleanfutures.blogspot.com

www.geocities.com/olympicdam

Alice Springs

Alice Action meets every Wednesday, 6pm,

Arid Lands Environment Centre, 39 Hartley St.

Nat Wasley: natwasley@alec.org.au / 08 8952 2011, 0429 900 774

www.alec.org.au

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www.ecnt.org

No Waste Alliance

Justin Tutty: darwin@no-waste.org / 08 8945 6810

www.no-waste.org

Melbourne

FoE Anti-Uranium Collective meets each Wednesday, 6.30pm, 312 Smith St, Collingwood.

Michaela Stubbs: michaela.stubbs@foe.org.au / 0429 136935

Perth

Anti-Nuclear Alliance of WA

Contact: nfreewa@inet.net.au / (08) 9271 4488

www.anawa.org.au

**None of the promises last
but the problems always do.**

Yvonne Margarula.