

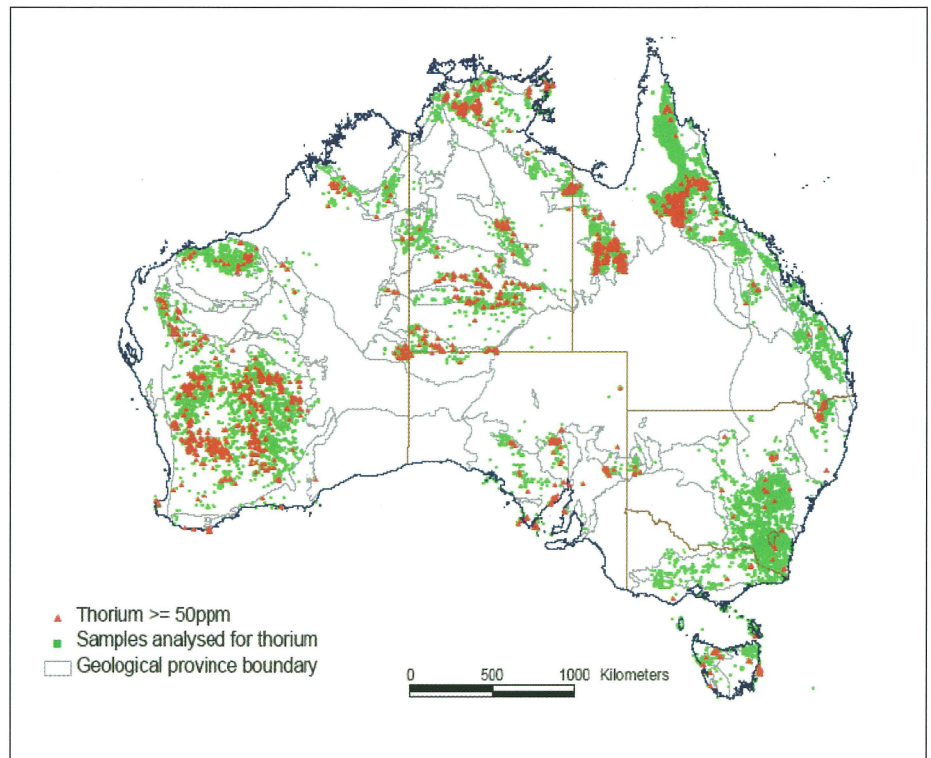
The Possibilities Of Thorium

Thorium is a naturally-occurring, slightly radioactive metal discovered in 1828 by the Swedish chemist Jons Jakob Berzelius, who named it after Thor, the Norse god of thunder. It is found in small amounts in most rocks and soils, where it is about three times more abundant than uranium. More importantly, it also has the capability to generate power inexpensively, offers no possibility of a meltdown, creates no weapons grade by-products and burns up existing high-level waste as well as old nuclear weapon stockpiles.

Wilson de Silva, science journalist and editor for popular science magazine Cosmos, talks about this super-element and why it is still largely unheard of and under-utilised. "It's been stumping us for a while, it's so obviously a fabulous technology that should be looked at, it doesn't produce greenhouse gasses so it's something that people are rather interested in now." de Silva explains.

"If you've gone camping and you've used those white mantles, that white stuff that you put on top of the mantle and you light is made of thorium. It's just lightly radioactive but it's radioactive enough to start a nuclear reaction if you either pack some uranium with it or you

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Areas of possible Thorium deposits in Australia.

attach a particle accelerator and cook it up," he continues.

"Into this amazing core of thorium you can just pour old nuclear waste and warheads and it will just cook it all – it's like a broth, it just gets rid of it! Once you've got that going it completely changes the physics of the reactions. All sorts of nasty stuff, like producing waste that stays radioactive for ten thousand years – some if it lasts ninety thousand years – that all disappears. And it means that into this amazing core of thorium you can just pour old nuclear waste and warheads and it will just cook it all – it's like a broth, it just gets rid of it!"

So why are we not using thorium already? de Silva explains, "An old physicist gave us the clue: years ago they could have started using it, but because you can't make weapons out

of it it's not that attractive. However in this day and age it's being looked at again. Some places like India, who has so little uranium but has the world's second largest reserves of thorium, have been working on it for a while."

"Research into thorium use has been conducted

“Into this amazing core of thorium you can just pour old nuclear waste and warheads and it will just cook it all – it's like a broth, it just gets rid of it!”

in Europe and Russia, but Australia has been slow on the uptake. There is only one Australian who is doing any research on this and he is completely funded by overseas investment", de Silva noted.

"Recently the US has been funding a program in the former Soviet Union to try and get rid of weapons stockpiles. The Europeans are really interested, in Madrid there's a complex of

three reactors and they're thinking of building a thorium one right next to it so it can chew up the waste produced by the other reactors and test the concept," said de Silva.

"Nobody has actually built a full-scale model to test this out, it would cost about A\$1.1 million to build it, but lab tests and the smaller prototypes that are built seem to work, so the physics looks right. Even if you just built one, not just to generate power, but to get rid of old waste, that's a really good option", de Silva commented.

Considering that Australia has the world's highest reserve of thorium with 300 000 t, followed by India who has 290 000 t then Norway at 17 000 t, de Silva concluded that, "it seems it could definitely be within the country's interest to be looking at this research." ■