

## **SEA CHANGE**

**Australia's love of coastal living is leading to some serious environmental problems, as more and more Australians are choosing to build along coastal areas. This is leading to the leaching of acid soils, which is degrading our coastline, marine life and infra-structure.**

Australian coastal soils have a high Pyrite content and when disturbed through excavation and construction is leading to the natural production of sulphuric acid, which is then washed down to the rivers and sea causing heavy environmental damage.

### **What is Pyrite?**

Pyrite ( $\text{FeS}_2$ ) is a common mineral found in soils around the coast of Australia. It is brass yellow in colour and has a metallic lustre. In industry, Pyrite is used to manufacture sulphuric acid ( $\text{H}_2\text{SO}_4$ ), which is widely used in the production of fertilisers, steel, explosives and petrochemicals.

In soil Pyrite is relatively benign, but when disturbed and exposed, it reacts with oxygen and water in the environment to produce sulphuric acid.

- *One tonne of pyrite gives 1.6 tonnes of sulphuric acid.*

### **How much Pyrite do we have?**

Australia has some 40,000 sq km of coastline and CSIRO research has estimated there is **one billion tonnes** of pyrite in Australia's coastal soils, potentially leading to serious environmental degradation in the near future as our coasts are opened up to more and more development

### **What are the effects of sulphuric acid on the environment?**

Sulphuric acid is toxic to aquatic life and organisms and can destroy infrastructure leading to costly repairs. It is known to:

- Kill fish;
- Release potentially dangerous arsenic and aluminium in shellfish such as oysters, which are later consumed;
- Eat away at concrete bridges, structures and footings;
- Eat away at road structures and steel structures such as bridge pylons.

### **What are we doing to fix the problem?**

- The CSIRO are undertaking studies to map where the reactive soils occur. They are determining what are the properties of the soil, then mapping key "hotspots".
- Some State Governments are putting planning policies in place to limit the development of these key sensitive areas.
- Where the damage has already occurred, state governments are rehabilitating the soils and the environment, which is extremely costly.

**Government Policies**

Victoria, Queensland, NSW and South Australia have government planning policies in place.

- The South Australian Government has only put in place limited "fringe" policy and needs to address the issue on a broader scale.
- In West Australia, Northern Territory and Tasmania no such policies exist.

As an island country, it is imperative that these planning policies are introduced in key sensitive areas.

**Rehabilitation**

Rehabilitation is a large task and already in parts of Cairns and South Australia, small areas are costing millions of dollars to repair.

**Source:**

*Dr Rob Fitzpatrick- CSIRO- June 8, 2004.  
For further information check the CSIRO website*