



cost **effective**
innovative solutions
for a cleaner **environment**

the company



The Environmental Challenge

There are significant social and economic benefits to be gained from taking better care of our environment, which is under increasing pressure from population growth and industrial activity. One of the major challenges facing governments, communities and industries is to clean up historical contamination of the environment and to develop more sustainable waste management practices for the future.

Our Commitment

Flinders Bioremediation Pty Ltd is an Australian based company with a strong commitment to providing innovative and sustainable solutions for a cleaner environment.

We develop cost-effective technologies that utilise nature's own organisms and processes to clean up contaminated sites and to treat a wide range of organic waste materials.

The company was originally formed in 1999, based on a successful environmental biotechnology research and teaching program at Flinders University in South Australia.

Today, the company has access to a wide range of expertise spanning several disciplines including chemistry, hydrogeology, microbiology, biotechnology and environmental health. We also have access to dedicated testing and analytical equipment and an approved quarantine facility for storage of imported contaminated materials.

With support from government and industry funding, we operate a substantial research and development program which expands our core capabilities and expertise.

We continue to build strong industry links through our ability to offer solutions that are relevant to 'real world' problems.

Our Services

- Full scale on-site and off-site bioremediation of contaminated soil
- Laboratory and pilot scale feasibility studies for bioremediation and organic waste treatment
- Expert consulting advice on all aspects of site remediation and organic waste management
- Contract research and development

Our Clients

- Environmental engineers and site assessors
- Contaminated site owners and developers
- Government agencies and regulatory bodies
- Local and regional councils
- Agricultural and industrial waste producers
- Organic waste processors
- Environmental consultants

Client Benefits

- Cost effective
- Proven track record
- Innovative and flexible approach
- Extensive scientific and technical expertise and infrastructure
- Environmentally sustainable practices
- Reduced commercial risk through feasibility testing
- Reduced development delays through off-site remediation options
- Ability to handle imported contaminated materials



Head office
located at
Flinders University,
South Australia



The company's pilot scale bioremediation facility at Maslin Beach, South Australia

bioremediation

What is Bioremediation?

Bioremediation refers to the use of living organisms to clean up contaminated soil, water and air. Bioremediation offers an attractive alternative to other remediation processes such as thermal desorption and chemical oxidation, in terms of its relatively low cost and low environmental impact. There are many forms of bioremediation including landfarming, phytoremediation (using plants), slurry bioreactors and composting.

Our Experience

At Flinders Bioremediation Pty Ltd, we are committed to developing innovative and cost-effective bioremediation processes for cleaning up contaminated soil and groundwater.

We have managed the technical aspects of several major site remediation projects in South Australia, including an old railway refueling yard and a wood treatment plant. Also, we have successfully remediated contaminated soil resulting from diesel tanker spills and leaking underground fuel storage tanks. Other projects have involved the treatment of soil containing TPH, BTEX, PAHs, PCBs and PCPs. We conduct site assessments, lab and pilot scale feasibility studies and full scale bioremediation.

In conjunction with our industry partners, Lucas Earthmovers Pty Ltd, we have access to a purpose-built EPA-approved bioremediation facility located at the Southern Waste Depot, Maslin Beach, South Australia. The adjacent landfill is currently the only site in South Australia licensed to receive low-level contaminated waste. The facility is used for both research projects and commercial scale bioremediation projects.

Bioremediation Services

- Contaminated site assessment
- Full scale design and operation of *in situ* and *ex situ* bioremediation of contaminated soil
- Lab and pilot scale feasibility studies for soil and groundwater bioremediation
- Technical advice on soil and groundwater bioremediation
- Sampling, analysis and monitoring of soil and water contaminants
- Feasibility testing and treatment of industrial waste using land-farming, phytoremediation and slurry bioreactors



A forced aeration biopile for treating contaminated soil

Excavation of underground fuel storage tanks and contaminated soil



Lab scale soil bioremediation equipment



Grape marc composting



Lab scale anaerobic digestion equipment

organic waste management

Organic Waste

Approximately 50% of all waste materials being disposed of to landfill are organic by nature, which potentially leads to the contamination of groundwater and the uncontrolled release of harmful greenhouse gases. Coupled with community opposition to new dump sites, this has led to increasing pressure to divert all organic waste from landfill.

Our Experience

Flinders Bioremediation Pty Ltd provides technical expertise to help waste processors convert organic materials into valuable products, with minimal environmental impact. We work with a number of industry clients in seeking innovative solutions for treating difficult to manage organic waste materials including agricultural by-products, commercial food waste and horticultural wastes.

In addition to our core scientific and technical organic waste services, we also conduct market research for industry and assist government and regulatory authorities with policy development and decision-making processes.

Organic Waste Services

- Development of innovative composting technologies
- Lab and pilot scale composting feasibility studies
- Anaerobic digestion and biogas production feasibility studies
- Evaluation of odour and leachate management options
- Expert advice on land use and development proposals
- Biofilter design and monitoring
- Region and industry specific waste audits



An in-vessel composting bin for treating greengrocer waste

cost effective, Innovative solutions



Problem > Approximately 2000 tonnes of soil at a former railway refuelling depot in Mount Gambier, South Australia was heavily contaminated with diesel (up to 36000 ppm).

Solution > In conjunction with a major engineering company, Flinders Bioremediation Pty Ltd was engaged to conduct feasibility tests to decide the best remediation option. Results suggested that an on-site biopile was the best strategy, and full-scale bioremediation using this method was successfully employed.



Problem > Following a storm, 1200 tonnes of tuna carcasses were buried at a local landfill site in Port Lincoln, South Australia. Remediation was required to reduce the environmental impact of the rotting tuna.

Solution > Flinders Bioremediation Pty Ltd was engaged to investigate cost effective alternatives for cleaning up the dumped fish waste. Following excavation, the material was composted on-site using a forced aeration system designed by the company. A valuable compost material was produced.



Problem > Approximately 4000 tonnes of soil from a disused wood treatment site at Port Adelaide, South Australia, was heavily contaminated with pentachlorophenol (Up to 600 ppm).

Solution > Flinders Bioremediation Pty Ltd was engaged to carry out both lab and pilot scale feasibility studies to assess the use of composting as a treatment option. Results were encouraging, and the full-scale treatment of the soil was successfully carried out at the company's dedicated bioremediation facility. The contaminated site was redeveloped for residential housing.



Problem > Polycyclic aromatic hydrocarbons (PAHs) are common soil contaminants at old gas work sites, and are hazardous to human health. Current treatment options involve relatively expensive and energy intensive processes. Bioremediation potentially offers a cost effective alternative for treating PAH contaminated soils.

Solution > Flinders Bioremediation Pty Ltd been awarded a major government grant to further develop a patented process that uses a fungal/bacterial co-culture to remove PAHs from contaminated soil. The project aims to demonstrate the efficacy of the process in pilot-scale and full-scale bioremediation trials.



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