

Mine rehabilitation research at your fingertips

Reference information from Queensland and New South Wales coal mine rehabilitation research over the past four decades is now at your fingertips thanks to the completion of the annotated bibliographic database Dig, undertaken by the Centre for Mined Land Rehabilitation (CMLR) at The University of Queensland.

www.digdatabase.com.au

“The bibliographies of rehabilitation work on New South Wales and Queensland coal mines were developed to enable coal mine employees and any other interested parties to become aware of historical work undertaken on rehabilitation issues relating to coal,” she said. “In addition to organising references in the one location, the database will aid in the identification of knowledge gaps, allow employees to access past rehabilitation procedures and enable records of historical research trials in the region to be considered when new research areas are proposed. The benefits will eventually contribute to a more efficient approach to coal mine environmental management”.

Through a recent ACARP research project, CMLR Director, Professor David Mulligan, said that further work had taken place on the development of a research tool, comprising otherwise fragmented and largely inaccessible coal mine rehabilitation research references. Two previously designed databases have been merged into one state-of-the-art, web-based database.

Project Leader Melina Gillespie said the Dig database currently contained more than 2,500 annotated coal mine rehabilitation references, from as early as 1931. The database stores reference information from papers, conference proceedings, books and ‘grey’ literature, such as reports, with associated annotations relating to reference type, keywords and abstracts (where available) to better describe the reference.

The Dig database can be accessed on the world wide web at www.digdatabase.com.au or via the CMLR website www.cmlr.uq.edu.au. Feedback from environmental related industry personnel and researchers has been extremely positive, with many having already found the database of use.

One of the difficulties in establishing and maintaining the database has been collecting relevant site-based reference information. To reduce the gaps in the collection and to continue the population of the database over time, the research team has called on mine and corporate environmental personnel to provide bibliographic details of any relevant material not yet entered via the Suggest an Article option available on the website. An automatic alert is then sent to designated CMLR staff to review the entry and add it to the database. The long-term management of this valuable resource is the next hurdle.

Research Trends

One result of compiling Queensland and New South Wales coal mine rehabilitation research into a bibliographic database has been the identification of clear research trends over the past four decades.

The early work consisted primarily of pre-mine surveys of soils, geology and vegetation. In the 1970s there was a focus on pollution, salinity and waste disposal, and revegetation objectives started to centre on the control of erosion through the use of pasture species.

In the 1980s revegetation trials progressed and the aim of revegetation shifted to the consideration of recreating natural ecosystems, although landscape stability and pasture establishment continued to be major focus areas. Water management issues also came to the forefront of research with hydrology, engineered diversions and acid mine drainage gaining the interest of the research community. The emerging ecological focus on revegetation strategies meant that issues such as native species preference over exotics, seed germination and establishment, provenance, sustainability and creation of fauna habitat were examined in the context of mine rehabilitation. An interest in creating ‘sustainable native



Australian Coal Industry's
Research Program
PO Box 7148 Riverside Centre
Qld 4001 Australia

Phone 07 3229 7661
Email acarpmatters@acarp.com.au

ecosystems' meant that research into soil development also increased, with trials on mulches and mycorrhiza also being developed during this time.

'Bigger picture' issues surrounding rehabilitation such as planning post-mining land uses, determining success criteria and sustainability, and examining the role of legislation in the 'mining and environment' context, all achieved increased prominence in the literature in the 1990s. Research surrounding seed biology also became a major focus as the challenges of direct seeding gained importance. The inclusion of biodiversity concepts into the research agenda and the development and undertaking of rehabilitation monitoring programs also markedly expanded. The literature since 2,000 places increasing importance on the issues of sustainability and legislation. The longstanding major issues of landform stability, water quality and vegetation establishment, however, continue to be reflected in the range of literature produced. Compared with the '80s and '90s, less information is now being disseminated via the platform of conference proceedings, emphasising the importance of maintaining a resource tool such as Dig to ensure research information remains available to those in the industry.