

APP Cement Task Force's Project Final Report Form

Project Number: CMT-07-07	Title of Project: Maximising the Use of Solvents in Cement Kilns						
Lead Partner Country: Australia							
Participating Partner Countries and Organizations: China and India, Relevant Ministries, cement companies and cement associations							
Project Location: Geocycle Pty Ltd, Cement Australia Holdings Pty Ltd							
Project Manager Information							
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Name: Mr Andrew Ward</td> <td style="width: 50%;">Phone: +61 7 3375 0455</td> </tr> <tr> <td>Organization: Geocycle Pty Limited</td> <td>Fax: +61 7 3375 0473</td> </tr> <tr> <td>Address: PO Box 293, Richlands DC Queensland Australia</td> <td>Email: andrew.ward@cemaust.com.au</td> </tr> </table>		Name: Mr Andrew Ward	Phone: +61 7 3375 0455	Organization: Geocycle Pty Limited	Fax: +61 7 3375 0473	Address: PO Box 293, Richlands DC Queensland Australia	Email: andrew.ward@cemaust.com.au
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Organization: Geocycle Pty Limited	Fax: +61 7 3375 0473						
Address: PO Box 293, Richlands DC Queensland Australia	Email: andrew.ward@cemaust.com.au						
Project Start Date: 2008	Proposed Project End Date: February 2010						
Project Described :							
<p>The objectives of the study were to develop and demonstrate techniques to scientifically transform hazardous wastes as a fuel for use in cement kilns, as a replacement for fossil fuels (coal, oils, natural gas) and thereby providing safe and effective disposal of hazardous wastes. The project coupled together existing and new technologies to maximise the volume of hazardous waste that can be utilised as a fuel in cement kilns.</p>							
Project Status and Outcome:							
<p>The project is completed.</p> <p>The project achieved the following outcomes:</p> <ul style="list-style-type: none"> • The successful pre-processing, handling, transportation, storage and firing of high viscosity fuels (HVF) at cement kilns to replace non-renewable fuels as demonstrated at the Cement Australian Kiln in Railton, Tasmania. This has the current potential for around 10% coal substitution without adverse impact on the kiln process or emissions. • Automated emptying and cleaning of steel drums containing difficult to remove liquid and solid residues so that waste conversion to fuel is maximised <p>The other proposed objectives relating to solvent dewatering and the production of High Calorific Distillate processes did not process due to funding difficulties associated with the GFC.</p>							
Future Direction and Recommendation:							
<p>The APP project has been completed (apart from the objectives listed above). There is significant potential to utilise the technology, both domestically and internationally. While the use of liquids like waste oils and solvents in cement kilns is well developed, the technology for firing high viscosity and solid content fuels to cement kilns is still under development. The Railton project has demonstrated this technology, replacing 10% of coal without adverse process impacts on the kiln. Similarly, the Drum Emptying & Recycling System has demonstrated the technology required to produce high viscosity kiln fuel from a wide range of wastes, while recycling steel waste containers. What makes the technology particularly applicable is that it is aligned with the changing waste market in most countries. The general trend is toward the recycling of waste oils and solvents to higher value applications, while sludge and solid wastes are becoming more available as governments strive to reduce disposal of wastes to landfill. This trend is expected to continue and accelerate as governments recognise that sustainable alternatives exist, and legislate to discourage landfill of waste. Information on the Geocycle plant has been provided to a cement company in the USA who are currently seeking environmental approval for construction of a similar plant. It is anticipated that further enquiries will be received as the changing market supports investment in the technology.</p>							

Other Information and Reference:
See previous reports provided

APP Cement Task Force's Project Final Report Form

Project Number: CMT-07-07 (3)	Title of Project: Utilising bio-solids in Cement Kilns						
Lead Partner Country: Australia							
Participating Partner Countries and Organizations: China, India, Melbourne Water Corporation, Blue Circle Southern Cement Ltd (a subsidiary of Boral)							
Project Location: Waurm Ponds, Victoria, Australia							
Project Manager Information <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; padding: 2px 0;">Name: Mr Jim Young</td> <td style="width: 50%; padding: 2px 0;">Phone: +61 3 5240 6070</td> </tr> <tr> <td style="padding: 2px 0;">Organization: Blue Circle Southern Cement Ltd</td> <td style="padding: 2px 0;">Fax: +61 3 5241 8310</td> </tr> <tr> <td style="padding: 2px 0;">Address: PO Box 63 Belmont Victoria 3216 Australia</td> <td style="padding: 2px 0;">Email: jim.young@boral.com.au</td> </tr> </table>		Name: Mr Jim Young	Phone: +61 3 5240 6070	Organization: Blue Circle Southern Cement Ltd	Fax: +61 3 5241 8310	Address: PO Box 63 Belmont Victoria 3216 Australia	Email: jim.young@boral.com.au
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Organization: Blue Circle Southern Cement Ltd	Fax: +61 3 5241 8310						
Address: PO Box 63 Belmont Victoria 3216 Australia	Email: jim.young@boral.com.au						
Project Start Date: November 2006	Proposed Project End Date: November 2010						
Project Described : <p>The project will examine the feasibility of introducing biosolids from industrial wastewater as an alternative renewable energy source in to the Waurm Ponds Cement plant and the viability of biosolids as a replacement fuel for traditional fossil fuels utilised in the cement kiln. The project will also develop control strategies to capture and contain mercury emissions from biosolids processed at the plant. The project engages Australian, Indian and Chinese government and industry, as well as providing an innovative solution to the problem of disposing of biosolids, a by-product of the industrial and household waste sewage treatment process.</p>							
Project Status and Outcome: <p>The project is not complete. The completion of the project has been delayed by performance issues with the mercury injection and measuring system used on the Mercury Demonstration Plant. The remainder of the work is complete.</p> <p>The issues with the mercury injection and measuring equipment are close to resolution and the test work on the Demonstration Plant will be completed before December 24 2010. A draft final report will be available by that date. The final report will not be available until February 2011. The delay will be caused by the need to obtain externally verified test results to corroborate the in-house test data.</p> <p>Subject to the satisfactory outcome from the Mercury Demonstration Plant, the project has shown that up to 60,000 tpa dry tonnes equivalent of the biosolids sourced from the Melbourne Water Western Treatment Plant can be processed into a form that can be satisfactorily combusted in the cement plant at Boral Cement Waurm Ponds. The use of biosolids can reduce greenhouse gas emissions from the site by 30,000 tpa.</p> <p>The Biosolids can be effectively used at the Waurm Ponds site to replace 0.6PJ of natural gas and 36,000 tpa of raw materials with no detriment to product quality or process operation.</p> <p>The approach used to establish, implement and administer the various aspects of this project is immediately applicable to other cement plants in APP member countries. The key steps in the methodology were</p> <ul style="list-style-type: none"> ▪ characterising the biosolids ▪ developing a specification and project objectives to ensure the effective use of the biosolids as an alternative energy source in the cement kiln ▪ developing a processing concept to ensure the biosolids satisfy the specification and project objectives ▪ proving the processing concept would meet the desired objectives through practical demonstration, modelling and comparison with existing processes 							

The experience gained in the conduct of this project can be made readily available to other cement operations in APP member countries. The process and outcomes have been well documented and there is a willingness on the part of all the partners involved in the project to disseminate the learnings through published papers and discussions with interested parties.

Future Direction and Recommendation:

The project should be allowed to continue to completion. The findings from the project will inform other biosolids to energy projects in the cement sector and the mercury removal demonstration project, a subset of the total project, will showcase a new technology for removal of mercury from flue gas. The mercury removal technology will be of interest to the cement and power sector in an environment where regulations for control of mercury emissions from fuel burning equipment are being tightened and plant owners are seeking alternatives to the existing mercury removal technology

Other Information and Reference: