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The TecEco Newsletter

Keeping you informed about the eco-cement project.

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New Book Supporting our Business Case.

A new text, **Waste Materials Used in Concrete Manufacturing** by Satish Chandra (Editor) and published by Noyes Data Corporation/Noyes Publications (**ISBN:** 0815513933) strongly supports all we are saying about the need to use wastes in concrete. The book looks good and we are looking forward to having enough money to purchase it!

ABOUT THE BOOK
(From The Publisher)

One of the most critical problems we are facing today is acid rain. One of the main causes is the burning of fossil fuels, and as a result, sulfuric acid and carbon dioxide are added to the atmosphere. These gases have detrimental effects on building materials. Thus, there are two problems: (1) to decrease the gas emission, and (2) to produce construction materials more durable to the aggressive pollutant gases and acid rain.

The environmental aspects involved in the production and use of cement, concrete and other building materials are of growing importance. CO2 emissions are 0.8-1.3 ton/ton of cement production in dry process. SO2 emission is also very high, but is dependent upon the type of fuel used. Energy consumption is also very high at 100-150 KWT/ton of cement produced. It is costly to erect new cement plants. Substitution of waste materials will conserve dwindling resources, and will avoid the environmental and ecological damages caused by quarrying and exploitation of the raw materials for making cement. To some extent, it will help to solve the problem otherwise encountered in disposing of the wastes. Partial replacement of clinker or portland cement by slag, fly ash, silica fume and natural rock minerals illustrates these aspects. Partial replacement by natural materials that require little or no processing, such as pozzolans, calcined clays, etc., saves energy end decreases emission of gases. The output of waste materials suitable as cement replacement (slags, fly ashes, silica fumes, rice husk ash, etc.) is more than double that of cement production.

These waste materials can partly be used, or processed, to produce materials suitable as aggregates or fillers inconcrete. These can also be used as clinker raw materials, or processed into cementing systems. New grinding and mixing technology will make the use of these secondary materials simpler. Developments in chemical admixtures: superplasticizers, air entraining agents, etc., help in controlling production techniques and, in achieving the desired properties in concrete.

Use of waste products is not only a partial solution to environmental and ecological problems, it significantly improves the microstructure, and consequently the durability properties of concrete, which are difficult to achieve by the use of pure portland cement. The aim is not only to make the cements and concrete less expensive, but to provide a blend of tailored properties of waste materials and portland cements suitable for specified purpose. This requires a better understanding of chemistry, and materials science.

There is an increasing demand for better understanding of material properties, as well as better control of the microstructure developing in the construction material, to increase durability. The combination of different binders and modifiers to produce cheaper and more durable building materials will solve to some extent the ecological and environmental problems.

Our Response to the AGO Draft Guidelines – The Case for Supporting Research

The main changes to this world in the last 100 years have occurred not through wars, economics or political processes but through changes in technology. I cannot emphasise more strongly that it is only through changes in technology that we can we overcome the greenhouse gas problem.

It is crucial that GGAP is able to support abatement opportunities that are ineligible for existing and more specific AGO Programs such as the Renewable Energy Commercialisation program, CNG and LPG Vehicle Conversion, Photovoltaic Systems or Remote Power Generation Programs.

I believe that the four broad categories proposed (technology deployment; regional greenhouse partnerships; the built environment and infrastructure; and greenhouse abatement facilitation) will provide a valuable tool for project assessment but should not be considered in isolation or as restrictive concepts.

A key element required for the realisation of commercial opportunities in greenhouse gas abatement is research and development, along with access to research and development facilities. I acknowledge and applaud the proposed technology deployment policy where investment might be allocated for research and development of technologies. It is also encouraging to see the AGO suggesting that the program would focus on accelerating these efforts, and that it may be possible to include the early stages of innovation (AGO1999:9-10). I cannot over emphasise the need to be inclusive of research and development and business innovation.

Since our previous submission the Tasmanian State Government has provided project support including a consultant to assist with the finalisation of our business plan. Our scientific investigations have so far confirmed our expectations about eco-cements.

I urge the AGO to strongly consider the reality of impediments to the rapid deployment of emerging and innovative greenhouse gas abatement technologies, as addressed in the proposed GGAP design. In particular:

"…policy disincentives that impede early retirement of greenhouse-intensive technologies or fail to encourage continuos improvement in technology and environmental performance… and the… critical need for a facility to promote the rapid development and deployment of ***a diverse portfolio of technologies*** *which address greenhouse gas emissions" (AGO 1999:8)*

I also make the following very relevant quotation.

"The recognition, …..the world, that sustainable growth should be a controlling process for guiding the development of technology through the millennium and beyond, is now well established. The more difficult problem is defining the content and thrust of the effort necessary to convert the recognition into practice and then demonstrating, through the best practice, the techniques and technology appropriate to reinforce the value of sustainability. The value can and should be measured by both environmental as well as financial gains and there is no more logical start point than Targeted Research Action on Waste Minimisation and Recycling (TRAWMAR).

The value of waste minimisation and recycling in one sense is self evident and has existed almost since civilisation itself, for after the initiation of the first processes of cultivation and animal domestication, survival instincts ensured that nothing was wasted and optimum recycle occurred.

The first forging and manufacturing steps were likewise followed by the same cycle of ploughshares into swords and it is something of a mystery as to why the intelligent human who, over the centuries developed and innovated technology to create wealth and improve the quality of life, should have failed to recognise or at least to act to ensure that resources were prudently used. In truth the threats, of course, have produced opportunities and there is a well developed waste recycling industry to prove it.

However, the diversified and cyclic nature of the recycling sector has, in general, made it a follower of technology rather than a leader, even though within the sector there are and have been both true and apocryphal stories of individual financial success. It is probably a combination of the growth of living standards and the lack of scale that have created, until recently, a somewhat casual or at least unfocussed attitude towards the need for targeted action on both waste minimisation and recycle." (TRAWMAR home page at www.trawmar.com)"

Once again I thank you for the opportunity to comment on this issue and look forward to providing the potential to significantly contributing to Australia's Kyoto commitments in the future.

Our Major Accomplishment in the Last Few Weeks

- A lot more work on our acclerator particulalry with high brucite eco- cements.
- Work on a submission for R & D funding with the help of our consultant, Peter Godfrey.

A message from our Managing Director

We need your support to secure R & D funding. Can you provide us with a letter from either a technical or marketing point of view?

Please contact me if you can. We are very enthusiastic and motivated to succeed and would like to hear from you.

John Harrison
Managing Director