



## **Recycled and Secondary Aggregates: Use in Concrete Construction**

This one day Seminar, which should be of interest to all those engaged in concrete construction, such as design/specifying engineers, contractors, precast concrete manufacturers, ready mixed concrete suppliers, recycled and secondary aggregates suppliers, demolition contractors, will deal with the fundamentals, technology and practice of the use of recycled and secondary aggregates in concrete construction and uses case studies to show what has been achieved and the challenges that lay ahead in overcoming the barriers against the use of RSA and in so doing promote sustainable concrete construction.

The one day Seminar will consist of 7(seven) Lectures conducted by three prominent lecturers in this field. Don't miss this great opportunity!

**Date: 12 January 2011 (Wed)**

**Time: 9.00am – 6.00pm**  
**(Registration starts at 9.00am)**

**Venue: "The Hall"**  
**Singapore Polytechnic**  
**500 Dover Road**  
**Singapore 139651**  
**\*\*Enter by Gate 3**

**PDU Points: Pending**



**Programme:-**  
**Morning Session**

**9.30am – 10.00am**

**Lecture 1: Professor R. K. Dhir**

**Sustainability and Recycled/Secondary Aggregates: Global Scenario**

Current and future demands for aggregates and the related sustainability issues. RSA aggregates currently used. Barriers to the use RSA in concrete construction. Role of aggregates in concrete. Concept of performance-based specification. Concept of appropriate use of aggregate.

**10.00am – 10.45am**

**Lecture 2: A/Professor K. C Gary Ong**

**Types of Recycled Aggregates and Relevant Singapore Standards**

Recycled aggregate (RA) and Recycled concrete aggregate (RCA). Singapore Standards (SEN 12620, SS 544 and related Singapore Standards). Use of recycled aggregates in non-structural and structural concrete.

**10.45am – 11.15am    TEA/COFFEE BREAK**

**11.15am – 12.00pm**

**Lecture 3: A/Professor K. C. Gary Ong    Processing of Recycled Aggregates**

Production of recycled aggregates. Quality issues. Methods to improve Recycled aggregates; heating and rubbing method, acid pre-soaking method and microwave beneficiation method.

**12.00pm – 12.45pm**

**Lecture 4: Professor R. K. Dhir**

**Engineering and Durability Performance of Concrete made with Recycled Aggregates: Potential for Use and Issues that are to be Resolved**

Strength. Load dependent deformation (modulus of elasticity and creep). Load independent deformation (shrinkage and thermal expansion). Permeation properties. Corrosion of reinforcement. Chemical attack. Alkali- silica reaction. Abrasion resistance.

**12.45pm – 1.00pm    QUESTION AND ANSWERS**

**1.00pm – 2.00pm    LUNCH BREAK**

**Afternoon Session**

**2.00pm – 2.45pm**

**Lecture 5: Professor R. K. Dhir**

**Potential for Using Secondary Aggregates: Possibilities and Challenges**

Possible sources and quantities. Characteristics and suitability for use; incinerated bottom ash, glass cullet, metallic slags and others.

**2.45pm – 3.30pm**

**Lecture 6: Dr Ho Nyok Yong**

**Practical R&D and Case Studies for Use of Recycled Concrete Aggregates in Singapore**

Background. Production of recycled concrete aggregates. Use of RCA in structural concrete and pavement construction. Case studies.

**3.30pm – 4.00pm    TEA/COFFEE BREAK**

**4.00pm – 4.45pm**

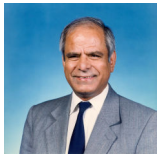
**Lecture 7: Professor R. K. Dhir**

**Case Studies from the Rest of the World**

A selection of up to five case studies covering a wide range of applications of recycled aggregates in concrete construction will be discussed.

**4.45pm – 5.15pm    QUESTIONS AND ANSWERS**

## Speakers



**Professor Ravindra K Dhir OBE**, Past President of UK Concrete Society, is a scholar and practitioner in concrete science, technology and construction, with research covering many areas including sustainability, environment impact and reuse, recycle and reconstitution of materials. His approach to research has been visionary, creative and working with industry he has developed £15 million centre of excellence, ensuring a very meaningful dissemination of research to practice. This research model won him many awards, including the Order of British Empire and Honorary Fellowships of the UK Institute of Concrete Technology and Indian Concrete Institute. He serves on many technical committees, has a global network and published 55 books, 60 Technical Reports and 320 papers.



**Dr Ong Khim Chye, Gary** from the Department of Civil and Environmental Engineering, NUS, is a member of the Editorial Boards of the ASTM Journal of Testing and Evaluation and the Journal of Ferrocement. He is a member of the Building and Construction Standards Committee SPRING Singapore and is Convenor of WG2 for the Migration to Eurocodes in Singapore. He is also Chairman of the Technical Committee for Civil Engineering Testing, Singapore Accreditation Council. His research interests include advanced composite materials, durability and assessment of concrete structures, retrofitting and sustainability.



**Dr Ho Nyok Yong** is Technical Director of Samwoh Corporation, a leading integrated construction and sustainable recycling company, where he is heavily involved in R&D in efficient utilisation of waste material, sustainable construction and pavement engineering. He is a Past President of Singapore Concrete Institute and First Vice President of Singapore Contractors association. Dr. Ho is a Registered Professional Engineer of Singapore and Malaysia and Chartered Structural Engineer of UK and has 20 years diversified working experience in civil and environmental engineering. Recipient of many awards, He has published over 50 papers and is regularly invited to speak at conferences and seminars.



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### Registration & Payment:-

Registration is confirmed upon payment.

Cheque should be crossed and made payable to "Singapore Concrete Institute" and mail it together with your completed registration form to:

**Block 342 Ang Mo Kio Ave 1 #03-1563 Singapore 560342.**

Please register early as seats are limited.

**Fees: S\$75.00 (for SCI Members) S\$90.00 (for Non-Member)**  
(Fee includes course materials and refreshments)

**\*\* Closing Date : 5 January 2011**

### Enquiries/Contact (SCI):-

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Contact: Ms Edina Koh

No.	Name of Participant	Membership No.
Payment Mode :- Cheque (Bank/No. _____) Amount : S\$_____		
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