



UNIVERSITY OF  
BIRMINGHAM

# Midland Geotechnical Society Newsletter

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Honorary Secretary:

Alan Turner

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Tel. 01902 670938

## Meeting Venue

Lectures start: 7pm

Location:

HAWORTH BUILDING,  
University of Birmingham B15  
2TT

Refreshments are available prior to the meeting in the Shell lounge, Department of Mechanical and Civil Engineering, from 6:15 onwards

Registered Charity Number:  
514610

## Wishing all our members a Happy New Year

### January 11<sup>th</sup> Meeting Dr Gurmel Ghataora (UoB), and Dr Nigel Hall (HAUC)

Will talk on the results of research into the

## Remediation of acid soils using Steel Slag

### ABSTRACT:

One of the legacies of the coal mining industry is the generation of numerous colliery spoil mounds are generally acidic. Runoff waters from some of these mounds can have a pH value as low as 2.5 with the resulting damaging consequence on vegetation. At this low pH metals dissolve and become more toxic. The dissolved metal compounds migrate into the natural groundwater and the adjacent water streams and rivers. In order to control and/or reduce the acidity, a number of remediation and amelioration techniques have been investigated over the years with varying degree of success. One of the recent technologies investigated is the use of Basic Oxygen Steel (BOS) slag. Its unique property in gradually releasing lime (Calcium Oxide), which is freely available within the BOS particles, over a long period coupled with the presence of many trace elements that are essential for healthy plant growth suggest that it was an obvious and long lasting solution to the problem for many situations. This approach was investigated by Tarmac Ltd, The University of Birmingham and Harper Adams University College in 2004 by undertaking extensive laboratory work that included a number of conventional tests that included determination of properties of leachates, but also included accelerated plant growing trials so that long term durability of the treatment could be predicted. Tests conducted over few months could be used to tentatively predict a number of decades of plant growth. The laboratory investigations were followed by remediation and grass growing trials at two sites in Cumbria with extensive deposits of colliery spoils. Over 5000 test results generated from laboratory and field trials were used to develop a prediction model for quantifying mix composition of additives required for a given type of soil. This model was recently tested and used in the remediation of a full scale site in the North East.

### ABOUT THE SPEAKERS:

Dr Gurmel S Ghataora is a senior lecturer in geotechnical engineering at the University of Birmingham. Besides his teaching duties, he has a diverse research portfolio that includes railway track foundations, use of marginal materials for road pavement construction, erosion of soils, and utilization of "waste" materials in construction, trench backfill and remediation of acid soils. His research projects have been funded by industry, MIRO, EPSRC and DfID and he has published over 80 papers. He is also responsible for admissions to all postgraduate taught programmes in Civil Engineering.

Prior to joining the University in 1990 he worked in Industry for about 8 years with Arup and Douglas Technical Services Ltd.

**Dr Nigel Hall** is a senior lecturer at the Harper Adams University College. In addition to his teaching duties, his soil research includes soil erosion, soil microscopy, remote sensing, and technology transfer/farmer training. His overseas research activities cover United States of America, Turkey, China, and Norway. In addition to this he is responsible for Short Course tutor, Personnel tutoring, Course Committee work, Course Marketing. He has authored numerous articles, conference papers and journals and is a consultant to industry.

This lecture has been supported  
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