



The
Geological
Society

A Joint SERG and ICE Meeting

ice
Institution of Civil Engineers

Date: 20 May 2014

Location: Capita House (East Grinstead), 18:00 for 18.30 start

Causes of Confined Space Hypoxia during underground construction in the Lambeth Group beneath London

A talk by Tim Newman

Hypoxic ground gas is rarely reported in London despite its frequent occurrence in the Upnor Formation and the serious health and safety implications for underground working. The death of two engineers by asphyxiation and recent interception of pressurised hypoxic gas by two ground investigation boreholes highlight the urgent need for research into this hazard which until now has been extremely limited.

Glaucanite is legally and widely assumed to cause the oxygen loss in confined spaces but recent research proves it incapable of doing so. Visual inspection and laboratory analysis, using optical and infrared spectroscopy, scanning electron microscopy and X-ray diffraction techniques confirm fresh glaucanite within highly oxidised soil samples throughout the lower Lambeth Group and Thanet Sand Formation. The low concentration of pyrite and organic materials eliminates these as alternative causes.



Green rust within the Upnor Formation

A poorly known but common bright blue-green mineral, green rust, is instead shown to be a very potent and plausible reducing agent. However, laboratory analysis under anoxic conditions has yet to prove its existence in the Upnor Formation, largely because of its extremely rapid oxidation. The presence of green rust during underground construction within the Upnor Formation will have serious implications for the health and safety of personnel. The presentation summarises the risks associated with hypoxic ground gas, the research carried out to date and recommendations for future construction work in the Lambeth Group.

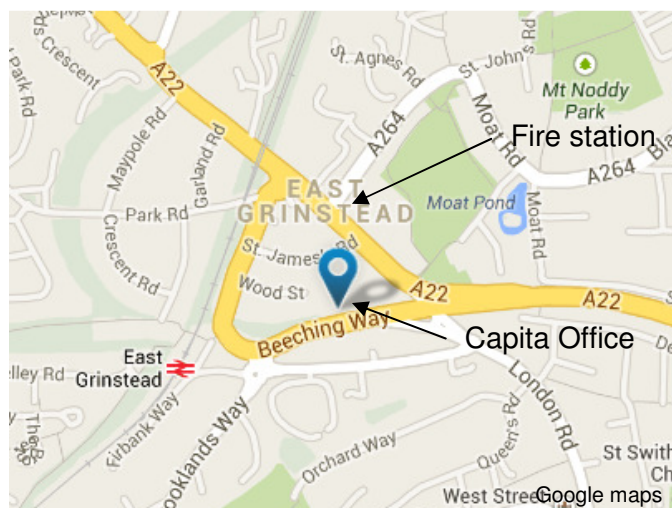
LOCATION: Capita, Capita House, Wood Street, East Grinstead, West Sussex. RH19 1UU.

This event is kindly sponsored by

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Details of this and other events are provided on the SERG section of the Geology Society website: <http://www.geolsoc.org.uk/serg>

Please let us know if you plan to attend so that we have an idea for numbers for catering
southeastrg@googlemail.com



Please note there is no parking at the office. There is some located 5 mins walk from the station and in the public car park behind the fire station