

Scottish Construction Safety Group

Minutes of the meeting of the 19th of September 2019

There were 19 members and guests present at the meeting. Robert Bradford introduced Carolyn McGonagle from the Institute of Occupational Medicine who was giving a presentation on exposure hazards in the construction industry.

Carolyn began by advising that she was the section head of the Chemistry and PPE division within the IOM. The IOM was started by the National Coal Board in 1969 to work on pneumoconiosis in mineworkers and from that base improved sampling techniques and improved knowledge including on silicosis. The IOM became independent of the NCB in 1983. They have three offices in the UK – Edinburgh, Chesterfield and Stafford with three divisions consultancy where they carry out analytical services, occupational hygiene, asbestos surveyors, H&S advice, consultancy and act as expert witnesses; a research division where they are currently carrying out research in to exposure, mineralogy and examining nano particles. The final division is the services division.

The chemistry laboratory carries out high performance liquid chromatography (HPLC); Ion chromatography (IC), Gas chromatography (GC), Inductively coupled plasma (ICP), Atomic emissions spectroscopy (AES), Ultra violet spectroscopy (UV) and Wet chemistry techniques. The mineralogy lab carries optical fibre counts (PLM), differential fibre counting (SEM / EDXS), elemental composition of dusts by SEM / EDXS, crystalline silica by XRD, quartz by FTIR, bulk asbestos analysis (PCOM) and asbestos in soils as well as dust and fibres. There is also a PPE testing facility.

The main hazards in the construction industry are dust, silica, welding fume, diesel particulate, lead, isocyanates, solvents, fibres and carbon monoxide. Monitoring is required to protect workers, help set the correct controls. Where exposure is a serious health risk check exposure levels are not exceeded, check the control levels are working, help choose the correct PPE and identify any need for health surveillance. Monitoring can also help when an organisation is served with an Improvement Notice. Before requesting sampling from the IOM the organisation should consider the risk and COSHH assessments as well as information in the hazard data sheets. They should provide information on the accessibility of the site and any previous sampling information. The requirements should be discussed with the IOM to determine the most appropriate analytical method, sampling media, whether substances can be sampled together, detection limits and delivery time of sampling media: the IOM should be provided with enough time to set up the filters as this can take a few days.

Using cement as an example the hazards are irritation of the eyes, nose, upper respiratory system etc. as well as skin irritation and burns with the silica component resulting in silicosis and lung cancer. The MSDS lists quartz (WEL resp 0.1mg/m³), chromium (0.5) and dust (Resp 4 and total 10) as constituents. Discussions with the lab will give guidance on the analytical method, sampling media, delivery time, information on samples gathered together and detection limits. The detection limit is important to help decide on the sampling period e.g. silica has a WEL of 0.1mg/m³ and a detection limit of 0.01 therefore a sample of 960 litres is required (sample drawn through the filter at 2 litres / minute). The lab will supply an IOM cassette with filter which can sample for total respirable and inhalable dust, silica and chromium. To supply this the IOM would require 2 – 3 day's notice to allow the filters to be prepared.

When sampling it is always preferable to collect more than one sample as a single sample

- isn't representative,
- would not show any sampling error

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- may be damaged in transit
- isn't cost effective

A field blank should also be included as a check.

Each sample should have a unique identifier (the simpler the better) and there should be a chain of custody record. Other information should include temperature, weather wind speed, tasks undertaken, sampling sites information and information on the 8 hour TWA. After sampling the samples should be stored correctly and in a way to prevent contamination (the IOM can provide guidance). When the samples are sent to the lab there should be clear information on the analytes, information on what is required in the report and contact information. In the lab the samples will be stabilised and weighed twice before the silica analysis is carried out using FTIR followed by chromium and total dust analysis where the filter is dissolved and analysed by ICP. The report will be issued covering all of the topics.

Other hazards include

- fibres where different methods cover different fibres such as asbestos and MMMF.
- Solvents
- Metals which includes weld fumes, lead in water, paint and air
- Carbon dioxide and monoxide

The IOM is accredited to ISO 17025 and is audited by UKAS annually and take part in external proficiency schemes. All activities are not fully compliant with the above however in the few cases where full compliance is not met the IOM has internal proficiency management and all analysts are trained. All analysis meets the IOM's stringent quality system.

Robert thanked Carolyn for her presentation before moving on to other business.

Revised editions of HSG 133, 144 and 168 are to be released by the end of October.

Dates of future meetings in the Hilcroft Hotel Whitburn at 13:30 are:

October the 24th Peter Ashcroft of Sygma Solutions

November the 21st

December the 12th

January the 23rd

February the 20th

March the 19th

April the 23rd

May the 21st.

Speakers will be announced shortly.

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