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Sent: Wednesday, July 05, 2006 7:35 AM
To: NIOSH Docket Office (CDC)
Subject: 084 - Respirable Personal Dust Monitor Comments
Attachments: ISO-CEN-ACGIH-BMRCurvepaper.PDF; Belle-PennStatePaper-April-06-Final.pdf

Hi

Greetings and writing to you from South Africa. First of all, let me congratulate Jon Volkwein and his team for the hard work that had gone to this important study. Since this subject is globally relevant and to my professional interest, it is hoped that some of the items below will be hopefully addressed before the instrument's introduction to the industry or the regulator or for whatever the purpose of the PDM is intended for. Views expressed herein are personal and do not reflect any organisation.

1. Use of Higgins-Dewell Type cyclone in PDM vs. Dorr-Oliver Cyclone as a reference sampler. I attach a paper herewith on the work comparing the HD cyclone (SA origin) and Dorr-Oliver cyclone operating in accordance with the new ISO/CEN/ACGIH curve which reflects significant difference between measured levels (both field and laboratory). When data in the 'draft for comments' was analysed between the Dorr-Oliver cyclone and PDM-HD cyclone, there was a significant difference between measured levels although exposed to the same aerosol underground for the new curve. How would these differences be expected to be handled by the users, i.e., operators or inspectors.
2. By switching over to the Higgins-Dewell Cyclone, i.e., operated at 2.2 Lpm in accordance with the international harmonisation curve, ISO/CEN/ACGIH with a D50 of 4 microns, the measured dust levels are expected to be lower than before (SA and UK studies). This was confirmed with the study in South Africa ~ 12% using HD cyclone (see attached paper). However, from the 'draft report for comments' I note that ~ 18% increase in measured levels by using the HD sampler when compared with the DO cyclone @ 2.0Lpm ~ BMRC curve. These must be addressed adequately as the 'gravimetric samplers' used in PDM is the cornerstone of the instrument. Should we be looking for other parameters to evaluate cyclone performance other than D50?
3. Will there be an option to retrofit other cyclones (for usage like 25 mm HD cyclone or 37 mm HD cyclone or BGI cyclone) into the PDM? I understand that the above work is meant for US usage.
4. Cyclone inlet mounted adjacent to the cap lamp mounted on the bill of the miner's hard hat-- If the PDM is planned to be used as a personal exposure assessment tool for compliance monitoring, then the variation between the breathing zone sample (i.e., shoulder) and the cap lamp position must be developed and how it would impact the measured values vs. compliance levels. It is well known amongst the measurement fraternity that the differences exist but quantifying the relationship at this stage is a pre-requisite for future dose-response work as this change in sampler inlet position would bring another parameter in comparing the historic and future dust dose. Therefore, it is prudent that with the resources available, at least, an attempt comparing the PDM sampler's proposed location and the currently practiced method be made.
5. How would the NIOSH or MSHA team plan to go about in reducing the current OEL for coal dust by switching over to new size-selective curve (as you are using HD cyclone @2.2 Lpm)? What is the influence of this on measured quartz level and recommended OEL in NIOSH criteria document? Any studies planned in this area?

While international harmonisation on measurement was initiated in 1989, the differences in measured levels using different cyclones operated in accordance with the same size-selective curve must be established through a relationship before releasing the PDM as the final R2P to avoid confusions at a later stage to determine compliance or non-compliance conditions (important for MSHA inspectors).

Finally, I appreciate the work that has gone through in validating the PDM. I trust and request that these comments be seen as only constructive, and helpful in the advancement of the research work!!!

9/28/2006

Kind Regards
bkb

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