

REF/G/12-03

Incident : Potential over exposure to Respirable Crystalline Silica during Refractory Work
Site : Grangemouth
Date : 27/11/2012

What Happened:

Prior to the 2012 FCCU and 3CDU TAR the tasks of wrecking out refractory materials and re-applying new refractory materials was assessed by the refractory contractor and Ineos. APF 40 full face respirators were specified over and above the industry standard of dust masks (APF 20).

Precautionary exposure monitoring of these activities revealed that exposures to respirable crystalline silica (RCS) can be extremely high, especially during wrecking out and the spray application of new refractory.

Out of a total of 39 personal monitoring results for wrecking out and spray application of refractory, 18 were at a level where a full face APF 40 mask would not reduce exposures to below the Workplace Exposure Limit (WEL) for RCS. 23 of the results were at a level where, had a basic APF20 dust mask been worn instead (which is the industry standard), it would not have reduced exposures to below the WEL.

The form of RPE worn by the refractory contractor for these tasks was inadequate, even though it was the APF40 full face respirator which is above industry standard for this work. This allowed operatives to be exposed to high levels of RCS.

As soon as the exposure monitoring results were received RPE was replaced with air supplied BA giving a higher level of protection (2000 fold). Some exposures were also limited by limiting working times. The exposures to RCS received during this event alone would be unlikely to result in harm. However, the exposure levels measured combined with industry standard level of protection (APF 20) puts those carrying out this type of work as a regular job, at long term risk of developing severe, possibly life threatening health effects such as silicosis and lung cancer.

Key Lessons:

1. The standard of RPE used by the contracting company was inadequate, but is the industry standard. **This type of work is thus being carried out on refineries, petrochemical and power generation sites across Europe without adequate protection. Those carrying out this work are at a high risk of developing serious long term health effects.**
2. Refractory materials in use in Europe typically range between 4 and 20 % Crystalline Silica.
3. It is not always enough to rely on contracting companies' assessments of their own activities. Where there is potential for serious, long term health effects assessments should be reviewed carefully to assure ourselves that control measures are adequate.



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