

## Case study: Improving respiratory health in construction

### Summary

There is very little information about the levels of exposure to silica dust in the UK construction industry. One piece of US literature (Baudry et al, 2013) indicates that a number of construction roles exceed occupational exposure limits: tunnel construction workers, rig operators, concrete finishers and bricklayers.

Skanska employs people in these roles and, like most of the industry, did not have sufficient data relating to their levels of silica exposure. Skanska's occupational health team undertook a review of its health surveillance protocols which led them to consider a different approach to surveillance for respirable crystalline silica (RCS) and/or sensitisers.

Skanska approached an expert in occupational and environmental respiratory disease to help refine its approach so that it could identify earlier those employees with indicators of deteriorating respiratory health, such as chronic obstructive pulmonary disease (COPD), and those who could remain in the workplace with confidence.

This case study sets out how Skanska is developing a better understanding of the known health risks associated with RCS through risk assessment and management of employee health, mitigating business and sector risk.

### Problem statement

There were two main issues:

- Like many construction companies, Skanska does not have an in-house occupational hygienist. Nor did it have data relating to exposure to respirable silica dusts in its operations. It knew some of its operations were dusty, but not what the component parts of the dust were. This meant it was reliant on engineering, PPE and health surveillance controls to mitigate the risk.
- While its health surveillance protocol met with HSE requirements, Skanska was concerned that it represented a 'one size fits all' approach to irritants and sensitisers. It was also concerned that when it referred employees to a GP or occupational respiratory specialist, it did not receive an opinion back on whether the condition was work-related. The consequence of this was that it had to 'stand people down' which impacted on operational productivity. This affected employee confidence, compensation and business productivity



Figure 1: Cutting with no controls results in significant dust exposure

### Solution / what you did

- Carried out a major exercise to categorise all employees based on their exposure to health risks. This enabled Skanska to identify its 'at risk' population.
- Revised its operational procedures to focus on workplace hazards.
- Consulted with an expert in occupational and environmental respiratory disease, Professor Cullinan, to review and provide advice on its health surveillance protocol. Professor Cullinan suggested that, in the absence of data for the UK construction industry with regard to RCS, Skanska should undertake some environmental and personal monitoring of its construction workers. It was thought that there was more risk from drilling and tunnelling than general demolition/construction work. This data would provide a basis to identify the population that were most at risk and required increased frequency of surveillance.
- Appointed an occupational hygienist to undertake environmental testing in its piling and foundation operations, which include many of the roles cited as being at most risk to the exposure to RCS above workplace exposure limits (WEL).
- Presented at the [Workplace Respiratory Surveillance Study Day](#) at the National Heart and Lung Institute, Imperial College Hospital, London to share its experience, challenges and approach in the construction industry.

### Key challenges faced

- No occupational or environmental monitoring data available within the company or sector to inform decision making regarding health surveillance required. The default position was to undertake health surveillance

without understanding whether a sensitiser or an agent for COPD.

- Identifying the geology of drilling and building knowledge regarding which geologies generate higher levels of RCS.
- All existing respiratory health surveillance for dusts was a ‘one size’ approach, irrespective of whether it related to an irritant, sensitiser or an agent for COPD. The indicators of deteriorating ill health are different for each, making it difficult to identify the changes early enough.
- Lack of internal occupational hygiene capability. Buying this in can be expensive and can limit scope.
- GPs ability to identify early changes and seek expert opinion due to limited knowledge about occupational respiratory disease. A general respiratory consultant is unlikely to be able to advise on work relatedness changes to lung function.



Figure 2: Cutting with controls reduces exposure to dust

### Outcomes and benefits

- Raised awareness across Skanska’s piling and foundation business regarding RCS.
- Skanska has revised its health surveillance questionnaire, protocol and markers for onward escalation for NHS specialist occupational respiratory assessment.
- A focus on appropriately referring employees with deteriorating lung function whilst putting people back to work more confidently.



Figure 3: Using pre-fabricated chambers eliminates the need for cutting and therefore eliminates dust exposure

### Measures of success

- Funding gained for further sampling focussed on tunnelling and drilling operations.
- Building a data and knowledge bank for Skanska and the wider industry regarding RSC which could help inform the policy and guidance from the Regulator.
- A defined question set for different respiratory risks so that it is able to identify earlier respiratory health issues.

### Lessons learnt

- The need to work with geologists to understand more about the sub-strata and where RCS is likely to be present.
- To move towards ‘designing out’ health risks – occupational hygiene costs need to be built in to project costs to negate the need to retrospectively seek funding after a project goes live.
- Be curious – conversations with Professor Cullinan fundamentally shifted Skanska’s approach to respiratory surveillance. This approach now better protects employee health and wellbeing, has the potential to reduce costs by refining tests within the surveillance programme and protects the business and sector from insurable risk claims.

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