

# Bowmer & Kirkland Respiratory health risk control in renovation

## Building the business case for prevention

Renovating old buildings can present a wide range of health risks to the workers involved from exposures to asbestos, harmful dusts, organic materials, toxic metals, chemicals and many other harmful substances. The recent renovation of a vast and derelict Grade II listed building by Bowmer & Kirkland required a coordinated exposure control programme, involving the supply chain, operations team and all site workers, including specialist subcontractors.



The building – a former Victorian hospital that closed in 1997 and has been unoccupied since – had fallen into disrepair. Theft, vandalism, neglect and the effects of the British climate over the years meant that it had lost its structural integrity, large areas of its roof and many of its windows, and the majority of the internal floors had been removed during previous demolition works. The interior was damaged and unsafe.

The renovation works were required to make it wind and water tight, structurally sound and compliant with heritage conservation and planning requirements by June 2015.

This project has demonstrated many benefits of the Company's integrated approach to managing occupational health, beyond just worker health protection. Here we give examples of just some of the solutions which, as well as effectively addressing specific respiratory risks as part of delivering a safe and healthy workplace, have also demonstrated process efficiencies, cost savings and, ultimately, delivered a quality job.

### Control by design

The project was complex, involving many different trades, and included:

- extensive external fabric repairs to the roofs;
- roof replacement including lead work, light wells and gutters;
- installation of new concrete and timber floors, including brick arch supported floors;
- cleaning and structural repair of internal walls and ceilings;
- cleaning and renovation of masonry (sandstone and brickwork) façades;
- installation of both reconditioned and new traditional sash windows.

Bowmer & Kirkland worked with their subcontractors to ensure that wherever possible products were sourced and procured or, where products and materials had to be reclaimed and recycled, processed and treated, to eliminate or minimise the health risks during works from the start, including:

- pre-painted steel, which required no surface preparation and only touch-up painting on site;
- solvent-free cleaning products;
- battery powered access equipment – spider/scissors lifts;
- catalytic convertors on diesel powered plant operated in internal areas;
- H and M class vacuum cleaners wherever possible to minimise dry sweeping.

**Controlling Exposures to prevent occupational lung disease in the construction industry**

**Case Study**

**Engineering and process controls**

A large part of the refurbishments required stonemasonry and brickwork renovations, as well as woodwork repairs, so block and brick cutting, block splitting and wood cutting and sanding, could therefore not be entirely avoided.

To control workers' exposure to dust, and in particular respirable crystalline silica (RCS) from silica dust, separate cutting stations were set up on site away from the main areas of work. These protected those not involved by segregating the dusty work:

- an enclosure was provided for stone cutting which utilised a 'water wall' to capture the dust removed via extraction and local exhaust ventilation (LEV);
- on-tool wet suppression was used to further reduce the exposure of the stonemasons;
- there was a dedicated central wet-cutting facility for site stonemasons with fixed suppression and extraction, and a dedicated brick cutting station positioned away from other trades;
- a dedicated woodworking shop included LEV extraction equipment for hot air paint stripping (hot air stripping was necessary because non-solvent paint strippers and off-site use of caustic dip had proved ineffective for the tasks required);
- Type M on-tool extraction for machine tools and hand-held power tools controlled exposures to wood dust. (Although type H industrial vacuums (with HEPA filter) are also suitable for wood dust control).

Other respiratory risks which were addressed through specialist process control solutions included exposures to asbestos and biological hazards:

- licensed asbestos contractors were scheduled to remove asbestos containing materials prior to other trades commencing works;
- a specialist removal contractor was engaged to treat and remove feathers and guano from pigeon infestation, using rope access and spraying a virucidal hard surface disinfectant, to effectively control the risks from mites and dust which can cause asthma / sensitisation (pigeon fancier's lung and psittacosis);

[www.hse.gov.uk/construction/healthrisks/hazardous-substances/harmful-micro-organisms/other-diseases.htm](http://www.hse.gov.uk/construction/healthrisks/hazardous-substances/harmful-micro-organisms/other-diseases.htm)

- water suppression was utilised during demolition works.



**RPE/PPE/site hygiene**

Because using water suppression in the areas where the materials were laid or installed was liable to generate slurry splashes on the stone that caused stains to the completed work (whereas dust could be brushed off), the stonemasons relied on RPE when working in these areas.

Larger pieces of stone which had to be worked were moved and installed using telehandlers, cranes and block/tackle - eliminating manual handling.

Within the cutting stations, and for residual dry stone working using hand tools or specialist power tools for restricted tasks, appropriate respirators were a final mandatory control.

All operatives who were likely to be exposed from their works to any harmful dusts, such as silica, wood dust and general construction dusts – which included site labourers as well as skilled trades - were required to have a minimum of FFP 3 disposable or half mask cartridge respirator supported by evidence they had been subject to a qualitative face-fit test and instruction on the correct use and maintenance of the RPE.

This requirement for qualitative face-fit testing was extended to agency labourers who had to provide proof of face-fit testing in addition to a CSCS card and proof of manual handling training, prior to being allowed on site.

The company operates a mandatory glove policy – gloves must be selected which are suitable for the task. Coveralls were provided to prevent contamination of clothing during tasks such as hot air paint stripping.

Washing facilities were provided on-site together with rest facilities and drying rooms incorporating storage for PPE and personal clothing.

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## Case Study

### Health benefits

Monitoring for dust control was largely visual. Because dust was required to be controlled at source, non-compliance was readily spotted.

#### The health benefits were:

- visibly a less dusty site overall, with dusty processes well-contained and away from the build areas and main enclosed work areas;
- elimination of some health risks, such as exposure to solvents from product substitutions;
- minimisation of exposure to other hazardous substances, in particular silica dust, wood dust, general site dust, biological hazards and diesel fumes, through process adaptations, engineering controls and PPE.

### Additional benefits

- recycling of material reclaimed on site reducing waste and giving a better match with existing finishes;
- cost savings from recycling site materials reducing material purchase and transport requirements;
- cost savings from segregated cutting stations, which reduced the overall requirement for RPE, extraction equipment and vacuums;
- flexibility offered by cutting stations and RPE to make/adjust stone to suit site and conservation requirements as needed;
- process efficiencies through the elimination of whole processes generating dusts/fumes or requiring work at height, eg. through the use of pre-painted steel, which eliminated the need for surface preparation and painting;
- Improved site conditions for all workers - a clean place of work;
- Increased ownership of health issues and risk avoidance, leading to widespread buy-in of good practice.



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