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Sent: Monday, 14 March 2016 9:46 PM
To: pollutionhotline@ehp.qld.gov.au
Cc: Helen Sutherland (hjsuther@bigpond.net.au); John Higgins (jhiggin2@bigpond.net.au); Mt Coot-tha Residents Group (mtcoottharesidents@gmail.com); 'Mtcoottha Electorate Office'
Subject: Pollution Hotline MCQ Blast Vibration Damage Submission - 3 Sir Samuel Griffith Drive, Mt Coot-tha
Attachments: 3SSGD-GarageQuarryBlastSlabCracks-March-2016.png; 3SSGD-GlassPanelDisintergratesAfterSeptemberQuarryBlast-RemainingEvidence.png; 3SSGD-GlassPanelDisintergratesAfterSeptemberQuarryBlast-September2015.png; AustTuneliing-DrillAndBlastTable.png; HalfMillimetreHouseFramelsLowStrength.JPG; 3SSGD-GarageQuarryBlastSlabCracks-September-December2015.png
Importance: High

MCQ Private Home Property Damage - Pollution Hotline Submission (March 2016):

Please note that I have documented these before, however we were never informed of the change in the EHP email address or the fact that our contact person had been seconded to Canada.

Damage to our property:

Our property is at 3 Sir Samuel Griffith Drive (3SSGD) which contains two houses (main and secondary dwellings). In 2010, we constructed the secondary dwelling and were amazed at how the concrete slabs opened up after each severe blast. We complained to the Lord Mayor and the MCQ-SSE but were totally ignored. However we were advised by MCQ-SSE that blast vibrations as high as 15mm/sec would never cause damage to houses. This a MCQ-SSE "Smoke Screen" personal opinion which is very incorrect, (it may have been true some decades ago but certainly not today).

Cracking and Chipping damage to our new 100sqm Slab:

At 3SSGD our main house is under construction and the garage slab has already suffered severe cracking. Our construction began in March 2014 and we are likely to complete this in April/May 2016. The design, engineering and construction of the building was done by myself and was supervised by our RPEQ Civil Engineer (Roy Saint). In this process we did everything possible to minimise vibration slab cracking as the house was due to have a polished concrete finish on the ground floor. (We placed thicker, stronger, better-supported concrete which was specially sealed after pouring). The attached photographs shows the cracking which is obviously not a shrinkage crack, it is clearly made worse by subsequent strong blast vibrations. In addition to this there is also chipping. (see 2 photographs). We have been forced to abandon the polished concrete option and the much more expensive tiling work is now half done.

New Glass Balustrade breakage:

The strong blast vibrations damaged the glass, this is most likely by causing chips where the glass is supported by spigots. When we later began adjusting the glass panel it exploded scattering glass in a 10 metre radius. As this was a construction safety hazard, the broken glass was immediately cleaned up. However there are still isolated fragments lying around on the ground (see photograph). We are worried that other glass panels may be already damaged or about to be damaged. Hence further panel explosions may occur.

Background Information - Slab Cracking and Chipping damage:

Cracking of slabs is known to happen due to concrete shrinkage - this is less when inside houses and especially when the slab is sealed immediately after pouring. Excessive blast vibrations make these cracks much worse because they overcome the friction restraint.

Typically shrinkage cracks are formed in a wavering straight line which depends on the dimensions. A square slab will often have two shrinkage cross-cracks at 90 degrees whilst a rectangular slab will often have lateral cracks. The thickness of these cracks can easily be covered by Polyurethane polished floor paints such as Flexithane.

Chipping of slab cracks can only be caused by mechanical action, either driving a heavy vehicle on it or from strong quarry blasting vibrating the slab.

In our case the house is unfinished and hence no vehicles or other heavy load has ever been placed on the slab.

The cracking and chipping to our new slab (see attached Photo) are solely the result of MCQ blast vibrations plus the cracks are in a vibration-based star formation located between 600mm footing beams.

The cracks are too wide to be covered by Flexithane and of course the chipping makes the problem considerably worse plus the very strong blasting is scheduled to continue for another 10 years.

This slab damage has forced us to abandon the polished concrete finish and proceed with tiling the floor which has increased the cost by approximately \$15,000. (We will know the final cost when the tiling is completed in April 2016.) Half the basement floor has now been tiled and the other half (where the photo is taken) is due to be tiled in late March.

Hence we recommend that your staff visit here to look at the damage asap (before it is tiled).

Background Information - Heat Soaked Glass Panels:

The main building patio balustrades are all made from vertical Heat Soaked (annealed) Glass panels. This is common in car windscreens and in the last 10 years has become popular in construction for pool fences and patio balustrades.

When constructed, the panels are delivered by truck and carefully lifted into place. It is generally considered that in the unlikely event that the glass panels were faulty, that they would break during shipping from China or during truck delivery, if any panels are chipped or are less-than-perfect in any way at all, then they are immediately discarded and scrapped.

When strong blast vibrations hit these panels they are likely to cause tiny chipping which weakens the glass. At any date after this the effect of leaning on or adjusting the panels can cause them to shatter (similar to a car windscreen when it is hit by a rock).

This happened to us following a series of extremely strong blasts last year.

The sequence of events is thus:

1. Cartage, 2. Installation, 3. Strong Quarry Blast causing chip, 4. Panel is adjusted or touched, 5. Panel Explosion.

This explosion can be quite a violent event and pieces of glass are often scattered over a 10 metre radius which cuts everybody within the radius. If this happens after installation, all glass sheets that are hit by flying glass will also be damaged and are also likely to explode when touched. In our situation the sheets either side of the exploded sheet were both replaced.

All these glass panels were replaced by us as part of the construction process.

We submit that as a result of the Quarry Blasting, all the sheets are now suspect and they should all be tested by a glass contractor.

The only safe alternative is to replace all the glass panels and reduce the blast vibration.

Background Information – Blast vibration test trials:

In the past 10 years, the project home construction has become intensely competitive and this has caused a general trend where the buildings have been reduced to the very minimum possible with much reduced lifespan. Current day steel frame constructed houses are made from 0.4mm and 0.6mm gauge steel framing. (This is lawn locker strength).

In addition to this Chinese Heat Soaked Glass panels have become popular because they are inexpensive and look good.

No blast vibration test trials have ever been done on these materials which are now commonly used in several houses very close to the quarry.

Severe slab cracks are likely when heavy vehicles are parked on a slab during strong blast vibrations. The slab is built to a minimum standard which is easily overloaded under these conditions and hence it will form large cracks,

especially if an air pocket exists under the slab. I do not believe there are any blast vibration trials on these kind of heavy vehicle loaded slabs.

Thank you for reading this email.

Yours sincerely, Phil Best.

Philip Best - Electrical Engineer

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