Working safely on Heritage Parquetry flooring.

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Many flooring professionals will come into contact with old Parquetry, or wood flooring that has been adhered with Bitumen (tar), or Bituminous Adhesives.

It is therefore important that we understand the dangers of working with this type of adhesive as it ages and becomes dust particles.

Bituminous Adhesives become brittle as they age. At some point, the adhesive 'gives up' and no longer holds the flooring down – creating a situation where the adhesive will over time become pulverised, becoming a dust beneath the flooring itself.

When exposed, the pulverised dust (adhesive particles) can become airborne.

There was a German study into the human health effects of this dust. Written by Dagmar Hansen and Gerhard Volland, the study was commissioned by the German Government when state-owned office blocks were turned into private apartments.

In the study, there was Mosaic Parquetry throughout the buildings. Most of the flooring was loose, and in some areas the fingers were gone, exposing the adhesive dust.

The study is titled *Study About the Contamination of PAH in Rooms with Tar Parquetry Adhesives*. Please see the excerpt below:

'In former times it was usual to use tar parquetry adhesives. Tar could be responsible for the contamination of the rooms with polycyclic aromatic hydrocarbons (PAH). In this study we investigated parquetry adhesives, dust, indoor air and outdoor air. The most important PAH compound is the benz(a)pyrene (BaP).

The indoor air was not significantly contaminated with BaP. The values for the BaP in the parquetry adhesives were very high. But only in one case, it was possible to find a contamination of the dust. In this room the parquetry by itself was defect. In all the other rooms we could not find any contamination of the dust. The contamination of the rooms with BaP depends on conditions of the parquetry'.

Please see the table below. Dust was collected from wardrobes and windowsills (old dust) and the floor itself (floor dust).

Table 1: Comparison old dust and floor dust

	old dust 1	floor dust 1	floor dust 2a	floor dust 2b
PAH	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
acenaphthaline	0.1	0.1	0.2	0.1
acenaphthene	2.0	8.2	2.4	1.6
fluorene	2.3	14	3.8	2.2
phenanthrene	76	180	49	31
anthracene	4.1	33	8.3	4.2
fluoranthene	86	147	35	23
pyrene	41	72	25	17
benzo(a) anthracene	26	64	18	12
chrysene	42	61	22	17
benzo(b) fluoranthene	36	43	12	9.8
benzo(k) fluoranthene	39	51	15	11
benzo(a)pyrene	**32**	**45**	**15**	**10**
indeno(1,2,3-c,d) pyrene	16	18	7.5	5.2
dibenz(a,h) anthracene	5.3	5.5	1.1	0.8
benzo(g,h,i) perylene	16	18	7.3	5.1
sum 15 PAH	425	762	220	149

old dust 1, floor dust 1: first measurement
floor dust 2a, floor dust 2b: repeat measurement

In conclusion, the study found that the contamination of the rooms with the adhesive dust was dependent on the condition of the parquetry – meaning if the parquetry was damaged, removed or installed incorrectly.

The regular vacuuming of the flooring was sufficient to remove dust contamination where the parquetry was in good condition.

Dealing with old parquetry adhesive is dangerous and there are a few safety factors that one must consider.

BaP (Benzo A Pyrene) is present in Tar (bitumen) dust. It is a mutagen, which means it can mutate human cells. Therefore, we need to cover our skin, eyes, mouth, and nose when handling the adhesive, or its dust.

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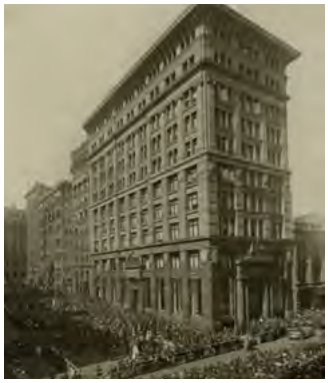
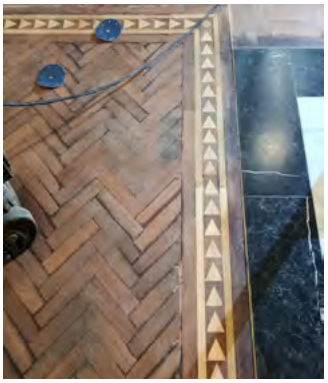
The case study is the Commonwealth Bank Building at No.5 Martin Place. The building itself was constructed in 1912.





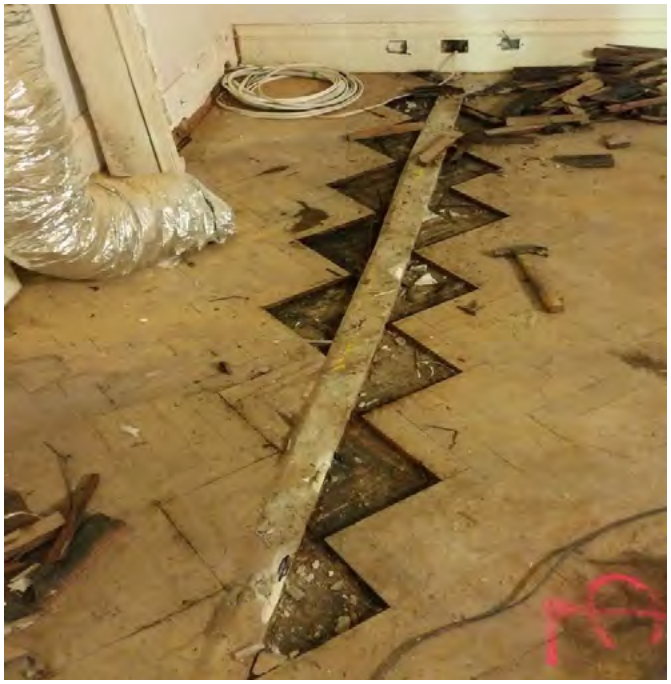
The Commonwealth Bank was created in 1911 under order of Prime Minister Andrew Fisher. Its head office was designed by architect John Kirkpatrick, who was the cousin of the bank's governor. In August 1916, the building opened. The building was expanded with extensions designed by E.H. Henderson and F. Hill between 1929 and 1933 along Pitt Street, and in 1966 construction was begun on an annex facing Martin Place, completed in 1967.

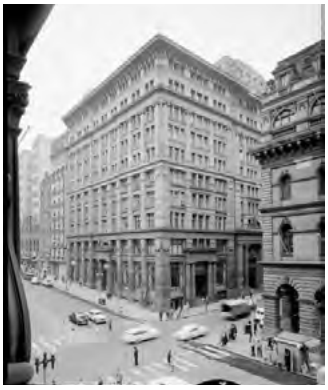
From 2012 the building was extensively refurbished. The 1960s extension was rebuilt, while much of the 1916 building and 1930s extension was stripped out and refurbished. The building now houses retail space in the old banking hall.

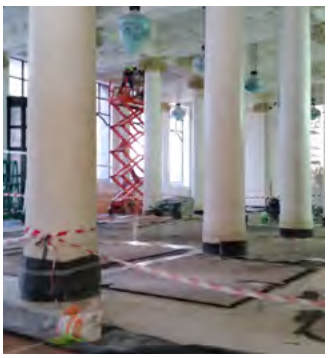
The building is full of original Jarrah Block Parquetry circa 1930 with nice border details.

We were called in to do repairs to all nine levels of the original bank building at the time. The original flooring had been extensively damaged by the renovation of the building in the 1960s.

The image below is a typical type of repair, where the electrical conduit was cut into the original Jarrah Parquetry flooring to create new power outlets on the other side of the room. The flooring was then covered with carpet.







There was exposed parquetry adhesive throughout. Needless to say, the dust was everywhere.

Our job was to remove the cement and reinstall new parquetry flooring to the slab, stitching the flooring into the existing heritage floor.

We were working in and around the parquetry dust every day so onsite safety for us was all about covering up.

Wherever you may come into contact with old parquetry adhesive, you will need to vacuum it up using a HEPA filter or similar, and then seal the exposed adhesive. In this case we used a concrete primer.

Here's to restoring our heritage flooring with care and most importantly doing so while maintaining our health.

Have you worked on a heritage floor recently? Send us a breakdown of the project and some images!

Ivan Kirton,

We Love Parquet