

## **5.8 LIMPET ASBESTOS: SPRAYING ILL-HEALTH WORLD-WIDE**

GEOFFREY TWEEDALE

*Manchester Metropolitan University, UK*

Many industrial hazards are a problem only during manufacture. Asbestos, however, can cause health problems wherever it is used or applied – sometimes for generations. Asbestos can cause disease and death where it is mined; it can cause problems during shipping and unloading; it can be a hazard in the country that uses it; and can also be re-exported to create similar problems yet again.

There is no better example than Sprayed Limpet Asbestos. This product originated in mines in South Africa, was formulated in the UK, and was then sent around the world. It can be found in several South American countries – including Brazil.

I would like to:

- discuss the history of this hazard;
- describe some of the health problems Limpet has created;
- and also try and identify some locations where Limpet can be found in South America.

### **HISTORY**

Spraying asbestos was quite simple. Limpet was a mixture of asbestos and cement. All that was needed was a bin on wheels (with a hopper to feed in the dry mixture); a fan inside to propel the Limpet; and a hose. At the end of the hose was a gun with a water spray, which ensured that Limpet would stick to its target. The coating was typically ½-inch.

Sprayed asbestos was a monopoly of one British firm – Turner & Newall – a company known as the Asbestos Giant. Spraying was devised in 1931 at a T&N subsidiary in Leeds – J.W. Roberts.

The selling points of spray were insulation, sound-proofing, fireproofing, and condensation control. It found a market in railway carriages, cinemas, and in ships. Sales grew slowly during the 1930s, but expanded rapidly during the Second World War, when many warships were constructed. Sales hit a peak in the early 1950s. Limpet was also exportable. J.W. Roberts was only a small factory, with less than 20 sprayers. So T&N decided to license other users. It licensed unit companies within the T&N group and it also licensed the product world-wide. Limpet was always a profitable product for T&N.

## HEALTH PROBLEMS

Asbestos is often cited as a case-study in toxic corporate crime: Limpet is a criminal story on its own.

Spraying was obviously a very dusty job – especially for the hopper-filler and sprayer. These men would be covered in fibre, but they were not covered by any health regulations. This was because Limpet operated outside the asbestos factories and mostly outside the UK. Government asbestosis regulations in 1931 did not include spraying. Because the process involved water (which dampened the fibre), the industry argued that there was no dust and no risk. This meant no medical exams and no compensation for the sprayers. At most they were given a mask, but spraying was often conducted in cramped and hot locations where masks were impossible to wear for long periods. Even in 1931, anyone with common sense could see the outcome. The medical journal, *Lancet*, predicted ‘a large increase in asbestosis’ in years to come.

It was apparent by the early 1940s that not only spray teams would be affected. Bystander workers (anyone working near the spraying) – such as painters, carpenters, coach finishers – were at risk. By then, the lung cancer hazard had emerged; by the 1950s, mesothelioma was beginning to make its mark. These diseases had no impact on the way Limpet was sold and operated. Besides masks, T&N tried various techniques to suppress the dust by adding extra water and oil. None were satisfactory.

During the late 1940s, T&N received its first claims from sprayers for asbestosis, but these were rebuffed. In the 1950s, however, the predictable and steady rise in certified asbestosis cases began at T&N. In 1953, the first sprayer with the disease was suspended from work by the government. These cases were notable for their short periods of exposure (often less than ten years) and the ruthless legal tactics used by the company to avoid liability.

In 1959, T&N began medical exams for its sprayers – but only for the small numbers on the company payroll, not licensees. It was to be another ten years before the UK government implemented further health regulations – defining for the first time a threshold (2 f/cc) that effectively banned crocidolite. But spraying was not banned. The 2-fibre threshold was clearly exceeded by Limpet, yet the government allowed spraying to continue and T&N declined to withdraw it. For its spray mixtures, the company switched to amosite instead of crocidolite. They sold the product both at home and overseas until about 1976. It was never really banned by the government – who allowed T&N to go on selling it until the process was defunct.

This is now ‘history’, apart from the steady, but now (one hopes) declining number of deaths among hopper-fillers, sprayers and labourers. But one aspect is worth emphasising and remains with us: the problem of Limpet that remains in buildings today.

Again, this problem was partly avoidable. By 1956, at the latest, the UK government knew that lagging once installed would cause future problems, when it

was removed. T&N dismissed these concerns as unimportant, even though they saw little chance of making removal a safe process. Another problem that had occurred during the 1960s was that sprayed coatings were starting to decay and shed fibre. Thus the occupants of sprayed buildings were at risk – often from the most dangerous types of asbestos such as crocidolite and amosite. This was to give rise to a new industry – the removal of Limpet by trained (and expensive) contractors.

Even so, maintenance workers (electricians, joiners, demolition contractors themselves) continued to be exposed as they worked in sprayed buildings. It should be noted that the steadily rising mesothelioma deaths in the UK are increasingly made up of these workers, who often disturb lagging unwittingly.

## OVERSEAS

Limpet is also a problem overseas. The UK was the largest single market for sprayed asbestos. However, the overall market for spray was much greater overseas, where Turner & Newall licensed SLA extensively in North America, Western Europe, Australia and Japan.

Abroad, Turner & Newall did little or nothing to control the health hazard:

- Operators were often unskilled. In 1956, a Roberts' director stated: "It is almost certainly the case that overseas there are a considerable number of people operating the process who have not been properly trained and, moreover, I would not be surprised if in the United Kingdom, particularly amongst the sub-licensees, unqualified people were not infrequently employed."
- The supply and use of masks seems to have been highly variable. Trade leaflets for Limpet, such as those distributed by Keasbey and by the German subsidiary Spritzabest, illustrated spray operators working without a mask. Photographs of Keasbey workers in America show them spraying and hopper-feeding without respiratory protection or even overalls.

Legally, of course, such dangerous work-practices posed no problem: in virtually, every overseas country in which Turner & Newall operated there were no government regulations regarding safe thresholds until at least the 1970s. As in Britain, the consequences appeared by the 1940s and 1950s. In 1955, Turner & Newall's company doctor himself confirmed asbestosis in a sprayer in Victoria, Australia. A later report confirmed the high dust counts in spraying in Australia and also noted that most operating firms showed "a surprising lack of awareness of the hazard of the task." Much the same situation was apparent in India, where spray was also in use at a Turner & Newall factory, Hindustan Ferodo. The health effects of blue sprayed Limpet were noted in 1956, when medical examinations showed that several workers had "pulmonary troubles." In 1966, Turner & Newall were told that "the company had created ... a situation which cannot be solved easily."

## SOUTH AMERICA

What about the situation in South America and Brazil? In 1998, Jacques Range (president of the Brazilian Asbestos Association) admitted that spraying exposed workers to extremely bad conditions, but stated: ‘In Brazil, asbestos was never used in this way.’ Unfortunately, he was wrong. Five Limpet licensees operated in South America, and two of those were in Brazil. About nine spray machines were working in South America by the end of the 1950s: three were in Brazil.

Limpet was applied in a variety of locations: cinemas, oil refineries, office buildings and railways (presumably railway carriages). However, it is still a problem identifying the precise locations where Limpet has been used. As far as I am aware, there is no documentation in the T&N archive that gives a complete listing of where Limpet has been applied. Some information can be collected piecemeal.

In South America, I have found several Limpet locations – some of which are in Brazil. For example, the Edificio Avenida Central in Rio de Janeiro was fireproofed with Limpet. In 1963, it was also used extensively at the National Steel Mills in Rio De Janeiro. The steel company’s Volta Redonda Works was sprayed with Limpet to prevent corrosion and its central offices were also fireproofed with the material.

If Limpet is still in place in these buildings, it may still be a hazard.

The hazards include:

- Exposure to the most dangerous types of fibre. Crocidolite and amosite were typical constituents of Limpet. About 33,000 tons of blue were used by Roberts for Limpet between 1933 and 1970; the figure for amosite was well over 20,000 tons.
- The deterioration of sprayed coatings over time.
- Failure to recognise Limpet as a hazard, or even failure to identify Limpet as an asbestos material.

In Brazil, efforts have been made by Fernanda Giannasi and her colleagues to identify buildings in which Limpet has been used. In some cases the buildings have been closed and the asbestos removed. The identification of locations where Limpet has been used should continue and be followed by appropriate strategies for removal or management of the material.

N.B. A fuller account of Limpet is contained in my article: ‘Sprayed “Limpet” Asbestos: Technical, Commercial, and Regulatory Aspects’, in G. Peters and B.J. Peters (eds), *Sourcebook on Asbestos Diseases* Vol. 20 (Charlottesville, VA: Lexis Law Publishing, 1999), pp. 79-109.

## LIMPET LICENSEES IN SOUTH AMERICA

### ARGENTINA

Calofrig Aislacionos (4 spray machines)

Argentine State Railways (1)

### BRAZIL

Industria De Isolantes Termicos (2)

Engenharia E. Isolamentos (1)

### CHILE

Interma De Instalaciones Termicos (1)

## LIMPET IN SOUTH AMERICA

### BRAZIL

Avenida Central Building	Rio de Janeiro
Refinaria de Manguinhos	Rio de Janeiro
Leblon II Cinema	Rio de Janeiro
National Steel Mills	Rio de Janeiro
Petroleos Brasileiro SA	Cubatao

### ARGENTINA

Sudamtex SA	Buenos Aires
Firestone de la Argentine	Buenos Aires
General San Martin Theatre	Buenos Aires
Olivetti Argentine SA	Buenos Aires
Yacimientos Petroliferos Fiscales	La Plata
Argentine Railways	

CHILE

Chile Railways	
----------------	--