Asbestos under the gavel

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Asbestos is a wonder material but it can pose serious health risks.

A hot, current headline item is the French ship, Clemenceau, which is proposed for dismantling at *Alang*, the ship-breaking yard in Gujarat. The Supreme Court is looking into the case that the ship contains a quantity of asbestos which would endanger the lives of workers engaged in ship-breaking**.**

Asbestos

Asbestos is a mineral which exists in fibres and was known for centuries for its complete indifference to fire It was traditionally used as the wick in oil-lamps and has later found use in the lining of brake blocks, as insulation in ovens and in electric heaters, etc, generally situations that involve high temperatures. It can be woven into mats, for easy use and was used in Egyptian burial cloths and even as the tablecloth of *Charlemagne*, which is said to have been cleaned by being thrown into fire!

Being fire-retardant, insulating, corrosion resistant and consisting of fibres that have tensile strength, asbestos was a good material to use with cement in building construction. A large number of fine constructions in Europe, right till the 1950s, contain sizeable quantities of asbestos, for the economy it allows in structural material, as well as economy in heating the interiors during winter, thanks to better heat insulation.

Asbestos also found ready use in lining the walls and hulls of ships, which need to maintain living temperatures when sailing in icy cold water. And also to protect the ship from the heat of the engine room.

One reason that asbestos fibre is such a good insulator that the fibres can be exceedingly fine – as low as 0.01 micometre, which is about 10,0000 times as fine as human hair. The crystal structure of asbestos is that it cleaves easily in two directions. This leads to the creation of thin sheets, which can again break up into thin strands, which end up as large numbers of thin fibres. Bunches of such fibre trap air in cells that constrict the free movement of air molecules, which prevents the conducting of heat – and hence the great insulator quality.

The hazards

A few decades after asbestos started being widely used, evidence turned up of the damage that asbestos fibres did to workers' health. The fine fibres get easily released from structures that contain asbestos and are easily blown about and carried in the air. When workers breathe the fibres in, the fibres lodge for long period in the lungs and can even be transported to other tissue.

The result is a brace of respiratory disease, including *asbestosis*, a serious lung fibrosis a form of cancer of the bronchi, and *mesothelioma*, a cancer of the chest and abdominal cavities. Other diseases are *asbestos warts* sharp fibres cause benign callus-like growths, and pleural *plaques* which thickening of areas of the lining of the lungs. The trouble with the cancers is that their onset is many years after the exposure to asbestos and is usually fatal by the time it is diagnosed.

These effects on workers exposed to asbestos were noticed and studied during the first half of the 20th century and the use of asbestos got progressively banned in different applications and different countries during the years that followed.

Clemenceau

The French government which approved the condemnation of the ship and its consignment to Alang for dismembering claims that the ship ha been 'decontaminated' and now contains only 45 tonnes of asbestos. Engineers from the firm that undertook the task of removing asbestos from the ship, however, have deposed that 'more than 500 tonnes' of asbestos remain. The French authorities say the estimate is 'fantasy', and the matter is before the Supreme Court Monitoring Committee.