# **Part 3: Asbestos: what are the health effects?**

Asbestos is responsible for a number of serious health effects, they include asbestosis, bronchogenic carcinoma, mesothelioma, pleural plaques, pleural effusion and laryngeal cancer and I’d like to talk in some more detail about some of these now.

Asbestosis is a diffuse interstitial pulmonary fibrosis which results from the load of asbestos dust in the lungs, its manifest is progressive shortness of breath although in the early stages its often asymptomatic and maybe diagnosed only on Xray.

Whether or not you develop asbestosis is dose related that is the greater concentration of dust and the longer exposed the more likely you are to develop asbestosis. There may be a latent period of between 5 and 25 years depending on your exposure and once present there is only symptomatic treatment possible, it’s not possible to be cured.

However, asbestosis is a disease of high exposure and were unlikely to see it these days. There have been studies which shows the annual incidence of 0.5 percent occurs after a dose of 100 fibre years per ml which is 2 fibre/ml each year. It doesn’t exist below 25 fibres per year and so there are no clinical cases occurring in the general public. In my experience in working in this field for over 20 years I haven’t seen any new cases in that time. Therefore, it’s important to mention to be thorough but asbestosis is not a consideration when we look at incidental workplace or school exposure.

Far more seriously asbestos has been demonstrated by the IARC the International Agency on Research and Cancer to be a group 1 carcinogen, that means there’s strong human evidence supported by animal studies that asbestos can cause cancer in humans.

Its responsible for two different sorts of cancer, first of all it may cause bronchogenic carcinoma that’s the ordinary sort of lung cancer that people most commonly get. When one looks at that under the microscope its indistinguishable from bronchogenic carcinoma caused for example by smoking.

Again, the likelihood of developing bronchogenic carcinoma is dose related, because it’s the same sort of lung cancer caused by smoking then it may be potentiated by smoking. What I mean by that is that people who are both exposed to asbestos and smoke have a much greater chance of developing this sort of cancer than if you have only one of those exposures.

Again, there is a long latent period of between 10 and 30 years between exposure and development of disease and once present I think its still untreatable. There are some surgeons who will attempt to cure but in my experience that certainly hasn’t been yet adversely successful.

For both lung cancer and mesothelioma there is quite clear qualitative evidence that excessive mortality is increased by more intensive exposure, but available data are insufficient to establish the form of dose dependency and there’s evidence that the greater exposure over a life time the more likely that both lung cancer and mesothelioma are to develop.

Mesothelioma on the other hand is a particularly aggressive malignant tumour of the pleura. The pleura is the membrane that lines the inside of the ribs and the outside of the lung unfortunately this disease is invariably and rapidly fatal. Particularly the development of mesothelioma is most commonly associated with exposure to crocidolite or blue asbestos and it seems to be because those fibres are particularly small and can penetrate further into the lungs. Particularly following asbestos exposure to crocidolite, the development of disease may follow relatively low exposure. For many years there was debate about whether white asbestos on its own could cause mesothelioma. Current research suggests that it can but much much greater levels of exposure then are required after exposure to blue asbestos. There’s no relationship with smoking and there’s a long latent period of between 15 and 40 years.

Mesothelioma has been found to be very common in those who worked in the Wittenoom mine where blue asbestos was mined and has also been responsible for a number of cases in carpenters and joiners and builders and those involved in the building industry.

There’s also a dose response relationship with mesothelioma and studies have included that there is a progressive reduction in risk as duration of exposure is reduced and that’s been demonstrated in a number of studies. Cases have occasionally been caused by short very extensive very intense exposure to the amphiboles particularly blue asbestos but under most circumstances the risk caused by brief exposure is negligible.

Pleural plaques may also occur after asbestos exposure and these are seen on x-ray on the inside of the ribs. The important thing about pleural plaques is that they don’t cause symptoms and while there a sign of asbestos exposure they don’t progress to cause any other disease. Thus, while they may indicate asbestos exposure and therefore some risk of developing asbestos disease that risk is not changed by the presence of pleural plaques, they certainly don’t progress to mesothelioma.

Presentation ended.