

Documentation: Asbestos causes Cancer among Construction Workers

By Lars Vedsmand.

It has through many years been documented again and again that asbestos causes serious and lethal diseases. First it was asbestosis. Later when the dust concentrations were reduced, the people exposed to asbestos lived for a longer time, enabling different types of cancer to get "time" to develop. Asbestos can cause cancer in the larynx, the lungs, and in the mesotheliomas of the stomach and lungs. Mesothelioma was in the 1980's in the UK called "The kiss of death". There are no other known causes than asbestos for this dreary and almost 100% lethal type of cancer. It is very rare in Denmark – but when it occurs it will in most cases be possible to find that the patient has been exposed to asbestos, occupationally or by other means.

New report shows allocation of cancer

The Branch Sector Council for H&S in Construction has together with other Sector Councils have made a more thorough report about occurrence of different types of cancer. The report has been prepared by the Danish National Cancer Registry. In a later article we will get back to the main conclusions from the entire report on the professions in Construction, but here we will look a little further into the relations between asbestos and different types of cancer.

The report contains data about the following professions within building and construction:

Public building and construction
General contractors
Stone-pavers
Sewer contractors
Brick-layers
Carpenters and joiners
Painters
Plumbers and sanitary
Electricians
Glaziers
Flooring and terrazzo
Technical insulation
Roofers
Scaffolding
Other construction

The report contains a long description of method and treatment of data as well as the reservations one always has to make in relation to possible causes of cancer. Even if one profession has an excess of cancer it is not necessarily connected to occupational causes. You should also be aware that for most types of cancer many years pass from exposure to outbreak of the disease. For the possible asbestos-caused cancer types there may have passed up till 35-40 years. So the cancer diseases seen in the recent years may be caused by working conditions many years ago. It has been possible within the data to see, whether exposure has increased or decreased over the years, when

The relative risk (RR) is often used as a parameter for the risk of disease connected to a certain exposure, in this case cancer. In this context the exposure is employment within a specific branch for at least half a year. As a starting point it is assumed that the risk is equal in all branches. The relative risk is a proportional, indicating how many folds the risk of one cancer type in a certain branch is bigger or lower than the risk of the same type of cancer among employees within all other branches among persons with same sex and age. Employees in other branches, other workers thus are the reference group pr. definition having a relative risk of 1. A relative risk on 1,0 thus means that the risk in that particular branch is the same as in other branches. A relative risk on 1,6 means that the risk is 1,6 fold (or 60%) bigger in that particular branch compared to the average of the other branches. On the opposite a relative risk on say 0,6 means that the risk is 0,6 fold (or 40%) smaller than in the other branches.

From the report Survey of risk for cancer (1970-2003) among employees in the building and construction branch in Denmark

inspecting some more precise data of *relative risk*. The report covers cancer cases reported to the National Cancer Registry in the period 1970 til 2003.

Adjusted relative risks (RR)

Non-occupational risk factors may influence the calculated RR for cancer, if the prevalence of such risk factors is unevenly distributed between the actual investigated branch and the compared reference group. The reference group is all other employees with the same age and sex. Most important non-occupational risk factors are smoking, alcohol, sun habits and physical inactivity. For instance smoking is found more frequently among employees in certain branches than in others. Thus there is a need to adjust RR, so that the smoking initiated contribution for the relative risk for say lung cancer will not blur the risk from a possible occupational exposure. We have tried to adjust the relative risks for other known and suspected risk factors for cancer. By adjusting the RR is thus seen an attempt of "cleaning" RR for the risk contribution from non-occupational risk factors.

In the optimum situation one would beside adjustment of RR for age also as a minimum adjust for the influence of smoking, alcohol, sun habits and physical inactivity. In order to make this practicable, we need individual information about such exposures for all persons in the investigation, both cases and controls. As this information does not exist in the registries we have instead used accessible information of other more indirect factors of life-style, for instance social group, marital status, period as employee, place of birth and age by birth of first child. The adjusted RR will typically be greater or smaller than the non-adjusted relative risk. If the non-adjusted and the adjusted RR are fairly equal it means that the adjusted factors are not major differently distributed between employees in a certain branch and employment in the other branches.

From the report Survey of risk for cancer (1970-2003) among employees in the building and construction branch in Denmark

Many professions in Construction have an increased relative risk as a possible cause of exposure to asbestos

From results of the report this table shows which professions having a *statistical significant* increased relative risk and adjusted relative risk for the types of cancer, known to be caused by asbestos exposure:

PROFESSION	TYPE OF CANCER	No.	RR	adjusted RR
Plummers and sanitary	Laryngeal	91	1,3	1,3
Plummers and sanitary	Lung mesothelioma	59	3,2	2,4
Plummers and sanitary	Lung not specified	3	3,1	3,7
Plummers and sanitary	lung	859	1,6	1,5
Plummers and sanitary	peritoneal mesothelioma	5	4,1	3,8
carpenter/joiners	Lung mesothelioma	76	2,2	2,1
carpenter/joiners	lung	1396	1,1	1,1
Insulation workers	laryngeal	25	1,9	1,7
Insulation workers	Lung mesothelioma	23	6,5	6
Insulation workers	Lung	201	1,8	1,6
Insulation workers	peritoneal mesothelioma	11	51,5	64,5
Electricians	Lung mesothelioma	27	2,3	2
Electricians	Lung not specified	3	5,2	8,7
Electricians	lung	476	1,2	1,1
Electricians	peritoneal mesothelioma	4	3,8	5,1
General contractors	laryngeal	644	1,4	1,3
General contractors	Lung mesothelioma	168	1,3	1,4
General contractors	lung	5667	1,2	1,1

The report makes some notes about the single professions:

Carpenters and joiners: The relative risk seem to increase during the years 1970 to 2003 – a tendency apparently connected to the extraordinary long latency period from asbestos exposure to the diagnose of *lung mesothelioma*. For the partial group of men having their first employment in the branch before the age of 25 the risk of *lung mesothelioma* is almost 5-fold increased.

Plummers and sanitary workers: The relative risk for *lung mesothelioma* increases with duration of employment in the branch and duration of employment, which normally is a substantiate indication that the disease is occupational. There is a tendency that the adjusted RR for *lung mesothelioma* is greater the earlier you have had your first employment in the branch. This indicates that there has been an asbestos exposure before 1965, which has decreased later on. Still it is seen that the risk is high after 1985 but this result is based on only 3 cases and thus subject to uncertainty.

Insulation workers: For *lung mesothelioma* there is fairly the same high relative risk (7-9 fold) for men being employed at least 2 years in the branch. The risk appears also to be fairly equal high no matter what periods of calendar-years and groups of birth year are watched. The vast majority of cases with *lung mesothelioma* (14 out of 24 %) are seen among men who had their first employment in the branch before 1965, which corresponds a 28-fold increased risk.

Electricians: The risk of developing *lung mesothelioma* is greatest if the first year of employment is before 1965. This relative risk decreases if the first year of employment is in the period 1970-84, while there has not yet been registered cases with persons with first employment after 1985. This also indicates that earlier there has been a very big asbestos problem, while the exposure later on decreases.

General Contractors: For *lung mesothelioma* it is seen that the risk dosen not increase remarkably by duration of employment – still the risk is a little increased by 2 to 5 years of employment tha by ½-2 years of employment. There is a trend that the relative risk increases the later the male employees are born. In this group employees born after 1944 seem to have more than 2-fold double the risk. Furthermore there is a trend that among those born later that the younger the men are at first employment at general contractors the higher the risk of developing *lung mesothelioma* later in life.

For the mentioned professions the prevalence of possibly asbestos related cancer types is *statistically significant*, which means that the resulting figures are within certain safety limits and thus are not coincident. More other professions have a tendency of increased risk for the asbestos related types of cancer, but where as it is not significant:

- Sewer contractors
- Brick-layers
- Glaziers
- Flooring- and terrazzo
- Scaffolding

It is now more than 20 years ago asbestos was banned in Denmark – and 35 years since it was banned for insulation purposes. There are still being reported an increasing numbers of cases to the National Compensation Board. So even if theoretically provided that nobody in any way would be exposed to asbestos any longer, the long latency period merely would mean that such diseases would still be reported in year 2040. Thus there is absolutely all reasons to make a survey and registration of asbestos and a political work for removing of the lethal asbestos – under completely *controlled conditions*.

This is a translation of an article in the magazine of the Danish Confederations of Construction workers' Unions, the BAT-Cartel, by Lars Vedsmand