VII. POSSIBLE BIOLOGICAL INDICATORS OF PAST NON-OCCUPATIONAL OR PARA-OCCUPATIONAL ASBESTOS EXPOSURE

In order to get any information about the question "who has been exposed to asbestos", it is necessary to consider the different biological methods that can be used to answer this question. In principle the available methods are:

1. the demonstration of asbestos fibres in the human body or its excreta (e.g. sputum);
2. the demonstration of asbestos bodies (asbestos fibres surrounded by protein and iron coating) in the human body or its excreta. Special attention should be given to the problem of the specificity of these bodies;
3. the demonstration either clinically or at autopsy of pathological processes, which are considered to be pathognomonic, highly specific or highly suggestive of past asbestos exposure. To this group of processes belong asbestosis, pleural plaques and several kinds of malignant tumours.

Asbestos fibres

Only a limited number of studies on asbestos fibres in the human body or its excreta are available. Single fibres with a length less than 5µm and a diameter less than 1µm are too small to be recognized by the lightmicroscope, but bundles of fibres can be seen by this method in some cases. In most cases these bundles or aggregates of fibres are still too small to be seen by the lightmicroscope. This means that the lightmicroscope can show only a small percentage of all fibres; a negative result does not prove the absence of asbestos. Phase-contrastmicroscopy has also been used (Otto 1969) but the limitations mentioned above are valid for this method also. As the morphology with these magnifications is not specific, these methods are not specific for asbestos, but they can be used by those who only wish to have a total count of fibres of lengths greater than 5µm (Lee 1974)(see chapter IV).

These limitations are not present in the case of electronmicroscopy combined with electron diffraction for example as used by Pooley (1972, 1973). He studied lung tissue and slides of lung tissue of mesothelioma patients and controls. In this last group which contains a mixture of control cases from Great Britain, Sweden and the Netherlands he found asbestos fibres in 65 out of 135 cases. In 30 cases one of the amphiboles (probably croci-

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