

## DENIS HAMEL - -Abstract

There is a general questioning in the world regarding the effect of microfibrils that can potentially be released from cutting large quantities of friction products and nonfriable building materials. Convention 162 of the International Labour Organization - *Safety in the use of asbestos* - warned, from the very start of the 1980's, employers, workers and governments of the importance to protect the workers by the use of an adequate respiratory protection and by the use of suitable tools. With the appearance, during last decades, of a great number of fibrous materials on construction, repair, restoration and demolition sites, the questioning is getting more appropriate, resulting to deplore the lack of scientific data on this issue.

The first objective of this study is to evaluate the airborne fibre emissions for various fibrocement and friction products to compare the safety of the various techniques of cutting for each of them. The tools used in laboratory are those that are generally found on building sites. This research also aims at carrying out a comparison between products containing chrysotile and products made from other industrial fibres to evaluate which were most likely to release respirable fibres beyond the recommended threshold.

Not less than 107 analyses were carried out at the time of the experiment. The methods of cut and analysis followed a rigorous protocol in conformity with the international standards. The results obtained made it possible to draw the following conclusions:

- 1) The use of water to reduce the respirable fibre emissions is a very effective process. Compared to the same product cut out with the same tool, saturation makes it possible to reduce the dust contamination from 50 to 90 %. However, the use of an abrasive disc for the cut of building materials and of a grinding stone for the friction products without an aspiration system is not advisable. All these products release important respirable fibre concentrations when not properly used, in particular in the case of chrysotile containing products. Even with the addition of water, respirable fibre concentrations released by these tools exceed the recommended thresholds.
- 2) The use of manual tools, in all circumstances and whatever the types of fibres is used, does not release respirable fibre concentrations beyond the threshold of 1 fibre/cc (time weighted average over 8 hours), which is the standard for chrysotile. These tools, which are recommended by the fibrocement manufacturers, regulation agencies and under the terms of the policy of controlled use, are the best for all types of fibrous materials.
- 3) Except in the case of an abrasive disc without system of aspiration (a tool which in any event is not recommended for this kind of work), the respirable fibre emissions tend to behave in a similar way whether the products contain chrysotile or not. Admittedly, the values are lower in the case of certain fibres other than chrysotile, but in all the cases, they remain in the range of the recommended levels.

It is not possible to reach a conclusion as for the relative risk of each product or each tool used at the time of this study. It is necessary to hold account of other factors, mainly the biopersistence of each type of fibre, to evaluate the risk of it. It is however advisable to recall that, in spite of

their presence growing on the market, the majority of fibres other than chrysotile alas is rarely regulated.

Overall, it is possible to ensure of the minimal conditions of exposure to airborne respirable fibres for the workers called to handle fibrocement products. As long as the basic rules that govern their use are followed, these products do not release respirable fibres beyond the recognized standard proposed by the international regulation organizations. The wearing of respiratory protection equipment remains however a recommended precautionary measure.