

THE USE OF CYCLOHEXANE AS A NEW ADHESIVE FOR AIRBORNE POLLEN SAMPLING

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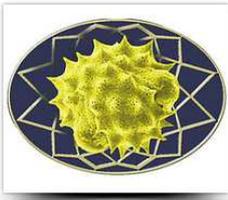
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Carbon Tetrachloride, used as a solvent for the silicone adhesive in airborne pollen sampling, has been recently interdicted by the Registration Evaluation Authorization of Chemicals (REACH) protocol due to its dangerous effects on environment and human health (Manibusan et al. 2007) and it will no longer be produced. Therefore, the need to find a new solvent for the silicon-coating solution is mandatory in order to continue aerobiological research. In a previous study, Thibaudon et al. (2014) concluded that there were no-significant differences between Diethyl Ether and Carbon Tetrachloride and the first can be used as solvent for capturing airborne pollen. The importance of this topic led us to investigate the efficiency of other solvents to use alternatively for the adhesive coating solution. The aim of this preliminary study is to compare the efficiency of airborne pollen grain capture on silicone fluid by using Cyclohexane solvent as an alternative to Carbon Tetrachloride, the solvent used by the Spanish Aerobiology Network (REA). The study was carried out in Malaga (southern Spain), from 16 February to 26 April, 2015 (10 weeks), with the aid of a 7-day Hirst type volumetric trap, located on the roof of the Faculty of Science, 15 m above ground level. For this, the drum was covered by a Melinex tape, coated with silicone adhesive containing two different solvents: one half of the tape with Carbon Tetrachloride and the other half with Cyclohexane, following the methodology previously described by Thibaudon et al. (2015). The position of the two sampling adhesives was reversed from right to left every week. The counting method consisted of 2 continuous horizontal sweeps per each half of the tape (Galán et al., 2007). The results obtained, expressed as number of pollen grains/m³, will be statistically analyzed in order to detect possible differences, if any. Finally, the results, regarding total pollen as well as the different pollen types, separately, will be presented in order to propose or not Cyclohexane as an alternative solvent to Diethyl Ether and Carbon Tetrachloride, more dangerous substances from a toxic point of view (Toxicology Data Network, TOXNET, <http://toxnet.nlm.nih.gov/>).

References:

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