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IDENTIFICATION OF CHRYSOTILE IN BRAKE PADS AND LININGS FROM MALAYSIAN VEHICLES AND HEAVY VEHICLES BY USING POLARIZED LIGHT MICROSCOPE (PLM)

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Personal exposures to asbestos fibers during brake maintenance of passenger vehicles

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Abstract


Exposure to types of asbestos such as chrysotile and crocidolite increases respiratory disease risks such as lung cancer, mesothelioma, and asbestosis. Nevertheless, asbestos products banning in Malaysia is only limited to crocidolite as per stated in OSHA (Prohibition of Use of Substance) Order 1999, though other types are highly suspected to be found in asbestos-containing materials (ACM) like brake pads and linings. This study ascertains the presence of asbestos fibres, particularly chrysotile, in brake pads and linings used in Malaysia's vehicle and heavy vehicle sector. Seven different brake pads; three from vehicle brands, and four from heavy vehicle brands were collected by bulk sampling approaches from the market and field. Dust fibres were extracted using slow grinding method and analysed under Polarized Light Microscope (PLM). The fibre characteristics such as colour, morphology, pleochroism, extinction, and dispersion staining technique were examined, referring the National Institute for Occupational Safety and Health (NIOSH) Manual of Analytical Methods (NMAM) 9002. Additionally, the observed samples also were verified by an accredited lab to support the authenticity of the outcome. From the analysis and lab results, chrysotile fibres were consistently detected in all brake pad samples, fulfilling the fibre characteristics and positive elongation signs. © 2023@ Penerbit UTM Press. All rights reserved.

Author keywords

Asbestos; brake lining; brake pad; chrysotile; polarized Light microscope (PLM)

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