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Editorial

Importance of Colour Vision Assessment in Workers Exposed to Organic Solvents

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The use of organic solvents in developing countries has been wide spread in the last century [1]. Organic solvents are used in different industrial processes and are sometimes considering important supplies in order to obtain more benefit in any type of manufacturer business, due to they can be reused [2]. Organic solvents are commonly used in the dry cleaning industry, because relatively stable and used for extraction, dissolving or suspending materials not soluble in water [3]. They are used instead of water because they dissolve oils and fats, which are not water-soluble, do not swell natural fibers as does water, are not expensive, and can be used more than once in the dry cleaning process [4]. The most common solvents used in the dry cleaning industry have been chlorinate solvents [5]. Chlorinate solvents are divided into three categories based upon common structural characteristics: chlorinated methanes, chlorinated ethanes and chlorinated ethenes [6]. Clorinate methanes were the first substances used in dry cleaning but due to its highly toxic characteristics, they were substituted. Clorinated ethanes were abolished by the Montreal Protocol (1987) [7], which considered it an ozone destructive substance and toxic to humans. Clorinate ethenes are the substances that nowadays are still in use in some developing countries [1], these are the perchloroethylene (PERC) and the trichlorotehylene or trichloroethene [8]. These solvents has been considered by some international organizations as hazardous substances for the central nervous system (CNS) [9,10]. Due to the eye is part of the CNS changes in its structure and function could happen [11]. For example, these substances could affect colour vision [12]; however, the mechanism for color vision loss in workers exposed to organic solvents remains unclear. A large group of studies has been reported a significant impairment in colour vision caused by PERC exposure and the majority of them reported that the main changes are in the blue-yellow axis [12-14]. Jiménez (2014) reported after a study conducted in a developing country (Colombia) that the best test that discriminates between non-dry cleaners and dry cleaners is the FM Hue 100 test (a colour vision test) [15-17]. Because it provides excellent sensitivity (97%) and excellent specificity (87%). This finding suggests that the FM Hue 100 should be considered as screening visual test to characterise if a population presents with neurotoxicity of the visual system or not. The introduction of this test in the battery test to assess neurotoxicity would be valuable, because it would provide information regarding low-level visual function that is clearly affected by organic solvents. Moreover, the early assessment of this test would help in the prevention of neurotoxicity caused by organic solvents.

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