

Red-Alarm against Fibers Concentration of Asbestos in Atmospheric Urban Area of Tehran Capital of Iran

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Asbestos is the natural silicate minerals with attractive physical properties such as; resistant to fire, electrical and chemical solvents. It composes of six types of materials include; Serpentine group; Chrysotile, Amphibole groups; amosite (Brown), Crocidolite (Blue) and other materials. It is popular for low cost favorable properties. All the six types have asbestiform fiber crystal, and can induce carcinogen in human. It was generally used during the boom of the industrial revolution since 1866, and the first publish of the unhealthy effect of asbestos reported nearly 30 years after industrial usage since 1899. The most common usage types of asbestos consist of chrysotile and the crocidolite. All the current types widely use in the building structures, brake pads (1) and clutch disc (2).

Daily inhalation of asbestos occurs in the

ambient air of cities which associated with poor air quality control. This event leads to generation of asbestosis disease (3), cancer development and mortality (4) and morbidity among at-risk population, such as asbestos –exposed workers (5), non-occupational subjects, people who living in the asbestos fibers exposed environment (6).

Long time exposure with asbestos leads to the development of chronic lung disease. It can be developed as occupational and non-occupational conditions (7, 8). Mesothelioma and lung cancer are the known causes of the asbestos exposure (9). In addition, it produces risk development of esophageal gastric, colorectal cancer (10) and head and neck squamous cell carcinoma (11). Children also are at risk of cancer by asbestos inhalation (12). The accepted threshold for asbestos is 100 fiber/liter that measured by phase-contrast optical microscopy (PCM) (13). There is a direct relationship between high level of asbestos in air and lung cancer (14).

The first use of asbestos in Iran returns to World War II during the foundation of railroad and beginning product of cement

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manufacture in 1958 (15). Meanwhile, asbestos is producing up to 55000 tones cement in Iran annually, and near the 94% of produced cement that used in our country. The current output predominantly detected in the manufacture of building material (16), as pipe in the water delivery network (5000 Kilometer), brake pads (17) and pad shoes (15, 18). The most common types of asbestos observed in the ambient urban area of Tehran, including; Chrysotil (60%), tremolite (10%), antophylline (10%) (19). The rate of asbestos in air of Tehran- Iran was 68 times higher in the USA in 2009 (19). Our ministry of health in 2013 reported that the asbestos levels in the Tehran was 50-100 times more than the standard definition of the world (20). It seems that the deadline of depreciating has been finalized to the issue of asbestos fibers in our atmospheric cities. It requires a national decision, though the creating practice planes in reducing the level of usage and replacement that with safe materials.

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