

## OCCUPATIONAL EXPOSURE EVALUATION OF WORKERS OF PORTLAND CEMENT INDUSTRY IN URUGUAY

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Portland cement is a light gray or white powder used as a building material in the production of concrete with strong adhesive properties when mixed with water. Employees who work with Portland cement are at risk of developing skin problems, ranging from mild and brief to severe and chronic. Portland cement becomes highly caustic (pH>12) when it is in contact with moisture in eyes or on skin, or when mixed with water, and will damage or burn the eyes or skin. Inhalation may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system or may cause or may aggravate certain lung diseases or conditions. The produced cement is composed of calcium, silicium, aluminium, manganese and ferrous oxides, sulphates and other materials, mostly water. The aim of this work is to evaluate occupational exposure of workers of three Uruguayan Portland cement plants. 46 personal and zone airborne samples were collected in plants 1, 2 and 3 and analyzed to determine occupational exposure. Samples of total and respirable dust were collected according to NIOSH 1 methods 0500 and 0600. 2010 ACGIH TLV'S 2 were considered as reference values being 1 mg/m<sup>3</sup> for respirable Portland cement dust and 10 mg/m<sup>3</sup> for total dust (PNOS 3). It was also considered 50 % of the TLV value as action level. We found that in Plant 1: 50 % of the samples were above the TLV value and 25 % exceeded the action level. In Plant 2: 43 % > TLV and 21% > action level. In Plant 3: 38 % > TLV and 8 % > action level. We discuss the reasons we observed that could lead to these results and conclude that there is a need of improving working conditions. Important measures should be taken to prevent occupational exposure including recommendations for the workers involved and the authorities of the industry. Meanwhile we emphasize that at some workplaces PPE4 should be used: 1) NIOSH: National Institute of Occupational Safety and Health; 2) ACGIH TLV'S: American Conference of Governmental Industrial Hygienists- Threshold Limit Values; 3) PNOS: Particulate Not Otherwise Specified; 4) PPE: Personal Protection Equipment.

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