

## **Broncho-pulmonary ailments caused by dusts from sintered metals**

### **Definition of causal agent**

Hard metal is a synthetic material of great hardness based on tungsten carbide. It is manufactured by blending tungsten with carbon in a furnace and mixing it with 3-25% cobalt – sometimes nickel - in a ball mill; other constituents – chromium, titanium, tantalum, vanadium, niobium etc – may be added at this stage. The powdered mixture is pressed and then fused ('sintered') at high temperature.

### **Main occupational uses and sources of exposure:**

Production of hard metals; production of hard metal tools; cutting, drilling, grinding or polishing operations with hard-metal tools.

### **Toxic or irritant effects**

#### **☐ Acute respiratory**

- rhinitis
- bronchial irritation
- asthma

*Minimum intensity of exposure:* >0.05 mg.m<sup>-3</sup> cobalt dust/fume

*Minimum duration of exposure:* immediate for acute effects:  
1 month for asthma

*Maximum latent period:* 1 month

#### **☐ Chronic pulmonary**

- (partially) reversible pulmonary fibrosis
- hard metal disease: progressive, interstitial pulmonary fibrosis, characterised by giant cells in bronchial biopsy or broncho-alveolar lavage.

*Minimum intensity of exposure:* >0.05 mg.m<sup>-3</sup> cobalt dust/fume

*Minimum duration of exposure:* 1 year

*Maximum latent period:* 10 years

#### **☐ Lung cancer**

Several reports addressing cancer risks among workers in hard-metal production facilities provide evidence of an increased lung cancer risk related to exposure to hard-metal dust. There is thus limited evidence and in humans - and in experimental animals - for the carcinogenicity of metal alloys containing cobalt with tungsten carbide.