

THE FACTS GENERATION OF PROCESS GENERATED CARCINOGENS UPON ABRASION



Most hazardous substances are labelled and identified, but there are also carcinogens created as a by-product during a work process, so called process-generated carcinogens (PGCs). As PGCs are usually not labelled and not referred to in Safety Data Sheets, these PGCs need special attention in OSH practice because millions of worker's in Europe are daily exposed to PGCs. One of the processes that emits PGCs is abrasion. Abrasion is the eroding of material by the side-to-side movement of surfaces. Upon abrasion there is actual damage of material, and in many cases lead to the release of abrasive dust. In occupational settings, abrasive dust is formed during for example sawing hard wood / metal or drilling in concrete. The abrasive dust may contain carcinogenic substances and is easily inhaled if elimination and control strategies are not applied.

Which activities lead to abrasion?

Abrasion may be caused by a number of different processes, such as cutting, drilling, sanding, blasting, planing, grinding, milling, sawing and crushing of material. Carcinogenic substances can be present in the abrasive dust which is released during these activities, then be inhaled and cause health effects. Also, sweeping dust after abrasive activities may lead to exposure.

Where risks occur

Workers exposed are: abrasive blasting workers, brick, concrete or tile manufacturing operators, bricklayers, ceramics and pottery workers, concrete workers, crushing and grinding operators, sander operators, press operators in the wood products industry, lathe operators, construction workers and carpenters. Industries where exposure frequently occurs are construction, the furniture industry and the forestry and carpentry industries.

How many workers are exposed?

The most well-known carcinogenic substances released upon abrasion are respirable silica (quartz) dust and hardwood dust, of which the exposure numbers in Europe are estimated on 5 and 3 million workers, respectively.

Health effects

When workers inhale hardwood dust, it is deposited in the nose, throat and lower airways. Exposure to hardwood dust can cause respiratory diseases, eye irritation, skin diseases and in case of prolonged exposure cancer.

When workers inhale crystalline silica, the lung tissue reacts by developing fibrotic nodules and scarring around the silica particles. It is unclear how silica dust exactly causes lung cancer.

For detailed information about health effects for specific carcinogenic metals and materials, please go to the factsheets for individual substances on the website of [Roadmap on Carcinogens: Silica dust, Chromium VI, Hardwood dust](http://www.dustfreeworking.tno.nl).

What to do?

Abrasive dusts are usually not considered to be hazardous for human health, so extra attention shall be paid to awareness of these substances and measures to mitigate the exposure. Like for any other chemical substance, exposure can be drastically decreased by using dust control tools such as dust extractors, eccentric sanders, hammers with integrated extractors or wetting systems to minimize emission of abrasive dust. Removing the abrasive dust as close as possible to the source (by wetting or local exhaust ventilation) is essential to reduce exposure of the worker and also to minimize the contamination of the workroom to avoid resuspension of abrasive dust. A variety of dust extractors are present at www.dustfreeworking.tno.nl. Good practices and solutions are available on the website of [Roadmap on Carcinogens](http://www.roadmaponcancer.eu).