

# Dust Reduction on Construction Sites

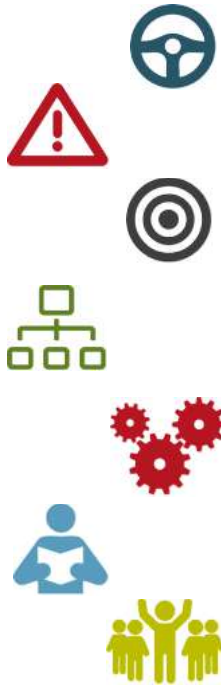
**International Conference Vision Zero in Construction  
Industry**

11<sup>th</sup> September 2019, Soglasie Hall,  
**Moscow**

Dr. Ursula Schies

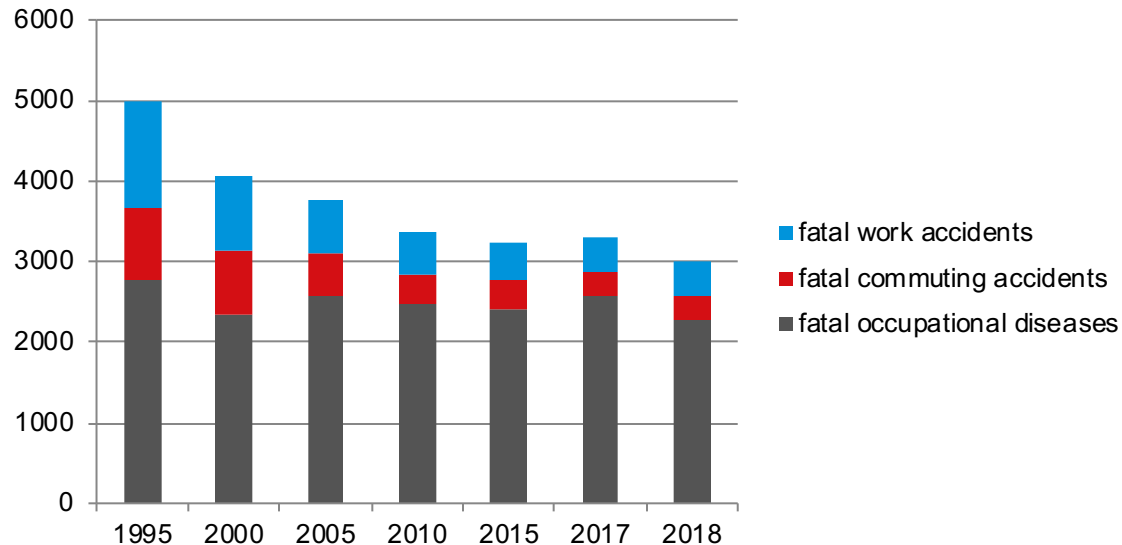
# Vision Zero - 7 Golden Rules

## Silicosis



1. **Take leadership** – demonstrate commitment
2. **Identify hazards** – control risks
3. **Define Targets** – develop programmes
4. **Ensure a safe and healthy system** – be well-organised
5. **Ensure safety and health in machines, equipments and workplaces**
6. **Improve qualifications** – develop competence
7. **Invest in People** – motivate by participation

# Fatal work accidents, fatal commuting accidents and fatal occupational diseases in Germany



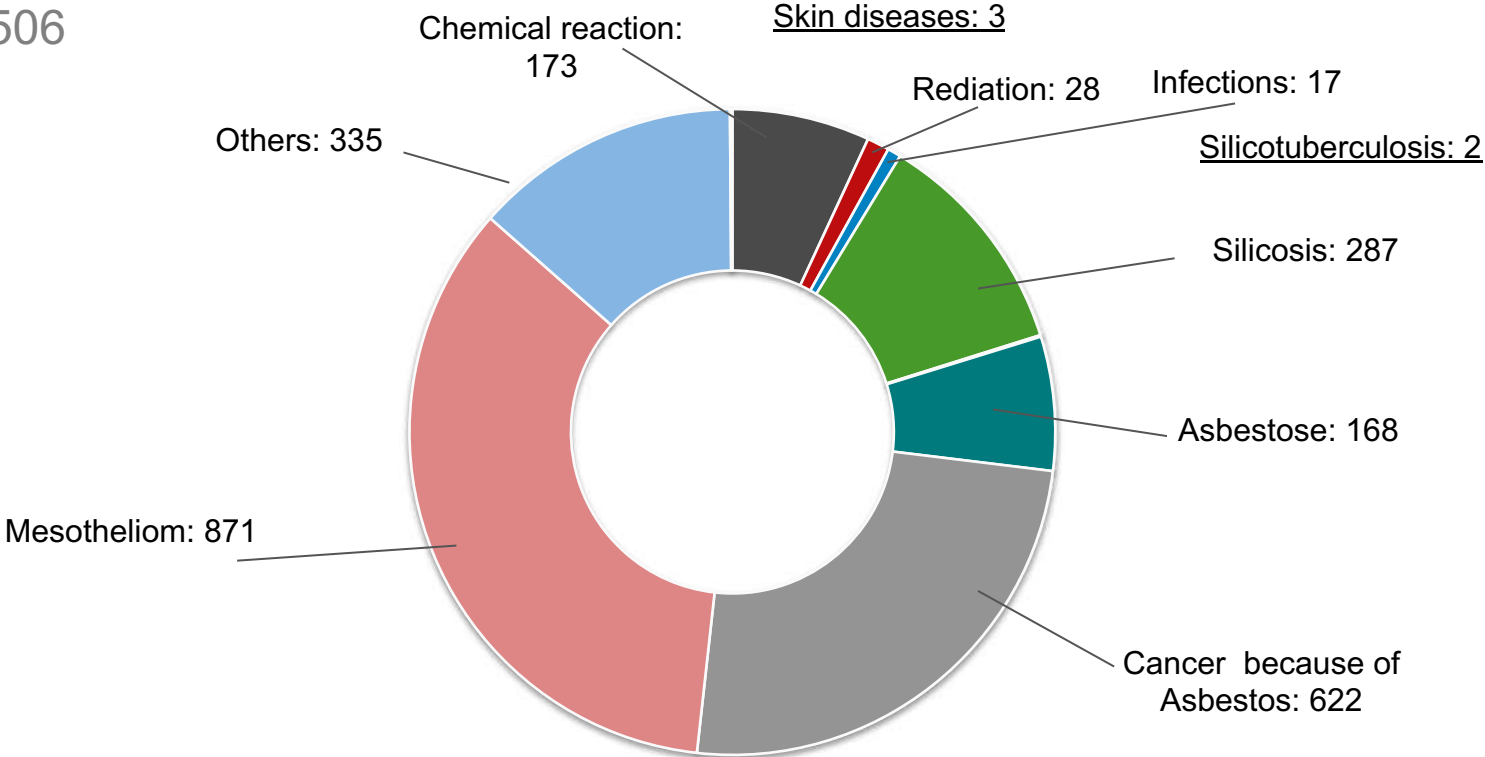
# 2 Identify hazards

control risks



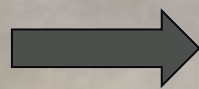
# Fatal occupational diseases in Germany 2016

Total: 2.506





- Dust can lead to irritation of the
  - airways,
  - skin and
  - eyes
- Special kind of dusts may even cause cancer



# Dust-intensive working areas

A pair of blue denim jeans is hanging on a metal railing. The jeans are heavily covered in a fine, grey dust, particularly on the pockets and the lower half. The background is a dark, textured surface, possibly a wall or ceiling, also appearing dusty. The overall scene suggests a construction or renovation site where dust is a significant concern.

- Renovation and demolition work
- Chiselling work
- Drilling
- Plastering

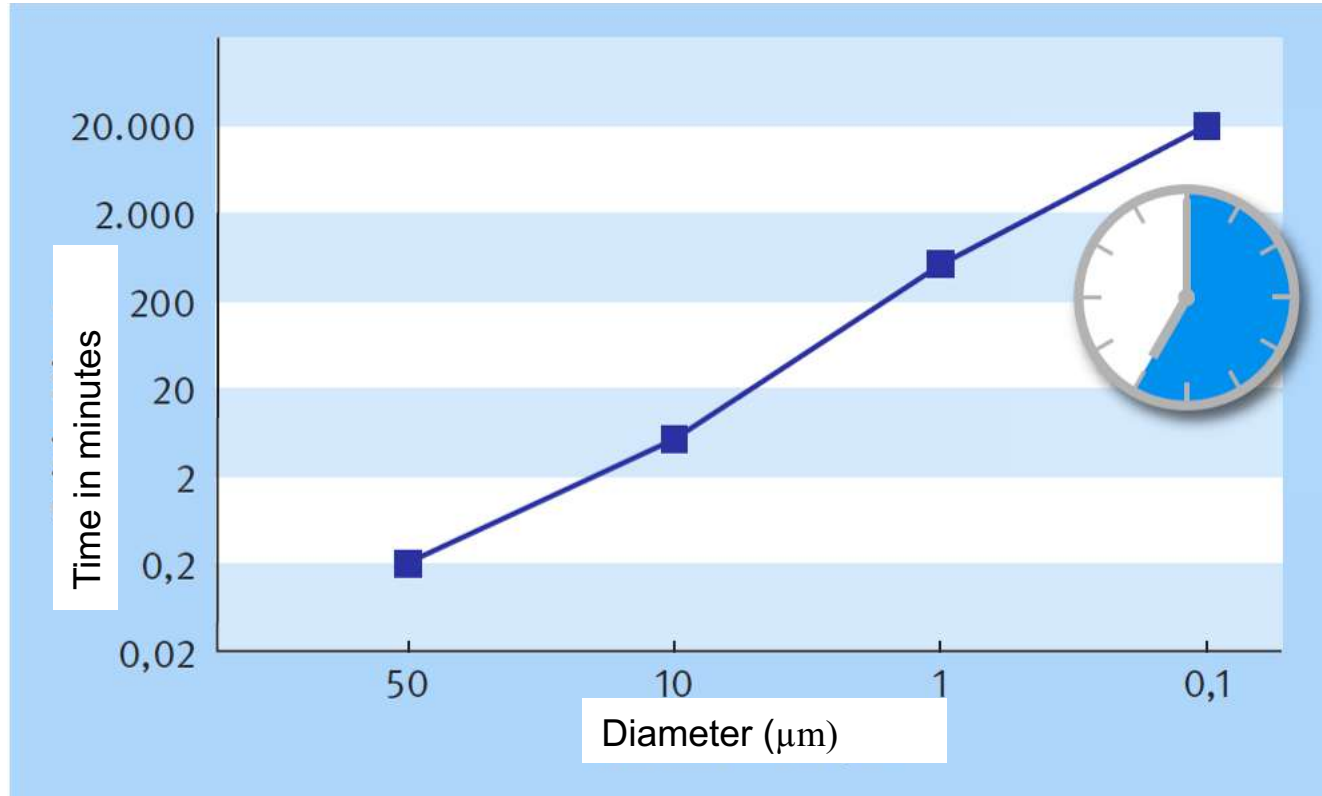


# Dust-intensive working areas

A pair of blue denim work pants is hanging on a metal ladder. The pants are heavily covered in a fine, grey dust, particularly on the pockets and the lower legs. The background is dark and hazy, suggesting a dusty or smoky work environment. A green hose is visible in the lower left foreground.

- Mixing of dry mortar
- Recycling plants
- Blasting work
- Cleaning
- Tunnel construction

# Time that dust partikles need to drop one meter



# 3 Define targets develop programmes



- Since 01.10.2001 so called “Arbeitsplatzgrenzwerte (AGW)”:  
\_\_\_\_\_
- A – Staub 1,25 mg/m<sup>3</sup>
- („particulate matter“, alveolar dust)
- E – Staub 10 mg/m<sup>3</sup>
- (inhalable dust)

- **Mineral dust is to be considered as quartz containing, as soon as quartz is detected.**
- **This contains nearly all dusts found on construction sites.**
- **Almost all activities with mineral dust are cancerogenic.**

# Limit value for quartz dust

so called assessment standard **since 2016** :

***0,05 mg/m<sup>3</sup>***

# 4 Ensure a safe and healthy system be well-organized



# Protective measures: rule of precedence

- **Substitution:**  
substitute the hazard substance or change the working method.
- **Technical measures**  
e.g. suction, moisten
- **Organisational measures**  
e.g. minimize amount of workers on the site, hygienic measures
- **Personal protective measures**



# 8 rules to shelter from dust

## 1. Use low-dust materials

Instead of mixing powdery materials or granulates select ready mixed mortar

## Substitution: Low-dust products ...

- **dusty**



**tile cement**

**low-dust**

**while opening**

**while distributing**

**when mixing**



# 8 rules to shelter from dust

## 1. Use low-dust materials

Instead of mixing powdery materials or granulates select ready mixed mortar

## 2. Use low-dust procedures

If possible use moist or wet methods

## 3. Suck the dust immediately at the place of origin

Use only certified machines (grinder, angle grinder, plaster milling cutters, slit miller)

## 4. Ventilate working areas sufficiently

Exhaust air should be filtered at high dust concentrations



# 8 rules to shelter from dust

- 5. Check and maintain regularly all machines and devices for dust collection!**

Control performance of ventilators and filters

- 6. Knock down dust with water**

especially at demolition sites

- 7. Clean up regularly all working areas and rooms**

Use only vacuum cleaners or air sweepers, do not sweep with a broom or blow

- 8. Prevent stirring up the dust or spreading of the dust**

Deposited dust or debris should be removed immediately

# 5 Ensure safety and health in machines, equipment and workplaces





**Mauernutfräsen**

- Positivliste
- Information



**Betonschleifer**

- Positivliste
- Information



**Putzfräsen**

- Positivliste
- Information



**Trennschleifer**

- Positivliste
- Information



**Stockmaschinen**

- Positivliste
- Information



**Betonfräsen**

- Positivliste
- Information



**Schwingschleifer**

- Positivliste
- Information



**Exzenterschleifer**

- Positivliste
- Information



**Diamantbohrgeräte**

- Positivliste
- Information



**Abbruchhammer**

- Positivliste
- Information



**Bohrhammer**

- Positivliste
- Information

## BG BAU: GISBAU

[www.gisbau.de](http://www.gisbau.de)

<https://www.bgbau.de/themen/sicherheit-und-gesundheit/gefahrstoffe/gisbau/>

## Information for different activities

## Positive list for different machines (only in german language)

# Demolition hammer - suction



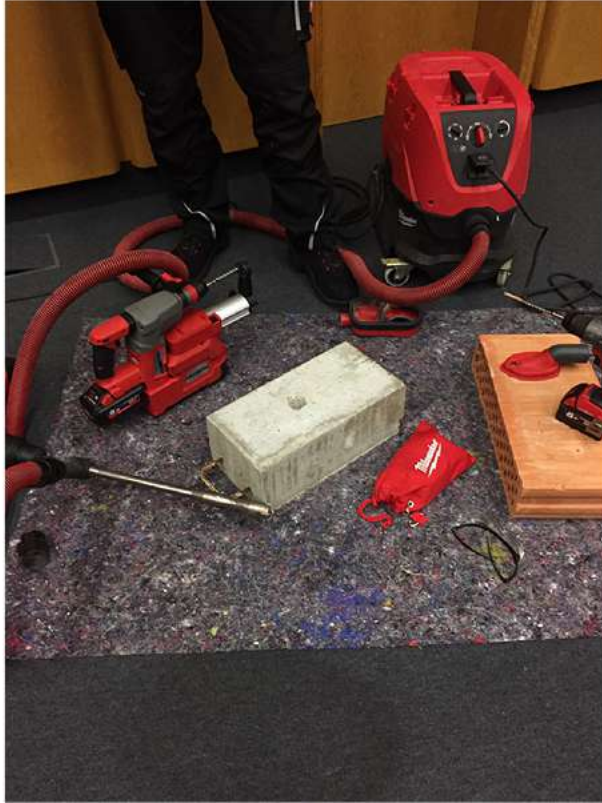
"Advertising films" of  
the BG BAU for  
incentive systems



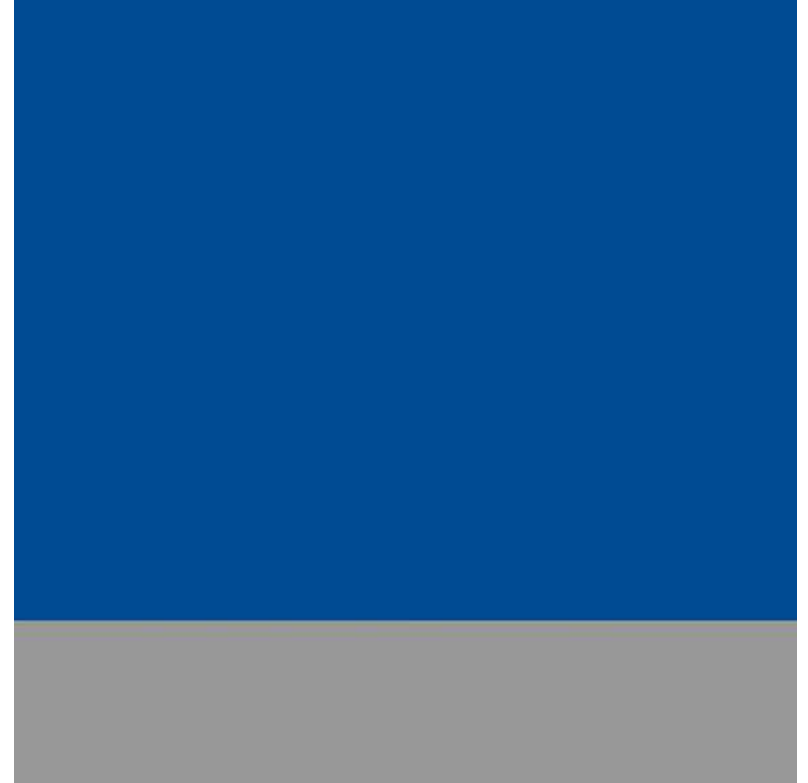
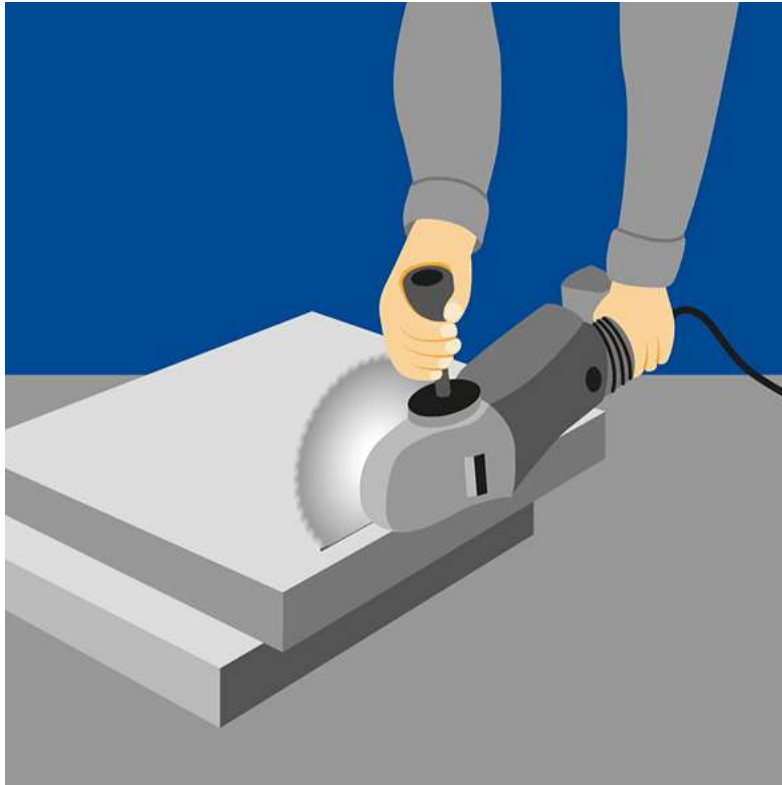
# Suction drill



# Suction drill



# Dust remover



# Dust extractors– filter surfaces



**up to 4 – 5 kg dust in half an hour**

# 6 Improve qualifications develop competence



# Improve Qualifications

## learn to work with low-dust construction techniques

- Starting in autumn 2018 around **60,000 trainees** are to be familiarised with low-dust construction techniques **every year at the start of their working lives**
- **Joint initiative between BG BAU and industry**  
a total of 220 machines and equipment - initially limited to two years - were presented to BG BAU on permanent loan.
- Experts advise and support the trainers as “**OHS-sponsors**” in the approximately **286** inter-company training centres in the construction industry as well as in master schools on occupational safety



# Thank you very much!

contact details:

Dr. Ursula Schies  
BG BAU

[ursula.schies@bgbau.de](mailto:ursula.schies@bgbau.de)

[www.bgbau.de](http://www.bgbau.de); [www.praeventionsforum-plus.info](http://www.praeventionsforum-plus.info)