

Silica Dust in Construction

Final Report on Priority Action 2020 - 2022



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1. Introduction

The annual work plan for labour inspections (Jahresarbeitsplan – JAP) included an Austria-wide advisory and inspection focus on silica dust in construction sites and mining for 2020. This priority action had 2 phases, its beginning being delayed by the COVID-19 pandemic. At the end of the second half of 2022, Phase II (and thus the entire action) was concluded.

The baseline for this priority action was the soaring number of fatal occupational diseases recognised by the General Work Accident Insurance Institution (Allgemeine Unfallversicherungsanstalt – AUVA) in classes BK-26 and BK-27 of occupational diseases (silicosis as well as asbestosis and their sequelae). The number of cases of occupational diseases in recent years was even higher than the number of recognised fatal accidents at work.

In addition, the amendment to the Regulation on carcinogenous substances and limit values (Grenzwertverordnung – GKV, in force as of 03 Sept 2020) reduced the eight-hour time weighted average for the maximum allowable concentration (MAC-TWA) for respirable silica dust at the workplace from 0.15 mg/m³ to 0.05 mg/m³ and classified silica dust as clearly a carcinogen.

This affects in particular workers in surface and underground mining, in the dimension stone industry as well as in earthworks, rock cutting and tunnelling. Operations on construction sites may produce dust (e.g. demolition, cutting, drilling, chiselling, milling, sweeping, etc.). The dusts thus generated are usually mixed dusts. If the worked material contains the mineral quartz, silica dust (silicogenic dust) may develop, which in turn may lead to silicosis (silica dust disease) and may later cause lung cancer.

The objective of this Austria-wide priority action was to improve knowledge about the clearly carcinogenic effect of respirable silica dust as well as to advise employers on possible measures to ensure low-dust (dust-free) operations in construction and mining.

The present final report includes the results of the priority action in construction, while the results for mining are detailed in a separate report.

2. Basic parameters of the priority action

2.1 Legal provisions

In December 2017, silica dust was included in the EU Directive on carcinogenic agents (EU Directive 2017/2398). In accordance with this cancerogenic classification and the resulting 66% reduction of the limit value for respirable dust from 0.15 mg/m³ to 0.05 mg/m³ in Austria, the provisions of the Health and Safety at Work Act (ArbeitnehmerInnenschutzgesetz – ASchG), of the Regulation on carcinogenous substances and limit values (Grenzwerteverordnung – GKV), again amended in 2021, and of the Ordinance on Health Monitoring in the Workplace (Verordnung zur Gesundheitsüberwachung am Arbeitsplatz – VGÜ) are to be met.

2.2 Objectives and contents of Phase I

Phase I was aimed at information and advice to those involved in construction (workers, employers, clients as well as coordinators as defined in the Bauarbeitenkoordinationsgesetz – BauKG or Act on Construction Work Coordination) regarding the obligation to implement the new limit values for silica dust and any related obligations of the parties concerned. This was implemented by focusing on advice and inspection concerning low-dust (dust-free) operations on construction sites.

- Raising awareness of those responsible in construction companies regarding possible risks in the context of processes where silica dust is released,
- Implementing technical protection measures to reduce dust and highlighting the benefits of low-dust (dust-free) operations,
- Networking between employers, workers, clients and coordinators (according to BauKG) to find solutions for silica dust in the preparatory stages of construction work,
- Preventing occupational diseases caused by respirable silica dust by means of technical measures of dust avoidance

were the objectives defined.

It was at the discretion of labour inspectorates to select the companies and construction sites to be visited, the target group being small- and medium-sized companies of the construction sector. In line with the questions raised, on-site operations were to be chosen where, as a rule, exposure to silica dust was to be expected. Advice was to be provided both at the headquarters and the construction site of these companies or in any other suitable form.

In Phase I of the JAP a total of 1668 companies involved in construction operations were counselled on silica dust during site controls

2.3 Objectives and contents of Phase II

The main objective of Phase II was to check the effect of Phase I advisory activities by focusing on follow-up inspections. This follow-up focus in Phase II was supplemented (as in Phase I) by advice. For this purpose roughly 15% of the companies counselled in Phase I were to be visited in Phase II. The labour inspectorates decided for themselves which of the parties involved in Phase I (construction workers, employers, clients, coordinators) were to be revisited for advisory inspection in Phase II. Advisory inspection took place on the construction site.

A total of 295 parties involved in construction was inspected in Phase II, which corresponds to 18% from Phase I.

2.4 Period of implementation

Phase I of the advisory and inspection focus lasted from the end of March till the end of November 2021 followed by Phase II, which was concluded at the end of the first half of 2022

2.5 Target group of the advisory and inspection focus

The target group for the 'silica dust' item in the JAP included small- and medium-sized companies of the construction and construction-related industry. Consequently, the results represent the essence of these companies' current approach.

3. Method of data collection

The priority action was implemented based on a questionnaire containing five closed questions. Below the background to these questions and the related response options will be explained.

3.1 Questions and response options

Question 1:

Do you know that silica dust is classified as clearly a carcinogen and that therefore it is an agent that poses a risk to human health?

Question 1 addressed the extent of awareness on construction sites regarding the fact that many on-site working methods generate silica dust, and that the inhalation of, specifically, respirable silica dust may cause harm to the lung.

Response options: Yes, No

Question 2:

Does your company carry out operations where workers come in contact with air that contains silica dust?

Question 2 was used to determine whether people know that work (such as grinding, cutting, sawing, drilling, milling, etc.) with agents that contain quartz results in the release of silica dust.

Response options: Yes, No

Question 3:

Does your company have technical measures in place to minimise dust?

Questions 3 was meant to clarify whether at the time of inspection the company carried out activities where dust (inert suspended solids as defined in § 5 GKV) and/or silica dust was released and whether remedial technical measures were taken.

Response options: Yes, No

Question 4:

Are the adopted measures suited to consistently subceed the limit values for dust and, more specifically, silica dust?

Proof of not exceeding the limit values may be provided in several ways. One of the approaches is to apply the 'industry solution – minimising silica dust in construction' blueprint. This is a list of on-site activities where, typically, dust develops as well as a description of working methods which can be used to reduce the amount of dust and/or avoid dust (and thus the amount of silica dust). The activities and working methods are hierarchically subdivided in 4 categories according to the STOP principle (1 substitution, 2 technical, 3 organisation, 4 personal [protective equipment] measures). If the company used 'good practice' (meaning the second highest protection measure within the 4 categories) and ensured that it stayed below the limit values, question 4 was to be answered with Yes. Subceedance of limit values can also be illustrated by comparison measurements of limit values as defined in § 28 of the Regulation on carcinogenous substances and limit values (GKV).

The eight-hour time weighted average can also be met without any dust-reducing measures. Since no short-time value is available for silica dust, any short-time exceedances of the limit value of 0.05 mg/m³ MAC are permissible within an eight-hour time weighted average (TWA). Proof of compliance could be provided by identifying and assessing the risks or, again, by carrying out comparison measurements of limit values. If no technical measures were taken, while the TWA was met, the question was to be answered with Not Necessary.

Response options: Yes, No, Not Necessary

Question 5:

Does the safety and health plan (Sicherheits- und Gesundheitsschutzplan – SiGe) according to § 7 BauKG include measures against the hazardous agent of silica dust?

Question 5 could only be answered if a safety and health plan (SiGe plan) was available on site. The SiGe plan was to include (according to § 7 BauKG) measures against the specific risk of silica dust as set out in § 7 (3) no. 2 BauKG.

Response options: Yes, Partially, No, No SiGe Plan Available

3.2 Explanation of response options

Questions 1 to 3 are Yes/No classifications, meaning that only Yes or No answers are admissible. Questions 4 and 5 permit further responses in addition to Yes and No.

- Yes: if the respondent can clearly answer the respective question in the affirmative. Yes for Question 1 would mean that the respondent is aware of silica being defined as clearly a carcinogen and, consequently, of it being an agent that is hazardous to health.
- No: if the respondent can clearly answer the respective question in the negative. No for Question 2 would mean that respondents can exclude for their companies any activities where workers come in contact with air that contains silica dust.
- N/A: no assessment made. Choice of this answer may be due to various reasons, which were not specified by the respondents in most cases. If plausible reasons can be identified, they are quoted in the response to the related question.
- Not necessary: only relevant for Question 4. Choice of this response option means that no technical measures against silica dust were adopted. The eight-hour time weighted average, however, was met. This can be explained by the fact that no short-time value is available for silica dust. Even if the limit value of 0.05 mg/m³ MAC is exceeded for a short period of time, the eight-hour time weighted average can still be met. This could be proven by, for instance, identifying and assessing the risks or by conducting comparison measurements of limit values.
- Partially: only relevant for Question 5. Question 5 refers to the safety and health plan (SiGe plan) and whether it includes measures against the hazardous agent of silica dust. If the response was Partially, this means that the issue was addressed but not sufficiently dealt with.
- No SiGe Plan Available: choice of this response option means that no SiGe plan was available on the construction site, or that no such plan was necessary.

3.3 Statistical evaluation

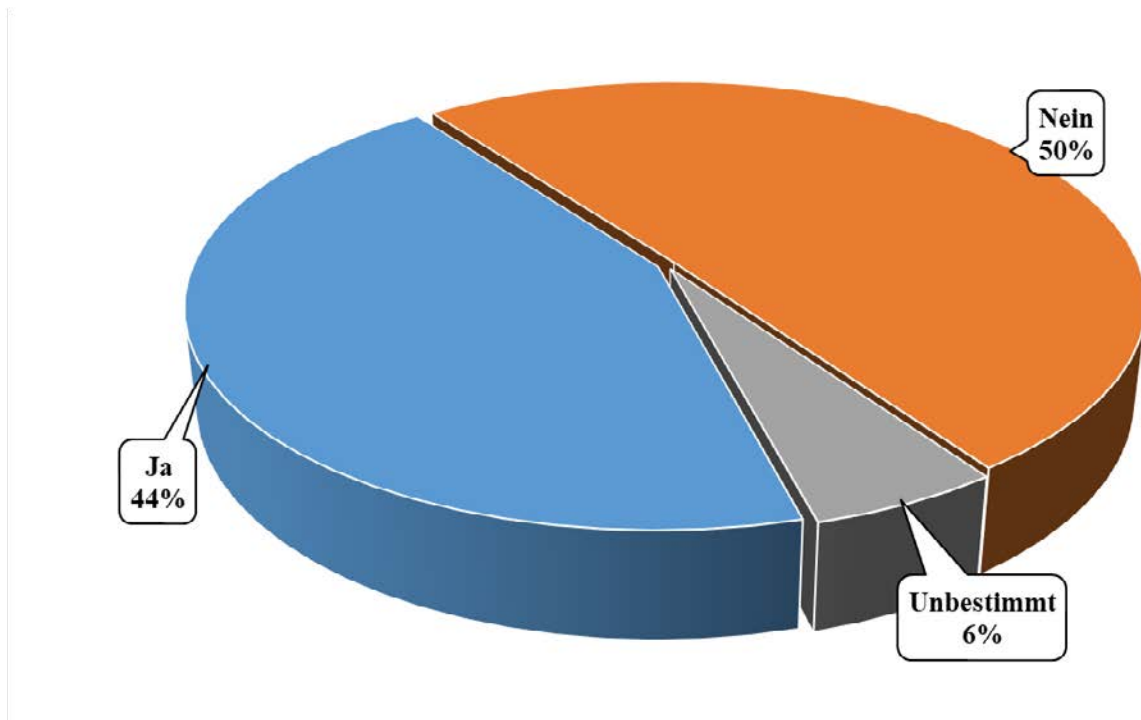
Um eine gute Vergleichsmöglichkeit der beiden Phasen zu erzielen, wurde in Phase II der idente Fragebogen (ebenfalls bestehend aus 5 Fragen) zu Phase I verwendet. In den nachfolgenden Kapiteln (Kapitel 4 bis 6) erfolgt eine separate graphische Darstellung der Ergebnisse der Auswertung von Phase I und Phase II sowie für eine leichtere Vergleichsmöglichkeit eine Gegenüberstellung der Ergebnisse beider Phasen.

4. Results of Phase I

Below you will find the results of the questionnaire of 5 questions.

Question 1:

Do you know that silica dust is classified as clearly a carcinogen and that therefore it is an agent that poses a risk to human health?

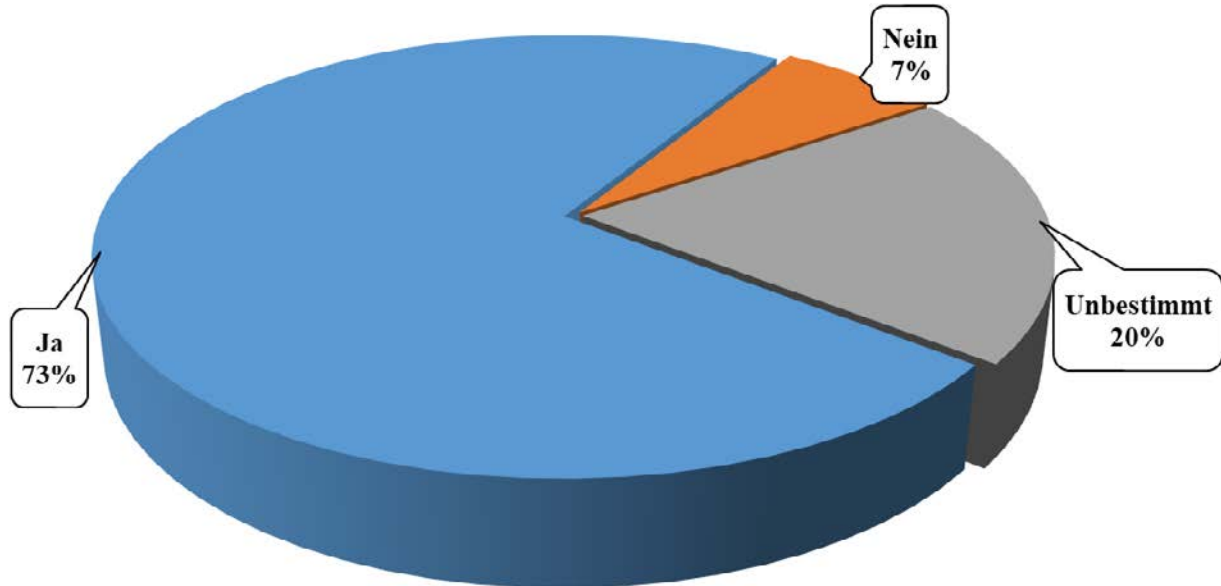


Ja = Yes, Nein = No, Unbestimmt = N/A

The question whether employers know that silica dust is classified as clearly a carcinogen and that therefore it is an agent that poses a risk to human health was answered with Yes by almost half (44%) of the respondents. Respondents thus knew already that silica dust was classified as clearly a carcinogen. One possible reason why half (50%) of the companies did not know the new provisions on this hazardous agent at the time of the survey might be due to the comparatively short period of time that had elapsed between the entry into force of the new legal provisions and the priority action. 6% of the answers could not be assessed.

Question 2:

Does your company carry out operations where workers come in contact with air that contains silica dust?

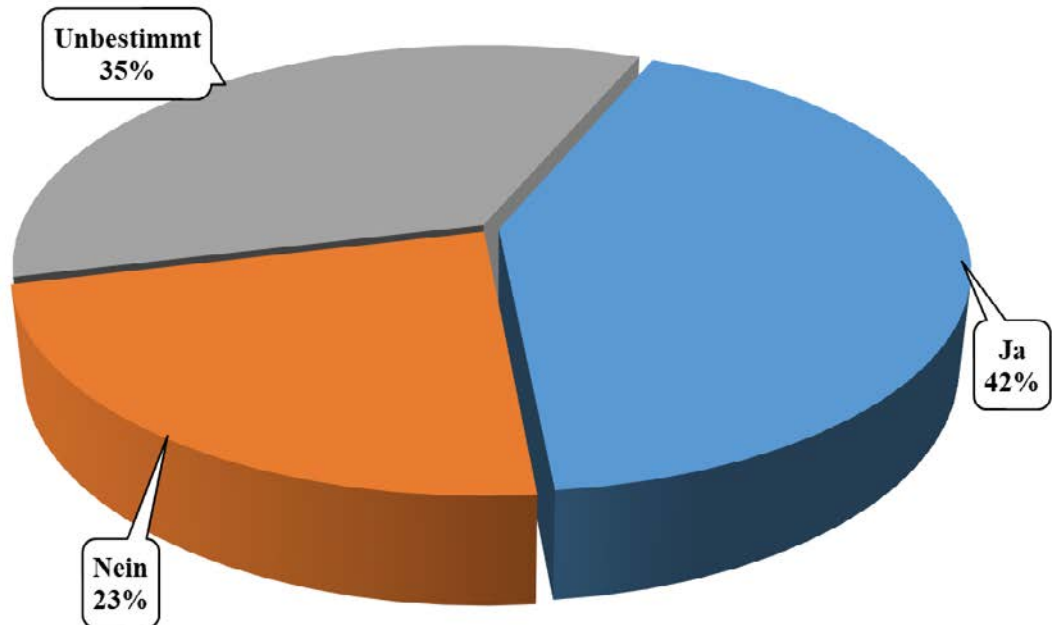


Ja = Yes, Nein = No, Unbestimmt = N/A

Almost 75% of all 1668 respondents stated that their companies carried out activities where workers came into contact with air containing silica dust. 20% were unsure whether the materials they handle or process contained silica dust. Companies still have to do some research to know the composition of the products used and the proportion of quartz in their products and building materials. A small minority of companies (7%) was able to exclude exposure to silica dust.

Question 3:

Does your company have technical measures in place to minimise dust?

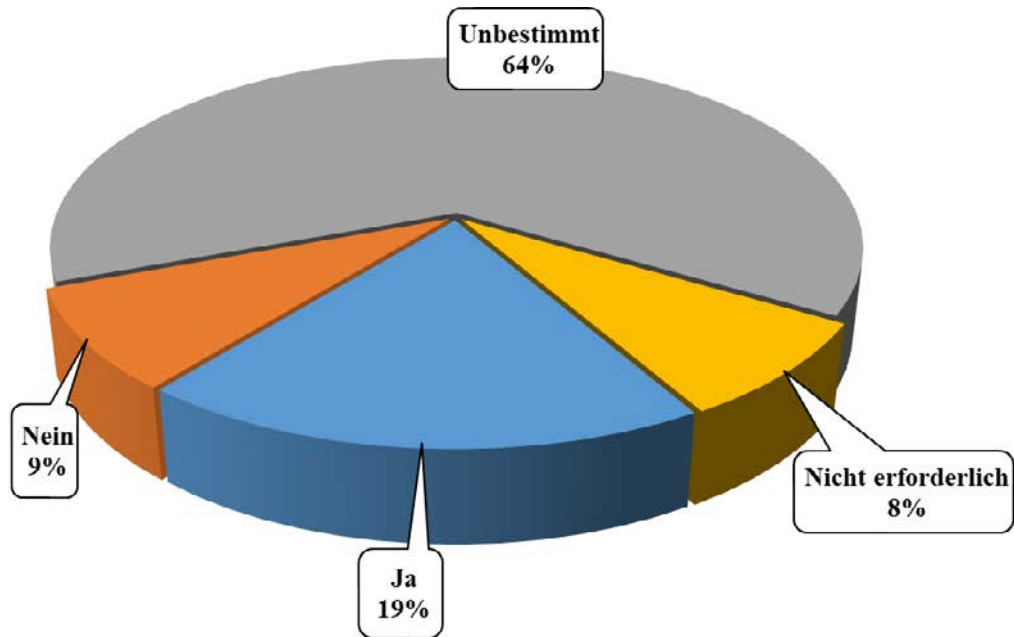


Ja = Yes, Nein = No, Unbestimmt = N/A

42% of the employers answered with Yes when asked whether technical measures to minimise dust have already been implemented in their company. If seen in conjunction with Question 2, where 73% stated they knew of exposure to silica dust, it becomes evident that most of those companies that know about silica dust being present in their work processes already use technical measures to reduce dust. 23% answered with No, while the percentage of N/A answers was 35%.

Question 4:

Are the adopted measures suited to consistently subceed the limit values for dust and, more specifically, silica dust?



Ja = Yes, Nein = No, Unbestimmt = N/A, Nicht erforderlich = Not Necessary

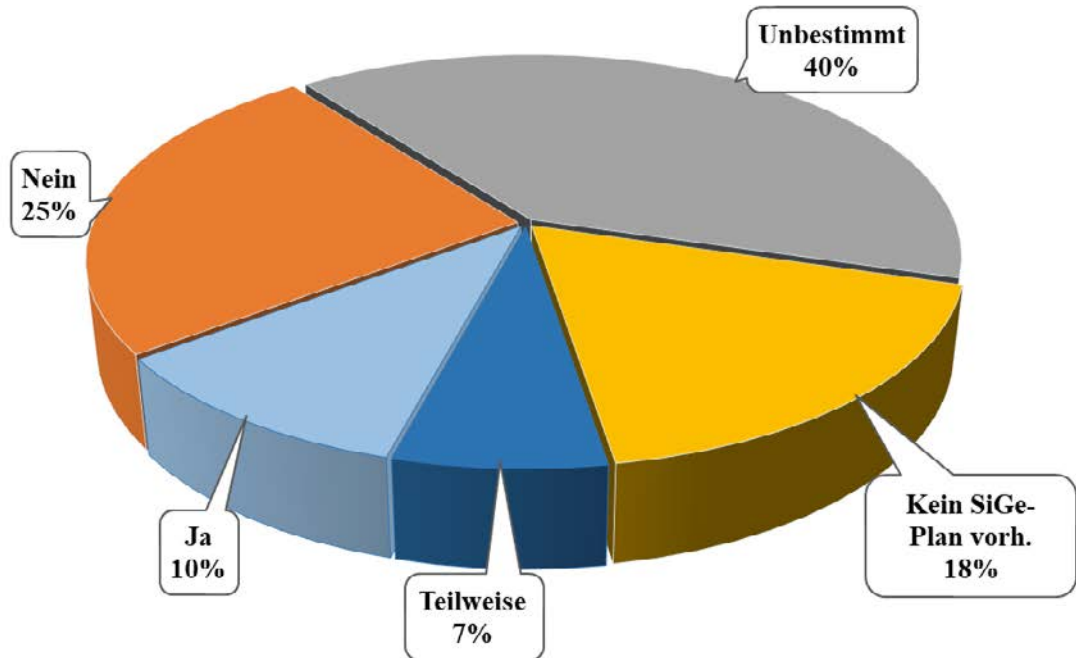
The extent to which the measures taken were effective is illustrated by the correlation between Questions 4 and 3. Roughly half of the employers who implemented technical measures of dust reduction (42% in Question 3) were able to consistently subceed the limit values for dust and, more specifically, silica dust (19% in Question 4), while for 9% of respondents the adopted technical measures had not yet resulted in any subceedance of limit values. A large part of the answers (64% in the chart) was classified as N/A. The reasons for this might be that appropriate measurements of fine particles were still outstanding and/or companies were unable to refer to values of comparable workplaces and activities related to them. There is still a major need for action and research to be undertaken by companies. The required measures include:

- 1) Companies need to carry out more comparison measurements of limit values for activities producing silica dust;
and
- 2) Companies need to enlarge the pool of comparable activities for comparison measurements of limit values.

In respect of this pool of comparable workplaces and related activities to be recorded by limit value comparison measurements, efforts are being made at the European level to merge these data to enable companies to take appropriate technical measures of dust reduction based on an 'industry-wide solution'. But until then employers must ensure that, in addition to the measures already taken, a number of technical, organisational and HR measures are introduced to achieve subceedance of the limit value.

Question 5:

Does the SiGe plan according to § 7 BauKG include measures against the hazardous agent of silica dust?



Ja = Yes, Nein = No, Unbestimmt = N/A, Teilweise = Partially, Kein SiGe-Plan vorh. = No SiGe Plan Availabl

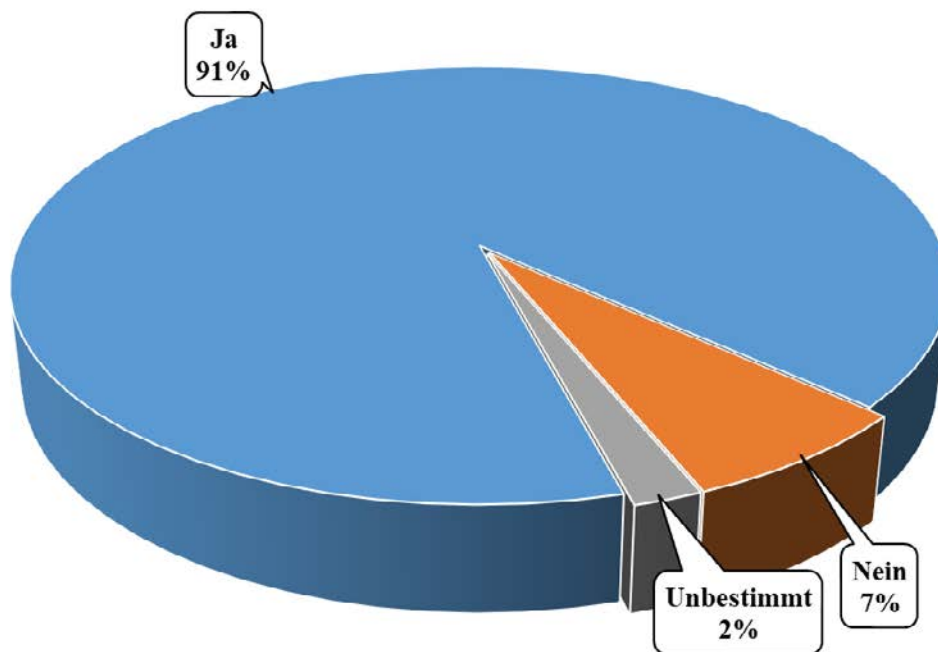
The question whether and to what extent the SiGe plan according to § 7 BauKG includes measures against the hazardous agent of silica dust relates to the coordination duties of clients on construction sites. This question seeks to explore whether knowledge about this hazardous agent is present among clients as well as among safety and health coordinators on the construction site. It should be noted that silica dust has been deemed a hazardous agent for a long time. A novel element is that silica dust has now been classified as cancerogenic and given a lower limit value. Answers to Question 5 show that only 17% of respondents (Yes and Partially added up) have addressed the issue of silica dust in their SiGe plans. One quarter of those who have answered in the negative (No) need to make appropriate adjustments to their SiGe plans. 40% of the chart is made up of N/A answers primarily referring to companies where the data available did not allow clear classification. However, in order to further the positive development and to find more measures against the hazardous agent of silica dust in the SiGe plans, the level of information and awareness among clients regarding this issue must be improved.

5. Results of Phase II

Below you will find the results of the questionnaire of 5 questions, which are identical with the questions used in Phase I. In Phase II of the JAP, a total 295 parties involved in construction operations (roughly 18% of Phase I) were given advice on silica dust during inspections of their construction sites. These were primarily companies already counselled in Phase I.

Question 1:

Do you know that silica dust is classified as clearly a carcinogen and that therefore it is an agent that poses a risk to human health?

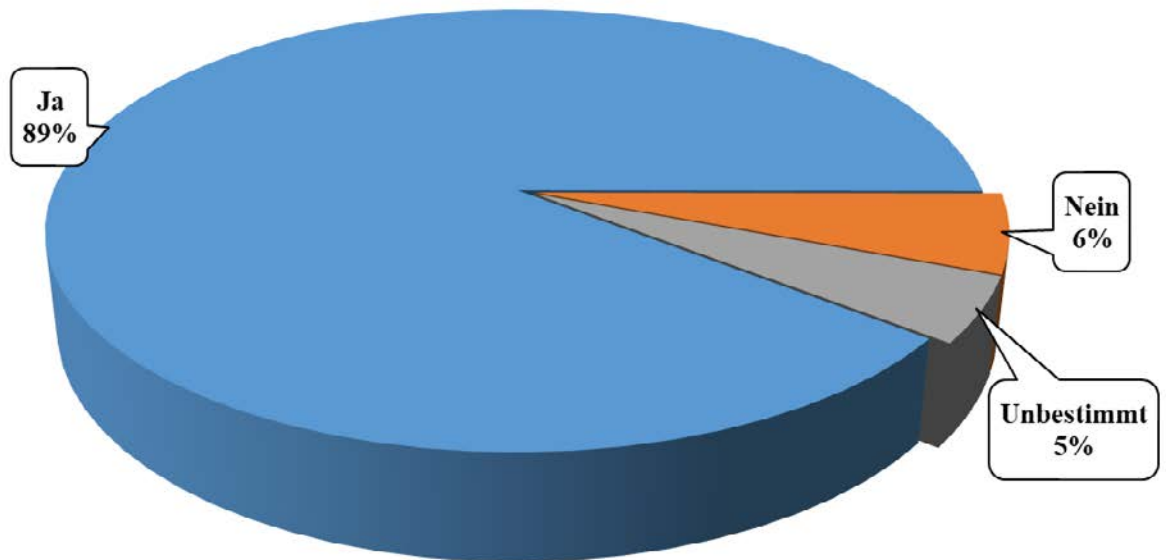


Ja = Yes, Nein = No, Unbestimmt = N/A

The question whether employers know that silica dust is classified as clearly a carcinogen and that therefore it is an agent that poses a risk to human health was answered with Yes by a majority (91%) of the respondents in Phase II of the priority action. 7% of the answers to Question 1 was No, 2% could not be assessed.

Question 2:

Does your company carry out operations where workers come in contact with air that contains silica dust?

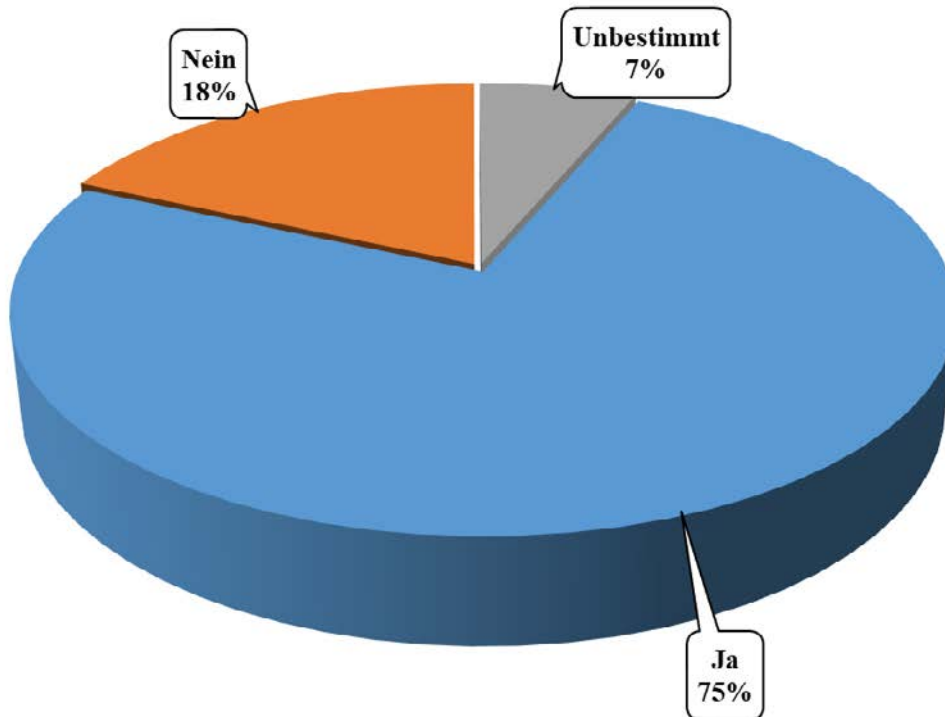


Ja = Yes, Nein = No, Unbestimmt = N/A

Almost 90% of all 295 respondents stated that their companies carried out activities where workers came into contact with air containing silica dust. 5% were unsure whether the materials they handle or process contained silica dust. A small minority of companies (6%) was able to exclude exposure to silica dust.

Question 3:

Does your company have technical measures in place to minimise dust?

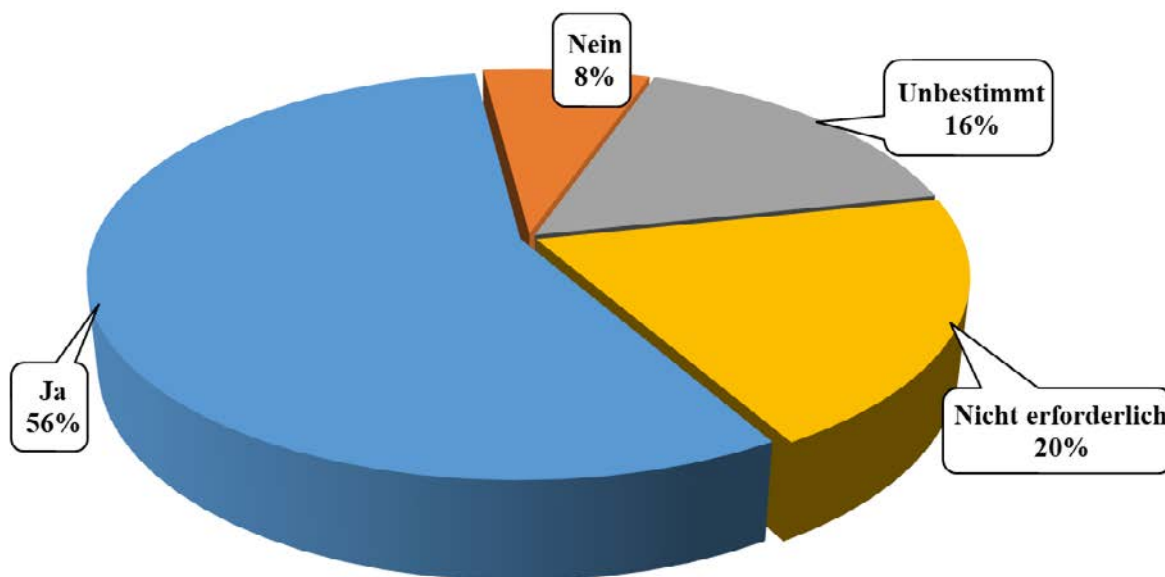


Ja = Yes, Nein = No, Unbestimmt = N/A

75% of the employers answered with Yes when asked whether technical measures to minimise dust have already been implemented in their company. If seen in conjunction with Question 2, where 89% stated they knew of exposure to silica dust, it becomes evident that a majority of those companies that know about silica dust being present in their work processes already use technical measures to reduce dust. 18% answered with No, while the percentage of N/A answers was 7%.

Question 4:

Are the adopted measures suited to consistently subceed the limit values for dust and, more specifically, silica dust?

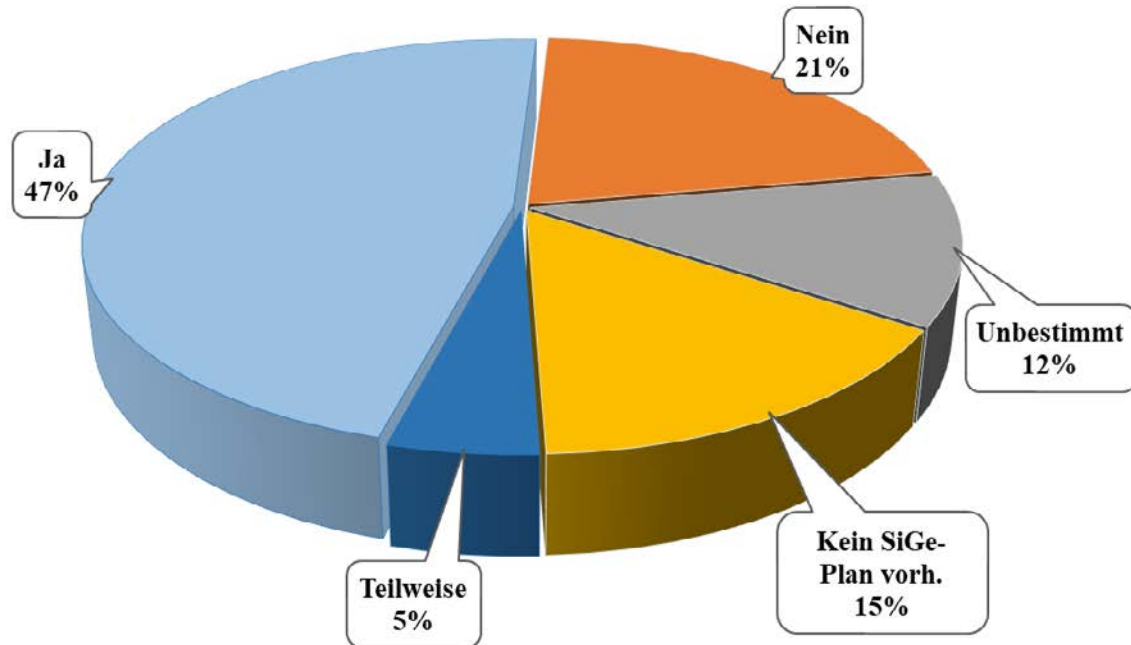


Ja = Yes, Nein = No, Unbestimmt = N/A, Nicht erforderlich = Not Necessary

That the measures taken are effective is illustrated by the correlation between Questions 4 and 3. More than two thirds of the employers who implemented technical measures of dust reduction (75% in Question 3) were able to consistently stay below the limit values for dust and, more specifically, silica dust (56% in Question 4), while for 8% of respondents the adopted technical measures have not yet resulted in any subceedance of limit values. 16% of respondents were unable to answer the question.

Question 5:

Does the SiGe plan according to § 7 BauKG include measures against the hazardous agent of silica dust?



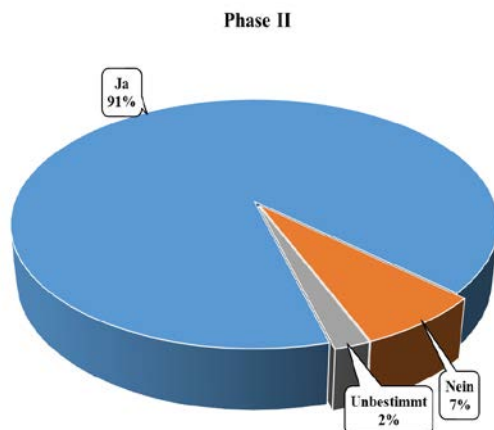
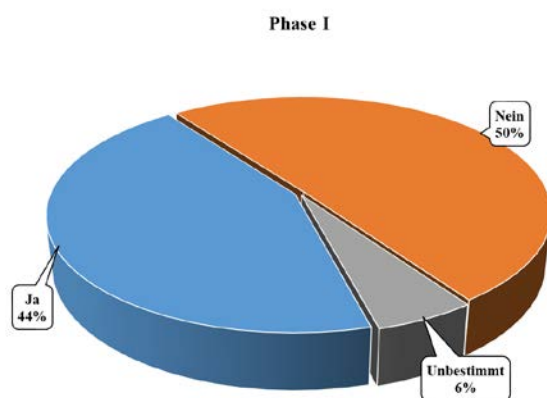
Ja = Yes, Nein = No, Unbestimmt = N/A, Teilweise = Partially, Kein SiGe-Plan vorh. = No SiGe Plan Available

Question 5 seeks to identify whether and to what extent clients as well as health and safety coordinators know about the hazardous agent of silica dust on the construction site. 52% of respondents (Yes and Partially added up) have already addressed the issue of silica dust in their SiGe plans. 21% of those who have answered in the negative (No) need to make appropriate adjustments to their SiGe plans. 12% of the chart is made up of N/A answers primarily referring to companies where the data available did not allow clear classification. In order to solidify the positive result of measures against the hazardous agent of silica dust being included in the SiGe plan, efforts are being supported which further raise the clients' awareness regarding this issue.

6. Comparison of Phase I and Phase II

Question 1:

Do you know that silica dust is classified as clearly a carcinogen and that therefore it is an agent that poses a risk to human health?

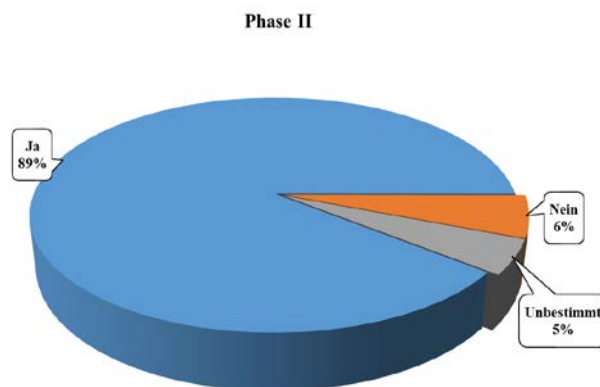
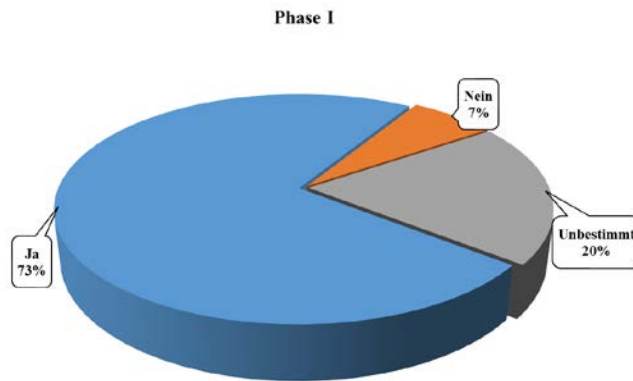


Ja = Yes, Nein = No, Unbestimmt = N/A

A comparison of Phase I with Phase II shows that the proportion of respondents who know about silica dust being classified as clearly a carcinogen has more than doubled (from 44% to 91%), while the proportion of No answers has fallen drastically (from 50% to 7%). Also the percentage of answers that could not be assessed (N/A) dropped from 6% to 2%.

Question 2:

Does your company carry out operations where workers come in contact with air that contains silica dust?

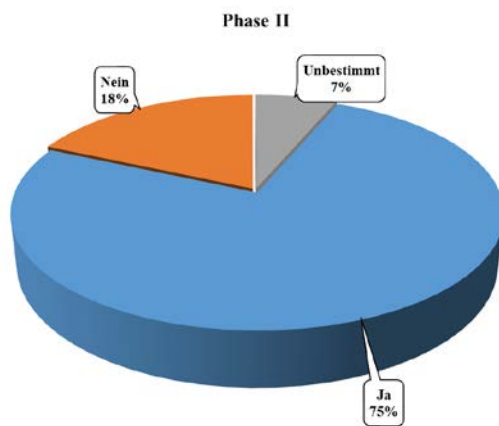
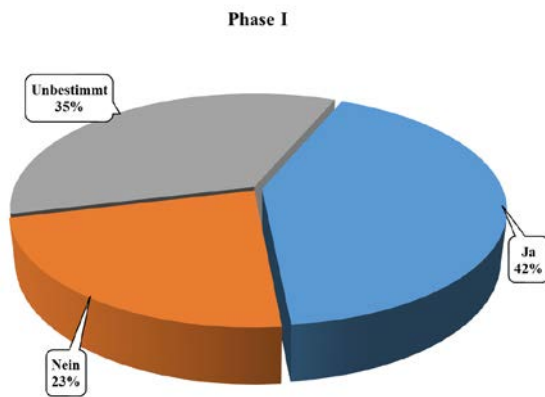


Ja = Yes, Nein = No, Unbestimmt = N/A

Comparison between Phase I and Phase II shows that the knowledge about workers coming into contact with air containing silica dust has improved as can be seen from the increase of Yes answers from 73% to 89%. Another finding is that in Phase II more employers had proper knowledge of the building products they use (the number of responses that could not be assessed plummeted from 20% to 5%). The proportion of those able to exclude exposure remained almost the same (7% in Phase I versus 6% in Phase II).

Question 3:

Does your company have technical measures in place to minimise dust?

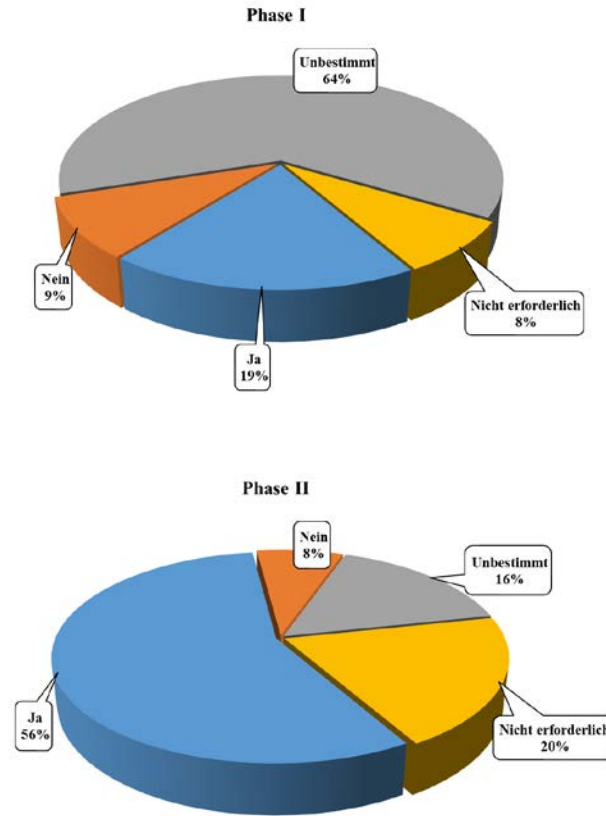


Ja = Yes, Nein = No, Unbestimmt = N/A

The proportion of respondents who had technical measures of dust reduction in place has almost doubled (from 42% to 75%). This increase mainly resulted from the fact that the proportion of respondents whose answers could not be assessed dropped from 35% to 7%. In addition, the proportion of respondents who had no technical measures of dust reduction in place dropped as well (from 23% to 18%). The benefit of technical measures of dust reduction is that workers need not use personal protective equipment (PPE).

Question 4:

Are the adopted measures suited to consistently subceed the limit values for dust and, more specifically, silica dust?

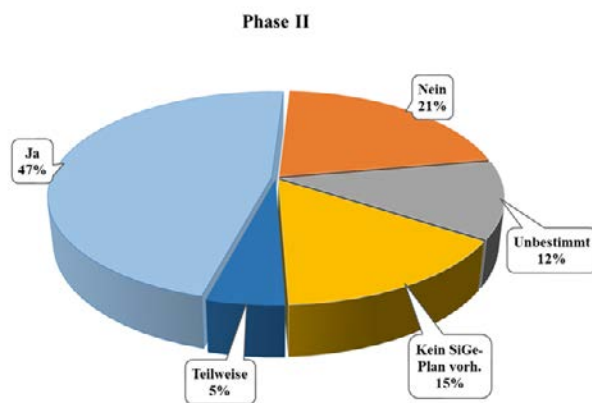
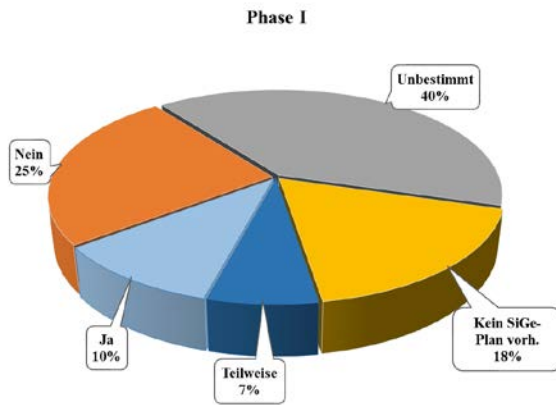


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In Phase I, a large portion of the pie chart was made up by the N/A category (64%). This portion dropped considerably in Phase II (down to 16%), primarily in favour of the proportion of respondents who had answered with Yes (their percentage rising from 19% to 56%). Shrinkage of the N/A category can be considered a success of the priority action as a growing number of employers are now able to comply with the limit values through technical measures. In addition, the proportion of respondents stating that no technical measures are required has increased (from 8% to 20%), while the proportion of those who said that the limit values could not be subceeded by technical measures remained roughly the same (9% versus 8%).

Question 5:

Does the SiGe plan according to § 7 BauKG include measures against the hazardous agent of silica dust?



Ja = Yes, Nein = No, Unbestimmt = N/A, Teilweise = Partially, Kein SiGe-Plan vorh. = No SiGe Plan in place

The N/A category dropped from 40% in Phase I to 12% in Phase II, the difference of 28% primarily migrating to the Yes category, which in turn improved from 10% to 47%. The remaining proportions remained approximately the same. In concrete terms, the proportion of those whose SiGe plans did not include any measures against the hazardous agent of silica dust narrowed from 25% in Phase I to 21% in Phase II. The proportion of respondents stating that they had no SiGe plan in place dropped from 18% in Phase I to 15% in Phase II. The issue of dust has now reached clients as well. A 47% rise in SiGe plans containing measures against dust is sensational!

7. Conclusion

Phase I of the priority action had 2 objectives:

On the one hand, the current situation in companies regarding the issue of silica was to be explored. This is why Phase I examined whether and to what extent those involved in construction (workers, employers, clients as well as coordinators as defined in the BauKG) were informed about the cancerogenic effect of silica dust, whether workers came in contact with this kind of dust and whether technical measures of dust reduction had been taken by the company. Moreover, the effectiveness of technical measures (low-dust processes, dust extraction, wet working methods, cleaning of equipment, etc.) against dust in general and silica dust in particular was polled and so was the question of the extent to which the hazardous agent of silica dust had already been included in SiGe plans.

On the other hand, Phase I also included an advisory campaign. All companies were informed about the issue of silica dust and the related risks to human health.

The results of Phase I showed that roughly half of all polled companies knew that silica dust was defined as clearly a carcinogen and, consequently, classified as an agent that is hazardous to human health. More than half of the employers whose employees were exposed to silica dust had already taken technical measures to combat dust.

The effectiveness of these technical measures was below 50% during Phase I, meaning that not even half of all companies which had taken technical measures were able to stay below the limit values.

The proportion of those who were unable to assess whether the technical measures had been effective or not was relatively high in Phase I (roughly two thirds of all respondents).

During Phase I, the issue of silica dust was addressed in SiGe plans in 17% of the cases.

Phase II took place between the beginning of December 2021 till the end of the first half of 2022, its objective being to use follow-up inspections of 15% of the companies counselled in Phase I to determine whether and to what extent the advice given in Phase I had already produced greater awareness of the issue of silica dust and/or positive developments in respect of workers' health and safety.

The results were positive across the board. The state of knowledge concerning the definition of silica dust as clearly a carcinogen (and, consequently, an agent hazardous to human health) was more than doubled (from 44% in Phase I to 91% in Phase II).

The advisory focus of Phase I also had an effect on information about activities where workers came into contact with air containing silica dust. A greater percentage of respondents in Phase II knew that the materials handled by them contained silica dust (73% in Phase I versus 89% in Phase II).

The proportion of companies which had adopted technical measures against exposure to fine particles almost doubled, up from 42% in Phase I to 75% in Phase II.

It would, of course, be desirable for this proportion to reach 100%.

More than half of the companies in Phase II were already able to stay below the limit values for dust and, more specifically, silica dust, their proportion rising from 19% in Phase I to 56% in Phase II. There may be several reasons for this increase: one might be that the data density of comparison measurements of limit values had risen. It is safe to assume that since the end of Phase I limit value measurements by companies and limit value comparison measurements by industry had resulted in greater data volumes available and, consequently, in more accurate statements on the effectiveness of technical measures. Another reason might be that companies had adapted their technical measures by introducing technologies that were better suited for the relevant situation or by improving the performance of their technical equipment (e.g. using higher filter classes in cabins). It would be desirable in this case as well that the remaining companies optimise their technical measures to stay below the limit values. Moreover, further data from companies (comparison measurements of limit values) would be necessary.

SiGe plans, too, are still in need of optimisation. True, 52% of all companies polled in Phase II addressed the issue of silica dust in their SiGe plans (versus 17% in Phase I). Within this context, the awareness of clients should be further enhanced so that the question of whether silica dust exposure is to be expected can already be clarified in the early phase of product selection in preparation for a construction project. With this information in mind one can adequately prepare construction work and include technical measures of dust reduction.

Overall, there was a significant improvement in all aspects polled in Phase II compared with the baseline situation in Phase I. The advisory campaign conducted in Phase I resulted in greater knowledge about silica dust and the risks it poses to human health and, more specifically, about the clearly carcinogenic effect of respirable silica dust. Knowledge about whether the materials used in construction contained quartz, and whether working with these materials might produce silica dust, improved as well. A positive outcome was that the number of companies which had taken technical measures to minimise dust had grown from Phase I to Phase II. In addition, apparently better technical solutions to control silica dust were applied during Phase II. Another positive development was that a much greater percentage of SiGe plans included measures against the hazardous agent of silica dust.

8. Examples of good practice

Below you will find several positive examples of working methods seen during the Austria-wide advisory inspection for silica dust carried out under the 'priority action on silica dust'.

These working methods involved protective measures to considerably reduce dust development and dirt migration. The measures taken thus represent examples of good practice as set out in the 'industry solution – minimising silica dust in construction' blueprint.

On-tool dust control:

The illustration below shows on-tool dust control on two hand-held tools used for cutting and drilling.





The worker on the right also uses a hand-held tool with on-tool dust control, on the left one can see the industrial dust extractor ensuring dust extraction.



Pictured is a long-neck sander connected to a dust extractor.

Wet-cutting process:

Pictured is a portable cut-off machine with water supply hose used to cut grass pavers.



Water sprinkled onto transport areas:

Driving on dirty transport routes can cause major dust development. Water sprinkling systems are effective measures to counteract this problem since they bind dust (at least until water has evaporated).

Pictured is a tractor pulling a slurry tanker. Water is sprinkled onto the transport routes by a spray nozzle to reduce dust development on the construction site.



