

EXPLOSION PROTECTION IN SMALL AND MEDIUM-SIZED ENTERPRISES – SAMPLING PROCEDURE

SUMMARY REPORT

DESIGN, IMPLEMENTATION, STATISTICAL ANALYSIS AND INTERPRETATION



A CAMPAIGN WITHIN THE FRAMEWORK OF THE OCCUPATIONAL HEALTH AND SAFETY STRATEGY

Involving motor vehicle paint shops and joineries

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Responsible for content

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SMALL AND MEDIUM-SIZED ENTERPRISES CAMPAIGN EXPLOSION PROTECTION IN MOTOR VEHICLE PAINT SHOPS AND JOINERIES

DESIGN, IMPLEMENTATION, STATISTICAL ANALYSIS AND INTERPRETATION

The implementation deadline for specific amendments to the *Verordnung explosionsfähige Atmosphären (VEXAT – Order on explosible atmospheres)*, which transposes Directive 1999/92/EC into national law, expired on 1 July 2006. This prompted the Labour Inspectorate to conduct an explosion protection campaign in 2006.

The campaign was planned in the form of a random sample so that the result obtained can be extrapolated to the total population with calculable accuracy and reliability.

Two sectors were selected: joinery establishments and motor vehicle paint shops. These account for some 5 700 establishments in Austria. Sampling was carried out in two phases:

- a) Phase 1 — Survey and advice in 190 establishments and electronic information of a further 190 establishments. The phase was conducted before the statutory transitional period for establishments to have an explosion protection document expired.
- b) Phase 2 — Survey in the 380 establishments which were informed and/or advised in Phase 1 and in the 190 establishments which were not advised or informed by the Labour Inspectorate in Phase 1. This was conducted in autumn after the statutory transitional period for having an explosion protection document had expired.

The main aims of the campaign were to determine:

- a) the explosion protection status in the sector concerned with regard to the main criteria (explosion protection document, zones, equipment in the zones, ventilation or extraction installations).
- b) how establishments receiving advice and information from the Labour Inspectorate compared with establishments which received neither.

1) Information and advice: what effect do they have? Findings on technical employee protection as a whole

As a rule, both information and advice increase the extent to which explosion protection is implemented. It was also found that the extent to which

implementation increased depended on whether the measures were geared to documentation or on-site implementation. It should be noted that increased implementation was achieved despite the complexities of explosion protection.

This suggests that information and advice from the Labour Inspectorate can always be expected to markedly increase the degree of implementation of technical employee protection as a whole.

2) Explosion protection for workers (in-house information and training)

Establishments which produce an explosion protection document have informed and trained their employees.

In most establishments which have not prepared an explosion protection document, no training or information of workers was carried out. It can therefore be inferred that workers are trained and given information about explosion protection only if their employers have come to grips with the problem in terms of identifying, assessing and documenting the risks.

It is therefore assumed that information and training in technical employee protection is given only when employers are aware of the risks and how to eliminate them.

3) Meeting the main criteria for explosion protection in the respective sectors and status groups

On the basis of our random sample, findings for motor vehicle paint shops and joinery establishments throughout Austria can now be extrapolated (to the basic population).

In almost all cases it can be assumed for the total population that 50% of the main requirements of explosion protection have not been met. However, it should be pointed out that Phase 2 was carried out relatively shortly after the implementation deadline (three to five months afterwards). Plans have therefore been made to check how implementation of explosion protection is affected in the longer term in 2009.

4) What are the benefits of information?

All the establishments in the selected sectors throughout Austria were informed in detail by the Labour Inspectorate and other institutions by autumn 2006 (Phase 2).

It can be assumed that meeting of the main explosion protection requirements, especially with regard to the formalities in Phase 2, is higher than it would have been without information.

In the sample of establishments (5 establishments per sector) which were merely informed in writing by the Labour Inspectorate but not given advice on-site, no significant increases could be ascertained in Phase 2, compared with establishments that had already received information from other institutions.

For example: Question 9: Does an explosion protection document exist?

For the whole of Austria, the results show that, in autumn 2006, between around 19% and 39% of motor vehicle paint shops in the status group "no advice" had an explosion protection document with a probability factor of 0.95. Between about 8% and 25% of joinery establishments had an explosion protection document with a probability of 95%.

5) What are the benefits of counselling

The results of the campaign show that on-site advice by labour inspectors was clearly more effective than no advice (Phase 1) or information (Phase 2). Advice leads to increased compliance with the main explosion protection requirements in the surveyed establishments except in respect of Question 13 (joinery establishments – structural explosion protection measures).

The data calculated are valid for the random sample. They would apply for the total population if all establishments – and not only the establishments in the random sample – had actually been given advice.

For example: Question 9: Does an explosion protection document exist?

For the whole of Austria, the results show that, in autumn 2006, between around 45% and 67% of motor vehicle paint shops in the status group "advice" had an explosion protection document with a probability factor of 0.95. Between about 30% and 54% of joinery establishments had an explosion protection document with a probability of 95%.

6) Documentation – joinery establishments/motor vehicle paint shop

Another indicator is the number of documents produced, which reflects the rate of introduction of explosion protection documents in various status groups. The difference in this indicator between Phase 1 and Phase 2 illustrates how effective or ineffective information or advice is.

Joinery establishments

Before Phase 1 (prior to the implementation deadline), the number of explosion protection documents (Ex-Doc) introduced was virtually irrelevant in statistical terms. In Phase 2 (after the implementation deadline), the proportion of explosion protection documents introduced was between 14.8 and 41.7% in the various status groups.

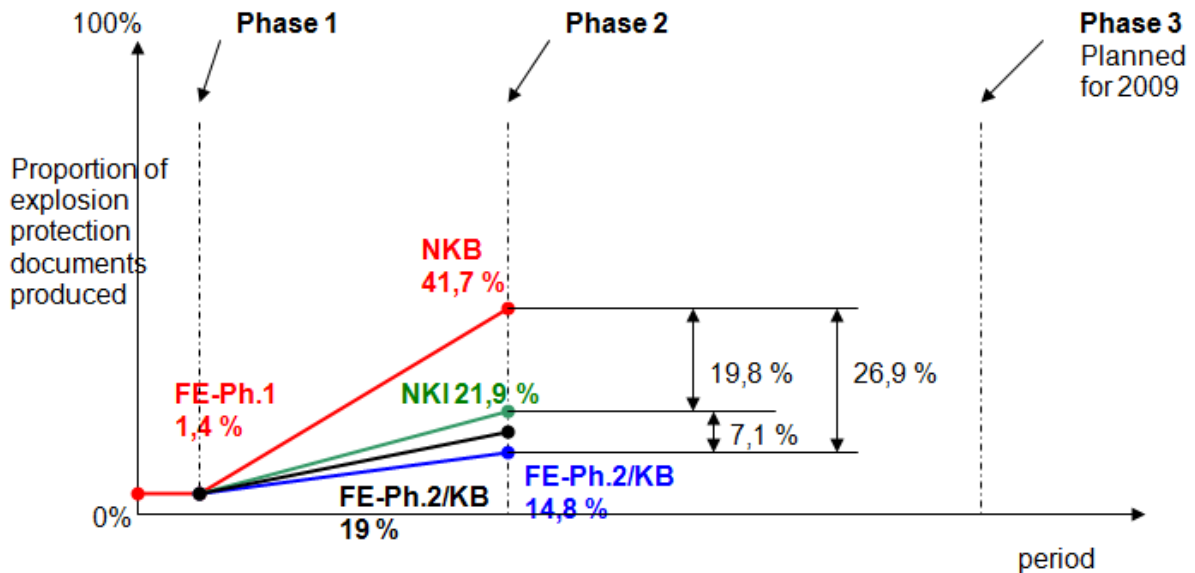
The proportion of explosion protection documents in the random sample is as follows:

The proportion of explosion protection documents introduced in establishments which were advised by the Labour Inspectorate is 41.7% (NKB).

This proportion is significantly higher, namely 19.8% higher than for the status group of establishments informed by the Labour Inspectorate (NKI - 21.9%) and 26.9% higher than for establishments which were not advised (KB - 14.8%),

The impact of information and advice increases the proportion of explosion documents introduced by 25.5% (26.9% - 1.4%) for advice and by 5.7% (7.1% - 1.4%) for information.

Main diagram for joinery establishments – Proportion of explosion protection documents produced



LEGEND

| Status groups | Explanation | Phase |
|---------------|--|-------|
| FE-Ph.1 | Questionnaire survey Phase 1 of establishments which received neither advice nor information from the Labour Inspectorate. | 1 |
| NKB | Follow-up control of groups receiving advice (which were advised by the Labour Inspectorate in Phase 1) | 2 |
| NKI | Follow-up control of informed establishments (initial questionnaire survey of companies which were informed by the Labour Inspectorate in Phase 1) | 2 |
| FE-Ph.2/KB | Questionnaire survey Phase 2 – no advice (random sample 63 establishments) see note | 2 |
| FE-Ph.2/KB | Questionnaire survey Phase 2 – no advice (random sample 81 establishments) see note | 2 |

Note: For the establishments which were not advised (FE.Ph2/Kb), two values were calculated: the random sample made up of the total number of establishments which were not advised was used to calculate the value of 14.8%. These were the establishments which received information from external institutions and those which did not receive any information.

The value was 19% for those that received information only from external institutions.

Information from external institutions increased the number of explosion protection documents produced by 19% which is not significantly different, in statistical terms,

from those receiving information from the Labour Inspectorate (21.9%). No conclusion can therefore be drawn from this.

It should be noted that advice by labour inspectors resulted in twice as many documents being produced as in the case of information (41.7%).

Motor vehicle paint shops

Here too, there was virtually no statistically relevant introduction of explosion protection documents in Phase 1 (before the implementation deadline).

In Phase 2 (after the implementation deadline) the proportion of explosion documents introduced is between 28% and 56.3% in the various status groups.

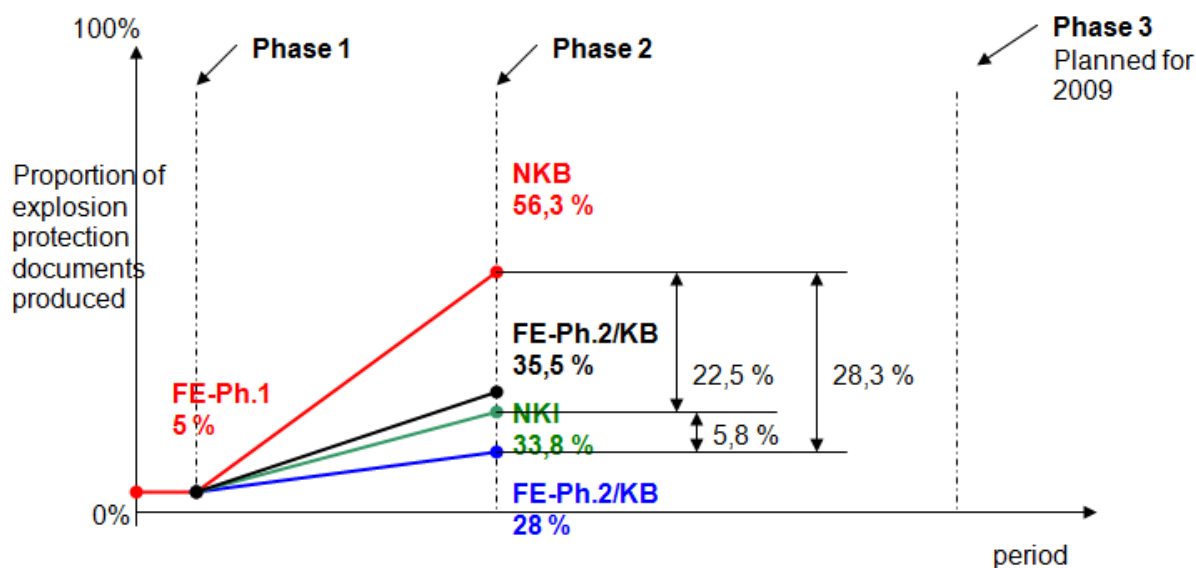
The proportion of explosion protection documents introduced in the random sample is as follows:

The proportion of explosion protection documents introduced in establishments which were advised by the Labour Inspectorate is 56.3% (NKB).

This proportion is significantly higher, namely 22.5% higher than for the status group of establishments informed by the Labour Inspectorate (NKI – 33.8%) and 28.3% higher than for establishments which were not advised (KB - 28%),

The impact of information and advice increases the proportion of explosion documents introduced by 23.3% (28.3% - 5%) for advice and by 0.8% (5.8% - 5%) for information.

Main diagram for motor vehicle paint shops – Proportion of explosion protection documents produced



Information from external institutions increased the number of explosion protection documents produced by 35.5% which is not significantly different, in statistical terms,

from those receiving information from the Labour Inspectorate (33.8%). No conclusion can therefore be drawn from this.

It should be noted that advice by labour inspectors resulted in twice as many documents being produced as in the case of information (41.7%).

CONCLUSION

The Labour Inspectorate's impact on the number of explosion protection documents produced is plain to see.

On-site advice is clearly more effective than written information. The success rate of on-site advice is between 23 and 26% of the companies advised and can probably be increased since the statutory requirement for an explosion protection document to be introduced has been in existence since only recently.