



Prevention of dust exposure by implementing a prevention culture in the demolition sector

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Presentation

- Project idea and motivation
- The demolition sector
- The Program Theory, methodology and design
- Developing an audit toll
- Result from questionnaire and interviews
- Conclusion and perspective
- and further



Background

25 years research in prevention culture, employee involvement and strategies to reach SME's

Networks as a means to regulate OHS -
Project proposal was developed in partnership with the sector

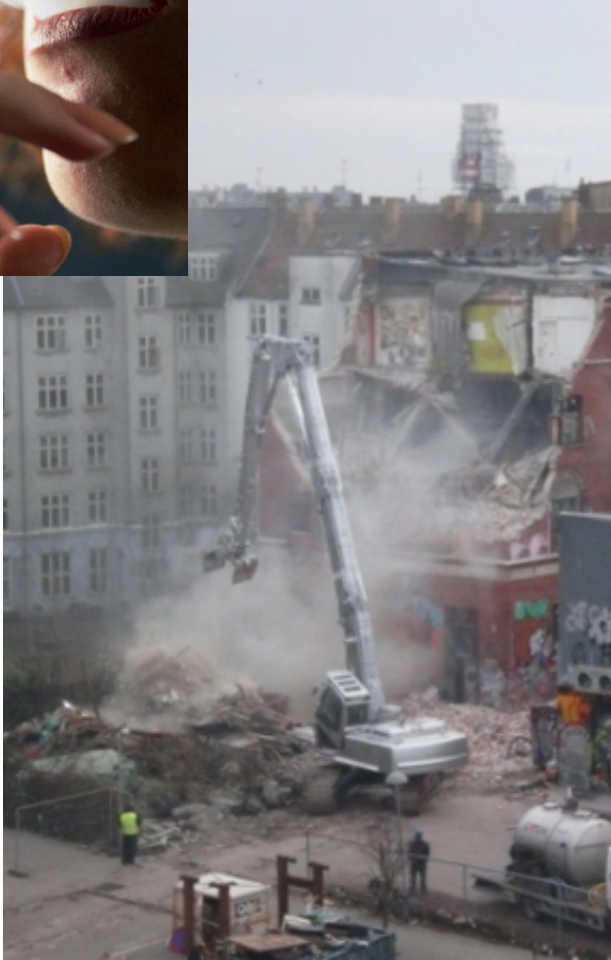
**Dust Prevention –
KTE – partnership
project – funding
DK-WE-Fund**

Danish health research documented high risk of dust exposure in the sector and high prevalence of COPD

International research on the risk of obstructive lung disease from inhalation of quartz dust*)

*) NEPSI 2006, silica-safe.Org etc.





COPD

- the fourth most common cause of death **in DK**
- 4000 cases a year
- Estimated **10 % related to dust exposure**
- Occurs primarily when aged 60 +



Monitoring of exposure to respirable dust: Demolition workers (mg/m³)

Demolition workers	Measurements	Time in average	GM (mg/m ³)	Variation
Manual work	2	118	3.40	3.30-3.50
Mechanical work	4	207	0.43	<0.05-3.30
Handling waste	3	131	5.06	3.50-10.0
Other	2	116	0.2	0.2
Total	11	143	1.06	<0.05-10.0



Knowledge Transfer Exchange (KTE) **in collaboration with a sector**

- The aim is to develop a practical and applicable tool to prevent dust exposure
- To utilize existing experiences from safety culture research, dust prevention practice and job practice from the sector (***knowledge transfer***)
- The sector is involved in defining the problems, developing the tools and strategies, in assessing the practical use and in disseminating within the sector (***knowledge exchange***)

*) Phipps D, Garcia J, Morassaei S. Report on knowledge transfer and exchange (KTE) practices: A systematic review of the quality and types of instruments used to assess KTE implementation and impact. Institute for Work and Health (IWH), Toronto: Ontario 2011.

Reardon R, Lavis J, Gibson J. From research to practice: A knowledge transfer planning guide. Institute for Work and Health (IWH), Toronto, Ontario 2006

The demolition sector



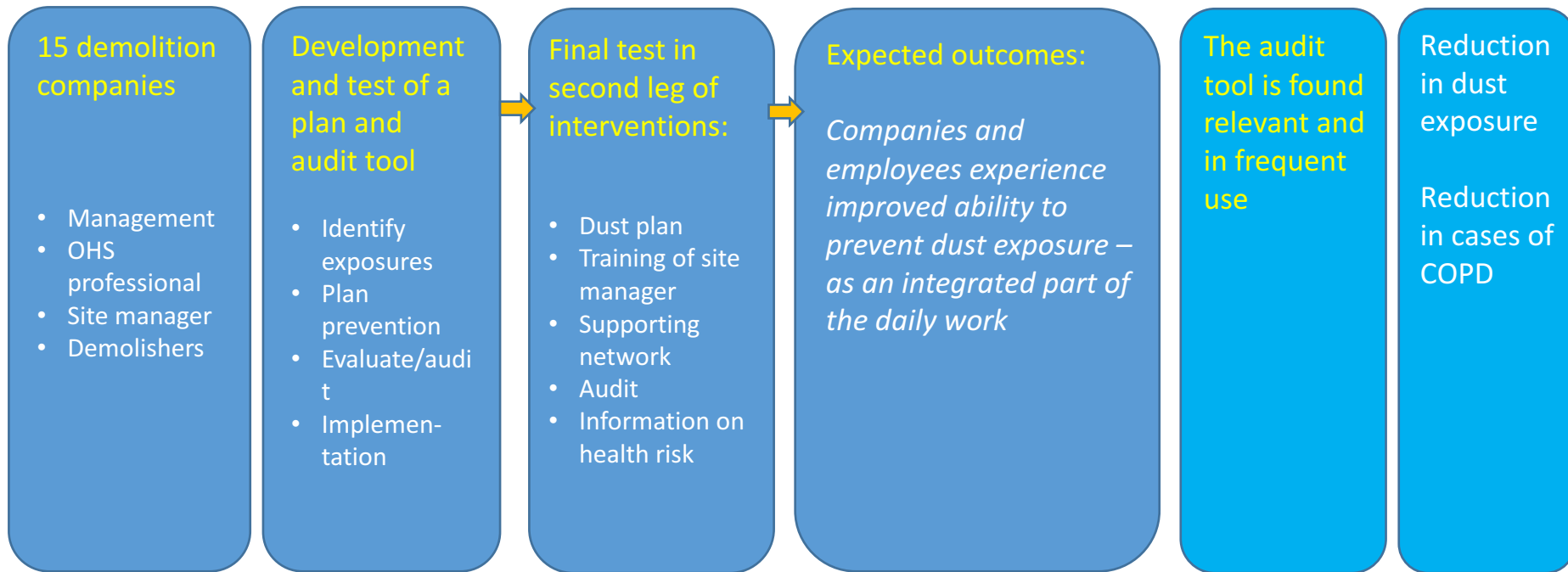
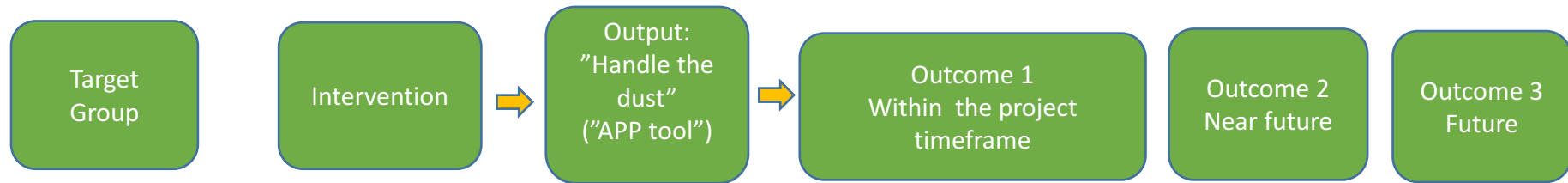
Demolition workers:

- Sanitation (removal of toxic and environmentally unfriendly substances)
- Stripping teams
- Machine operators
- Manual ground workers

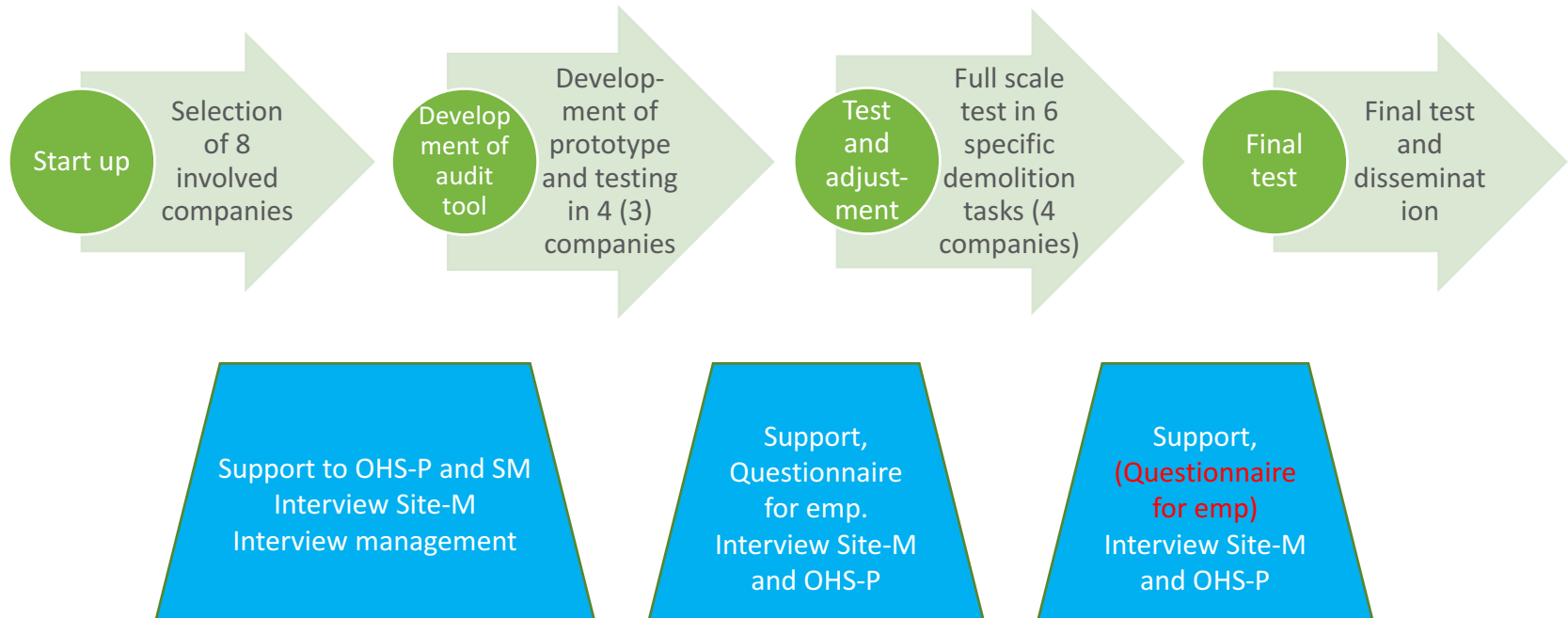
- The demolition sector in DK consists of ‘the good guys, the bad guys & the ugly ones’
- The good guys: 15 companies in a section of the Danish Construction Association (employers association)
- From 25 - 200 employees
- Use of hired workers – mostly migrant workers
- Economically dependent of environmental regulation
- Changed from a ‘Wild-West - sector’ to a respectable business since 2000
- An educational program: ‘Skilled demolisher’ was established in 2005



Program-theory of the project



Methodology and design



Development of the Audit tool – creating a plan for *each* specific demolition task

Trin 7: Control and audit

Who is performing the audit
How often?
Briefing and debriefing?
Support to Site – M in using Audit tool

Trin 6: Define prevention strategy

What types and volume of dust exposure?
What tools, equipment etc. must be available – when?
Which tasks and processes need special attention?
What training and instruction are needed – when and whom?

Trin 5: Environment

Other workers/people on the site?
Weather conditions?

Step 1: The site

Draw a map of the site:

- Access roads
- Waste containers
- Transport routes and Equipment handling ?

Step 2: Dust producing tasks

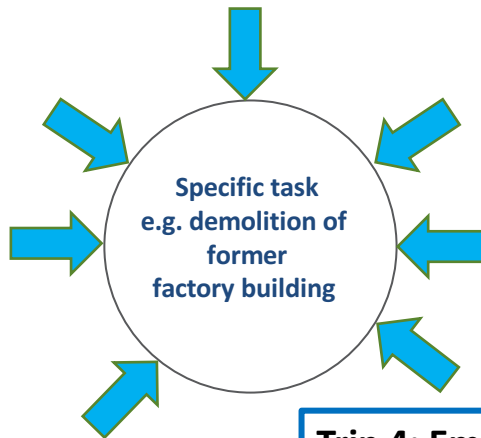
- Define all processes and timeline
- Categorize in relation to type and volume of dust

Step 3: Machines and aids

- What machines, tools, aids and equipment are needed?
- When and how are they available?

Trin 4: Employees

- How many and who are at special risk of dust exposure?
- Are they skilled and instructed?
- Define need for training and instruction



AUDIT tool: 'Handle the dust' checklist - App



iPad 10.45 100% WOS2017 conference example / 02. oktober, 2017

Cancel Send

1. Personal protective equipment ? Add notes / photos

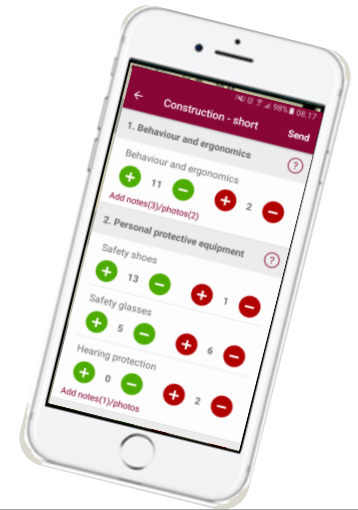
Appropriate signage for PPE	+	8	-	+	1	-
Safety glasses	+	2	-	+	1	-
Safety gloves	+	5	-	+	2	-
Safety masks	+	6	-	+	0	-

2. Order and tidiness ? Add notes / photos

Waste containers placed appropriately	+	3	-	+	0	-
Appropriate dust reduction when filling waste containers	+	0	-	+	5	-

3. Machines and tools ? Add notes / photos

Appropriate vacuum cleaners	+	4	-	+	2	-
Dust reduction	+	3	-	+	1	-
Dust protection	+	8	-	+	1	-



Based upon 'Safety observer' by Kines et al – coming soon to app stores worldwide (November, 2017)
Smartphones and tablets
IOS and Android
English and Danish

'Handle the dust' observer - app

The app is used during safety rounds in order to assess working conditions and behaviour:

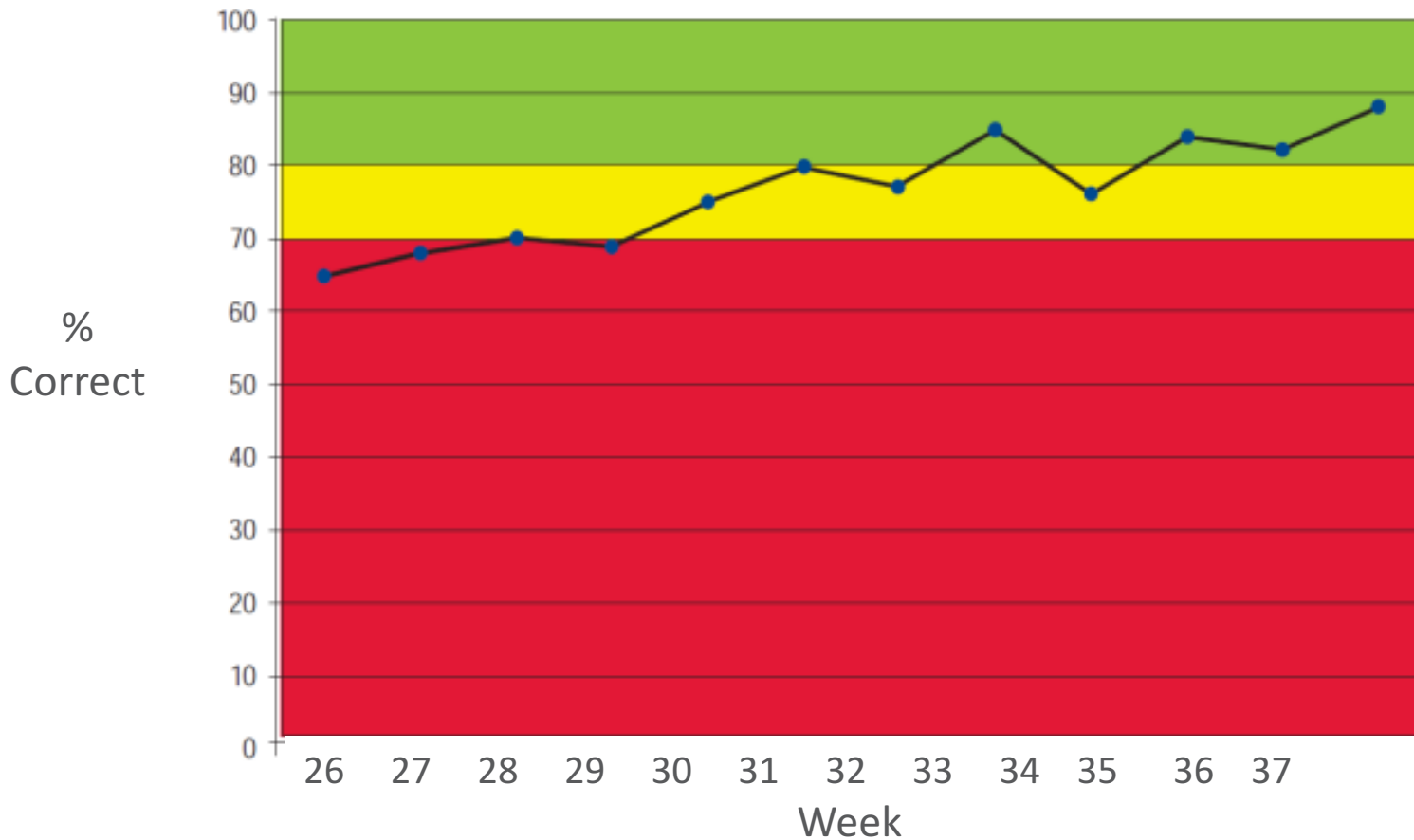
- Order and tidiness
- Use of collective dust prevention equipment?
- Use of personal protective equipment and technical aids
- Safe access ways, guardrails, machines, ladders, scaffolding
- Waste management
- Etc.

Document what you see by typing/dictating notes, adding smileys and taking photos

Follow progress over time and benchmark with other areas and sites using the generated safety index

Receive results immediately in the app and in a PDF report sent to your email

Prevention index (conditions and behavior) (example)



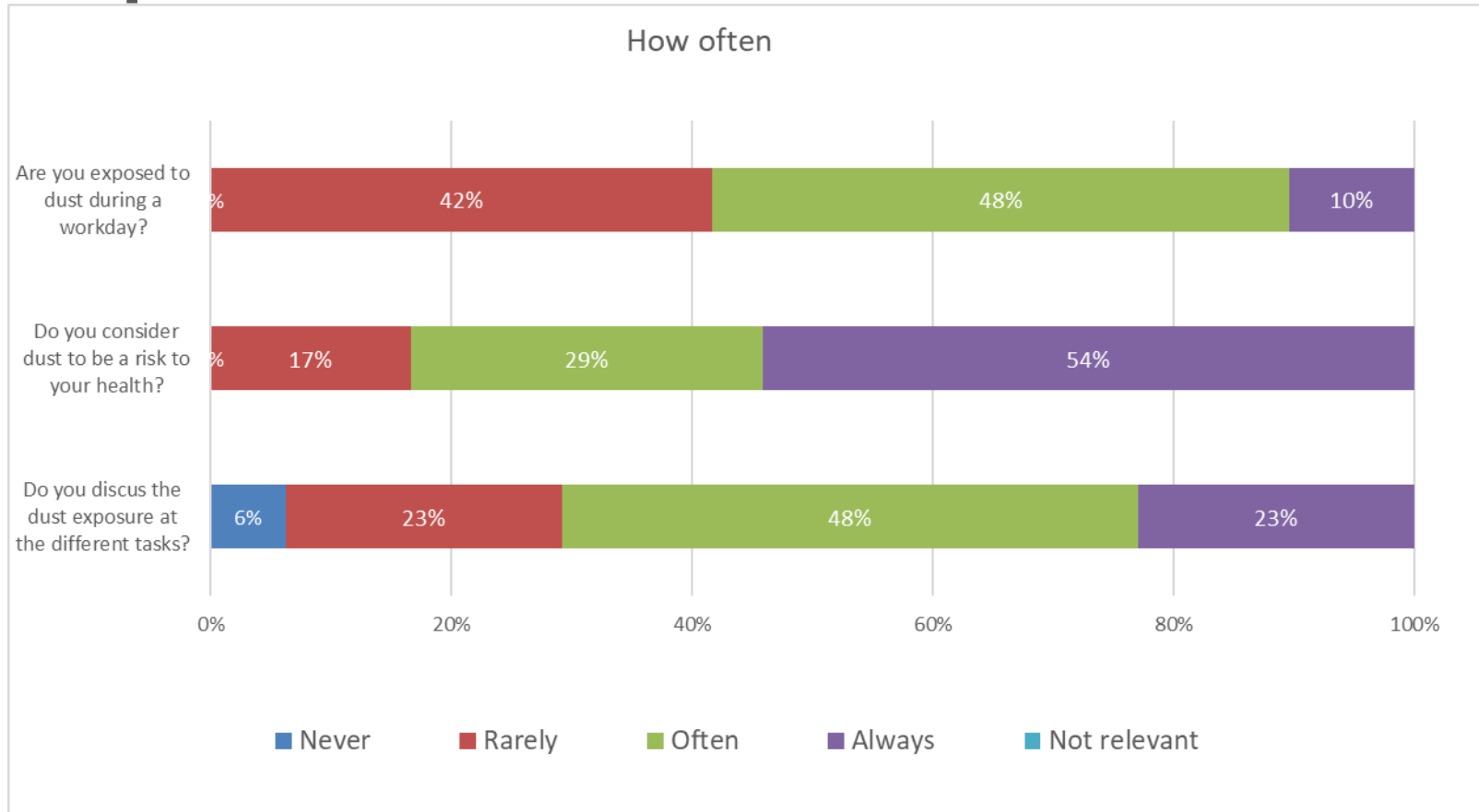
The questionnaire

- Developed by in collaboration with National Research Centre for the Working Environment (DK) *)
- Includes:
 - Risk perception in relation to dust exposure
 - Job experience, planning, prevention, skills and knowledge
 - Experience with dust prevention
 - Information, training and instruction
 - Communication
 - Etc.
- Translated to Polish, Rumanian & English
- Completed on site
- Before and (after) the demolition task
- The "after questionnaire" was discarded

*) Pete Kines et al.: Nordic Safety Climate Questionnaire (NOSACQ-50): A new tool for diagnosing occupational safety climate

Results from survey 1

Exposure to dust

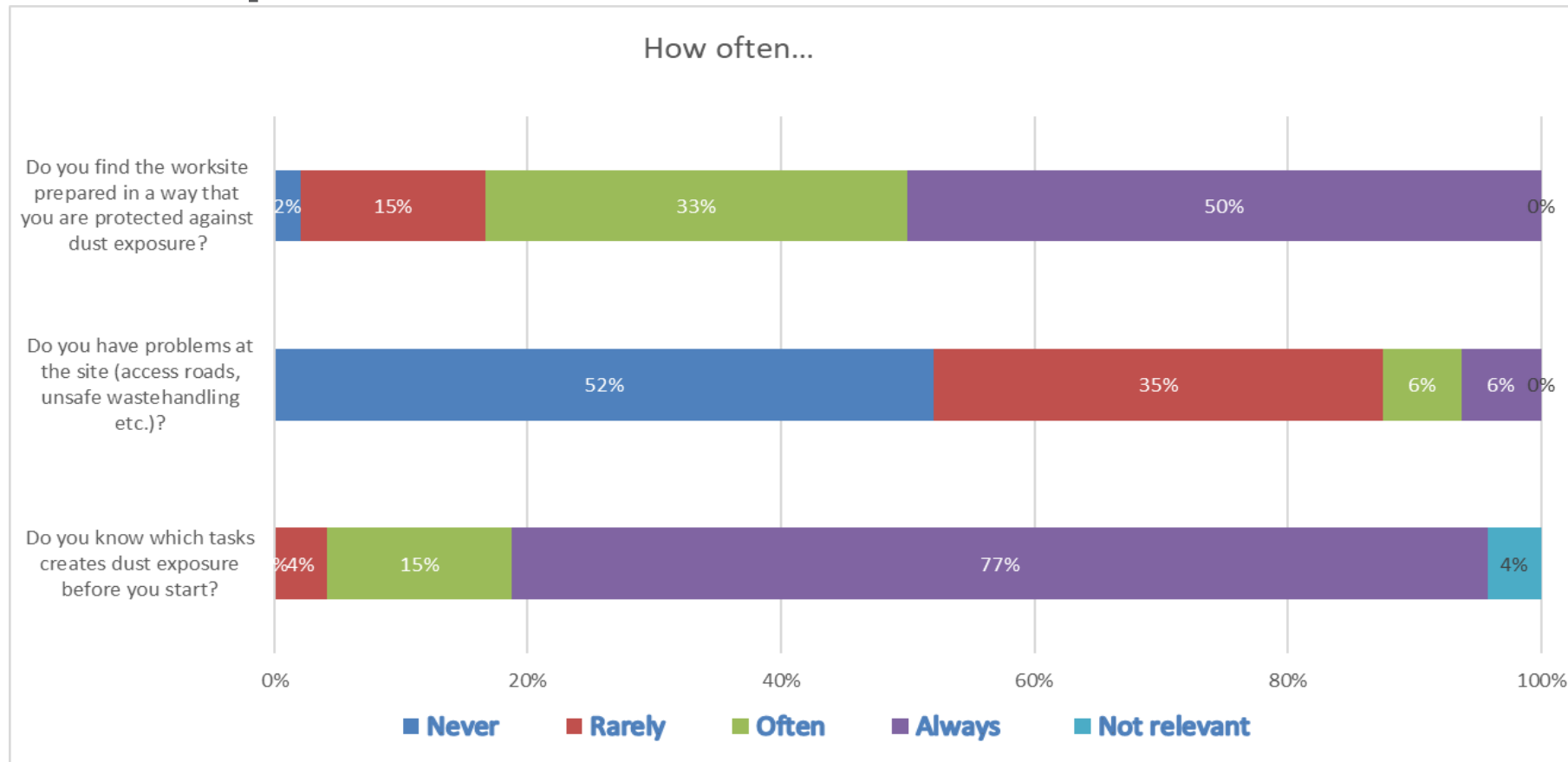


N: 48 , 6 companies



Results from Survey 2

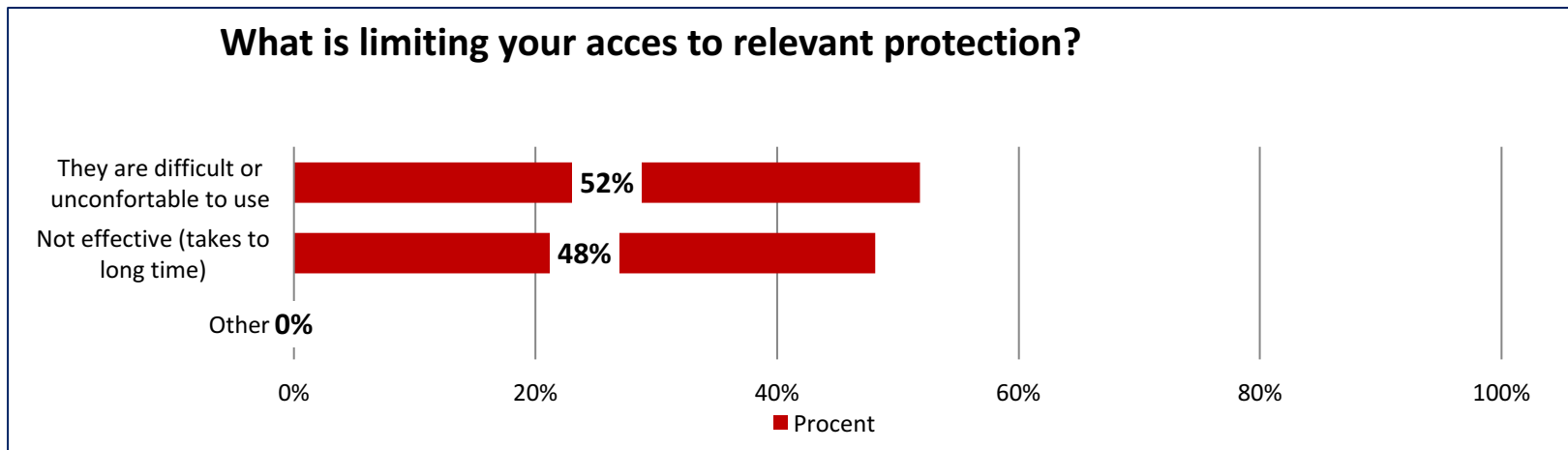
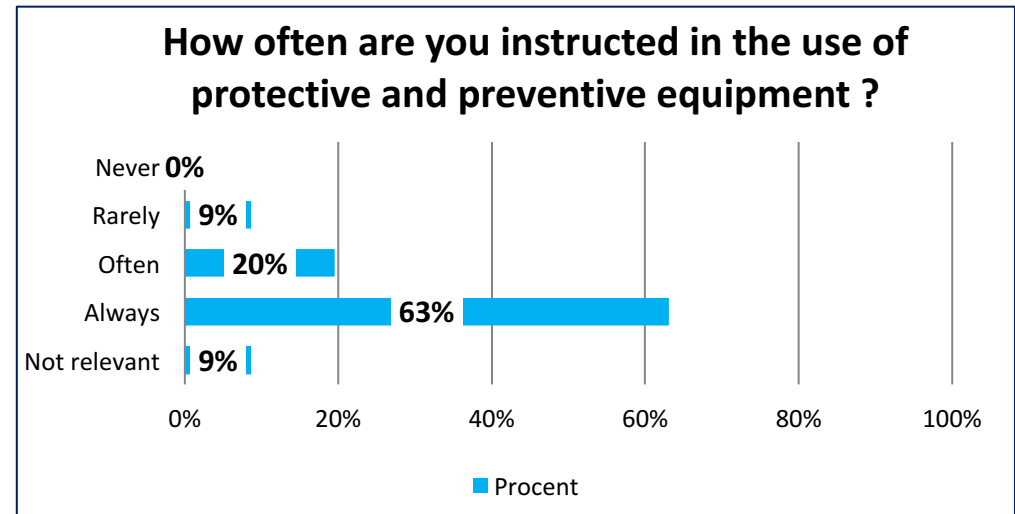
How often is the work organized to prevent dust exposure?



N: 48 , 6 companies

Results from survey 3

Obstacles i using technical prevention



N: 48 , 6 companies



Results from qualitative analysis of interviews

There are several impediments for preventive practise:

- The relevant technical prevention equipment is not always available - Comfortable and effective dust masks are hard to find
- There is a hierarchy in 'dust exposure':
 - Sanitation workers (asbestos, PCB etc.) are fully protected
 - Machine operators are protected by cabin-ventilation
 - Manual site workers are exposed but often outdoors
 - Demolishers are highly exposed at specific operations and task
- Tasks such as handling waste, transporting waste, cleaning in old buildings etc. provides the highest exposure, but are considered less important



Results from qualitative analysis of interviews on four levels

A "hierarchy of motivation"

Companies/managers (2 group int.)

- Include dust-prevention in strategic plans to utilize regulation to transfer costs to the customer

OHS professionals: (3 group int.)

- The Audit tool is considered relevant and applicable, but the network – collaboration with other OHS – professionals is the added value

Site Manager (7 int.)

- The audit tool is easy to use, (smart phone or tablets), it is an easy way 'to please' the Project Manager, but the ability to provide relevant equipment – at the relevant time is restricted

Employees: (8 group int., 6 int.)

- General knowledge that dust is harmful, but little knowledge about health risks, effect of prevention and 'long-term' consequences

Conclusive



*Expected outcome:
Companies and employees
experience improved ability
to prevent dust exposure –
as an integrated part of the
daily work*

Companies:

- Improving image

OHS professionals:

- A useful tool to audit prevention

Site manager:

- A tool that is applicable in daily practice

Employees:

- Focus on prevention and personal protection

Obstacles

*Companies and employees
consider dust exposure as a
'secondary problem' and
prevention a secondary cost*

Companies:

- Competition is hard – cost reductions on secondary costs

OHS professionals:

- Change jobs

Site manager:

- Too busy – use app only if observed

Employees:

- Knowledge to general, Health problems are considered long term

Gained outcome:

*OHS professionals and some
site managers are able to use
the audit tool, and are
motivated to prevent dust
exposure in the sector*

Companies:

- Include dust-prevention in strategic plans

OHS professionals:

- Relevant tool, improved network - collaboration

Site manager:

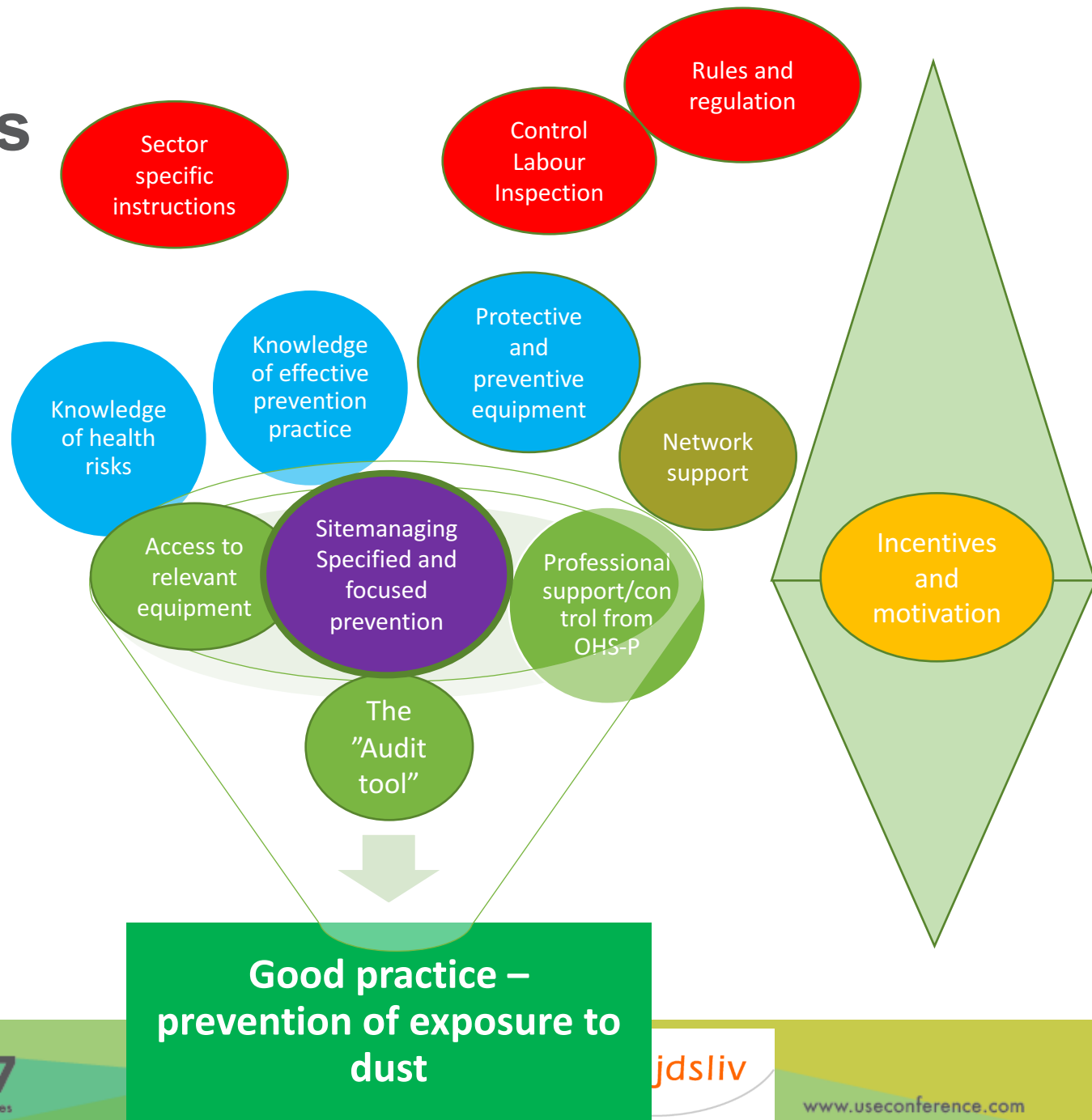
- Find the App easy to use and mostly relevant

Employees:

- Informed but reluctant to use prevention and protection in general

Perspectives

The 'audit tool'
is effectful if it
aligns to a
complex world



Progress so far and onward

- All tests and development cases performed
- One final test pending
- Next step:
 - Final adjustment of APP and development of guide and instructions
 - Catalogue of practical ideas and proposals
 - Continuing support to network of OHS-Professionals
- Further dialogue with the sector and authorities ?



***Thank you for your
attention***

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