Findings of the Workers' exposure survey on cancer risk factors in Europe (WES)

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Preventing Occupational Cancer – webinar, 28 May 2025

European Agency for Safety and Health at Work

EU-OSHA – Who we are

The European Union body responsible for the collection, analysis and dissemination of relevant information to serve the needs of those involved in safety and health at work.

- Set up in **1994**
- Based in **Bilbao, Spain**
- Governed by **European law**
- Mostly **financed** from the general EU budget
- Independent in the execution of its **mission/tasks**
- **A tripartite network organisation**, closely linked to EU actors and national networks through the **national focal points**

EU-OSHA – Research projects

- **Surveys**
  - ESENER 2024
  - OSH Pulse 2025
- **On-going**
  - Psychosocial risks – support to the next Healthy Workplaces Campaign 2026-2028 "Together for Mental Health at Work"
  - Occupational safety and health in the health and social care sector
- **At an early stage**
  - Cardiovascular diseases
  - Climate change
    - overview on occupational safety and health
    - foresight study focusing on preparedness

The survey in short

Telephone survey with 24,402 workers in six EU Member States

Coverage: employed population in Germany, Spain, Finland, France, Hungary, and Ireland (both employees and self-employed) representing 98.5 million workers.

Based on Australian Workplace Exposure Study (AWES)

Standardised sets of questions (modules) covering 50 occupations.
Short, precise and factual customised questions about **tasks**.

Expert assessment of probable exposure to 24 known cancer risk factors using a web-based application

OccIDEAS website for more information

Cancer risk factors covered in WES

Physical, chemical, or biological exposures can be assessed in OccIDEAS.

WES covers exposure **to chemical risk factors** (including process-generated substances and mixtures) **and also to physical risk factors** (different types of radiations).

Industrial chemicals
1,3 butadiene
acrylamide
diethyl/dimethyl sulphate
epichlorohydrin
ethylene oxide
formaldehyde
ortho-toluidine
Inorganic dusts/ fibres
asbestos
respirable crystalline silica
Organic dusts
leather dust
wood dust

Metals
arsenic
cadmium
chromium (VI)
cobalt
lead and inorganic compounds
nickel
Oils
mineral oils (as mists)
Products of combustion
diesel engine exhaust emissions
Solvents
benzene
trichloroethylene

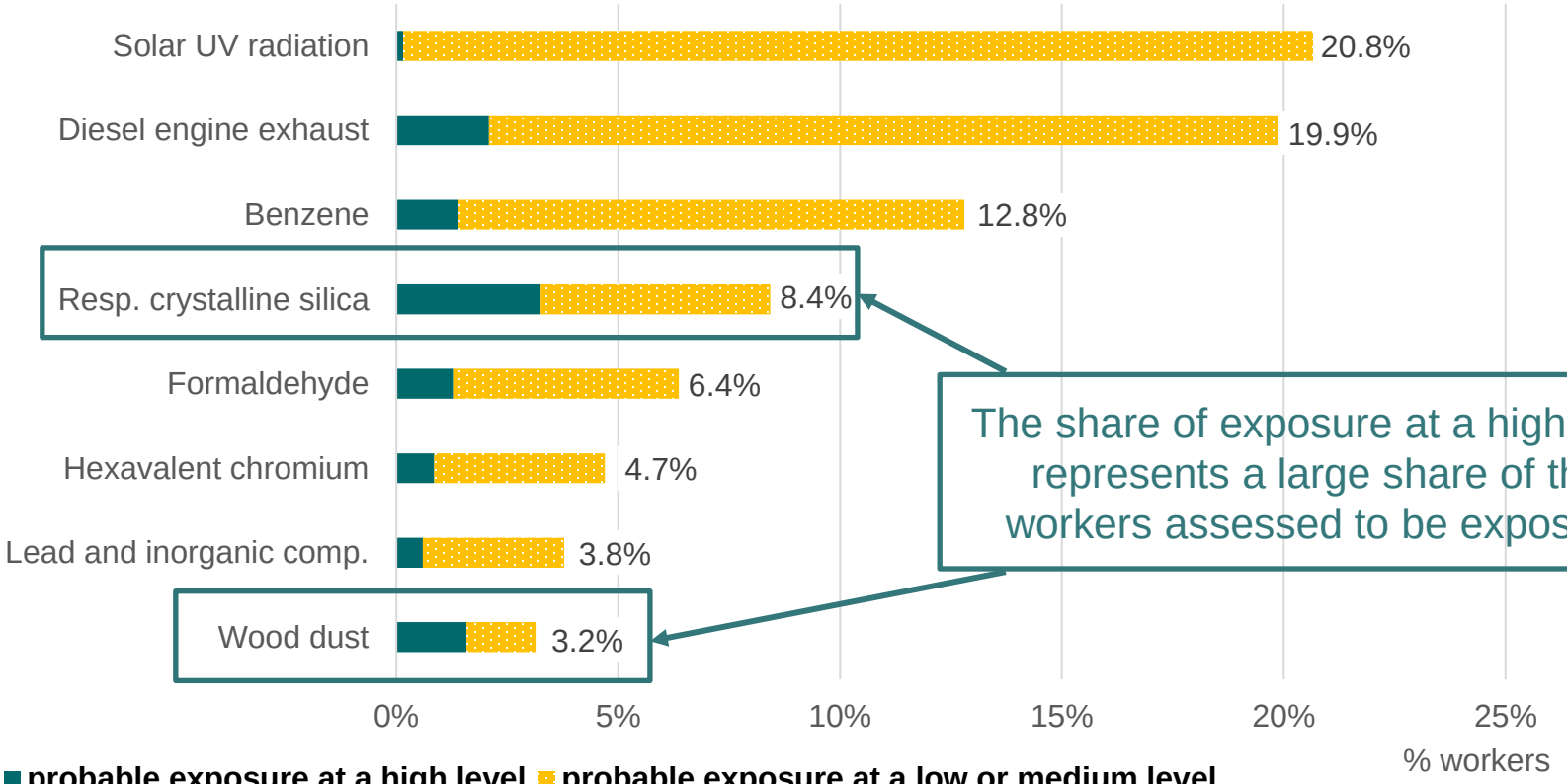
Radiation
ionising radiation
artificial ultraviolet radiation, including ocular exposure
solar ultraviolet radiation, including ocular exposure

WES data – three types of information

The dataset was made available for research in December 2024 (GESIS).

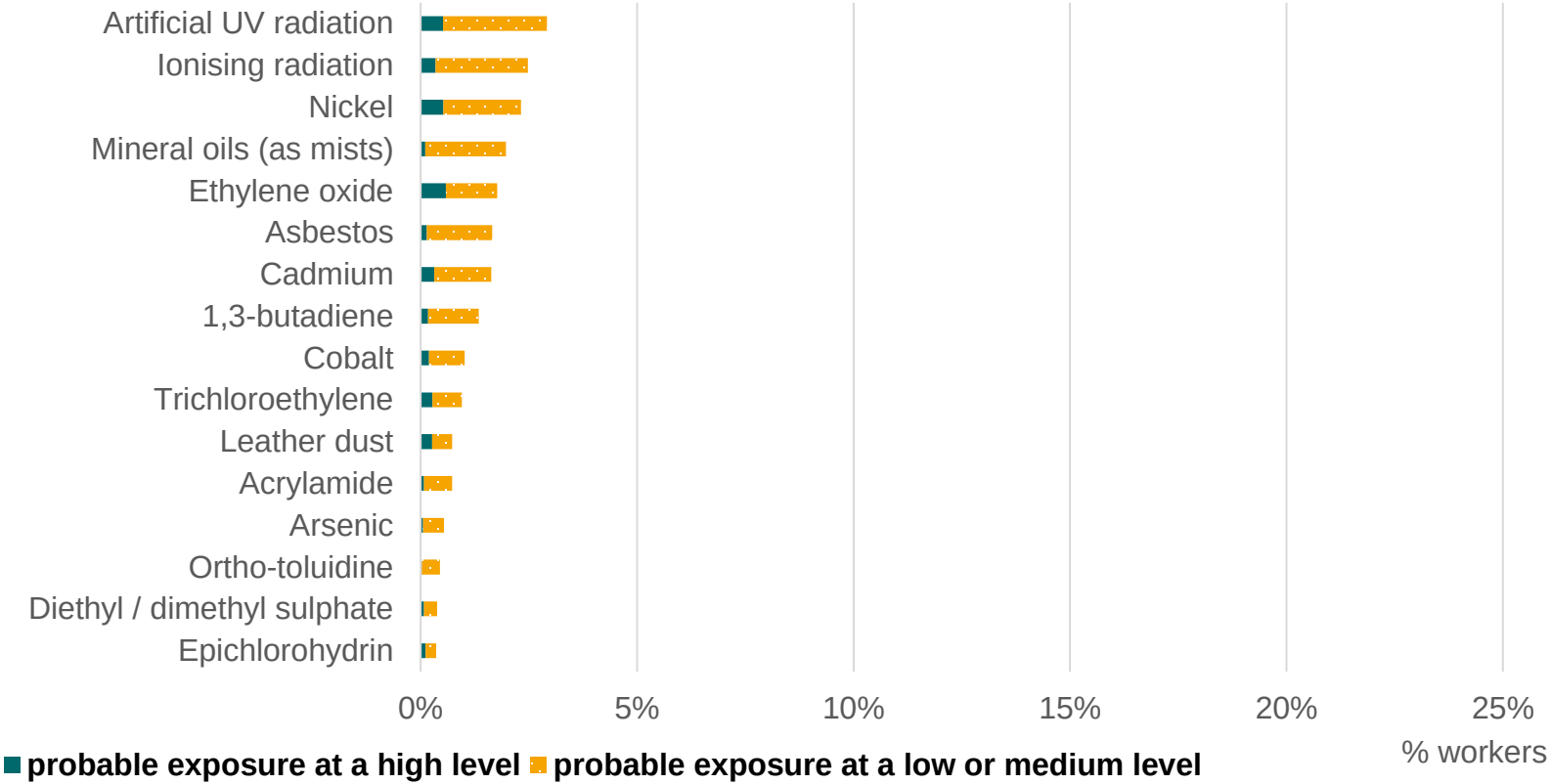
1. **Demographic and job-related variables** for each respondent:
   - Gender, age category, country of birth.
   - Sector of activity, occupation, type of employment and contract, workplace size, job category.
2. **Answers to the sets of questions**, tailored to the worker's job category defined at the start.
3. **Exposure assessment to 24 cancer risk factors** for each respondent:
   - Probable exposure vs. non exposure (including possible exposure but not enough evidence to define a level).
   - Three levels: probable exposure at low, medium or high level.

The most common exposures in the last week



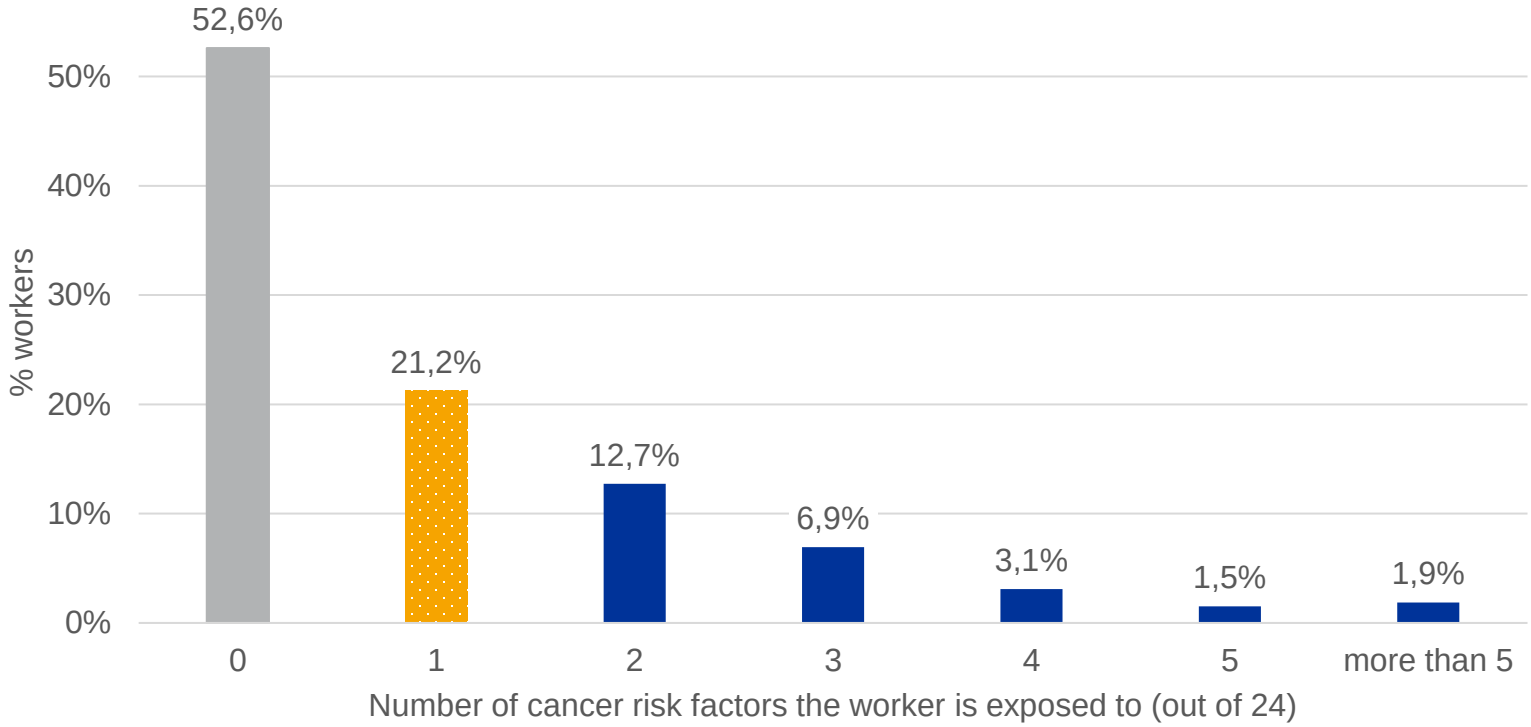
Source: WES 2023, EU-OSHA; reference population: all workers in Germany, Spain, Finland, France, Hungary, and Ireland.

Other exposures in the last working week



Source: WES 2023, EU-OSHA; reference population: all workers in Germany, Spain, Finland, France, Hungary, and Ireland.

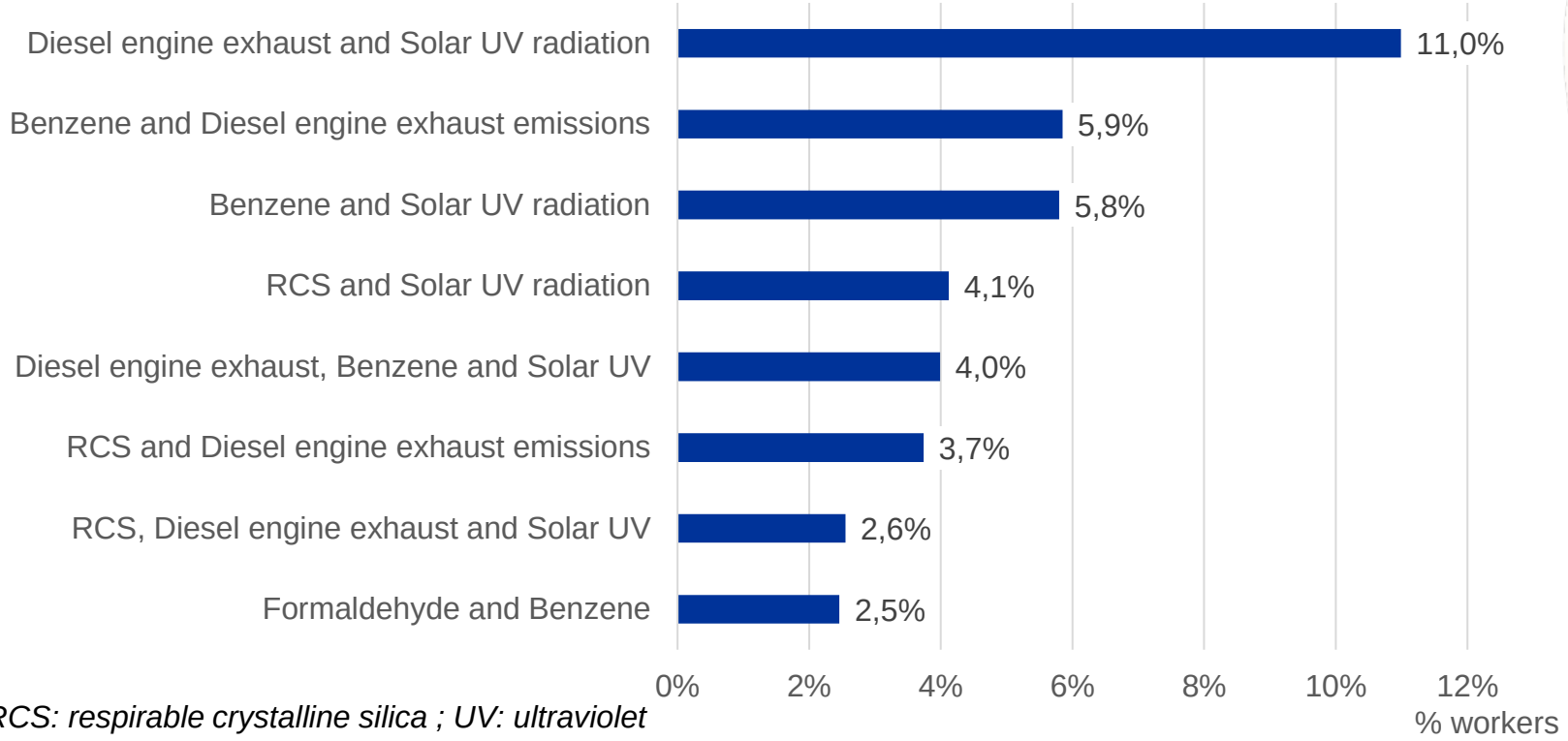
Exposure to the 24 cancer risk factors in the last week



Source: WES 2023, EU-OSHA; reference population: all workers in Germany, Spain, Finland, France, Hungary, and Ireland.

Multiple exposures over the same working week

The most common multiple exposures:



RCS: respirable crystalline silica ; UV: ultraviolet

Source: WES 2023, EU-OSHA; reference population: all workers in Germany, Spain, Finland, France, Hungary, and Ireland.

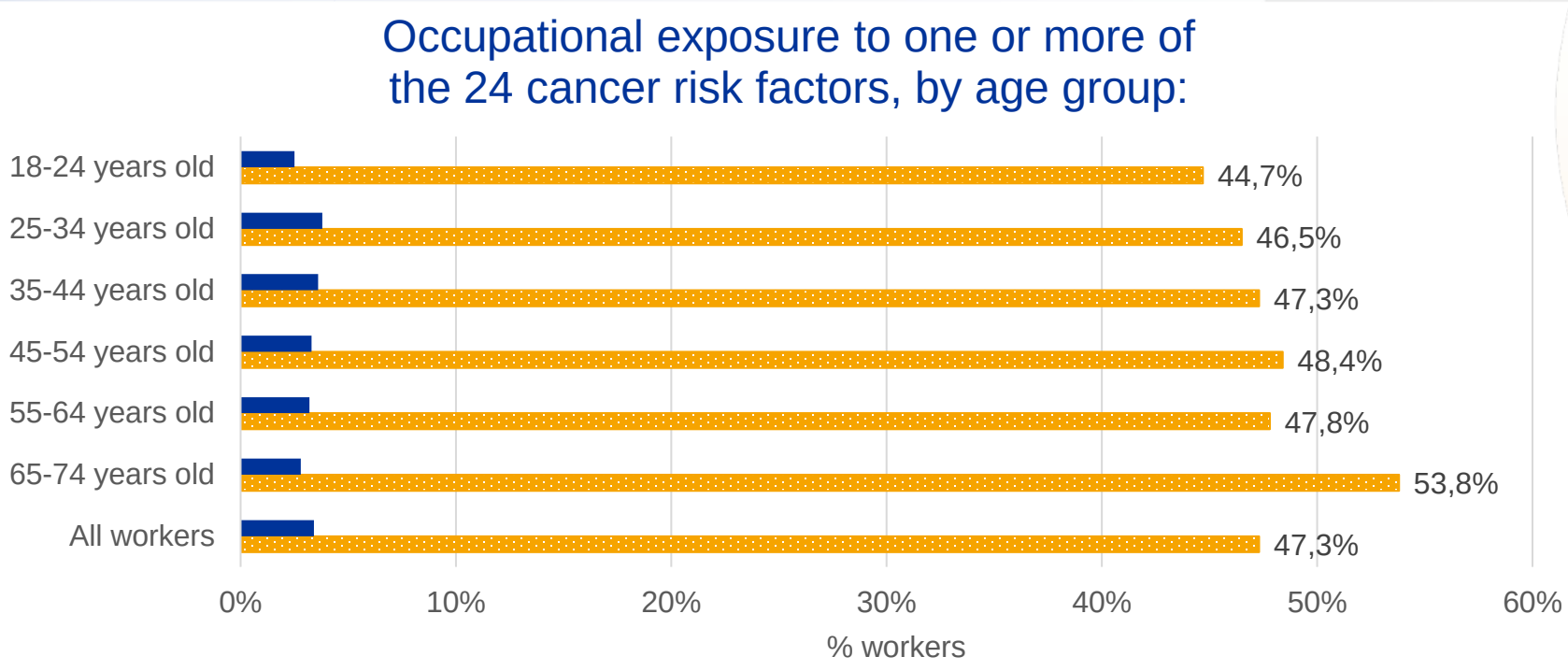
Proportion of workers exposed by gender

The 10 most common cancer risk factors at any level:

	Male		Female	
	Exposure to at least one cancer risk factor (out of 24)	**56.5%**	**Exposure to at least one cancer risk factor (out of 24)**	**36.3%**
1	Solar ultraviolet radiation (including ocular exposure)	26.4%	Solar ultraviolet radiation (including ocular exposure)	13.8%
2	Diesel engine exhaust emissions	26.1%	Diesel engine exhaust emissions	12.3%
3	Benzene	15.8%	Benzene	9.0%
4	Respirable crystalline silica	12.2%	Formaldehyde	5.7%
5	Hexavalent chromium	7.1%	Respirable crystalline silica	4.0%
6	Formaldehyde	6.7%	Ionising radiation	2.5%
7	Lead and inorganic compounds	5.5%	Artificial ultraviolet radiation (including ocular exposure)	2.0%
8	Wood dust	4.5%	Hexavalent chromium	1.9%
9	Artificial ultraviolet radiation (including ocular exposure)	3.7%	Lead and inorganic compounds	1.7%
10	Nickel	3.2%	Ethylene oxide	1.6%

Source: WES 2023, EU-OSHA; reference population: all workers in Germany, Spain, Finland, France, Hungary, and Ireland.

Proportion of workers exposed by age category



Source: WES 2023, EU-OSHA; reference population: all workers in Germany, Spain, Finland, France, Hungary and Ireland, except workers under 18 years old and above 74 years old.

Proportion of workers exposed by activity sector

The 10 activity sectors with the highest proportion of workers exposed to at least one cancer risk factor, at any level (out of 24):

NACE rev.2 division	Economic activity	Exposure to at least one cancer risk factor (out of 24)
NACE 08	Other mining and quarrying	100.0%
NACE 02	Forestry and logging	93.5%
NACE 95	Repair of computers and personal and household goods	88.3%
NACE 42	Civil engineering	87.4%
NACE 31	Manufacture of furniture	87.0%
NACE 50	Water transport	84.8%
NACE 01	Crop and animal production, hunting and related service activities	84.4%
NACE 03	Fishing and aquaculture	81.9%
NACE 41	Construction of buildings	81.4%
NACE 15	Manufacture of leather and related products	81.2%

NACE: Statistical Classification of Economic Activities, see Eurostat website.

Source: WES 2023, EU-OSHA; reference population: workers working in the 10 activity sectors in the table in Germany, Spain, Finland, France, Hungary, and Ireland.

Exposures in the job category ‘Firefighters’

Proportion of workers exposed in the job category ‘Firefighters’

Ranking	Cancer risk factors	Proportion of firefighters exposed
1	Solar ultraviolet radiation (including ocular exposure)	58%
2	Diesel engine exhaust emissions	52%
3	Benzene	51%
4	1,3-butadiene	46%
5	Formaldehyde	45%
6	Hexavalent chromium	28%
7	Lead and inorganic compounds	28%
8	Asbestos	23%
9	Respirable crystalline silica	5%
10	Wood Dust	5%
11	Mineral oils (as mists)	2%

Source: WES 2023, EU-OSHA; reference population: workers working in the job category ‘firefighters’ in Germany, Spain, Finland, France, Hungary, and Ireland.

Exposure to solar ultraviolet radiation (UVR)

Circumstances of exposure among the workers exposed to solar UVR (the same worker may get exposed in more than one circumstance):

Exposure circumstances (tasks conducted in the last week)	**Any level**	100% **Low**	**Medium**	**High**
Working outside during the day in the open	63.0%	16.5%	82.5%	1.1%
Working with or near reflective surfaces (sand, glass, roofing iron, water, concrete or cement, plastic, snow)	40.4%	26.6%	71.5%	1.8%
Including: working with or near snow	*1.0%*	*0.0%*	*28.6%*	*71.4%*
Working outside during the day under partial shade at least 1 hour/day	31.9%	31.4%	68.1%	0.5%
Working outside during the day in a vehicle with the windows down at least 1 hour/day	22.9%	32.0%	67.7%	0.3%

Source: WES 2023, EU-OSHA; reference population: all workers exposed to solar UVR (including ocular exposure) in Germany, Spain, Finland, France, Hungary, and Ireland.

Reminder: 20.8% of all workers were assessed to be exposed to solar UVR in the last working week.

Note: The survey fieldwork was conducted between September 2022 and February 2023.

Protection measures – exposure to solar UVR

Use of protection measures among the workers exposed to solar UVR and for each circumstance of exposure (the same worker may use more than one measure):

Exposure circumstances (tasks conducted in the last working week)	Use of eye protection (wearing sunglasses)	Wearing clothing that covered most of your body (i.e., trousers and shirts or t-shirts with sleeves)	Wearing sunscreen	Wearing a hat or other sun protection head cover
Working outside during the day in the open	21.6%	86.9%	13.3%	49.4%
Working with or near reflective surfaces (sand, glass, roofing iron, water, concrete or cement, plastic, snow)	38.1%	Not asked	Not asked	Not asked
Including: working with or near snow	*28.6%*	*Not asked*	*Not asked*	*Not asked*
Working outside during the day under partial shade at least 1 hour/day	29.1%	88.7%	14.5%	44.2%
Working outside during the day in a vehicle with the windows down at least 1 hour/day	45.8%	88.1%	10.6%	Not asked

Source: WES 2023, EU-OSHA; reference population: all workers exposed to solar UVR (including ocular exposure) in Germany, Spain, Finland, France, Hungary, and Ireland.

Exposure to respirable crystalline silica (RCS)

Most common circumstances of exposure among the workers exposed to RCS (the same worker may get exposed in more than one circumstance): 100%

Exposure circumstances	Any level	Low	Medium	High
Driving in a construction site, a mine or a quarry (not specific to any job)	26.5%	66.2%	10.3%	23.6%
Presence of sand dust on working site (in construction trades)	20.1%	4.3%	13.9%	81.8%
Drilling or making holes in walls (in construction trades)	15.6%	16.1%	39.0%	44.9%
Working with concrete, stone, artificial stone, slate, ceramic tiles or bricks, including: (not specific to any job)	13.9%	1.3%	8.0%	90.7%
Working with ceramic tiles (not specific to any job)	*3.4%*	*0.1%*	*10.1%*	*89.8%*
Working with artificial stone (not specific to any job)	*3.0%*	*0.0%*	*0.0%*	*100.0%*
Mixing concrete or cement (in construction trades)	13.5%	0.0%	0.0%	100.0%
Ploughing, harrowing, or otherwise disturbing soil (in crop and livestock farm workers)	7.9%	16.0%	55.6%	28.4%

Source: WES 2023, EU-OSHA; reference population: workers exposed to RCS in Germany, Spain, Finland, France, Hungary, and Ireland and working in one or more of the circumstances listed.
Reminder: 8.4% of all workers were assessed to be exposed to RCS in the last working week.

Protection measures – exposure to RCS

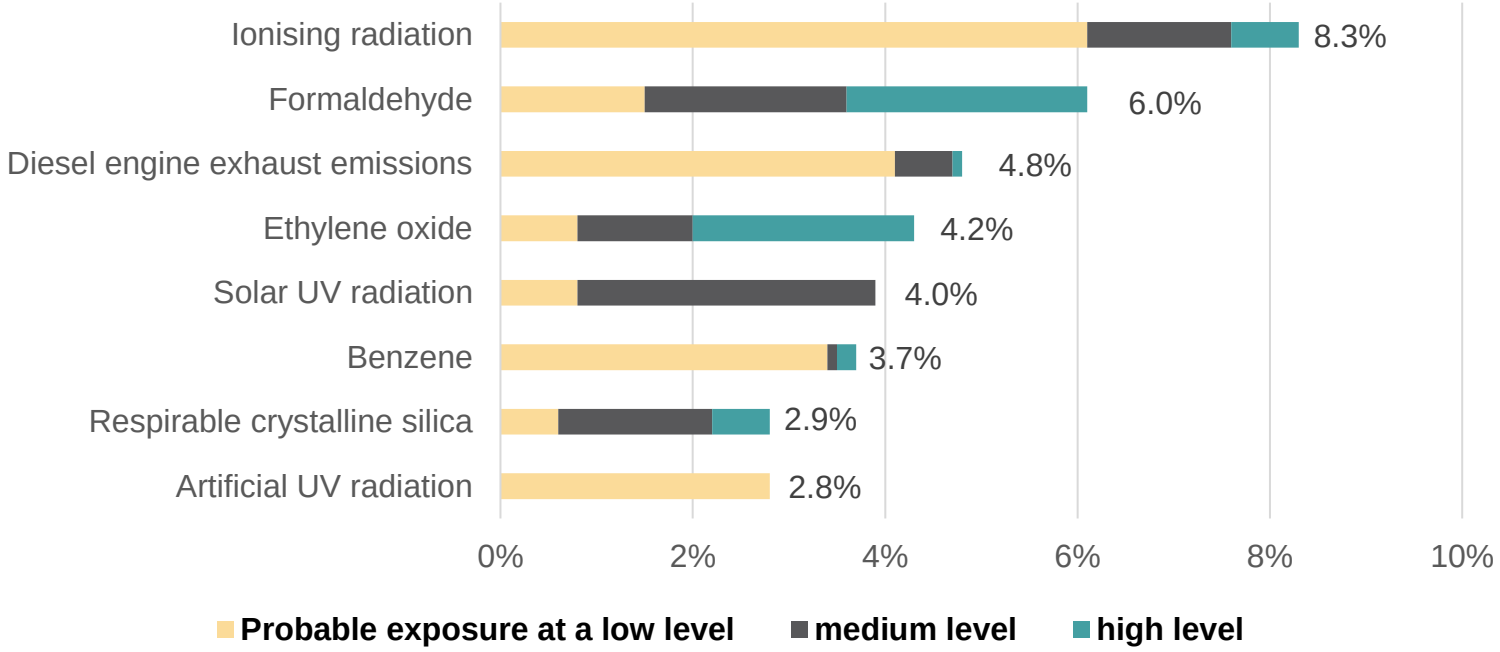
Use of protection measures among the workers exposed to RCS and for each circumstance of exposure, when available (the same worker may use more than one measure):

Exposure circumstances (tasks conducted in the last working week)	Use of water spray or water suppression	Local exhaust ventilation, on-tool extraction or dust collection	Use of an enclosed cab	Filtering or air-supplied respirator	None of the protection measures listed before
Presence of sand dust on working site	30.0%	Not asked	Not asked	Not asked	70.0%
Drilling or making holes in walls	Not asked	37.0%	Not asked	Not asked	63.0%
Working with concrete, stone, artificial stone, slate, ceramic tiles or bricks:	30.0%	30.0%	Not asked	35.4%	43.5%
Working with ceramic tiles	*35.8%*	*46.7%*	*Not asked*	*33.9%*	*36.1%*
Working with artificial stone	*24.1%*	*35.4%*	*Not asked*	*44.3%*	*48.3%*
Ploughing, harrowing, or otherwise disturbing soil	Not asked	Not asked	45.7%	Not asked	54.3%

Source: WES 2023, EU-OSHA; reference population: workers exposed to RCS in Germany, Spain, Finland, France, Hungary, and Ireland and working in one or more of the circumstances listed.

Note: 40.2% of the workers exposed to RCS and working with sand dust in their working site are using cleaning measures as well (vacuum cleaning or mopping with water).

Main exposures – healthcare workers



Source: WES 2023, EU-OSHA; reference population: healthcare workers in Germany, Spain, Finland, France, Hungary, and Ireland.

How can the survey contribute?

- **Increasing awareness** of exposure to cancer risks at work.
- **Better design and targeting of preventive measures.**
- Contribution to **evidence base for policy**, including evaluation:
  - Contribution to occupational safety and health actions – Europe's Beating Cancer Plan.
  - Support one of key objectives – EU strategic framework on health and safety at work 2021-2027 (improving prevention of work-related diseases, in particular cancer).
  - Provision of information for updating EU legislation to improve the protection against dangerous substances and fight occupational cancer.
- Participation in the activities around the **Roadmap on carcinogens**.

Willing to know more about WES?

- **Website section and publications already available:**

https://osha.europa.eu/en/facts-and-figures/workers-exposure-survey-cancer-risk-factors-europe

  - First findings (6 languages)
  - Methodology report (EN) and summary (6 languages)
  - Criteria for inclusion of the 24 cancer risk factors (EN)
  - Bibliography (EN)
  - Powerpoint presentation: description of the survey and key findings (13 languages)
  - Occupational cancer risk factors in Europe – Findings of WES for health and social care workers: report and summary (EN)
- **Publications to come in 2025**
  - Flyer on exposures in HeSCare
  - Overview report and summary