

LET'S STICK TOGETHER

Survey on health and occupational
issues among ASML employees
working in the clean room.



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REASON

FNV members and their colleagues working in the ASML clean room have been experiencing health issues and a decrease in their wellbeing. According to the members, the main cause is the continuous wearing of a face mask, a requirement that was introduced in September 2024. They consider that the mask requirement not only affects their health and wellbeing but that it is also unnecessary.

The FNV carried out a survey among ASML employees working in the clean room to determine the percentage of members who are experiencing specific issues.

STRUCTURE AND EXECUTION OF THE SURVEY

The FNV set up a short survey using software developed by the research company www.onderzoekdoen.nl. The questionnaire was drawn up in collaboration with FNV members and was based on the expected health complaints. The questions are shown in Appendix 1.

The survey was carried out between 8 September and 10 November 2025, and a general link to the survey was sent to ASML clean room employees. The survey was completed by 803 respondents, most of whom worked all day in the clean room (see Fig. 1).

RESULTS

REPORTED HEALTH AND OCCUPATIONAL ISSUES POTENTIALLY CAUSED BY WEARING A FACE MASK

Only 10% of the respondents answered "No" to indicate that they had not experienced any issues related to wearing a face mask. This means that 90% of the respondents reported health or occupational issues. On average, respondents checked three options when indicating they had issues.

The length of time spent in the clean room had a significant impact on the occurrence of health issues. The reported issues were more widespread when the length of the stay exceeded more than 2 hours (under 2 hours, "No" was indicated by 52% of the respondents, decreasing to 10% or below for longer periods). For each complaint, the following emerged (see Fig. 3):

- Headaches increased significantly when employees spent more than 4 hours in the clean room.
- Respiratory problems were reported most often, increasing significantly when employees spent more than 6 hours in the clean room.
- Reports of facial irritation increased significantly when employees spent more than 4 hours in the clean room.
- Reports of tiredness increased significantly when employees spent more than 4 hours in the clean room.
- Reports of a dry mouth or throat increased when employees spent more than 4 hours in the clean room.
- There was no clear trend with regard to a functional problem concerning condensation on glasses.

SEVERITY OF HEALTH AND OCCUPATIONAL ISSUES

Tiredness was experienced most often as severe by respondents (30%), while condensation on glasses was experienced least often as severe (7%). Roughly 70% of the respondents experienced significant (moderate or severe) inconvenience with regard to health issues. Approximately 25% were severely affected by health issues (see Fig. 4).

The reported severity of the health issues was also compared with the length of time spent in the clean room during a workday (see Figs. 5-10). The number of respondents who experienced issues after spending 2 to 4 hours or under 2 hours in the clean room was relatively low. Therefore, these two groups were combined into a single group of employees who spent under 4 hours in the clean room. A comparison of the data yielded the following results:

- The severity of headaches increased from mild to moderate or severe when the employee spent more than 4 hours in the clean room.
- The severity of respiratory problems increased from mild to moderate when the employee spent more time in the clean room. Only a few respondents who spent less than 4 hours in the clean room experienced issues. The severity of the issues experienced by respondents in this group was the same as that of respondents who spent their entire workday in the clean room.
- The time spent in the clean room did not seem to influence the severity of issues regarding facial irritation.
- The time spent in the clean room did not seem to influence the severity of issues regarding tiredness.
- Severe dry mouth or throat issues increased when the employee spent more than 4 hours in the clean room.
- The time spent in the clean room did not seem to influence the severity of issues regarding condensation on glasses.

OTHER HEALTH ISSUES

Respondents were given the opportunity to report other health issues. Those most frequently reported had to do with heat and breathing, and were significantly more common than other issues.

- Overheating / heat buildup – Respondents reported this issue most often, with many indicating they felt too warm as soon as they put on their face mask (multiple variations added up to it being reported 11 times).
- Copious sweating / excessive sweating – Closely linked to temperature issues, this concern was also common (reported 9 times).
- Dizziness, especially during physical exertion – Multiple reports of respondents feeling light-headed or dizzy when working (reported 5 times).
- Blocked nose / stuffy nose – Recurring issue; sometimes the nose became unblocked only when the respondent was on holiday (reported 4 times).
- Asthma or worsening of respiratory issues (including COPD) – Several reports of asthma symptoms worsening from the time face masks became mandatory (reported 3 times).
- Runny nose / phlegm in the throat – Continuous presence of phlegm or mucus (reported 3 times).
- Shortness of breath / trouble breathing – respondents reported tightness in the chest or the feeling they could not breathe in enough air (reported 3 times).
- Heart-related issues – including heart-rhythm issues, pressure on the chest, or existing heart conditions (reported 3 times).

Issues that were reported less frequently included coughing; throat irritation; a dry nose and nose bleeds; yellow secretion or inflammation; nose pain or pressure; collapsed nose; neck pain caused by face-mask elastic; issues with a dental prosthesis (retching); hyperventilation; dizziness caused by lack of oxygen; tiredness and decreased fitness; sleeping and focus issues; skin irritation and acne in the area surrounding the nose; hearing and communication issues (requiring lip reading); concerns about exposure to microplastics and chemicals; and leg issues caused by alleged oxygen deficiency. These issues were reported by one or two respondents. See Appendix 2 for further information.

SOLUTIONS SUGGESTED BY RESPONDENTS

Respondents had been applying solutions to make wearing a face mask more comfortable or to be able to keep wearing it. The most frequently mentioned solution was to take regular breaks to catch one's breath and to take longer breaks. Extra drinking breaks were also taken frequently, with employees indicating that they drank more often not only because of the sweating but in order to take breaks more frequently. This meant they also took more breaks to visit the sanitary facilities.

The second most popular workaround was to wear the face mask incorrectly. Respondents reported a variety of methods.

Other solutions included working at a slower pace, taking ibuprofen or paracetamol for their headaches, using nasal sprays to keep their noses clear, and applying skin care products to reduce skin irritation.

A very small number of individuals had been granted a medical exemption with regard to wearing a face mask.

MISCELLANEOUS COMMENTS

BREATHING

Respondents noted that too little air was able to get through the face masks, partly because they became wet from condensation. This made it difficult to breathe and could cause respiratory problems. A few respondents indicated that they did physical work but the face mask made it hard to cool down after exertion, which could lead to excessive sweating and skin irritation around the mouth and nose.

WORK PERFORMANCE

Several respondents noted that the condensation on their glasses and the loss of concentration caused by tightness in the chest negatively affected their ability to carry out their work. They considered that wearing a face mask constituted a quality risk.

USEFULNESS, NECESSITY, AND ENFORCEMENT

Some respondents doubted that the continuous requirement to wear face masks helped prevent contamination. It was also pointed out that even before the COVID-19 pandemic, product quality had been delivered without the continuous obligation to wear face masks. They felt that wearing a face mask was pointless, but failing to do so carried strict penalties. A number of respondents felt they were not taken seriously by management.

ALTERNATIVES AND IMPROVEMENTS

Respondents suggested limiting the wearing of face masks to critical areas or to when hands-on tasks were being carried out. Other options included setting up rest areas where employees could remove their face mask for a short period. They also said that the lack of options for extra breaks was considered to be a hindrance.

Many respondents felt that the current face masks were not appropriate, and would prefer to wear masks that allowed for a better flow of air. Some suggested that an older type of mask such as those used in hospitals or at Intel and Micron would be more suitable.

LEGAL CONTEXT

BASIC PRINCIPLES

The Dutch Working Conditions Act (Arbeidsomstandighedenwet) stipulates that employers must implement a comprehensive health and safety policy (Arbobeleid) aimed at achieving the best possible working conditions (Article 3). In practice, and in light of current scientific knowledge and professional standards, this means that working conditions must be organised in such a way that they do not harm the health and safety of employees, unless this is not reasonably possible. In this respect, the occupational hygiene strategy - also known as the source-oriented approach or tackling the problem at the source - must be followed.

Under normal circumstances, the use of face masks is governed by the provisions for working with hazardous substances in Chapter 7 of the Dutch Working Conditions Decree (Arbeidsomstandighedenbesluit) and the provisions for working with personal protective equipment (PPE) in Chapter 8 of the Working Conditions Decree. However, the way ASML uses face masks in the clean room for the purpose of protecting the product is not governed by the definition of PPE. This means that the provisions concerning work equipment with regard to hazardous substances in Section 7 of the Working Conditions Decree are to be taken as the legal baseline.

Article 7.3 of the Working Conditions Decree includes the following requirements:

- The selection of work equipment must be justified in the company's Risk Assessment and Evaluation (RI&E).
- To prevent the use of work equipment from posing a risk to the health and safety of employees, all work equipment may only be used for the purpose, in the manner, and at the location for which it was designed and intended.
- The work equipment must be suitable for the work to be performed or must be adapted for that purpose.

This article must also be read within the context of the underlying European Council Directive 89/391/EEC.

Article 7 of this Directive stipulates that ergonomic principles must also be taken into account by the employer. Since the purpose of the face mask makes no difference to the health and safety of employees, the basic principles for the regulations regarding personal protective equipment in Chapters 4 and 8 of the Working Conditions Decree are also relevant for assessing the current state of scientific knowledge.

EVALUATION

The use of the prescribed washable face masks as work equipment in the ASML clean room poses risks to the health and safety of employees. Wearing a face mask can cause skin irritation that can be further increased when moisture is retained behind the mask and if the skin is exposed to soap residue. In addition, a face mask increases breathing resistance, which reduces breathing efficiency and can lead to an increase in the concentration of carbon dioxide behind the mask. This can result in health issues such as respiratory problems, tightness in the chest, a dry mouth or throat, headaches, and tiredness. Finally, it can lead to functional limitations for individuals who wear glasses. The answers provided by the respondents clearly indicate that these are not theoretical risks but that employees actually experience them. In short, the face mask is not only work equipment but also a source of health hazards. Therefore, the use of face masks as work equipment must reasonably be limited.

Specifically, this means that the use of face masks may only be mandated if other solutions, such as increased or focused ventilation and filtration, are not considered feasible. Based on the principle of tackling the problem at the source, an assessment should be made to determine whether the source of the health risks - i.e. the face mask - can be removed, replaced, or its use limited. This also includes limiting the period of time during which the face mask is to be worn. The survey data clearly show there is a correlation between time spent in the clean room and the occurrence of issues. With regard to several of these, the data also indicate a correlation between their severity and time spent by the employee in the clean room. The open answers from respondents clearly demonstrate that taking mask-breaks helps them keep up their productivity at work.

Moreover, if the use of face masks cannot be avoided, measurements must be in place to show whether the masks actually do what they are intended to.

The choice of face mask also needs to be justified. Is it the most ergonomic design? Does it ensure that the source of the symptoms is limited as much as possible? If a particular face mask is preferred because it is more comfortable but not considered to be effective enough, this should be backed up with measurements. An option may be to use different types of face mask, based on what the employee is doing or where they are working. A washable face mask without CE certification will probably not meet the legal standard of being appropriate as work equipment under the specific circumstances according to the Netherlands Labour Authority (Arbeidsinspectie).

Certain organisational measures must be taken to make it easier for employees to wear a face mask. This means having a proper break schedule as well as access to areas where a face mask is not required, and allowing employees to take extra breaks if they need them. In view of the differences in sensitivity to health issues, a more personalised approach is necessary. This might also mean that medical exemptions to the wearing of masks need to be given more freely.

CONCLUSION

The survey data show that the mandatory use of face masks in the clean room results in significant health and functional problems. As many as 90% of the respondents report complaints, ranging from breathing difficulties, headaches, and tiredness to skin irritation and loss of concentration. These issues become noticeably worse if the respondent spends more than 4 hours in the clean room. Respiratory problems and tiredness are reported to be serious issues. Employees also mention feeling hot, sweating excessively, and becoming dizzy, all of which make the work physically and mentally stressful.

The severity and frequency of these issues clearly indicate that the face mask is not just work equipment but is also a health hazard. This is at odds with the obligations under the Working Conditions Act and the Working Conditions Decree, which require that work be organised in such a way that it does not have a negative effect on the health of employees. Current policies do not comply with this. Based on the results and legal requirements, the use of face masks needs to be critically reviewed.

APPENDIX 1: DISTRIBUTED SURVEY INCLUDING OPTIONS

Click the following link to consult a version of the survey:

onderzoek.fnv.nl/?f=uiw1pu71ne&voorbeeld=ja

The survey is closed. To view the survey in English, select the “Ignore the question validation” and then click “Go”.

Please note: Questions on the severity of the health and occupational issues are posed only after a respondent has selected an issue.

1. In which department do you work? (mandatory question)

2. Do you work in the clean room all day or only part of the day? (mandatory question)

- ☐ I work in the clean room all day
- ☐ I work in the clean room more than 6 hours a day
- ☐ I work in the clean room 4 to 6 hours a day
- ☐ I work in the clean room 2 to 4 hours a day
- ☐ I work in the clean room less than 2 hours a day

3. Have you experienced any health or occupational issues that may be caused by wearing a face mask? (mandatory question, multiple answers allowed)

- ☐ No
- ☐ Yes, a headache
- ☐ Yes, respiratory problems (e.g. trouble breathing, shortness of breath)
- ☐ Yes, facial irritation (e.g. redness, itching, a rash or acne)
- ☐ Yes, tiredness (e.g. drowsiness, reduced concentration, exhaustion)
- ☐ Yes, dry mouth or throat
- ☐ Yes, condensation on glasses
- ☐ Other health issues: (Please elaborate)

4. Can you indicate the severity of your headaches? (mandatory question)

- ☐ Mild (on and off)
- ☐ Moderate (often)
- ☐ Severe (significant discomfort)

5. Can you indicate the severity of your respiratory problems? (mandatory question)

- ☐ Mild (on and off)
- ☐ Moderate (often)
- ☐ Severe (significant discomfort)

6. Can you indicate the severity of your facial irritation? (mandatory question)

- ☐ Mild (on and off)
- ☐ Moderate (often)
- ☐ Severe (significant discomfort)

7. Can you indicate the severity of your tiredness? (mandatory question)

- ☐ Mild (on and off)
- ☐ Moderate (often)
- ☐ Severe (significant discomfort)

8. Can you indicate the severity of your dry mouth or throat? (mandatory question)

- ☐ Mild (on and off)
- ☐ Moderate (often)
- ☐ Severe (significant discomfort)

9. Can you indicate the severity of the condensation on your glasses? (mandatory question)

- ☐ Mild (on and off)
- ☐ Moderate (often)
- ☐ Severe (significant discomfort)

10. Can you indicate the severity of your other health issues? (mandatory question)

- ☐ Mild (on and off)
- ☐ Moderate (often)
- ☐ Severe (significant discomfort)

11. Have you tried any adjustments that might reduce your symptoms? (mandatory question)

- ☐ No
- ☐ Yes, the following (e.g. different type of face mask, taking breaks): (Please elaborate)

12. Do you have any other comments or suggestions you would like to share with us on the topic of this survey? (Please elaborate)

BIJLAGE 2: FIGUREN

Do you work in the clean room all day or only part of the day? (N=803)

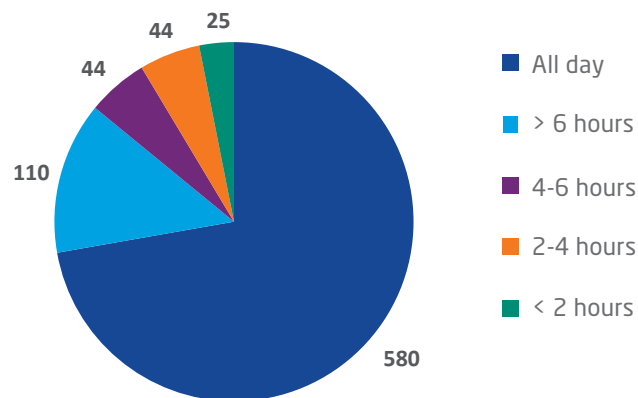


Fig. 1: Number of respondents who work in the clean room all day or only part of the day.

Have you experienced any health or occupational issues that may be caused by wearing a face mask? (N=2173)

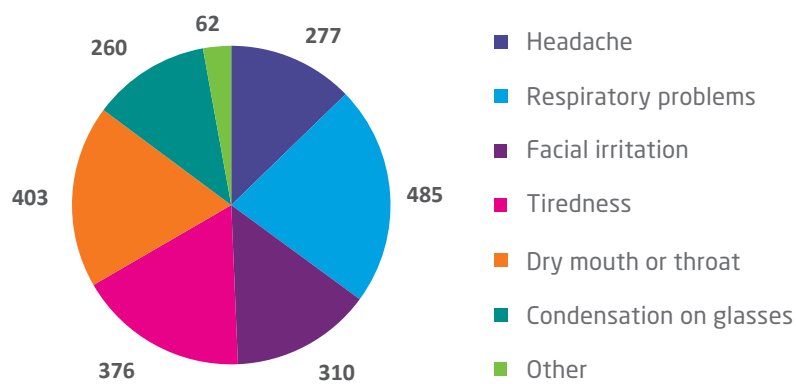
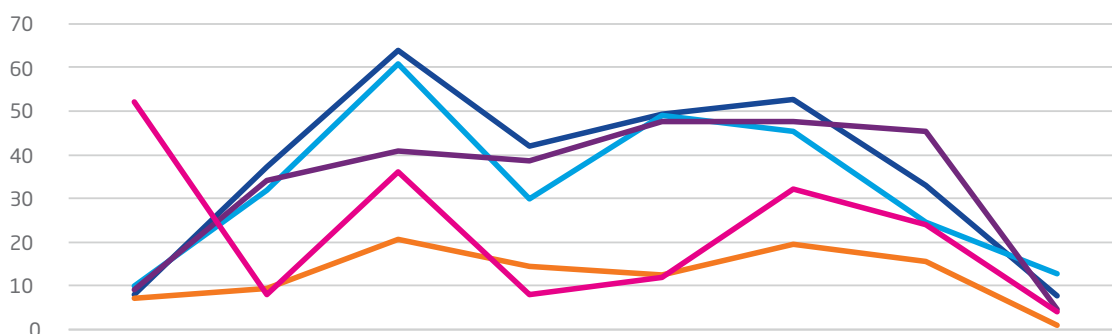


Fig. 2: Health and occupational issues reported by 722 respondents.

Have you experienced any health or occupational issues that may be caused by wearing a face mask? (%)



	No	Headache	Respiratory problems	Facial irritation	Tiredness	Dry mouth or throat	Condensation on glasses	Other
All day	8	37	64	42	49	53	33	8
> 6 hrs	10	32	61	30	49	45	25	13
4-6 hrs	9	34	41	39	48	48	45	5
2-4 hrs	7	9	21	14	12	20	15	1
< 2 hrs	52	8	36	8	12	32	24	4

Fig. 3: Reported number of health and occupational issues in relation to work time spent in the clean room for each individual issue. The percentages are based on the total number of respondents for each length of time. Totals do not add up to 100%, because respondents could select multiple answers. For example, of the respondents who spend all day in the clean room, 8% report no complaints, 64% report respiratory problems, and 42% report facial irritation.

Severity of health and occupational issues

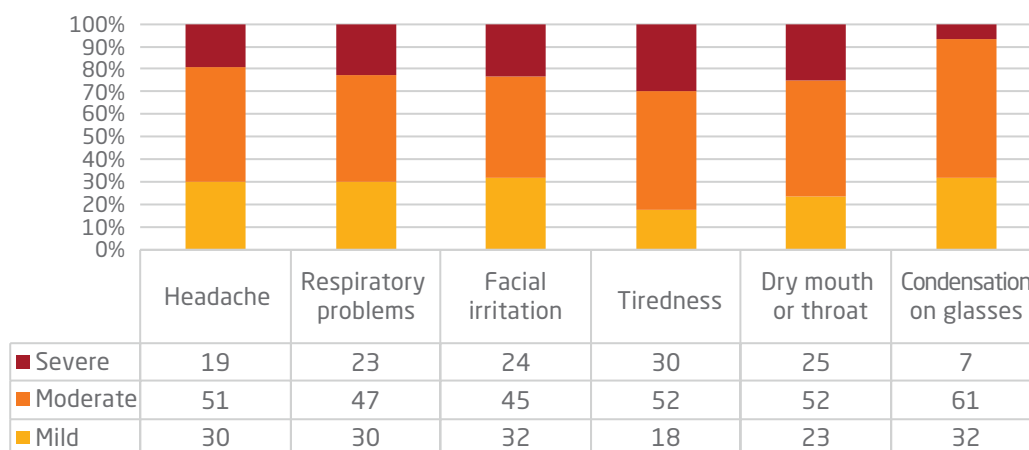


Fig. 4: Severity of issue per complaint among all respondents who reported complaints.

Can you indicate the severity of your headaches?

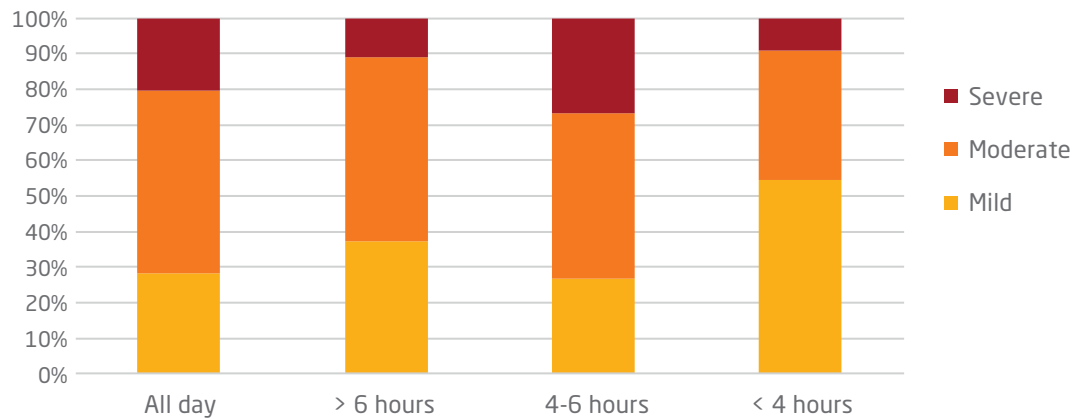


Fig. 5: Severity of headaches reported by respondents in relation to the time spent in the clean room.

Can you indicate the severity of your respiratory problems?

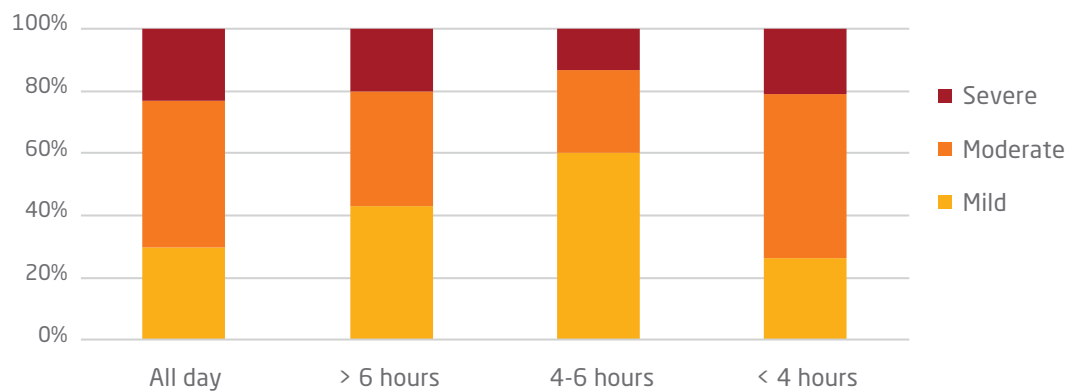


Fig. 6: Severity of respiratory problems reported by respondents in relation to the time spent in the clean room.

Can you indicate the severity of your facial irritation?

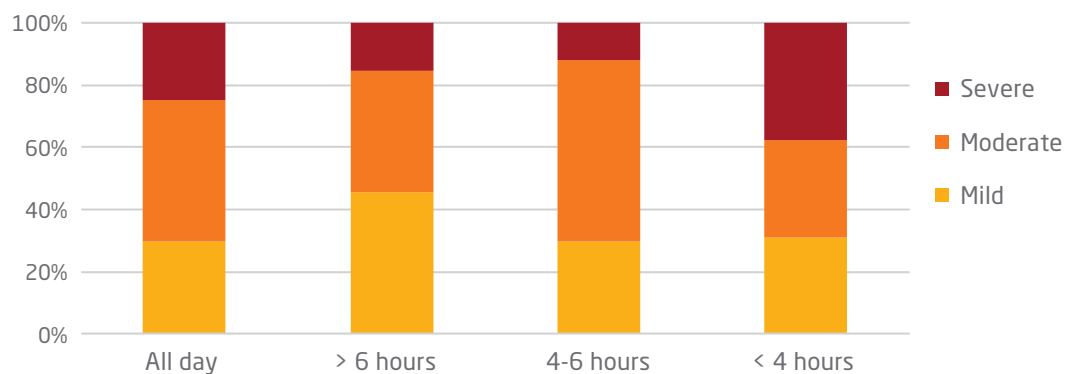


Fig. 7: Severity of facial irritations reported by respondents in relation to the time spent in the clean room.

Can you indicate the severity of your tiredness?

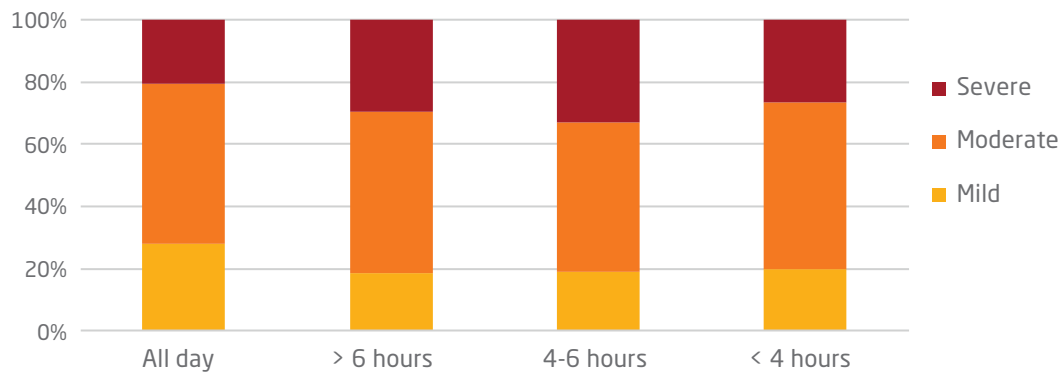


Fig. 8: Severity of tiredness reported by respondents in relation to the time spent in the clean room.

Can you indicate the severity of your tiredness?

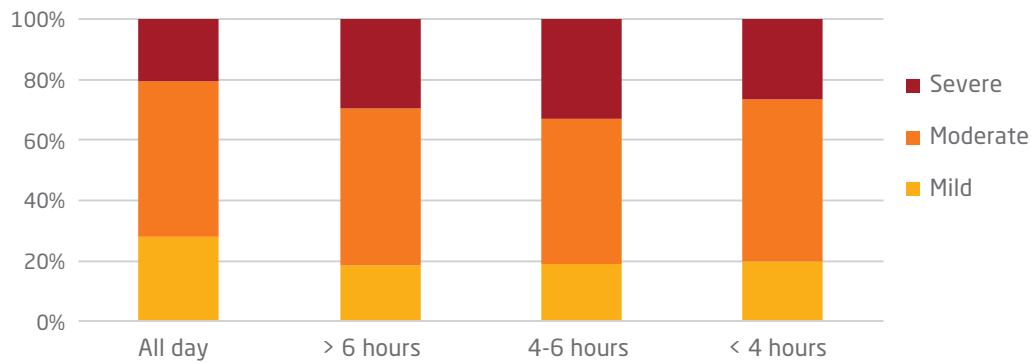


Fig. 9: Severity of issues involving a dry mouth or throat reported by respondents in relation to the time spent in the clean room.

Can you indicate the severity of the condensation on your glasses?

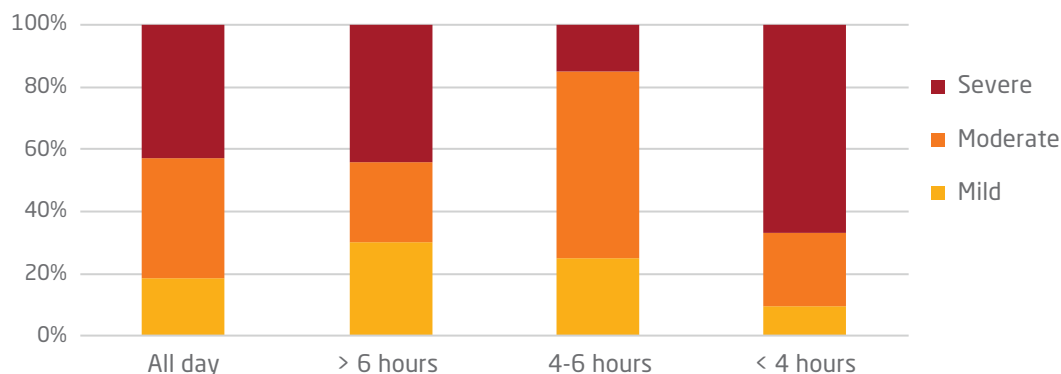


Fig. 10: Severity of condensation on glasses reported by respondents in relation to the time spent in the clean room.

APPENDIX 3: SUMMARY OF OTHER REPORTED HEALTH ISSUES

Topic	Unique issue	Number of reports
Thermoregulation	Overheating / heat buildup / too hot	12
Thermoregulation	Copious sweating / excessive sweating	9
Breathing and airways	Dizziness (including during physical exertion)	5
Breathing and airways	Shortness of breath / gasping for air / respiratory problems	
Breathing and airways	Asthma / worsening of asthma / COPD / newly developed asthma	3
Breathing and airways	Coughing	1
Breathing and airways	Throat irritation / phlegm in throat	1
Nose and upper airways	Blocked nose / stuffy nose	4
Nose and upper airways	Runny nose / mucus / chronic runny nose	3
Nose and upper airways	A cold / cold symptoms worsen when a face mask is worn	2
Nose and upper airways	Dry nose / nose bleeds	1
Nose and upper airways	Yellow secretion / sinus infection	1
Nose and upper airways	Pain or constant pressure on the nose	1
Nose and upper airways	Collapsed nose	1
Cardiovascular issues	Heart-related symptoms (cardiac problems / heart valve / heart rhythm / pressure on the chest)	3
Neurological / head	Migraine / cluster headache	1
Psychological / cognitive issues	Fear / anxiety regarding breathing	2
Psychological / cognitive issues	Problems sleeping	1
Psychological / cognitive issues	Concentration problems	1
Hearing and communication problems	Hearing problems / lip reading	2
Skin irritation	Skin issues around the nose / dry skin / acne	2
Musculoskeletal	Neck pain caused by face-mask elastic	1
Musculoskeletal	Leg issues caused by oxygen deprivation	1
General / workload	Decreased fitness / tiredness	1

General / susceptibility to infections	Often ill / lower resistance	2
Face-mask specific / occupational	Face mask becomes wet / seals off, making breathing difficult	1
Face-mask specific / occupational	Condensation on glasses / visibility issues caused by breath condensation	1
Other concerns	Worried about exposure to microplastics or chemicals	1
Other symptoms	Nausea due to oxygen deprivation	1
Other symptoms	Hyperventilation	1
Other symptoms	Retching caused by dental prosthesis	1

HEALTH AND SAFETY AT WORK

Under the Working Conditions Act, you have the right to a safe and healthy workplace. Your employer must ensure good working conditions. FNV provides more information on these topics on the following page:

fnv.nl/werk-inkomen/veilig-gezond-werken

ARBO-ADVIESPUNT FNV

Do you have a question regarding occupational health and safety? For instance, regarding an industrial accident, your workload, hazardous substances, RSI, or safety? Ask Arbo-Adviespunt FNV.

WHO CAN CONSULT ARBO-ADVIESPUNT FNV?

FNV members, active trade unionists (kaderleden), trade union officials, and members of employee participation bodies can consult Arbo-Adviespunt FNV on work days for information and advice.

ASK YOUR QUESTION BY TELEPHONE

Call Arbo-Adviespunt FNV at 088 - 368 06 09 (Monday to Friday, between 9 a.m. and 1 p.m.).

ASK YOUR QUESTION BY EMAIL USING AN ONLINE FORM

fnv.nl/diensten/arbo-adviespunt/stel-je-vraag-over-gezond-veilig-werken



JOIN THE TRADE UNION OR RECRUIT OTHERS. TOGETHER WE STAND STRONGER!

Would you like to take advantage of the many benefits FNV membership has to offer, but you are not yet a member? If so, go to fnv.nl/lidworden for more information or to join directly. If you are younger than 23 or on a low income, you will receive a discount on your membership fee.

If you are already a member – and would like to contribute to a larger and stronger trade union – you may have colleagues, family, or friends who could also benefit from an FNV membership. If so, please invite them to join the union via fnv.nl/anderlidmaken. As a bonus, for each person who becomes a member, you will receive 10 euros from us as a ‘thank you’!

