

TECHNICAL REPORT

D4.1: Report on accumulated evidence and final guidelines to mitigate heat stress of workers from the addressed key industries (agriculture, construction, manufacturing, transport and tourism)



Nathan B. Morris^{1,2}, Miriam Levi³, Alberto Baldasseroni³, Marco Morabito⁴, Alessandro Messeri⁵, Andreas D. Flouris⁶, Leonidas G. Ioannou⁶, Tjaša Pogačar⁷, Lučka Kajfež Bogataj⁷, Lars Nybo²

¹Centre for Technology Research and Innovation (CETRI Ltd), Lemesos, Cyprus;

²Department of Nutrition, Exercise and Sports, University of Copenhagen, Copenhagen, Denmark;

³Department of Prevention, Local Health Unit Tuscany Center, Florence, Italy;

⁴Institute of Biometeorology (IBIMET), National Research Council, Florence, Italy;

⁵Department of Agricultural, Food, Environmental and Forestry Sciences and Technologies (DAGRI), University of Florence, Florence, Italy;

⁶FAME Laboratory, Department of Exercise Science, University of Thessaly, Trikala, Greece;

⁷Biotechnical Faculty, University of Ljubljana, Ljubljana, Slovenia.

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SUMMARY (overview of identified issues and screened solutions)

The present report shall provide the reader with an integrated overview including up-to-date, evidence-based and best-practise guidelines on how to maintain worker health and productivity during periods with increased heat stress. In the appendices we provide concrete examples of information material targeting specific stakeholders and recipients (ranging from policy makers to managers and individual workers) presenting the solutions and guidelines that we developed in parallel with, and following completion of, the previous work package (WP3, which included five reports on issues and identified solutions for each of the five Heat-Shield key industries; see <https://www.heat-shield.eu/technical-reports> for reports on construction, manufacturing, agriculture, tourism and transport). During WP4, the general and industry-specific guidelines were distilled into presentations that we delivered to key stakeholders within the specific industries who represented a wide variety of relevant occupations within the target industries, such as: workers (farmers, drivers, builders, etc), worker and union representatives, safety officers, company doctors, occupational hygienists, insurance providers, policy makers and politicians. We collected feedback from these stakeholders at each meeting regarding the feasibility, implementability and cost-effectiveness of our proposed heat stress solutions. The feedback was then conglomerated and organised to be able to extract common areas where the stakeholders felt information was lacking or further details were needed to describe and exemplify the recommended interventions. Following the feedback from the stakeholders, our guidelines were both expanded upon and revised to create updated advice based on the best available evidence and refined to meet the demands of those who will actually use these recommendations in real-life scenarios on a daily basis.

The primary points and main considerations are in summary:

1. A proper understanding of the negative effects of heat stress on worker health and performance is still largely lacking and novel and effective methods are required for disseminating critical information to the affected industries.
2. Even for those who believe that heat stress does negatively affect workers, solid step-by-step plans for what should be done to protect workers from heat stress are lacking and there is a need for readily accessible heat mitigation plans in the workplace.
3. Early-warning systems are becoming more prevalent and specifically tailored to individuals and these systems can be a simple and effective way to ensure workers and companies are prepared for when hot weather strikes; however, many people still are unaware of these warning systems and need to be informed about their use and existence.
4. Adding pre-planned breaks to the work day during periods of hot weather is a method that most stakeholders agree would be an effective and easy intervention to implement; however, delivery of clear and accurate information is needed to illustrate that these breaks will not reduce worker productivity, as many employers are initially sceptical of having their workers take more breaks, is critical.
5. Ensuring workers are adequately hydrated is extremely important. While many agree that this is an incredibly important point for workers' health, dehydration at the workplace is still rampant. Preliminary findings suggest as many as 70% of European workers arrive to work dehydrated and this will undoubtable affect their work performance. Meanwhile, employers in some sectors continue to encourage their workers not to drink during periods of hot weather for fear their workers will lose productivity with more frequent bathroom breaks. Hydration at work sites can be improved by establishing drinking stations indoors or giving workers water backpacks and other water carrying devices outdoors.

Alternatively, in outdoor settings, establishing “water caches” – areas known to workers where clean cool drinking water is stored – can be effective.

6. The establishment of rest areas, either air-conditioned rooms or areas with access to electrical fans and cool drinking water indoors or shaded, well-ventilated (and portable if necessary) rest areas for outdoor work was recognised by both researchers and stakeholders as an important method for combatting heat stress.
7. In some scenarios, heat stress may be effectively reduced by optimizing the clothing worn by the workers. Outdoors, this should include light-weight, light-coloured, loose-fitting, long-sleeved clothing made with materials that “breathe well”, as well as a hat in order to minimize the amount of skin exposed to solar radiation while maximizing heat lost to the environment. Indoors, loose, light clothing should also be worn, but – if the work environment allows – these clothes should expose as much skin to the open air as possible. If more sturdy protective clothing such as coveralls are required, mesh patches should be incorporated into the more protected areas of the clothing such as the armpits, behind the knees and elbows, and by the groin area to facilitate heat loss.
8. The knowhow, confidence, willingness to embrace, and resources to execute cooling interventions for workers varies greatly from company to company. Therefore, while it is important to provide information on more effective, yet more costly, cooling interventions for those who are interested, the primary focus for disseminating advice on cooling strategies should be on the interventions that have the best balance of effectiveness, economic cost, and feasibility.

With the above findings from stakeholder feedback in mind, simple dissemination materials were made which condensed our best-practise recommendations to the most important, cost-effective and feasible interventions and combined this information with the most important points about the effects of heat on worker health and productivity. Several versions were created to target specific industries, as well as different positions held within these industries from workers to owners. Additionally, a brief heat-defence plan was created that focuses primarily on the basics of what should be done to protect workers from heat stress and could be employed by any occupational firm, regardless of size and resources. These materials will be graphically optimized in subsequent work packages of the Heat-Shield project.