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Improving worker health in the wind turbine industry – an evaluation of three workplace interventions in Denmark, Spain and Portugal

Submission date
10/12/2024

Recruitment status
Recruiting

Registration date
13/12/2024

Overall study status
Ongoing

Last Edited
18/08/2025

Condition category
Skin and Connective Tissue Diseases

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
As a part of an EU-funded research project, this study aims to improve the physical and mental health of workers in the wind turbine blade (WTB) manufacturing industry. The main effort of this study will involve the development, implementation and evaluation of a workplace intervention involving ultraviolet illumination systems that will allow workers to detect and respond to skin contamination by epoxy resins, a potent allergen.
Over the course of the study, the researchers will encourage employers and workers to take ownership of the intervention so they may continue to refine and adapt it after the study has been completed. Where appropriate, the researchers will identify and share best practices with the wider industry. Finally, by empowering workers from green industries to take ownership of their health and safety, the aim is to promote a culture of honesty and trust in the workplace.

Who can participate?
Workers aged 18 to 70 years directly involved in the production of WTBs made of composite materials in three predetermined study sites at factories in Denmark, Portugal and Spain

What does the study involve?
The study period is about 1 year and comprises a survey and skin patch testing, as well as the characterisation of work experiences using lightweight sensors in a small subset of the participants at baseline.

What are the possible benefits and risks of participating?
The benefit of participating in this study is the opportunity to be involved in the evaluation of a robust workplace intervention with a potential impact on the health of workers in the WTB manufacturing industry. The risks of the study are minimal for the survey and characterisation efforts. Patch testing is a non-invasive and generally safe procedure. It may nevertheless cause local irritation to the skin with itching, swelling and discomfort. Local irritation might in rare circumstances be complicated by a skin infection that may require a visit to a primary care provider for assessment and topical treatment.

Where is the study run from?
1. Department of Occupational Medicine, Aarhus University, Denmark
2. Barcelona Institute for Global Health, Barceolna, Spain
3. Escola Nacional de Saúde Pública, Universidade Nova de Lisboa, Lisbon, Portugal
In keeping with confidentiality agreements, the three study sites (WTB factories) are not named

When is the study starting and how long is it expected to run for?
January 2024 to December 2028

Who is funding the study?
This study is funded by HORIZON Europe Programme - Evidence-based interventions for promotion of mental and physical health in changing working environments (HORIZON-HLTH-2023-ENVHEALTH-02-02)

Who is the main contact?
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2. A/Prof. Michelle Turner
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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
INTERCAMBIO WP7 Intervention Protocol

Study information

Scientific Title
INTERCAMBIO Work Package 7: Interventions to promote mental and physical health in changing working environments: Renewable energy/wind turbine workers

Acronym
INTERCAMBIO WP7

Study objectives
Exposure and sensitisation to epoxy resins is a persistent problem in the wind turbine blade (WTB) manufacturing industry. The hypothesis is that a co-created workplace intervention using ultraviolet (UV) light systems will reduce skin sensitisation risk.

Ethics approval required
Ethics approval required

Ethics approval(s)
1. approved 26/05/2025, Research Ethics Committees of Central Jutland Region (Regionssekretariatet, Juridisk kontor Skottenborg 26, Viborg, 8800, Denmark; +45 (0)78 41 01 83, +45 (0)78 41 01 82, +45 (0)78 41 01 81; komite@rm.dk), ref: 1-10-72-168-24

2. approved 07/04/2025, CEIm - Hospital del Mar (1ª planta, espai 163.05 c/Doctor Aiguader, 88 (Edifici PRBB), Barcelona, 08003, Spain; +34 (0)93 316 06 77; ceic-psmar@imim.es), ref: 2024 /11888/I

3. approved 13/11/2024, Comissão de Ética da Escola Nacional de Saúde Pública da Universidade Nova de Lisboa (CE-ENSP) (Avenida Padre Cruz, Lisbon, 1600-560, Portugal; +351 (0)961 980 960; comissaoetica@ensp.unl.pt), ref: 64/2023

4. approved 07/11/2024, Aarhus University Research Ethics Committee, c/o Fakultetssekretariatet, Health (Vennelyst Boulevard 4, bygning 1267, 211, Aarhus C, 8000, Denmark; +45 (0)8715 0000; forskningsetiskkomite_health@au.dk), ref: 2024-18

Study design
Multi-centre quasi-experimental study

Primary study design
Observational

Study type(s)
Prevention, Safety

Health condition(s) or problem(s) studied
Skin sensitisation and allergic contact dermatitis in persons occupationally exposed to epoxy resins

Interventions
Primary Intervention:
Improvements in the detection of skin contamination with epoxy resins using UV light systems.

Secondary Intervention:
Improvements in worker education and risk communication

Control:
Retention of current work-practices

Assignment:
The basic unit of allocation to intervention or control conditions in this study is the work team. Employers will consider a range of factors such as plant operations, logistics and human resources before determining the allocation of work teams a priori, without randomisation. The role of the researchers will be to guide employers in the development and practical implementation of the intervention.

Duration of intervention:
Work teams will utilize the novel UV light systems for a period of 1 to 12 months depending on factors such as plant operations and logistics.

Follow-up:
Participants will undergo a second round of assessments 6-12 months post-intervention

Intervention Type
Device

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Ultraviolet light detection and visualisation systems

Primary outcome(s)

Skin sensitisation status assessed using skin patch testing at baseline and 6 to 12 months post-intervention

Key secondary outcome(s))
1. Self-reported symptoms of hand and forearm eczema measured using the Nordic Occupational Skin Questionnaire (NOSQ) at baseline and 6 to 12 months post-intervention
2. Self-reported effects of eczema on daily life measured using the NOSQ at baseline and 6 to 12 months post-intervention
3. Self-reported well-being measured using the World Health Organisation 5 Well-Being Index at baseline and 6 to 12 months post-intervention
4. Self-reported depressive symptoms measured using the Center for Epidemiologic Studies Depression scale at baseline and 6 to 12 months post-intervention
5. Self-reported health measured using the Self-rated Health question at baseline and 6 to 12 months post-intervention
6. Self-reported productivity loss measured using the PROductivity and DISease Questionnaire (PRODISQ) at baseline and 6 to 12 months post-intervention

Completion date
31/12/2028

Eligibility

Key inclusion criteria
1. Participant is able to read and understand briefing materials, participant information sheets, voluntary informed consent or survey forms provided in English, Danish, Spanish or Portuguese
2. Participant is willing and able to give informed consent for participation in the study
3. Participant has direct employment in WTB production at the manufacturing facility, i.e. is not employed via a contractor
4. Aged 18 to 70 years
5.1. Either performs tasks involving the application of uncured epoxy resin to be recruited as an exposed production worker
5.2. Or performs any other tasks relating to the production on the factory floor, e.g. delivering goods and materials, transporting products, or preparing composite materials in moulds, to be recruited as a non-exposed production worker

Participant type(s)
Employee

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Upper age limit
70 years

Sex
All

Key exclusion criteria
1. Specifically concerning patch-testing:
1.1. Participant is taking more than 10 mg oral prednisolone daily for any condition
1.2. Participant is on any other form of immunosuppressive therapy
1.3. Participant has previously been diagnosed with occupational, contact or atopic dermatitis of the hands/forearms
2. Specifically concerning post-intervention patch testing:
2.1. Participant has produced a skin response suggesting sensitisation at baseline during this study

Date of first enrolment
01/07/2025

Date of final enrolment
31/01/2026

Locations

Countries of recruitment
Denmark

Portugal

Spain

Study participating centre
Aarhus University
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Sponsor information

Organisation
Project INTERCAMBIO

Funder(s)

Funder type
Government

Funder Name
The European Union's Horizon Europe Research and Innovation programme under Grant Agreement No 101137149 (INTERCAMBIO)

Results and Publications

Individual participant data (IPD) sharing plan
In order to facilitate that the data generated by the project is findable, the datasets will be published in the INTERCAMBIO ISGlobal Dataverse data repository, suitable for EC-funded research. This repository is free to access, facilitating that everyone can find and use the data generated by the INTERCAMBIO project. The repository enables linking research outputs to datasets and funding information, which also facilitates that anyone interested in the project or in project publications can find the relevant data.

IPD sharing plan summary
Stored in publicly available repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes