

Supplementary Material 1 :Interview Guide: Occupational Heat Stress & Cognitive Performance

Interviewer: [Your Name/Organization]

Interviewee: [Name and Role]

Date/Time: [Date] | [Time]

Platform: [Face-to-Face / Online Platform]

Duration: 30–45 minutes

I. Introduction (3 Minutes)

- **Purpose:** Briefly explain the study’s goal: bridging theoretical heat stress frameworks with practical industrial implementation.
- **Confidentiality:** Confirm that all responses are anonymous and will be aggregated for the Fuzzy Delphi process.
- **Instruction:** “We are evaluating various heat stress indices to understand how they impact cognitive performance. Your professional insight on the feasibility and accuracy of these indices is vital.”

II. Core Discussion (25–35 Minutes)

1. Theoretical vs. Practical Alignment

- “Based on your experience, which existing heat stress indices (e.g., WBGT, PHS, UTCI) do you find most relevant when predicting cognitive impairment in your specific work environment?”
- “Are there theoretical indices that you find too complex or impractical for daily field use? Why?”

2. Field Implementation & Practicality (Key Contextual Factors)

- “When implementing a heat stress monitoring program, what are the primary barriers (e.g., equipment calibration, data latency, worker resistance)?”
- “How important is the ‘real-time’ monitoring capability of an index compared to its purely physiological accuracy?”
- “In your opinion, what is the ‘gold standard’ for a heat stress index in terms of ease-of-use for field supervisors?”

3. Cognitive Performance Criteria

- “When assessing cognitive decline under thermal stress, what specific warning signs (e.g., reduced vigilance, decision-making errors, slowed response time) are most critical to monitor in an industrial setting?”
- “Do you believe current evaluation criteria adequately cover the nuances of cognitive impairment, or is there a missing variable we should account for?”

4. Selection Criteria for the Fuzzy Delphi Method (FDM)

- “If we were to rank potential heat stress indices for a new safety protocol, what criteria should we use? (e.g., Scientific Validity, Cost-effectiveness, Response Time, Adaptability to local climate).”

III. Closing (2–5 Minutes)

- **Open Floor:** “Is there any factor or constraint regarding heat stress and cognitive performance that we haven’t discussed but you consider essential?”
- **Next Steps:** Briefly outline that their feedback will be codified into a set of alternatives for the upcoming FDM consensus-building round.
- **Gratitude:** Thank the expert for their contribution.