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DEEP BODY TEMPERATURE MEASUREMENTS IN WORKERS AT HOT SALT-MINING WORKPLACES

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Introduction

In deep mines, work must be done in salt-mining at high ambient temperatures up to 50 °C. The legal rules applicable also to aboveground work for limiting the heat conditions do not allow continous work above 36 °C. By analyzing the physical strain in real occupational activities, the admissibility of longer-lasting work was examined.

Material and Methods

For analyzing the strains a system of instruments developed by the Central Institute of Occupational Medicine of the GDR was applied for measuring the deep body temperature in the auditory canal. The heart rate and the sweat rate were determined as further parameters for the strain during whole workshifts of a selected team of miners.

Results

The collective medium values for the deep body temperature and for the heart rate were continuously increased in the individual occupational activities in the course of the workshift. After preparatory work in a burdensome climate, after 3 hours of work at the face at ambient temperatures of *40* °C and at a relative humidity of about 20 %, the following final values were obtained:

deep body temperature:	37,5 °C
heart rate:	160 · min^{-1}
sweat rate:	600 $g \cdot h^{-1}$

Under comgerable external conditions, at ambient temperatures about 50 C, the following final values were determined for the individual strain parameters after a duration of 130 minutes:

deep body temperature:	38,0 °C
heart rate:	140 · min^{-1}
sweat rote:	850 $g \cdot h^{-1}$

Conclusions

A special work-rest regime was derived from the results. At 40 °C, it is necessary to have a pause in the investigated activity in the middle of the 8-hour workshift, at temperatures about 50 °C after 90 minutes' work in a hurdensome climate, a pause in relaxing thermal conditions (ambient temperature less than 25 °C).

The method for determining the temperature in the auditory canal has made its proofs at workplaces.