

AMBULATORY MONITORING OF ENVIRONMENTAL STRESS

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The increasing complexity of a variety of stressors in the working environment has caused a growing need for a system of flexible loggers capable of monitoring several parameters simultaneously, both pertaining to the working environment and to the worker's physiological response to these environmental stressors. Since these stressors may constitute a combination of the stress of heat, noxious gases in the inspired air and physical work, such battery-operated loggers carried on the worker, should be sufficiently flexible to record a combination of all these types of parameters simultaneously. Such a system is already available in the Squirrel Logger made by Grant Instruments Cambridge, which in its present form is equipped to record environmental **heat stress** in terms of Wet-Bulb-Globe-Temperature (WBGT) and Botsball temperature by sensors attached to the worker's helmet, as well as core- and skin temperatures of the worker, and work load in terms of continuously recorded heart rate. The sensors and the logger have been systematically checked in controlled laboratory studies and the system as a whole has been tested under realistic field conditions in heat-exposed industry and found to be quite accurate, dependable and simple to operate. A major advantage with this system is that the results of the measurements are immediately available both to the investigator and to the subject by visual display on the logger, by printout on a small battery-operated portable printer, or by a miniature battery-operated PC. Another advantage is that the environmental parameters are measured where the worker is located, and not at a fixed point in the factory. The logger has a considerable memory capacity, and the data are transferable to any IBM compatible conventional PC for data analysis, printout and graphic display according to already available programs.

Sensors for gases such as CO in the inspired air are already available and compatible with this logger and are now being tested in the field. It is also conceivable that existing sensors for inhaleable dust may be plugged into this miniature battery-operated logger.