

THERMOREGULATION DURING WORK IN HEAT WHILE WEARING IMPERMEABLE
GARMENTS

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Heat stress is much more severe if a working man uses protective vapor-barrier (VB) garments in an environment that is chemically and/or biologically hazardous. Such problems may be encountered in certain industries, professions and in the military. The objective of this report is to present data collected under natural desert conditions on young healthy men performing various tasks of work while wearing VB garments during the summer season. Two studies were carried out with 42 volunteers ranging in age from 19 to 32 years of age. Wearing protective VB ensembles increased the magnitude of heat stress as reflected by a greater rise in body temperature, heart rate and sweat rate. When WBGT exceeded 25C, physical work loads costing up to 30-50% of aerobic capacity could not be continued safely for more than 40-80 minutes if the subjects wore VB suits. This was true even though the work was intermittent and drinking water was allowed ad lib. Workers using VB garments had greater sweat rate and the skin was fully wet. Increased sweat rate without the benefit of its evaporative cooling is disadvantageous since it leads to a greater rise in body temperature and to a higher degree of dehydration. Heat stress preventive measures should be established for individuals working in heat and wearing VB ensembles to insure their safety and increase their efficiency.