



DEPARTMENT OF THE ARMY
U S ARMY RESEARCH INSTITUTE OF ENVIRONMENTAL MEDICINE
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SGRD-UEZ

5 November 1986

SUBJECT: Justification for Approval of RAD V Funds

Commander
US Army Medical Research and Development Command
ATTN: SGRD-PL/COL George Irving
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Frederick, MD 21701-5012

1. Members of the Heat Research Division recently completed a study entitled "Effects of Chemical Protective Masks and Drinking Systems on Voluntary Dehydration in the Heat." Preliminary results reported to the Water Resources Management Action Group (WRMAG #10) at Fort Belvoir, VA on September 16, 17, and 18, 1986 are outlined below:

a. A marked reduction (43%) in water intake (dehydration) during work in the heat was observed while wearing the chemical protective M17A1 face mask, shorts, socks, and sneakers and using the current water delivery system.

b. The Fluid Intake Suction Tubing (FIST-FLEX) type hydration system reduced this fluid deficit. Thus, further research conducted in MOPP IV configuration under thermally stressful conditions and longer work periods is recommended. These future studies would offer a number of insights to include:

- 1) Testing the hypothesis that 10°F should be added to observed WBT reading when wearing MOPP gear as this may affect the potential for voluntary dehydration and heat injury.
- 2) Measuring total body and sweat electrolyte losses in MOPP IV.
- 3) Evaluating and comparing fluid intakes and body weight losses (body water losses) when using the current and FIST-type of water delivery systems under more "realistic" work conditions (50/10 work/rest cycles).
- 4) Evaluating drugs identified in our rat model as ergogenic aids and facilitators of heat loss via radiation and conduction.

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2. With these goals in mind, we request authorization/justification from RAD V to approve these enclosed 1498. Dr. Szlyk's group currently represents 2.5 man years of effort. We predict that less than 6 months will be devoted to this task.

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DAVID D. SCHNAKENBERG
Colonel, MS
Commanding