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ADDENDUM/MODIFICATION OF THE WRITE-UP

COMMENTS ON THE PROPOSED INCREASE TO 50 mW/cm<sup>2</sup>  
AS THE NEW SAFETY LEVEL OF RADIATION  
IN THE FREQUENCY REGION 3-30 MHz

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## ADDITIONAL COMMENTS

1. Continuing experiments have shown that maximum absorption under free space exposure conditions occurs at somewhat lower frequencies than those described in the original write-up of November 27, 1974. Peak absorption for  $\vec{E} \parallel \hat{L}$  orientation is measured for frequencies such that the major length of the body is approximately  $0.36-0.4 \lambda_0$  where  $\lambda_0$  is the free space wavelength of radiation.

→ || For a 1.75 meter man, maximum whole body absorption is anticipated therefore for the frequency region 62-70 MHz.

2. On the basis of some preliminary experiments, absorption in the presence of ground effects is expected for frequencies approximately one-half the above values, i.e., for 31-35 MHz.
3. A whole body absorption cross section of 2.5-3.5 times as much as the shadow area was observed for bodies of prolate spheroidal shape with  $a/b = 6$ . This observation was previously used to calculate a whole body power deposition of 550-750 watts for man exposed to incident plane wave intensities of  $50 \text{ mW/cm}^2$ . Recent experiments with human shaped figurines (rather than prolate spheroidal bodies) have shown that the whole body absorption cross section is somewhat higher at 4.2 times the shadow area. From the observed average absorption densities, we calculate the whole body energy deposition rate of 775 watts at  $50 \text{ mW/cm}^2$ .
4. The energy deposition rate in the neck region<sup>1</sup> is among the highest

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<sup>1</sup> O. P. Gandhi, "Conditions of Strongest Electromagnetic Power Deposition in Man and Animals", to be published in *IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT-23, December 1975.

of the various parts of the body. For incident plane wave fields of  $50 \text{ mW/cm}^2$  at 67.9 MHz, the rate of energy deposition in the upper neck region is estimated to be\* 308.1 W/kgm.

5. For the case of ground effects, the numbers will be generated using the monopole-above-ground chamber presently under construction at our laboratory and comparing the results so obtained with those from the parallel plate radiation chamber that is currently being used.

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\* An estimate of the severity of this deposition rate may be obtained by looking at the implied heating in case of no heat transfer by blood circulation, conduction, etc. The rate of energy deposition is high enough to affect a temperature increase of  $4.42^\circ \text{ C/min}$ . The additional load on the blood circulation mechanism is apparent from these projections.