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"Biological effects of microwaves probed by OTP"

Early returns are in on the Federal government's multi-pronged effort to evaluate the biological effects of low-level nonionizing electromagnetic radiation (0-300 GHz). It began in 1972 at the prompting of the White House Office of Telecommunications Policy (OTP). Little was known about the biological effects of low-power density levels over extended periods of time.

While OTP insists it is still shy on conclusions—insufficient funding is hampering many studies, it notes—**valuable information is being gathered on many aspects of microwave radiation.** A sampling of findings from all government studies is included in a just-released report from OTP and is available from that office (for copies write the Office of Telecommunications Policy, Executive Office of the President, Washington, DC 20504. Ask for Third Report on Program for Control of Electromagnetic Pollution of the Environment). **It may surprise you to learn that the OTP program consists of approximately 106 projects, including 50 extramural and 56 projects being conducted within government laboratories.** The majority represent continuing efforts with approximately 21 new projects included.

Here is a sampling of some of the most important projects:

—**The Dept. of Health, Education and Welfare/Bureau of Radiological Health.** It figures that the inability to accurately determine microwave exposure and dose levels can be a major factor in widely differing standards for maximum permissible exposure levels. The bureau is also supporting the microwave oven performance standard by calibrating microwave measurement instruments used by lab and field personnel. To do this, it operates the country's only microwave power density calibration facility. It is also developing facilities covering an expanded range of rf-microwave facilities.

—**HEW/National Institute of Environmental Health Sciences** is concentrating on determining nonthermal effects of mw radiation at 2450 MHz with emphasis on cell systems, embryo development and neutral response.

—**HEW/National Institute of Occupational Safety and Health**—a Labor Dept. affiliated office, writes occupational safety standards including radiation from 10 MHz to 100 GHz. But field monitoring instrumentation is not commercially available for detecting exposure levels for radio frequency radiation from 10 GHz to 300 GHz. In addition, little is known about the biological effects of rf radiation on humans or experimental animals at the government assigned Industrial-Scientific-Medical band frequencies of 13.56, 27.12 and 40.68 MHz. Since the industrial uses of these frequencies are rapidly increasing, NIOSH is concerned.

—**Environmental Protection Agency** has completed a number of studies on such sources as radar, satellite communication systems and uhf broadcast stations. It has improved a crossed-beam apparatus for simultaneous mw irradiation at 2.45 GHz. It has completed an 8.5-9.6 GHz exposure facility operating under controlled environmental conditions.

—**Department of Defense** has several projects underway such as the Army's study of ocular effects of microwaves on rabbits (where animals were exposed at levels of from 50 mW/cm² to 300 mW cm² and followed for information on development of cataracts. A final report is underway that will include the general finding of no cataract formation except at high exposure levels). The Navy is concentrating on safe exposure power levels and tolerance times for personnel, and defining the nature of possible biological effects of exposure to nonionizing radiation from radar, communications transmitters, etc.

—**National Bureau of Standards** has developed basic measurement techniques for microwave radiation, exposure chambers, portable measurement instruments and radiation propagation theory. Example is the development of a series of energy density meters using an isotropic probe designed to minimize perturbation of the field being measured.