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Eighth Supplement

to

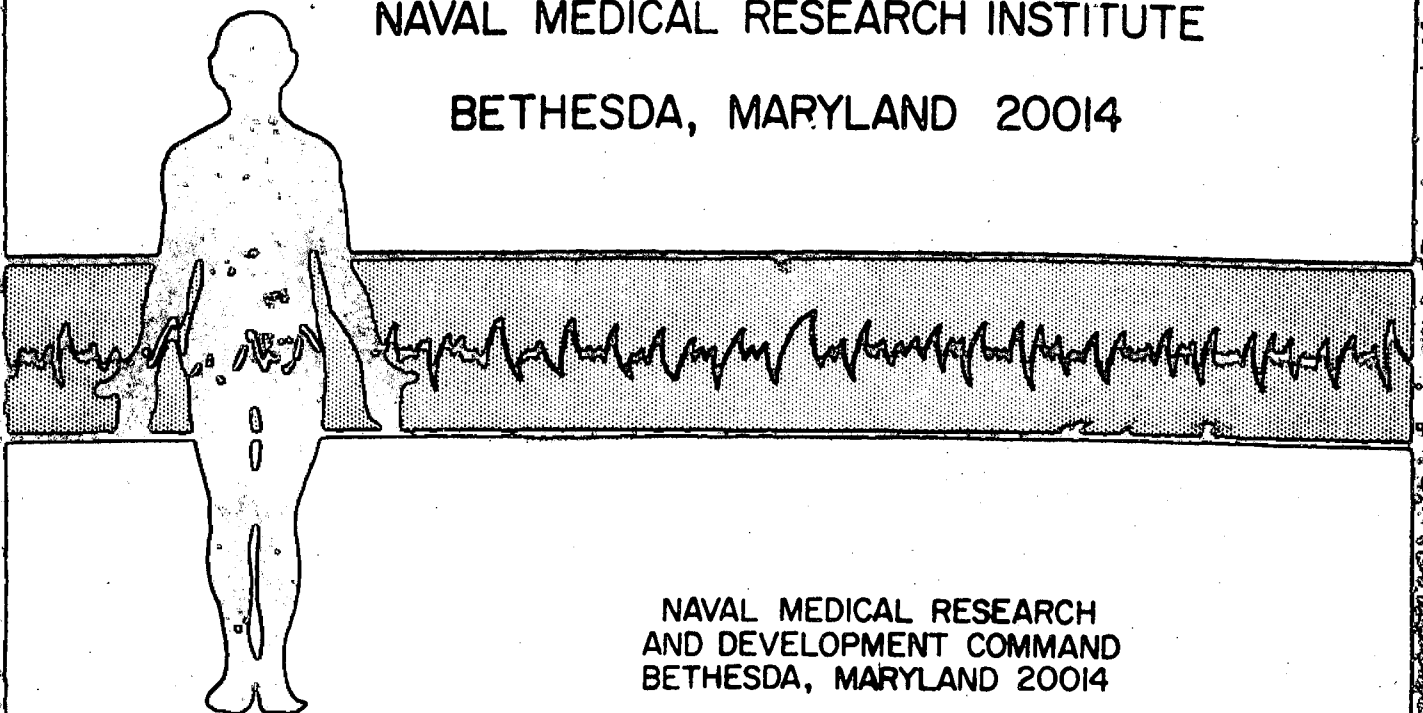
BIBLIOGRAPHY OF REPORTED BIOLOGICAL PHENOMENA
('EFFECTS') AND CLINICAL MANIFESTATIONS ATTRIBUTED
TO MICROWAVE AND RADIO-FREQUENCY RADIATION

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This report is the eighth supplementary "up-dated" bibliographic listing to Naval Medical Research Institute (NMRI, Bethesda, MD 20014) Research Report No. 2, completed under Research Work Unit MF12.524.015-0004B in October 1971, by the senior author, and available from National Technical Information Service (Springfield, VA 22151) as AD #734-391. The original report was revised and reprinted in April 1972, and also contains the first three supplements; No. 1 dated October 1971, No. 2 dated November 1971, and No. 3 dated April 1972. The revised report which consists of more than 2300 literature citations, is available from NTIS as AD #750-271, and includes, as the first chapter, an outline of the effects which have been attributed to radio frequency and microwave radiation. Supplement No. 4 (containing 327 citations) was completed in June 1973, as an Electromagnetic Radiation (EMR) Project Office Report, Bureau of Medicine and Surgery (Navy), (Washington, DC 20372), and is available from NTIS as AD #770-621. Supplement No. 5 (containing 497 citations) was completed in July 1974 as an EMR Project Office Report, Naval Medical Research and Development Command (NMR&DC, Bethesda, MD 20014), and is available from NTIS as AD #784-007. The sixth Supplement (containing 241 citations) was completed in June 1975 (also as an EMR Project Office, NMR&DC Report), and is available from NTIS as AD #A015-622. The seventh Supplement (containing 345 citations) was completed in May 1976 as a NMRI Report, and is available from NTIS as AD #A025-354.

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ABSTRACT

Almost 350 additional references on the biological responses to radio frequency and microwave radiation, published up to August 1976, are included in this continuing bibliography of the world literature. Particular attention has been paid to the effects of non-ionizing radiation on man at these frequencies. The citations are arranged alphabetically by author (where possible), and contain as much information as possible so as to assure effective retrieval of the original documents. Soviet and East European literature is included in detail.

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Key Words

Biological Effects	Non-Ionizing Radiation
Bibliography	Microwave Radiation
Electromagnetic Radiation Bio-Effects	Electric-Field Bio-Effects
Radio Frequency (RF) Radiation	Magnetic Bio-Effects
Radiation Effects	Human Factors
Thermogenesis	Pulsed Electromagnetic Radiation
Health Effects	Stress Physiology
Radiobiology (Non-Ionizing)	Radar Safety

The comments upon and criticisms of the literature made in this report, and the recommendations and inferences suggested, are those of the authors, and do not necessarily reflect the views of the Navy or the Department of Defense.

FOREWORD TO THE SEVENTH SUPPLEMENT

It is the hope of the author that the updating of this Bibliography will continue to provide guidance to the diffuse and conflicting literature on the biological responses to electromagnetic radiation (EMR) at radio- and microwave-frequencies, with particular reference to the effects of concern to man. Such guidance is needed in the formulation and appraisal of criteria and limits of human exposure to "non-ionizing" electromagnetic radiation, and in the planning and conduct of future research.

My original plans for the Bibliography were to categorize and key the literature citations to the "outline of biological and clinical effects" (Chapter 1 of the initial report). This proved to be much more difficult and time-consuming task than anticipated, and was actually completed at the time for only about 400 papers. Since then, a much more extensive classification of the literature has been accomplished, using Keysort[©] cards punched on the four axes to indicate: the research area, organ system, frequency, power level, species used, experimental data, and a summary of the results. This will be the subject of a future report.

The standard format used throughout the Bibliography is: author, (date), journal, volume, (issue): page, "title". The authors are alphabetized, and in chronological order. Multiple authors are also alphabetically ordered according to the second, third, etc., author. Inclusive pagination is given where possible, as is the original language of the citation. Report accession and translation numbers (some of the sources were cited in Appendix A of the initial report), and alternate sources are listed when known. The title of books is underlined. When the title of the report was not available (or not given), a short (one line) description of the paper is listed whenever possible. Reports in which the name of the author was not given are listed chronologically using the format, "title", reference, source, (date). In many cases the citation was obtained from secondary (and tertiary) sources. For this reason it was impossible to put every citation into a consistent format.

The original intent for the Bibliography was to limit the citations to those papers describing bio-effect studies using electromagnetic radiation at radio- and microwave-frequencies. Some broadening of scope has occurred, so that this Supplement includes a few references to recently-issued relevant reports on biological studies involving pure electric or magnetic fields (alternating or static), extremely low frequency (ELF) fields, and a citation to ultrasound (which, although it is not electromagnetic radiation, is in some respects similar to RF radiation). Other

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citations include such topics as bio-medical studies using electromagnetic pulse radiation (EMP), high voltage (Kirilian) photography, biological dosimetry, effects of EMR on implanted electronic cardiac pacemakers, some therapeutic applications of EMR (including wound healing and bone regeneration), microwave exposure limits, regulations and standards, and such diverse applications as tissue fixation, insect control, and electroanesthesia.

The use of square brackets for explanatory notes and comments has been increased. The listing of relevant presentations made at technical meetings (especially in view of the sometimes considerable time lag before the paper appears in print) has been expanded.

The author continues to solicit comments and criticism regarding form, content, omissions, etc., as well as information on new papers/manuscripts so that updating, revision, and corrections can be made.

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Acknowledgment is also due to many friends and associates for their helpful suggestions, comments, and loans and/or gifts of reports or other material which have been invaluable in the course of this work. Among them are: Dr. Joseph Hosszu, and Messrs. Terence O'Grady, James Bryant, and Joseph Halberstein (Naval Surface Weapons Center), Mr. John Mitchell (Air Force School of Aerospace Medicine), and Mr. Arsen Iwanovsky (Editor, Neuroelectric News).

Special help in the acquisition of relevant papers has been received from the librarians and staff members of the Naval Medical Research Institute Library, and the Naval Surface Weapons Center/Dahlgren Laboratory Technical Library. Their diligence and resourcefulness in tracing and obtaining copies of a large number of papers and reports, often in spite of incomplete and/or inaccurate citations given in other sources, enabled us to include many relevant items.

Credit is due Mrs. Anna Woke (Naval Medical Research Institute), Mr. Nick Yanowsky (Naval Medical Research and Development Command), and to Chris Dodge for assistance in translating portions of a number of foreign language papers.

The outstanding assistance in many aspects of the preparation of this report by Ms. Judith Allamong has again been considerable, and is appreciated. Typing of the report was again performed by Mrs. Patricia Brown in a superb manner.

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EIGHTH SUPPLEMENTARY LISTING

to

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4046. "Embassy staff blood is tested in Moscow" [in connection with the accounts of microwave irradiation], The Washington [DC] Post [newspaper], p. A-11 only, Friday, May 7, 1976.
4047. "Industrial applications of microwave energy" [including a lecture on "safety and hazards" by VOSS, W.], short course presented at the 11th Annual Microwave Power Symposium, Leuven, Belgium, The International Microwave Power Institute (27 July 1976).
4048. "Use of microwave ovens in the catering industry" [including a lecture on "microwave oven safety" by EKE, K.I., & KOUKOUidakis, S.], short course presented at the 11th Annual Microwave Power Symposium, Leuven, Belgium, The International Microwave Power Institute (27 July 1976).

TECHNICAL MEETINGS

4049. "1975 Microwave Power Symposium," sponsored by the International Microwave Power Institute, Univ. of Waterloo, Ontario, Canada (27-30 May 1975), (Relevant presentations). [See citation #3124, this Biblio.]

Session 1 - "Medical and Biological Applications -I," (VOSS, W.A.G., chmn.)

BIGU DEL BLANCO, J., & ROMERO-SIERRA, C. (Queen's Univ., Ontario, Canada), "Color-thermography and microwave radiometry: Their application to biological systems under microwave radiation exposure."

DIETZEL, F. (Justus Liebig-Universität, West Germany), "Microwaves in tumor therapy."

ROBINSON, J.E., McCULLOCH, D., & EDELSACK, E.A. (Univ. of Maryland, School of Medicine), "Microwave heating of malignant mouse tumors and tissue equivalent phantom systems."

SCHWAN, H.P., & KRITIKOS, H.N. (Univ. of Pennsylvania), "Energy deposition in homogeneous and multilayer tissue spheres and effect of circulation."

Session 2 - "Microwave Ovens," (SAAD, T.S., chmn.)

DOYON, P.R. (West Jersey Hospital, Voorhees, NJ), "Total food systems approach to hospital food service, using conveyORIZED microwave ovens."

KASE, Y., OKADA, T., FUJIWARA, Y., & SATO, T. (Osaka, Japan), "Food vending machine equipment with microwave oven."

KUMPFER, B.D. (American Microwave Inc., Salt Lake City, UT), "The 'Micromite', an ultra-compact microwave oven."

Session 3A - "Medical and Biological Applications -II," (ROMERO-SIERRA, C., chmn.)

BURNS, C.P., BURDETTE, E.C. (Georgia Institute of Technology), & POPOVIC, V.P. (Emory Univ. School of Medicine), "Electromagnetic thawing of frozen granulocytes."

BUTCHER, S.H., BUTCHER, L.L., HARMS, M.S., & JENDEN, D.J. (UCLA, Los Angeles, CA), "Fast fixation of brain *in vivo* by high intensity microwave irradiation for neurochemical studies."

GUY, A.W., WEBB, M.D., & McDOUGALL, J.A. (Univ. of Washington, School of Medicine), "A new technique for measuring power deposition patterns in phantoms exposed to EM fields of arbitrary polarization -Example, the microwave oven."

Session 3B - "Biological Effects of Microwaves -I," (GUY, A.W., chmn)

DEFICIS, A., DUMAS, J.S., & LAURENS, S. (Laboratoire du D.E.R.M.O., O.N.E.R.A.-C.E.R.T., Toulouse, France), "Biological alterations observed under microwave irradiation."

KRITIKOS, H., TAKASHIMA, S., & SCHWAN, H.P. (Univ. of Pennsylvania), "Effects of RF fields on nervous activities."

LU, S-T, JONES, J., PETTIT, S., LEBDA, N., & MICHAELSON, S. (Univ. of Rochester, NY), "Neuroendocrine and cardio-dynamic response of the dog subjected to cranial exposure to 2450 MHz microwaves."

4049. (continued)

Session 3B - (continued)

TRIVERS, W.D., & VETTER, R.J. (Purdue Univ.), "Low level microwave effects on the total iron-binding capacity of pregnant rats."

Session 4 - "Microwaves in Food Industry," (MEISEL, N., chmn)

FORD, J.D., PEI, D.C.T., & ANG, T.K. (Univ. of Waterloo, Canada), "Microwave freeze-drying of beef."

MAURER, R. (Lipton of Canada, Ontario), "Preview of field trip to microwave pasta dryer installation."

NYKVIST, W.E., & DECAREAU, R.V. (U.S. Army Natick Laboratories), "Microwave meat roasting."

O'MEARA, J.P. (U.S. Dept. of Agriculture, Berkeley, CA), "Sterilization of pouch-packed foods in a microwave pressure retort."

PELTRE, P.R. (U.S. Army Natick Laboratories), & MA, Y.H. (Worcester Polytechnic Institute, MA), "Application of computer simulation in the study of microwave freeze-drying."

VAROQUEAUX (National Institute of Agronomic Research, Dijon, France), "Blanching of peaches."

Session 5 - "Biological Effects of Microwaves -II," (GUY, A.W., chmn.)

BORTH, D., & CAIN, C. (Univ. of Illinois), "The generation of acoustic signals in materials irradiated with microwave pulses -a theoretical analysis."

CHOU, C-K., & GUY, A.W. (Univ. of Washington), "Effects of microwave fields on muscle contraction."

LOVELY, R.H., & GUY, A.W. (Univ. of Washington), "Conditioned taste aversions in the rat induced by a single exposure to microwaves."

OLSEN, R.G., DURNEY, C.H., LORDS, J.L., & JOHNSON, C.C. (Univ. of Utah), "Low level microwave interaction with isolated mammalian hearts."

SEAMAN, R.L., WACHTEL, H., & JOINES, W.T. (Duke Univ.), "Stripline techniques in the study of microwave biological effects on isolated neural preparations."

Session 6 - (Not Relevant)

Session 7 - "Biological Effects of Microwaves -III," (JOHNSON, C.C., chmn.)

ALBERT, E.N. (George Washington Univ., Washington, DC), "Light and electron microscopic observations on hamsters after microwave irradiation."

BIRENBAUM, L. (Polytechnic Institute of New York), KAPLAN, I.T. (City Univ. of New York), METLAY, W. (Hofstra Univ.), ROSENTHAL, S.W. (Polytechnic Institute of New York), & ZARET, M.M. (Zaret Foundation), "Ocular effects of 35 and 107 GHz CW microwaves."

FOSTER, M.R. (Bureau of Radiological Health, Winchester, MA), "A model for thermal cataractogenesis."

MAGIN, R.L., LU, S-T., & MICHAELSON, S.M. (Univ. of Rochester, NY), "Biological effects of locally applied microwaves on the thyroid gland of dogs."

MICHAELSON, S.M., & MAGIN, S.W. (Univ. of Rochester, NY), "The ocular lens and cataract."

THOUREL, B., PRIOU, A., & AUGE, C. (D.E.R.M.O., O.N.E.R.A.-C.E.R.T., Toulouse, France), "Microwave specific effects on beer yeast."

WILLIAMS, R.J. (Duke Univ.), MCKEE, A., FINCH, E.D., & FULK, D.W. (Naval Medical Research Inst.), "Electron microscopic evaluation of the lenses of rabbits exposed to long-term 2450 MHz continuous microwave energy at 10 mW/cm²."

Session 8 - "Equipment Safety and Interference Session," (HOLADAY, R., chmn.)

BABIJ, T., & TRZASKA, H. (Tech. Univ. of Warsaw), "Problems of wideband magnetic field measurements above 30 MHz."

CZEGANY, S., & GYORI, A. (Post Research Inst., Budapest), "Measurement methods for industrial applications of microwaves."

MOBLEY, M.C. (Federal Communications Commission, Laurel, MD), "Interference measurements on radiofrequency devices." [Invited Paper]

PIOTROWSKI, M. (Military Inst. of Hygiene and Epidemiology, Warsaw), & DZIECIOLOWSKI, K. (Polish Academy of Science, Warsaw), "Microwave dosimetry."

4049. (continued)

Session 9 - "Panel: Economics and Market Analysis," (JOLLY, J.A., chmn.)

American National Standards Institute (ANSI) Committee C-95. IV, Meeting (GUY, A.W., chmn.)

IEEE Committee on Man and Radiation (COMAR)

Session 10 - "Local Fields and Heat Sensing" portion of Microwave Instrumentation for Industrial Control -I Session (GARDIOL, F.B., chmn.)

BOWMAN, R.R. (National Bureau of Standards, Boulder), "A temperature probe for RF-heated material."

DEFICIS, A. (Laboratoire du D.E.R.M.O., Toulouse, France), "Fiberoptic microprobes for microwave electromagnetic field measurements."

MA, Y.H., & ARSEM, H.B. (Worcester Polytechnic Inst., Mass.), "Thermocouple temperature measurements in microwave fields."

Session 11 - "Panel: Biological Applications and Effects," (ROSENTHAL, S.W., chmn.)

Sessions 12, 13, 14, 15, 16 - (Not Relevant)

Session 17 - "Industrial Microwave Systems," (KUMPFER, B.D., chmn.) [Relevant Presentation]

BURDETTE, E.C., HIGHTOWER, N.C., BURNS, C.P., & CAIN, F.L. (Georgia Inst. of Technology, Atlanta), "Microwave energy for wood products insect control."

4050. "The Bicentennial Symposium," 1976 International Microwave Symposium/Exhibition, Cherry Hill, NJ, June 14-16, 1976. [Relevant Session]

Session 23: Review and State-of-the-Art, "Biological Effects and Hazards of Microwave Radiation" (ROSENTHAL, S.W., chmn.)

23-1: Invited. Biological Effects and Experimental Techniques.

23-2: Invited. Behavioral and CNS Effects.

23-3: Invited. Measurements and Dosimetry.

23-4: Invited. Medical Surveillance.

23-5: Invited. Effects Other Than Biological

Panel Discussion.

4051. Teratology Society Meeting, Carmel, California, June 20-23, 1976.

RUGH, R., & McMANAWAY, M. (Division of Biological Effects, BRH), "Are mouse fetuses uniformly sensitive to microwave radiation?"

4052. IEEE 1976 International Symposium on Electromagnetic Compatibility, July 13-15, 1976, Washington, DC. [Relevant Session]

Session 4A-2: Bio-Medical (JANOSKI, J.R., chmn.)

BRIDGES, J.E. (IIT Research Institute, Chicago, IL), "Biological influences of power line fields and switchyard environments."

BURDETTE, E.C., & STUDWELL, M.L. (Georgia Institute of Technology, Atlanta), "Evaluation of cryogenic temperature sensors for use in electromagnetic fields."

ECKER, H.A., BURDETTE, E.C., & CAIN, F.L. (Georgia Institute of Technology, Atlanta), "Simultaneous microwave and HF frequency thawing of cryogenically preserved canine kidneys."

KALL, A.R. (Ark Electronics Corp., Willow Grove, PA), "RF radiation hazards: An engineering status review."

SCHLENTZ, R.J., LARSON, K.L., & EXWORTHY, K. (Medtronic, Inc., Minneapolis, MN), "Evaluation of in-vivo versus in-vitro test methods for the determination of electromagnetic compatibility of implantable cardiac pacemakers at 450 MHz."

4053. [11th Annual] Microwave Power Symposium 1976, July 27-30, Katholieke Universiteit, Leuven, Belgium, International Microwave Power Institute.

Session 1A: Biological Effects of Microwaves-I (GRANT, E., & MICHAELSON, S., co-chmn.)

DEFICIS, A., DUMAS, J., LAURENS, S., & PLURIEN, G. (Centre d'Etudes et de Recherches de Toulouse, France), "Effects of electromagnetic radiation on the formation of triglycerides," Part A: "Power influence," Part B: "Frequency influence."

4053. (continued)

Session 1A: (continued)

GUY, A., HARRIS, C. (U. of Washington School of Medicine, Seattle), KRAMAR, P. (U.S. Public Health Service Hospital, Seattle), & EMERY, A. (U. of Washington, College of Engineering, Seattle), "Study of the effects of chronic low level microwave radiation on rabbits."

KRAMAR, P. (U.S. Public Health Service Hospital, Seattle), GUY, A., EMERY, E., & HARRIS, C. (U. of Washington, Seattle), "Acute microwave irradiation and cataract formation in rabbits and monkeys."

WEBB, S. (U. of South Florida, St. Petersburg), "Effects of microwaves on normal and tumor cells as seen by laser-Raman spectroscopy."

Session 2A: Biological Effects of Microwaves-II (GRANT, E., & CZERSKI, P., co-chmn.)

AVERBEECK, D., DARDALHON, M., & BERTEAUD, A.-J. (Foundation Curie, Paris, France), "The effect of microwaves in procarvotic and eucaryotic cells and a possible interaction with x-rays."

CHEN, K.-C. (Wayne State U., Detroit, MI), & LIN, C.-J. (U. of Detroit, MI), "Cytotoxic effects of electromagnetic radiation on Chinese hamster cells in culture."

EICHERT, E., III, & FREY, A. (Randomline, Inc., Huntingdon Valley, PA), "Human auditory system response to low power density, pulse modulated, electromagnetic energy: A search for mechanisms."

PAZDEROVA-VEJLUPKOVA, J. (Charles U., Prague, Czech.), & FRANK, Z. (Inst. of Aviation Medicine, Prague, Czech.), "Influence of pulsed microwaves on haematopoiesis of adolescent rats." [Invited Paper]

ROTKOVSKÁ, D., & VACEK, A. (Czechoslovak Academy of Sciences, Brno, Czech.), "Modification of the repair of radiation damage of haematopoiesis in mice by microwaves."

SIERKIERZYNSKI, M., CZARNECKI, C., DZIUK, E., JEDREZEJCZAK, W., & SZADY, J. (Military Medical Academy, Warsaw, Poland), "Microwave radiation and other harmful factors of working environment in radolocation. A method of determination of microwave effects."

SZADY, J., SIERKIERZYNSKI, M., DZIUK, E., JEDREZEJCZAK, W., & CZARNECKI, C. (Military Medical Academy, Warsaw, Poland), "Effects of microwaves on the 24-hour rhythm and 24-hour urinary excretion of 17-hydroxycorticoids and 17-ketosteroids."

Session 3A: Biological Effects of Microwaves-III, and Dosimetry for Biological Research (CZERSKI, P., & ROZZELL, T., co-chmn.)

BARANSKI, S., DEBIEC, H., KWARECKI, K., & MEZYKOWSKI, T. (Military Inst. of Aviation Medicine, Warsaw, Poland), "Influence of microwaves on genetical processes of *Aspergillus nidulans*."

BIELEC, M., & SZMIGIELSKI, S. (Center for Radiobiology and Radioprotection, Warsaw, Poland), "Use of thermography for quantitation of energy absorption in animals irradiated with microwaves."

BRODWIN, M. (Northwestern U.), "Passive telemetry for *in vivo* measurements of fields in biological materials."

CATRAVAS, G., KATZ, J., TAKENAGA, J., & ABBOTT, J. (Armed Forces Radiobiology Research Institute, Bethesda, MD), "Biochemical changes in the brain of rats exposed to microwaves of low power density."

DEFICIS, A., & PRIOU, A. (Centre d'Etudes et de Recherches de Toulouse, France), "Non-perturbing microprobes for measurement in electro-magnetic fields."

FANSLAW, G. (Iowa State U., Ames), "A liquid crystal calorimeter for radiation monitoring."

SERVANTIE, B., GILLARD, J., SERVANTIE, A., OBRENOVITCH, J., BERTHARION, G., PERIN, J., & CRETON, B. (Centre d'Etudes et de Recherches Biophysiologicals appliquees a la Marine, Toulon Naval, France), "A comparison of the effect of three microwave exposure conditions on the behavior of the white rat."

Session 4A: Microwave Dosimetry & Safety (GALLAGHER, J., & OSEPCHUK, J., co-chmn.)

AGARWAL, R., YOKOO, K., HARTNAGEL, H., & KENNAIR, J. (U. of Newcastle upon Tyne, U.K.), "A miniature microwave power monitor."

ASLAN, E. (Narda Microwave Corp., Plainview, NY), "A low frequency H-field radiation monitor."

BABIJ, T., & TRZASKA, H. (Technical U. of Warsaw, Poland), "Power density measurements in the near fields."

deVECCCHIS, M. (Lignes Télégraphiques et Téléphoniques, Conflans Ste. Honorine, France), "High sensitivity electromagnetic energy leakage monitors."

KAMAL, A., AL-BADWAIHY, K., & HASHISH, E. (Cairo U., Egypt), "An upper limit on the coefficient of transmission of microwave leakage into biological tissue."

KASHYAP, S., WONG, J., & DUNN, J. (National Research Council of Canada, Ottawa), "Microwave leakage indication."

PRUCHA, R. (General Electric Co., Louisville, KY), "Human thermal loading by exposure to emissions from a microwave oven."

4053. (continued)

Session 4A: (continued)

REXFORD-WELCH, S. (A.W.R.E. Aldermaston, Near Reading, U.K.), & LINDSAY, I. (Inst. of Naval Medicine, Alverstoke, U.K.), "The practice of microwave radiation safety."

Session 5A: Microwave Medical and Biological Applications-I (PELUSO, F., & GUY, A.W., co-chmn.)

DAELS, J. (Kliniek Maria Middelaers, Gent, Belgium), "Microwave heating of the uterine wall during parturition."

KANTOR, G., & WITTERS, D., Jr. (Bureau of Radiological Health, Rockville, MD), "A comparative performance of spaced applicators in microwave diathermy."

McNIVEN, D. (Southern General Hospital, Glasgow, U.K.), & WYPER, D. (West of Scotland Health Boards, Glasgow, U.K.), "Microwave therapy and muscle blood flow in man."

MICHAELSON, S., GUILLET, R., CATALLO, M., SMALL, J., INAMINE, G., & HEGGENESS, F. (U. of Rochester School of Medicine and Dentistry, NY), "Influence of 2.450 MHz CW microwaves on rats exposed in utero."

STEVENS, A., & PELUSO, F. (Katholieke U., Leuven, Belgium), "Temperature changes generated by microwave therapy in the thighs of human subjects."

WEBB, M., GUY, A., & McDOUGALL, J. (U. of Washington School of Medicine, Seattle), "Assessment of the EM field coupling of 915 MHz oven leakage to human subjects th thermographic studies on phantom models."

Session 5B: Microwave Properties of Materials (FRANCESCHETTI, G., & RZEPECKA-STUCHLY, M., co-chmn.), [Relevant Presentations].

NAJIM, N. (Laboratoire d'electronique, Rabat, Morocco), "Microwave Kerr effect."

SALEFRAN, J., DELBOS, G., MARZAT, C., & BOTTREAU, A. (U. de Bordeaux I, Talence, France), "Study of the decomposition of aqueous beta-alanine solution dielectric relaxation spectra."

WALKER, C., VOSS, W., & TINGA, W. (U. of Alberta, Edmonton, Canada), "Dielectric properties of dimethyl sulfoxide and their importance in cryobiology."

Session 6A: Microwave Medical and Biological Applications-II (PELUSO, F., & GUY, A., co-chmn.)

CHOU, C., & GUY, A. (U. of Washington, Seattle), "Microwave-induced cochlear microphonics in cats."

LUCZAK, M., SZMIGIELSKI, S., JANIAC, M., KOBUS, M. (Center for Radiobiology and Radioprotection, Warsaw, Poland), & deCLERCQ, E. (Katholieke U., Leuven, Belgium), "Effects of microwaves on virus multiplication in mammalian cells, in vivo and in vitro."

SZMIGIELSKI, S., LUCZAK, M., BIELEC, M., JANIAC, M., KOBUS, M. (Center for Radiobiology and Radioprotection, Warsaw, Poland), STEWART, W. (U. Medical School, Warsaw, Poland), & deCLERCQ, E. (Katholieke U., Leuven, Belgium), "Effect of microwaves combined with interferon and/or interferon inducers on development of sarcoma 180 in mice."

WALLEN, C., & MICHAELSON, S. (U. of Rochester School of Medicine & Dentistry, NY), "Microwave-induced hyperthermia as an adjuvant to cancer therapy."

WEST, B., & REGELSON, W. (Virginia Commonwealth U., Richmond), "Pulsed radiowave effects in vivo and in vitro tumor growth."

Session 6B: Microwave Applications in the Food Industry (MEISEL, N., & DECAREAU, R., co-chmn.), [Relevant Presentations].

FAILLON, G., & MALONEY, E. (Thomson-C.S.F., Paris France), "New uses of microwave power in the food industry."

FRANCOIS, D. (Industries Micro-Ondes Internationales, Epone, France), "Coagulation of fish products prior to canning."

O'MEARA, J. (Western Regional Research Center, Berkeley, CA), TINGA, W. (U. of Alberta, Edmonton, Canada), WADSWORTH, C. (U.S. Army Natick Develop. Center, Mass.), & FARRAS, D. (Western Regional Research Center, Berkeley, CA), "Food sterilization in a microwave pressure retort."

RZEPECKA-STUCHLY, M., BFYGIDYR, A., & McCONNELL, M. (U. of Manitoba, Winipeg, Canada), "Tomato paste dehydration by hot air and microwave energy."

WYSLOUZIL, W., & KASHYAP, S. (National Research Council of Canada, Ottawa), "Microwave sterilization of pea flour and pea protein concentrate."

4054. 45th Annual Convention of the Genetics Society of America, Salt Lake City, Utah, 15-18 August 1976.

YAO, K.T.S. (Division of Biological Effects, Bureau of Radiological Health), "Cytogenetic consequences of microwave incubation of mammalian cells in culture."

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Almost 350 additional references on the biological responses to radio frequency and microwave radiation, published up to August 1976, are included in this continuing bibliography of the world literature. Particular attention has been paid to the effects of non-ionizing radiation on man at these frequencies. The citations are arranged alphabetically by author (where possible), and contain as much information as possible so as to assure effective retrieval of the original documents. Soviet and East European literature is included in detail. (cont'd)		