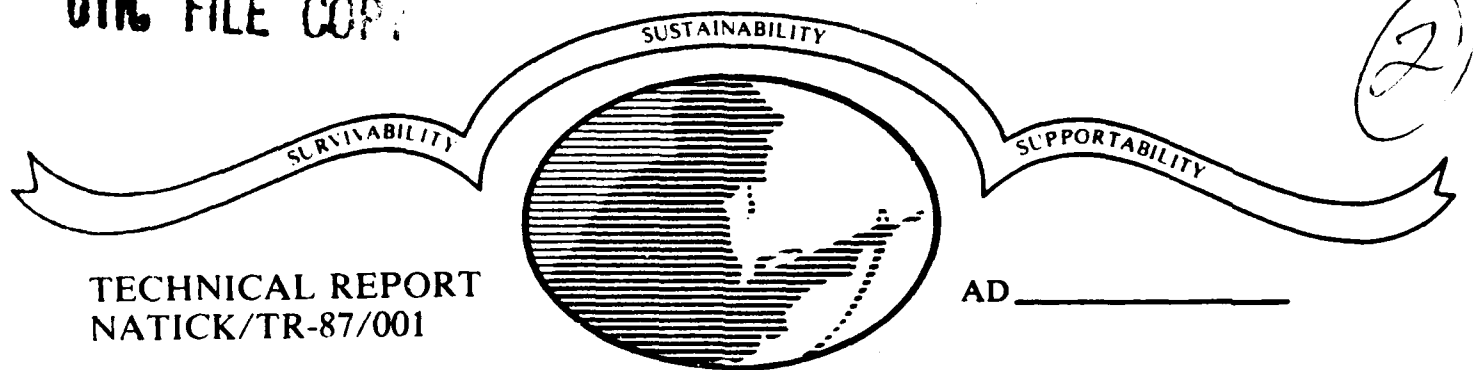


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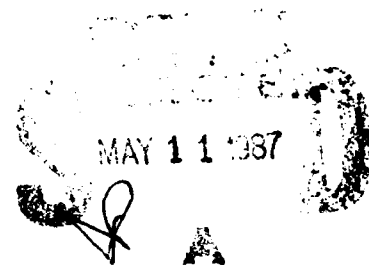
**M. EILEEN COLLINS
EDITOR**

NOVEMBER 1986

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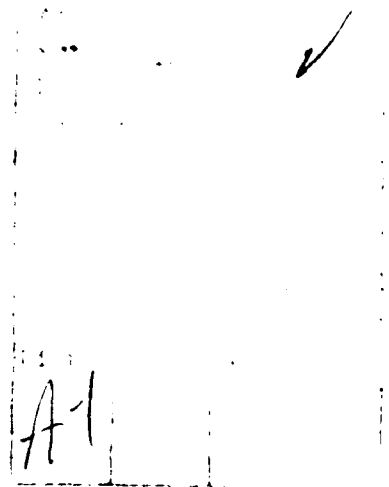
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PREFACE

This bibliography is a list of technical publications and papers by personnel of the US Army Natick Research, Development and Engineering Center and its contractors for the period October 1985 through September 1986. The arrangement is by organization elements. Previously unreported items from past years are also listed. Patents issued to personnel in FY86 are included as a separate section.

Reprints of journal articles, in some cases, are available from the individual authors. Copies of technical reports may be obtained from (1) Defense Technical Information Center, Cameron Station, Alexandria, Virginia 22314, or (2) the National Technical Information Service, Springfield, Virginia 22161. The "AD" number, if available, should be cited when ordering copies of reports.

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U.S. ARMY NATICK RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
BIBLIOGRAPHY OF TECHNICAL PUBLICATIONS, PAPERS, AND LIST OF PATENTS

October 1985 - September 1986

OFFICE OF THE COMMANDER

Journal Articles

RODGERS, A.D., III. New technologies from basic principles in military foodservice, food preservation, ration and packaging development and feeding systems: Welcome. Act. Rep. R&D Assoc., 38(1): 1-2 (1986).

_____. General Session remarks. Act. Rep. R&D Assoc., 38(2): 16-18 (1986).

OFFICE OF THE TECHNICAL DIRECTOR

Technical Reports

DECOSTA, P.F., Editor. NRDEC Science Symposium Proceedings, 2-4 June 1986, Volume I. NATICK/TR-86/050.

_____, Editor. NRDEC Science Symposium Proceedings, 2-4 June 1986, Volume II. NATICK/TR-86/051L.

ADVANCED SYSTEMS CONCEPTS DIRECTORATE

Technical Reports

BARNICLE, E.J., and E.P. SYVRUD. M-1 release failure analysis. NATICK/TR-86/024L, November 1984 (AD B102 075L).

FREITAS, S.A., R.V. SPRING, R.F. KINNEY, R.S. LINDSAY, and J.A. MANICKAS. Service life of battledress overgarments. NATICK/TR-86/028L, February 1986 (AD B103 621L).

GRAVES, R.D. CHEMCAS Volume I: Methodology. AMAF Industries, Inc. Contract No. DAAK60-83-C-0040. NATICK/TR-85/064L, September 1985 (AD B107 724L).

_____. CHEMCAS Volume II: User's Manual. AMAF Industries, Inc. Contract No. DAAK60-83-C-0040. NATICK/TR-86/010L, October 1985 (AD B100 313L).

LAFERRIERE, R., J. OVELMAN, L. SYMINGTON, J. PRIFTI, and D.P. LEITCH. A systems analysis of food service at Army remote and isolated sites. NATICK/TR-85/063, June 1985 (AD A164 290).

SHORT, P.M., G.S. LEVESQUE, D.R. MCALLISTER, C.G. KANTER, with J.E. ROSADO and R.D. POPPER. A systems analysis to define the types of rations needed to support amphibious operations. NATICK/TR-86/071, September 1985 (AD A176 063).

WALKER, J.M. Front end analysis of command, control, communications and intelligence shelters for the high mobility multipurpose wheeled vehicle and the commercial utility cargo vehicle. NATICK/TR-86/069L, September 1986.

WELCH, A.J., M.L. WOLBARSHT, and W. HAM. Simulation of the effectiveness of filters for preventing retinal damage due to laser irradiation. Battelle Laboratories. Contract No. DAAG29-81-D-0100. NATICK/TR-85/060L, July 1985 (AD B097 914).

Journal Article

WYANT, K.W., and J.M. WALKER. Urine specific gravity and other physiological correlates of chemical warfare protective clothing. Mil. Med. (in press).

Technical Papers

BAGGE, K. Chemical warfare hazard in diverse climates. 54th Military Operations Research Society Symposium, Fort McNair, Washington, DC, June 24-26, 1986.

ADVANCED SYSTEMS CONCEPTS DIRECTORATE

Technical Papers (cont'd)

BARNICLE, E. J. Systems analysis of airdrop requirements, Army 21. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

MAZZUCHI, T.A., and R.V. SPRING. A reliability application of proportional hazard models. The Annual Meeting, American Statistical Association, Chicago, IL, August 20, 1986.

SAMPSON, J.B. Decision analysis for individual soldier protection. The Institute for Management Science/Operations Research and Systems Analysis Joint Meeting, Los Angeles, CA, April 14-16, 1986.

SAMPSON, J.B., and J.T. BANAS. Managing research: Basic vs. applied. The Institute for Management Science/Operations Research and Systems Analysis Joint Meeting, Los Angeles, CA, April 14-16, 1986.

AERO-MECHANICAL ENGINEERING DIRECTORATE

Technical Reports

ALLING, G. Survey of commercially available liquid fueled space heaters. Arthur D. Little, Inc. Contract No. DAAK-81-C-0054. NATICK/TR-86/020L, November 1984 (AD B102 013L).

BLESS, S.J., R.V. KROLAK, and D.R. ASKINS. Evaluation of lightweight materials for shelter armors. University of Dayton Research Institute. NATICK/TR-86/046L, July 1986 (AD B105 556).

FANUCCI, J.P., B.D. BOYER, and R.W. MILLIGAN. Technology base development for nuclear hardened tactical shelters, Volume IV - Thermal protection concepts, Part A - Analytical and experimental results. NATICK/TR-86/035L, April 1984 (AD B104 035).

LAWRENCE, T. Development of conceptual designs for an improved M41 type space heater. Arthur D. Little, Inc. Contract No. DAAK60-82-C-0054. NATICK/TR-86/026, November 1984 (AD A167 984).

ROBERTS, N. The rate of deterioration of mesh gasket door seals. NATICK/TR-86/066L, August 1986.

SONNENSCHNEIN, M.G., and D.B. ROSE. Graves registration and mortuary affairs: An overview and recommendations. Arthur D. Little, Inc. Contract No. DAAK60-82-C-0054. NATICK/TR-86/018L, May 1985 (AD B101 462L).

STEEVES, E.C., A. GALEZEWSKI, and C.K. LEE. Studies of materials and concepts for CW hardened tentage. NATICK/TR-86/002L, June 1985 (AD B099 001).

Technical Papers

BLESS, S.J., and J.A. GALEZEWSKI. Comparative evaluation of lightweight materials for fragment armor. U.S. Army Symposium on Solid Mechanics, West Point, NY, October 7-9, 1986.

CYRUS, J., and C. LEE. Retrorocket assisted parachute inflight delivery (RAPID) system development update. American Institute of Aeronautics and Astronautics, 9th Aerodynamic Decelerator and Balloon Technology Conference, Albuquerque, NM, October 7-9, 1986.

FALLON, E.J., J. WATKINS, and E. VICKERY. The annular parachute: An approach to a low altitude personnel parachute. American Institute of Aeronautics and Astronautics, 9th Aerodynamic Decelerator and Balloon Technology Conference, Albuquerque, NM, October 7-9, 1986.

AERO-MECHANICAL ENGINEERING DIRECTORATE

Technical Papers (cont'd)

FANUCCI, J.P., and R.W. MILLIGAN. An investigation of composite material applications in nuclear hardened shelters. U.S. Army Symposium on Solid Mechanics, West Point, NY, October 7-9, 1986.

GALEZEWSKI, J.A. Tentage fabric laminate resistant to chemical warfare agents. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

PISCITELLE, L.J. Mathematical model for chemical agent concentration inside tents. 4th Annual Chemical Research Development and Engineering Center Chemical Modeling Conference, Aberdeen Proving Ground, MD, August 1986.

STEEVES, E.C. Airdrop resupply to support the light division and deep strike. Symposium--Technology Enhancement for Sustaining the Force. Laboratory Command, Adelphi, MD, January 1986.

_____. Prediction of decelerator behavior using computational fluid dynamics. American Institute of Aeronautics and Astronautics, 9th Aerodynamic Decelerator and Balloon Technology Conference, Albuquerque, NM, October 7-9, 1986.

WATKINS, J.W. Design and development of a two-stage parachute system for delivery of troops from a high speed aircraft. American Institute of Aeronautics and Astronautics, 9th Aerodynamic Decelerator and Balloon Technology Conference, Albuquerque, NM, October 7-9, 1986.

FOOD ENGINEERING DIRECTORATE

Technical Reports

CUMMINGS, R.D. Design and production of damage-resistant Tray Pack containers. NATICK/TR-86/008, July 1985 (AD A164 595).

DARSCH, G.A. REDLEG: Physiological and psychological effects of nuclear, biological, and chemical and extended operations on crews (P² NBC²) command post vehicle life support exercise. NATICK/TR-86/049L, April 1986.

FRIEL, J.V., and S.J. RODGERS. Supplies and services to test and evaluate modified food packaging systems for resistance to penetration by chemical agents. NATICK/TR-86/055L, May 1986.

HOWKER, J.J., G. MULLINS, J. HALKIOTIS, J. BRIGGS, C.P. DUNNE, and C. CATHCART. Storage study of electrolyte beverage for NBC environment. NATICK/TR-86/062, December, 1985 (AD 172 878).

KAPRIELIAN, G., J. HERNE, G. JARBOE, J. KALICK, and N. HARRIS. Sealing mustard jars with plastic linerless closures. NATICK/TR-86/003, October 1985 (AD A161 736).

KLUTER, R.A., J.W. SZCZEBLOWSKI, and M. BRANAGAN. An evaluation of foods processed in Tray Pack versus two standard food service containers. Part 1: Sensory, container and bacteriological tests. NATICK/TR-86/011, February 1986 (AD A167 187).

KNIGHT, J.B. An evaluation system for foodservice equipment. NATICK/TR-86/070, October 1985 (AD A177 362).

MASTROMARINO, A.C., and V.A. LOVERIDGE. An evaluation of the Ration, Cold Weather, April 1985. NATICK/TR-86/027, June 1986 (AD A170 407).

_____. Evaluation of the Ration, Cold Weather, by Navy Seals, 1984. NATICK/TR-86/042, July 1986 (AD A171 022).

MATHIPRAKASAM, B. Development of thermoelectric water heating/cooling devices. Midwest Research Institute. Contract No. DAAK60-85-C-0011. NATICK/TR-86/019, October 1985 (AD A166 949).

RODGERS, S.J. Evaluation of food packaging system resistance to penetration by chemical agents. MSA Research Corp. Contract No. DAAK60-83-C-0018. NATICK/TR-86/005L, June 1984 (AD B098 262).

SHAW, C., and L. KLARMAN. The acceptability of food and foodservice at Fitzsimons Army Medical Center under military and contract operation. NATICK/TR-86/006, September 1985 (AD A171 210).

FOOD ENGINEERING DIRECTORATE

Technical Reports (cont'd)

WYZGA, L.A., M.V. KLIKA, C.A. KUBIK, and J.W. SZCZEBLOWSKI. An evaluation of foods processed in Tray Pack versus two standard food service containers. Part 2: Nutritional analyses. NATICK/TR-86/012, February 1986 (AD A170 398).

Journal Articles

AYOUB, J.A. Drying foods by "decanting": A new microwave-vacuum technique. Act. Rep. R&D Assoc., 38(1): 49-55 (1986).

BARRETT, A. Maximizing caloric density by vacuum infusion of porous foods. Act. Rep. R&D Assoc., 38(1): 56-63 (1986).

KIM, H.-J. Sulfites in foods: the search for alternatives. Act. Rep. R&D Assoc., 38(1): 35-40 (1986).

KIM, H.-J., and Y.-K. KIM. Analysis of free and total sulfites in food by ion chromatography with electrochemical detection. J. Food Sci., 51(5) (1986).

SEXTON, E.W., CW2. First Article: A standard for production, processing, and quality of Meal, Ready-to-Eat (MRE) and Tray Pack items. Act. Rep. R&D Assoc., 38(1): 91-93 (1986).

SHAW, C.P. Satisfying mission/soldier needs through product development. Act. Rep. R&D Assoc., 38(1): 94-97 (1986).

SMITH, J.J., S.C. SEIDEMAN, R. ROSENKRANS, and J.L. SECRIST. Vacuum packaged trimmings as a source for ground beef patties: Changes during one year of frozen storage. J. Food Protection, 48(3): 200 (1985).

TIRRELL, R.N., K.S. RHEE, T.R. DUTSON, J.C. SMITH, and G.W. SHULTS. Properties of restructured-precooked beef roasts. J. Food Qual., 8(2/3): 131 (1985).

WRIGHT, B.B. Computer-based monitor/control system offers versatile process research tool. Food Proc., 47(5): 163-164 (1986).

Technical Papers

AYOUB, J.A. Drying foods by "decanting": A new microwave-vacuum technique. Fall Meeting, Research and Development Associates, Natick, MA, October 23-25, 1985.

AYOUB, J.A., and I.A. TAUB. Microwave assisted, low pressure drying of foods. Fifth International Drying Symposium, Cambridge, MA, August 13-15, 1986.

FOOD ENGINEERING DIRECTORATE

Technical Papers (cont'd)

BARRETT, A. Maximizing caloric density by vacuum infusion of porous foods. Fall Meeting, Research and Development Associates, Natick, MA, October 23-25, 1985.

_____. Chemical aspects of food engineering. Simmons College, Boston, MA, November 5, 1985.

BERKOWITZ, D. Enhancement of production rates and quality of freeze dried food bars using preconcentration. Fifth Annual International Drying Symposium, Cambridge, MA, August 13-15, 1986.

BRIGGS, J.L., C.P. DUNNE, M. GRAHAM, E. RISVIK, A. CARDELLO, A. BARRETT, and I.A. TAUB. A calorically dense ration for the 21st century. NRDEC Science Symposium, Natick, MA, June 2-4, 1986; U.S. Army Science Conference, West Point, NY, June 17-19, 1986.

HILL, B. Design of advanced food processing and technologies for military rations. Fall Meeting, Research and Development Associates, Natick, MA, October 23-25, 1985.

_____. Unitization of T Rations. Fall Meeting, Research and Development Associates, Natick, MA, October 23-25, 1985.

KIM, H.-J. Sulfites in foods: The search for alternatives. Fall Meeting, Research and Development Associates, Natick, MA, October 23-25, 1985.

KIM, H.-J., G. PARK, and Y.-K. KIM. A fast and sensitive analysis of sulfites in foods by ion exclusion chromatography with electrochemical detection. AOAC Sulfite Methods Task Force Meeting, Scottsdale, AZ, September 19, 1986.

KLICKA, M.V. Emerging technologies in military food service. Lockheed, Inc., Space Station Food Supply and Service System Symposium, Houston, TX, April 30, 1986.

_____. Space foods. The College Academy for Gifted Children, Keefe Technical High School, Framingham, MA, July 18, 1986.

O'BRIEN, R. A proposed in-flight feeding system concept. Fall Meeting, Research and Development Associates, Natick, MA, October 23-25, 1985.

SALANT, A. A cooperative manufacturing technology program for the food industry. National Food Processors Association Meeting, Washington, DC, May 14, 1986.

FOOD ENGINEERING DIRECTORATE

Technical Papers

_____. New military food service technology with commercial applications. Society of Flavor Chemists, New York City, NY, May 15, 1986.

_____. A cooperative manufacturing technology program for the food industry. Institute of Food Technologists 46th Annual Meeting, June 15-18, 1986.

WRIGHT, B.B., and I.A. TAUB. Temperature-dependent quality changes in frozen foods as reflected by physiochemical indices. American Institute of Chemical Engineers Symposium, Chicago, IL, November 10-15, 1985.

INDIVIDUAL PROTECTION DIRECTORATE

Technical Reports

ALEXANDROFF, E. Investigation of improving chemical protective properties of fabrics used in military uniforms. Winfield Manufacturing Co., Inc. Contract No. DAAK60-84-C-0019. NATICK/TR-86/064L, February 1985 (AD B107 470L).

BRADTMILLER, B., J. RATNAPARKHI, and I. TEBBETTS. Demographic and anthropometric assessment of U.S. Army anthropometric data base. Anthropology Research Project, Inc. Contract No. DAAK60-84-C-0086. NATICK/TR-86/004, August 1985. (AD A164 637).

BYERS, G., W. HOLLEY, C. MOWREY, A. SINISCALCHI, and M. WALKER. Development of water resistant coatings for chemical protective clothing. Springborn Laboratories, Inc. Contract No. DAAK60-84-C-0052. NATICK/TR-86/041L, June 1986 (AD B104 481).

CLAUSER, C., J. MCCONVILLE, C. GORDON, and I. TEBBETTS. Selection of dimensions for an anthropometric data base - Volume 1. Anthropology Research Project, Inc. Contract No. DAAK60-84-C-0086. NATICK/TR-86/053, May 1986.

_____. Selection of dimensions for an anthropometric data base - Volume 2. Anthropology Research Project, Inc. Contract No. DAAK60-84-C-0086. NATICK/TR-86/054, May 1986.

DENT, R.W., and J.G. DONOVAN. Projectile impact with flexible armor - An improved model. Albany International Research Co. Contract No. DAAK60-84-C-0034. NATICK/TR-86/044L, February 1986 (AD B104 482L).

DENT, R.W., J.G. DONOVAN, J. SKELTON, and S. FOSSEY. Development of synthetic down alternatives. Albany International Research Co. Contract No. DAAK60-83-C-0022. NATICK/TR-86/021L, April 1984 (AD B101 043L).

DONOVAN, J.G., and F.B. PETERS. Evaluation of carbon laminate structures for chemical warfare protection. Albany International Research Co. Contract No. DAAK60-81-C-0016. NATICK/TR-86/060L, June 1982 (AD B106 874).

GALAITIS, A.G., M.A. THEOBALD, and F. FIGUCIA. Fibrous material system concepts for protecting personnel from blast waves. Bolt Beranek and Newman, Inc. Contract No. DAAK60-80-C-0075. NATICK/TR-86/016L, May 1982 (AD B100 422L).

INDIVIDUAL PROTECTION DIRECTORATE

Technical Reports (cont'd)

HERRICK, J.W., and F.B. PETERS. Development of activated carbon coated yarn and fabric for chemical warfare protection. Fiber Materials, Inc. Contract No. DAAK60-80-C-0075. NATICK/TR-86/013L, July 1982 (AD B100 417).

HOLLIES, N.R.S., and M. O. PARKER, JR. Summary of laboratory and field comfort studies on candidate fabrics for a year-round uniform. Gillette Research Institute. Contract No. DAAK60-79-C-0083. NATICK/TR-86/045, August 1980 (AD A172 010).

KERRIN, S.L. Preliminary development of a portable device to determine sorption of chemical protective garments in the field. Tracer Technologies. Contract No. DAAK60-85-C-0076. NATICK/TR-86/043L, December 1985 (AD B105 968L).

KIM, D.W. Development of fire resistant tentage. Celanese Research Company. Contract No. DAAK60-81-C-0061. NATICK/TR-86/052, February 1982 (AD A173 873).

LANGENMAYR, E.J., and G.N. ARONS. Reactive/sorptive materials for CW protective garments Volume 1: Development and evaluation of reactive/sorbent resins and foam/fabric system. Rohm and Haas Research Laboratory. Contract No. DAAK60-80-C-0104. NATICK/TR-86/014L, July 1983 (AD B100 753).

_____. Reactive/sorptive materials for CW protective garments Volume 2: Toxic military agent testing. Rohm and Haas Research Laboratory. Contract No. DAAK60-80-C-0104. NATICK/TR-86/015L, July 1983 (AD B100 754).

MASON, D.W., T.R. TICE, R.B. SPAFFORD, D.R. COLEMAN, and G. N. ARONS. Encapsulation and testing of carbon particles and fabrics. Southern Research Institute. Contract No. DAAK60-83-C-0031. NATICK/TR-86/039L, March 1984 (AD B105 140).

NANDI, U.S., F.A. SLIEMERS, and F.B. PETERS. Plasma coating of shell fabrics. Battelle Columbus Laboratories. Contract No. DAAG29-81-D-0100. NATICK/TR-86/025L, March 1985 (AD B101 073).

ROCHE, A., W. CHUMLEA, and S. GUO. Identification/validation of new anthropometric techniques for quantifying body composition. Wright State University. Contract No. DAAK60-84-C-0054. NATICK/TR-86/058, May 1986.

RUPE, B.I. Development of test methods for the electrostatic properties of nonhomogeneous fabrics - Phase I. I.K.E. Associates, Inc. Contract No. DAAK60-85-C-0074. NATICK/TR-86/056, April 1986 (AD A177 026).

INDIVIDUAL PROTECTION DIRECTORATE

Technical Reports (cont'd)

SZLACHTUN, A.J. Chemical protective suit stock surveillance study - Phase II. NATICK/TR-86/009L, November 1984 (AD B100 570L).

Technical Papers

CARDOZO, W.J. A method for spectral and spatial analyses of natural terrain for camouflage effectiveness. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

COFFIN, L. U.S. Army's present and future fabric needs. Annual Meeting, American Association for Textile Technology, Inc., Charlotte, NC, March 13, 1986.

_____. Study of the capability of the United States textile and apparel industries to support national defense -- Natick update. Industrial Fabrics Association International (IFIA) on the Hill '86, Washington, DC, September 17, 1986.

DONOVAN, J., R. DENT, J. SKELTON, and S. FOSSEY. Development of synthetic fiber alternatives to waterfowl down. The Fiber Society Spring 1986 Technical Conference, Princeton, NJ, May 1986.

FITZGERALD, B.E., T.R. COMMERFORD, and A.O. RAMSLEY. An objective computerized color measurement system. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

MELLO, J. Current and future uses of narrow fabrics in the military. Second Annual Technical Workshop on Narrow Fabrics, Cambridge, MA, November 14, 1985.

_____. Classification of defects for parachutes - examination of cloth, tape and webbing. Parachute Manufacturing Seminar, Piedmont Technical College, Roxboro, NC, March 17-18, 1986.

SZCZESUIL, S. Properties and selection of common fasteners for military clothing. Cornell University, Ithaca, NY, March 18, 1986.

WARD, J.E., and W. KOZA. Hi-tech fibers for improved ballistic protection. NRDEC Science Symposium, Natick, MA, June 2-4, 1986; U.S. Army Science Conference, West Point, NY, June 17-19, 1986.

WILUSZ, E., and R.C. LAIBLE. Factors influencing the barrier properties of elastomers. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Reports

FLYNN, L., B.A. JEZIOR, and L.E. SYMINGTON. Survey evaluation of Marine Corps food service schools at Camp Johnson, NC. NATICK/TR-85/044, March 1985.

KIM, Y.-K. Effect of processing and preparation for serving on vitamin content in T, B, and A Ration peas and carrots. NATICK/TR-86/047, May 1986 (AD A173 406).

LINDER, J.F. Refining and automating photochemical vapor deposition process for laser eye protection, Volume I. Hughes Aircraft Co. Contract DAAK60-82-C-0101. NATICK/TR-86/040L, April 1986 (AD B104 827L).

MAYER, J.M., D.L. KAPLAN, and A.M. KAPLAN. Assessment of BW protection capabilities of military materials. NATICK/TR-86/007L, August 1985 (AD B098 228L).

MCCORMICK, N.G., and A.M. KAPLAN. Biocide interaction with chemical protective and camouflage finishes applied to Army materials. NATICK/TR-86/067L, September 1986 (AD B107 556L).

PORTER, W.L., E.D. BLACK, Y.-K. KIM, and L. HOKE. Development of rapid methods to monitor oxidative and Maillard (sugar amine) polymerization in energy dense, encapsulated model ration systems. NATICK/TR-86/063, September 1986.

ROACH, J., and G. CALDARELLA. CO₂ laser irradiation of Army uniform ensembles. NATICK/TR-86/017L, March 1986 (AD B100 418L).

ROWLEY, D.B., D. JOHNSON, and G.E. SHATTUCK. The antimicrobial effects of various nutrient electrolyte beverages. NATICK/TR-86/048, May 1986 (AD A173 832).

SALTER, C.A., L.E. SYMINGTON, B.A. JEZIOR, and T. HOVAGIMIAN. Improving U.S. Navy foodservice management training, Part I: Evaluation of the current system. NATICK/TR-86/029, November 1985.

SALTER, C.A., L.E. SYMINGTON, T. HOVAGIMIAN, and B. JEZIOR. Improving U.S. Navy foodservice management training, Part II: Recommendations for improving on-site training ashore and afloat. NATICK/TR-86/030, December 1985.

THOMAS, M.H., B.M. ATWOOD, and K.A. NARAYAN. Effect of processing and preparation for serving on vitamin content in T, B, and A Ration pork. NATICK/TR-86/022, March 1986 (AD A176 243).

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Reports (cont'd)

_____. Stability of vitamins C, B₁, B₂, and B₆ in fortified beef stew. NATICK/TR-86/061, September 1986 (AD A173 815).

WILEY, B.J., D.L. KAPLAN, and A.M. KAPLAN. The fungal resistance or susceptibility of resins, plasticizers, and other constituents of adhesive formulations. NATICK/TR-86/023, October 1985 (AD A166 930).

Journal Articles

CAMPO, A., M. DEL CERRO, J.A. FOSS, J.R. ISON, J.L. ORR, P.H. WARREN, and A.A. MONJAN. Impairment in auditory function follows perinatal viral infection in the rat. *Int. J. Neurosci.*, 27: 85-90 (1985).

EDELMAN, B., D. ENGELL, P. BRONSTEIN, and E. HIRSCH. Environmental effects on the intake of overweight and normal-weight men. *Appetite*, 7(1): 71-83 (1986).

FEEHERRY, F.E., D.T. MUNSEY, and D.B. ROWLEY. Thermal inactivation and injury of spores of Bacillus stearothermophilus. *Appl. Environ. Microbiol.* (in press).

GREENBERGER, M., A.M. KAPLAN, and B.J. WILEY. Observations on mildew susceptibility of painted surfaces in tropical chamber exposure. *J. Coatings Technol.*, 57(731): 59-65 (1985).

HIRSCH, E. Critical ration attributes for adequate nutrient consumption. *Act. Rep. R&D Assoc.*, 38: 80-86 (1986).

KAPLAN, A.M. Microbial Transformations of Polymeric Materials: Applied and Theoretical Considerations. Occasional Pub. #1, Biodeterioration Society, Cranfield Press, Ltd. (UK), December 1985.

KAPLAN, D.L., and A.M. KAPLAN. Biodegradation of N-nitrosodimethylamine in aqueous and soil systems. *Appl. Environ. Microbio.*, 50(4): 1077-1086 (1985).

KIM, H.-J., and Y.-K. KIM. Analysis of free and total sulfites in food by ion chromatography with electrochemical detection. *J. Food Sci.*, 51(5): 1360-1361 (1986).

NARAYAN, K. A. The interactive effect of starch or sucrose on rat liver lipids. *Nutr. Rep. Int.*, 33(1): 33-41 (1986).

POPPER, R., S. PARKER, and E. GALANTER. Dual loudness scales in individual subjects. *J. Exp. Psych.: Human Perception and Performance*, 12(1): 61-69 (1986).

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Journal Articles (cont'd)

RISVIK, E., and A.V. CARDELLO. Sensory attributes critical for the acceptance of low volume rations. Act. Rep. R&D Assoc., 38(1): 74-79 (1986).

SIEGEL, S.F. A test of the similarity rule model of temporal bisection. Learning and Motivation, 17: 59-75 (1986).

_____. Reduction of test anxiety using pavlovian conditioning principles: A preliminary note. Psych. Rep., 59: 48-50 (1986).

_____. The compensatory conditioned response to brain stimulation-induced feeding: A preliminary study. Psych. Rep. (in press).

THAYER, D.W., R.V. LACHICA, C.N. HUHTANEN, and E. WIERBICKI. Use of irradiation to ensure the microbiological safety of processed meats. Food Technol., 40(4): 159-162 (1986).

WARNER, K., E. N. FRANKEL, J. M. SNYDER, and W.L. PORTER. Storage stability of soybean oil-based salad dressings: Effects of antioxidants and hydrogenation. J. Food Sci., 51(3): 703-708 (1986).

WARREN, P.H., and W.H. MORSE. Effects of quaternary naltrexone and chlorodiazepoxide in squirrel monkeys sensitized to the behavioral effects of naltrexone. J. Pharmacol. and Exp. Ther., 235(2): 412-417 (1985).

Technical Papers

ALLEN, A.L., and M.T. HOLTZAPPLE. Heat exchanger designs for a portable microclimate cooling unit. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

BRANSON, D.H., and L. ABUSAMRA. The role of sweating on comfort and performance in an encapsulation environment: A study of hand encapsulation using different glove liners. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

CORNELL, J.H., J. CULLEN, G.C. RICHARD, J.T. STAPLER, and F.H. BISSETT. Synthesis and evaluation of reactive polymers for chemical protection. NRDEC Science Symposium, Natick, MA, June 2-4, 1986; U.S. Army Science Conference, West Point, NY, June 17-19, 1986.

DUNNE, C.P. Biosynthesis of food components -- realities and opportunities. Biotech 85 Conference, OnLine Conferences, Washington, DC, October 23, 1985.

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Papers (cont'd)

ENGELL, D.B. The interdependency of food and fluid intake: scientific and military perspectives. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

HIRSCH, E. Critical ration attributes for adequate nutrient consumption. Fall Meeting, Research and Development Associates, Natick, MA, October 1985.

_____. Behavioral effects of sweetness. International Life Sciences Institute Meeting on Sweetness, Geneva, Switzerland, May 1986.

HIRSCH, E., R.D. POPPER, B. JEZIOR, and H.L. MEISELMAN. Soldier oriented research in combat ration development: The effects of prolonged feeding the Meal, Ready-to-Eat operational rations. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

KAPSALIS, J.G. Influences of hysteresis and temperature on moisture isotherms. Symposium on Water Activity, International Food Technologists, Dallas, TX, June 13-15, 1986.

KIM, Y.-K. Effect of processing and preparation for serving on vitamin content in military ration peas and carrots. 46th Annual Meeting, Institute of Food Technologists, Dallas, TX, June 15-18, 1986.

LACHICA, R.V. Plasmid mediated surface properties of Yersinia enterocolitica. X Food Microbiological Research Conference. Chicago, IL November 6-8, 1985.

MAYER, J., D.L. KAPLAN, and A.M. KAPLAN. Assessment of BW protective capabilities of military materials. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

MCCORMICK, N.G. Biocide interaction with chemical protective and camouflage finishes applied to Army materials. Thirty-fourth Conference on Microbiological Deterioration of Military Materiel, Natick, MA, November 1985.

NAKASHIMA, M., and J.B. CARLSON. Laser-induced thermal decomposition of Army uniform materials. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

NARAYAN, K.A., and R.E. ANDREOTTI. Protein quality deterioration in compressed models. American Institute of Nutrition, St. Louis, MO, April 13-18, 1986.

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Papers (cont'd)

_____. Safeguarding the nutritional adequacy of nutritional sustainment modules: Kinetics of quality loss in compressed model systems due to Maillard reaction. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

NARAYAN, K.A., and J. KAPSALIS. Reactivity of compressed acetyllysine-glucose models. 46th Annual Meeting, Institute of Food Technologists, Dallas, TX, June 15-18, 1986.

POPPER, R.D., and E. RISVIK. A comparison of different methods for uncovering sensory attributes of ration components. NRDEC Science Symposium, June 2-4, 1986.

PORTER, W.L. Natural versus synthetic antioxidants: Effects of chemistry and social attitude on the use of food preservatives. Framingham State College, Framingham, MA, November 1985.

_____. The fat's in the fire: Autoxidation and enzymic peroxidation in foods and biological systems. Natick High School, Natick, MA, March 1986.

_____. People versus principles in food preservation. Chapman College, Food Science & Nutrition Lecture Series, Los Angeles, CA, April 1986.

_____. Relationships between fats, antioxidants, consumers and physiology. Seminar, U.S. Army Natick Research, Development and Engineering Center, Natick, MA, May 1986.

PORTER, W.L., E.D. BLACK, Y.-K. KIM, and L. HOKE. Rapid monitoring of oxidation and nonenzymatic browning in encapsulated energy dense rations. Fall Meeting, Research and Development Associates, Natick, MA, September 1986.

PORTER, W.L., E.D. BLACK, C.P. SHAW, J. JARBOE, and C.P. DUNNE. Use of polyamide fluorescence as accelerated storage life test for oils in the food emulsions: Mayonnaise and salad dressing. Symposium on Lipid Oxidation, Miami, FL, May 1986.

_____. Use of polyamide fluorescence comparative stability tests and sensory and acceptance evaluations in storage life tests for oils in the food emulsions: Mayonnaise and salad dressing. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

RISVIK, E., and A.V. CARDELLO. Sensory attributes critical for the acceptance of low volume rations. Fall Meeting, Research and Development Associates, Natick, MA, October 1985.

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Papers (cont'd)

ROBERTSON, D.H. Rapid monitoring of materials penetration by toxins and chemical surrogates. NRDEC Science Symposium, Natick, MA, June 2-4, 1986; U.S. Army Science Conference, West Point, N.Y., June 17-19, 1986.

ROGERS, M.R., J. AKKARA, D. SEEKINS, and A.M. KAPLAN. Development of a military disinfectant for sanitizing eating utensils, fresh fruits and vegetables. Annual Meeting of the Society for Industrial Microbiology, San Francisco, CA, August 1986.

ROWLEY, D.B. Effect of sublethal injury on outgrowth of spores of foodborne pathogenic and spoilage bacteria. X Food Microbiological Research Conference, Chicago, IL, November 6-8, 1985.

_____. Microbiological aspects of irradiated foods. The New York Institute of Food Technologists 1986 Short Course on Food Irradiation. Montclair State College, Upper Montclair, NJ, April 3, 1986.

ROWLEY, D.B., F.E. FEEHERRY, and D.T. MUNSEY. Thermal inactivation and injury of spores of Bacillus stearothermophilus. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

SEGARS, R.A. Progress in the measurement of surface properties and the wetting of fabrics. Seminar, U.S. Army Natick Research, Development and Engineering Center, Natick, MA, April 1, 1986.

SEGARS, R., E. JOHNSON, and D. NORDQUIST. Nondestructive measurement of the variation in carbon distribution and vapor adsorption capacity of chemical protective fabrics. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

SILVERMAN, G. J. Inactivation of the Botulism Neurotoxin Type A. 1985 Interagency Botulism Coordinating Committee, Milford, CO, October 17-18, 1985.

_____. The environmental stability of staphylococcal enterotoxin A and botulinum neurotoxin A. Army Research Office Fourth Biodefense Workshop, Cashiers, NC, April 16-18, 1986.

_____. The stability and detoxification of staphylococcal enterotoxin A and botulinum neurotoxin A. U.S. Army Chemical Research, Development and Engineering Center, Aberdeen Proving Ground, MD, June 10, 1986.

_____. Food safety and microbiology. School of Nutrition, Tufts University, Medford, MA, September 19, 1986.

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Papers (cont'd)

SILVERMAN, G.J., G.G. ROY, C.T. WOODBURY, C.H. LEE, and J.J. PREVITE. Environmental stability and detoxification of staphylococcal enterotoxin A and botulinum neurotoxin A. NRDEC Science Symposium, Natick, MA, June 2-4, 1986; U.S. Army Science Conference, West Point, NY, June 17-20, 1986.

SYMINGTON, L.E. Combat encapsulation: Human factors in advanced integrated life support systems. NRDEC Science Symposium, Natick, MA, June 2-4, 1986.

WALKER, J.E. Use of spin labeled organophosphonates in the measurement, binding and detoxifying properties of CBW protecting substances attached to fabrics. NRDEC Science Symposium, Natick, MA, June 2-4, 1986; U.S. Army Science Conference, West Point, NY, June 17-19, 1986.

WALKER, J.E., F.M. ROBBINS, W.J. SMITH, and B.J. GALLO. Enzymes from microbial sources with activities against G-agents. NRDEC Science Symposium, Natick, MA, June 2-4, 1986; U.S. Army Science Conference, West Point, June 17-19, 1986.

WILEY, B.J., D.L. KAPLAN, and A.M. KAPLAN. The fungal resistance or susceptibility of resins, plasticizers and other constituents of adhesive formulations. 37th Annual American Institute of Biological Sciences Annual Meeting, Amherst, MA, August 10-14 1986.

Other Publications

ARMSTRONG, L.E., P.C. SZLYK, R.W. HUBBARD, D.B. ENGELL, I.V. SILS, J.P. DELUCA, W.T. MATTHEW, R.P. FRANCESCONI, M.J. DURKOT, and R.F. LARSEN. Physiological responses to WBGT-equivalent environments and two clothing types during simulated desert marches. Report No. T4/86, U.S. Army Research Institute of Environmental Medicine, Natick, MA, December 1985.

CARDELLO, A.V., and J. KUZNICKI. Psychophysics of single taste papillae. In Clinical measurement of taste and smell. H. Meiselman and R. Rivlin (eds). New York: Macmillan, 1986.

CARDELLO, A.V., and O. MALLER. Psychophysical measurement and the assessment of food quality. In Objective Methods in Food Quality Assessment. J. Kapsalis (ed). Boca Raton, FL: CRC Press, Inc., 1986.

DUNNE, C.P. Biosynthesis of food components -- realities and opportunities. In Proceedings, Biotech 85 Conference, World Biotechnology Report Volume II. New York: OnLine, Inc., 1985.

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Other Publications (cont'd)

KAPLAN, D.L., and M. MANDELS. Conversion of inedible wheat biomass to edible products for space missions. Technical Report, American Institute of Biological Sciences, Kennedy Space Center (National Aeronautics and Space Administration) Biomass Processing Technical Panel (in press).

SEGARS, R.A., and J.G. KAPSALIS. Texture, rheology and psychophysics. In Objective Methods of Food Quality Assessment. J.G. Kapsalis (ed). Boca Ration, FL: CRC Press, Inc. (in press).

LIST OF PATENT ISSUANCES

Date	Name	Lab/Ofc	Title of Patent
Jan 86	Ralph Martone	IPD	An Explosive Ordnance Disposal Protective Suit
Mar 4 86	Daniel Berkowitz	FED	Freeze Dried Cooked Meats
Jul 8 86	Richard Braga	IPD	TRAC-SHUN Sole and Heel Design
	Carole A. Przygoda	IPD	
	Richard F. Lacerte	IPD	
Jul 15 86	Frederick Robbins	SATD	Meat Tenderization with a Pro-
	Alfred L. Allen	SATD	teolytic Enzyme from Trichoderma
	John E. Walker	SATD	Reesei
	Samuel H. Cohen	SATD	

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