W. Gary Flamm, PhD

CURRICULUM VITAE

EDUCATION:

1959-1962 - Ph.D. (Biological Chemistry), University of Cincinnati, Cincinnati Ohio

1957-1959 - M.S. (Pharmaceutical Chemistry), University of Cincinnati, Cincinnati, Ohio 1953-

1957-1957 - B.S. (Pharmacy), University of Cincinnati, Cincinnati, Ohio

PROFESSIONAL POSITIONS:

Consultant in Toxicology, 1988-present

Principal, Health Science Solutions, Washington, DC, November, 1988- present

Associate, Consultox, Ltd, Baton Rouge, Louisiana, November 1988-present

Director, Office of Toxicological Sciences, Center for Food Safety and Applied Nutrition,

U.S. Food and Drug Administration (US FDA), 1984-1988.

Associate Director for Toxicological Sciences, Bureau of Foods, US FDA, 9/82 - 3/84

Acting Associate Director for Toxicological Sciences, Bureau of Foods, US FDA, 5/82 – 09/82 Acting Associate Director for Regulatory Evaluation, Division of Toxicology, Bureau of Foods, US FDA, 10/81 - 5/82.

Deputy Associate Commissioner for Health Affairs, US FDA, May, 1981- October, 1981

Acting Deputy Associate Commissioner for Health Affairs, US FDA, July, 1980 - May, 1981.

Assoc. Dir. for Regulatory Evaluation, Div. of Toxicology, Bureau of Foods, US FDA, 11/78 - 7/80.

Acting Associate Director for Regulatory Evaluation and Chief, Genetic Toxicology Branch, Division of Toxicology, Bureau of Foods, US FDA, October, 1977 - November, 1978.

Assistant Director for Division of Cancer Cause and Prevention, National Cancer Institute, NCI, September, 1974 - October, 1977.

Chief, Genetic Toxicology Branch, Bureau of Foods, US FDA, 09/72 – 09/74

Head, Somatic Cell Genetics Section, National Institute of Environmental Health Sciences, National Institutes of Health, January, 1972 - September, 1972

Research Chemist, Cell Biology Branch, National Institute of Environmental Health Sciences, National Institutes of Health, June, 1968 - January, 1972

Sr. Research Fellow, Dept. of Zoology, Univ. of Edinburgh, Edinburgh, Scotland, 9/66 - 7/67. Research Chemist, National Cancer Institute, National Institutes of Health, July, 1964 - September, 1966. Research Fellow, California Institute of Technology, June, 1962 - July, 1964.

Predoctoral Fellow, Department of Biochemistry, University of Cincinnati, September, 1959-June, 1962

PROFESSIONAL SOCIETIES AND HONORS:

American College of Toxicology (Charter Member) 1977-present President, 1984-1985

Fellow, 1986-present

Chairman, Program Committee 1983, 1984

Membership Committee, 1979, 1981 Program Committee 1984-1985

Nominee Committee, 1982-1983 Council, 1982-1984

Publications Committee, 1983-1984

Environmental Mutagen Society (EMS) (Charter Member) 1969-present Council, 1974-1976, 1978-1981

Executive Board, 1975-1976

Treasurer, 1973-1974

Chairman, Program Committee

1974 Chairman, Nomination Committee, 1978-1979

Finance Committee, 1979-1980

Long-Range Planning Committee, 1979-1980

Society for Risk Analysis (Charter Member & Co-Founder) 1980-present

Council 1988-1990

Program Committee, 1981-1982

President's Advisory Committee, 1981-1982

International Society for Regulatory Toxicology and Pharmacology, 1985-present

Vice President, 1988-present

Council, 1985-present

Rho Chi

Sigma Xi

Member, Federal Executive Institute Alumni Association (Policy Issues Committee) 1982

Former Member, American Chemical Society, Genetics Society of America, Biophysical Society, American Pharmaceutical Association, Biochemical Society, American Association for the Advancement of Science, New York Academy of Science, American Forestry Association

Geo Scott Memorial Award, Toxicology Forum, 1988

US FDA Senior Executive Performance Award for Outstanding Performance during fiscal years 1980, 1982, 1983, 1984

Environmental Mutagen Society's Recognition Award, 1981. 'For his accomplishments both in research and the administration of toxicology programs, especially for his untiring efforts to establish genetic toxicology as an essential component of chemical safety evaluation.'

U.S. Dept. of Health, Education and Welfare Superior Service Award, 1977. 'for vigorous leadership in reshaping the philosophy and methods for assessing environmental carcinogenic hazard to humans on a national and international scale.'

U.S.Public Health Service Predoctoral Fellowships, 1962, 1963, 1964

Sigma Xi - honorary graduate

U.S. Public Health Service Predoctoral Fellowships, 1959, 1960,1961,1962

Rho Chi - honorary Pharmaceutical Society, 1958.

Onto Mooseburger Award in Pharmacy, 1957.

ADDITIONAL TRAINING-.

Radiation Biology, University of Sao Paulo, Brazil, 1971

Molecular Biology, University of Edinburgh. Scotland, 1966-1968.

Biochemical Genetics, National Institutes of Health, 1965-1966.

Molecular Biology, Biophysics, California Institute of Technology, Pasadena, California, 1962-1964.

COMMITTEES, CHAIRMANSHIPS AND RESPONSIBILIITIES:

Special Foreign Assignment to the University of Edinburgh, Edinburgh, Scotland, 1967-1968

Testimony before U.S. Senate on 'Chemicals and the Future of Man,' 92nd Congress,

Subcommittee on Executive Reorganization and Government Research, Washington, D.C.

1971 Organizer and Chairman 'Methods for the Detection of Somatic Mutations in Man, NIEHS/NIH, Research Triangle Park, North Carolina, 1972

Executive Secretary - Subcommittee on Carcinogen Laboratory Standards, DHEW, 1973-1975

Chairman - Subcommittee on Carcinogenicity of NTA, Committee to Coordinate Toxicology and Related Programs, DHEW, Bethesda, Maryland, 1974-1975 Executive Secretary -National Cancer Advisory Board Subcommittee on Environmental Carcinogenesis, Bethesda, Maryland, 1975-1977 Chairman - Working group to develop document on 'Approach to Determining the

Chairman - Working group to develop document on 'Approach to Determining the Mutagenic Properties of Chemical Substances,' CCTRP, DHEW, 1975-1977 Preparation of testimony and hearing statements before NIH appropriation subcommittees of the Congress on cancer prevention for the National Cancer Institute, 1975, 1976 Preparation of testimony and appearance before U.S. Senate Health Subcommittee on Diethylstilbestrol Hearings, 1975

Member, DREW Subcommittee on Polychlorinated biphenyls, Bethesda, Maryland, 1975 Coordinated and participated in the interdepartmental HEW study on the toxicology and health effects of polybrominated biphenyl, 1975-1977

Chairman, Carcinogenesis Coordinating Committee, National Cancer Institute, Bethesda, Maryland, 1976-1977

Member of the FDA interagency committee to evaluate carcinogenicity of FD&C Red No. 40, Washington, D.C., 1976-1978

Testimony before a U.S. Congress on saccharin, House Health Subcommittee, 1977 Comissioner's Task Force on the 1977 National Academy of Sciences report on the National Center for Toxicologic Research, Rockville, Maryland, 1977-1978 Chairman, Cancer Assessment Committee, FDA/Burcau of Foods, Washington, D.C., 1978-1988.

Chairman, Mutagenicity Working Group on Risk Evaluation, U.S. Environmental Protection Agency 1978-1980.

Chairman, Health Effects of Dicscl Fuel Emission, U.S. Environmental Protection Agency, 1978. Testimony before U.S. House of Representatives, Committee on Science and Technology on Use of Animals in Medical Research and Testing, 1981.

Member of Working Group on methods for the integrated evaluation of risks for progeny associated with prenatal exposure to chemicals - WHO/International Program for Chemical Safety, 1981. Working Group on Carcinogen Principles, White House Office of Science Technology Policy, 1982. Testimony before a U.S. House of Representatives, Committee on Science and Technology, hearing on Hazards of Chemicals to Human Reproduction, 1982 Member, Risk Management Working Group, Interagency Risk Management Council, 1984, 1985. Co-chairman, US FDA, Health Hazard Evaluation Board, 1982-1988

Chair, Session on Mutagenesis, Annual Meeting of the American College of Toxicology, 1980. Chairman, Food and Risk Assessment, Mechanisms of DNA Damage and Repair: Implications for Carcinogenesis and Risk Assessment, 1985.

Chair, Session on DcMinimus Risk, International Society of Regulatory Toxicology and Pharmacology, 1987.

Chairman, Approaches to Validation, In Vitro Toxicology, sponsored by the John Hopkins Center for Alternatives to Animal Testing, 1986.

Chair, Risk Analysis and the Food and Drug Administration, Society for Risk Analysis, Annual Meeting, 1988.

Chair, Risk Assessment in the Federal Government Managing the Process, Toxicology Forum, 1983. Chair, Program Committee, Annual Meeting of the International Society of Regulatory Toxicology and Pharmacology, 1987, 1988.

FACULTY APPOINTMENTS:

Adjunct Associate Professor, Department of Zoology, University of North Carolina, Chapel Hill, North Carolina, 1968-1972

Visiting Professor of Biochemistry, University of Sao Paulo, Sao Paulo, Brazil, 1970 and 1971 Adjunct Professor of Genetics, George Washington University, Washington, D.C., 1972-1974

Visiting Professor, European Molecular Biology Organization, University of Zurich, Zurich, Switzerland, 1973.

Visiting Professor, University of Concepcion, Chile, 1979

ADVISORY AND CONSULTING ACTIVITIES

Manuscript review for numerous journals, cg, Biochem. Biophys. Acta, Science, Proc. NatL Acad. Sci., J. Mol. Biology, J. Biochem. Genetics, Biochemical Journal, Expt- Cell Research, Cancer Research, J. Natl. Cancer Institute, Mutation Research, Radiation Research, Food and Chemical Toxicology, J. Toxicol. and Environ. Health, Genetic Toxicology, CRC Reviews in Toxicology

Associate Editor, Journal of Environmental Health and Toxicology, 1974-1978

Section Editor, Journal of Environmental Pathology and Toxicology, 1978-present

Editorial Board, Genetic Toxicology, 1975-1978

Editorial Board, Food and Chemical Toxicology, 1977-present

Editorial Board, Biomedical and Environmental Sciences, 1988-present

Member of the Editorial Boards of

Sec. Ed.. Journal of the American College of Toxicology

Journal for Risk Analysis

Regulatory Toxicology and Pharmacology

Co-editor, Advances in Modern Toxicology: Mutagencsis, 1976-1978

Co-editor, Carcinogenesis & Mutagenesis, Pharmacology Handbook Series, Springer Verlag, 1978-1981

Member, Genetics Program Committee, George Washington University, Washington, D.C, 1972-1975

Member, Joint Subcommittee on Mutagenicity, Pharmaccutic Manufacturers Association – Food and Drug Administration, Washington, D.C., 1972-1974

Mcmbcr, Faculty Group, European Molecular Biology Organization, Geneva, Switzerland, 1973. Mcmbcr, U.S./USSR Delegation to Moscow, Environmental Health Agreement,

DREW, 1974 Member, Scientific Advisory Board, National Center for Toxicological Research (NCTR), Jefferson, Arkansas, 1975-1978

Chairman, Subcommittee on Mutagenesis, Science Advisory Board, National Center for Toxicological Research. Jefferson, Arkansas, 1975-1978

Chairman, Subcommittee on Genetic a rid Environmental Influences on Carcinogenesis (matrix) Sci. Adv. Board, National Center for Toxicological Research. Jefferson, Arkansas, 1975-1978

Member, Toxicology Advisory Committee, Food and Drug Administration, Rockville, Maryland, 19751978

Member, National Academy of Sciences, Committee to Develop Principles for Evaluating Chemicals in the Environment, Washington, D.C., 1975

Chairman, Subcommittee on Tissue Culture Resources, Sci. Adv. Board, National Censer for Toxicologic Research, Jefferson, Arkansas, 1976-1978

Member, National Academy of Sciences Committee to Revise Publication No. 1138,

Toxicologic Evaluation of Household Products, Washington, D.C., 1976-1977

Chairman, Subcommit(ceon Mutagenesis of NAS committee to revise Publication No. 1138, Washington, D.C, 1976-1977

Member, National Academy of Sciences Visiting Committee to Review the Food and Nutrition Board, Washington, D.C, 1976-1977

Consultant, Organization of American States, Office of Scientific Affairs, Sao Paulo, Brazil, 1971 Consultant, National Science Foundation, Structure and Function of Human Chromosome, Washington, D.C. 1971

Advisor, National Science Foundation, Developmental Biology - Cell Biology, Washington, D.C. 19711972, 1978

Washington, D.C, 19711972,1978 Consultant, World Health Organization, consultant group on anti-schistosomal agents, Geneva, Switzerland, 1972.

Consultant, National Cancer Institute, Carcinogenesis Program, Bethesda, Maryland, 1972-1974 Consultant, Environmental Protection Agency, Washington, D.C, 1972-1973,1976-1977 Consultant, Bureau of Drugs, Safety Evaluation, Rockville, Maryland, 1972-1974

Consultant, Consumer Product Safety Commission, 1973-1975, 1977 Consultant, National Institute on Drug Abuse, Rockville, Maryland, 1976-1977 Member, Faculty Group - International Course on Methods for the Detection of Environmental Mutagems, Concepcion, Chile, 1979

Chairman of the FDA's Recombinant DNA Coordinating Committee, 1980-1981 Co-Chairman Joint Committee on Agency-Wide Quality Assurance Criteria (FDA), 1980-1981 Chairman, Scientific Advisory Research Associates Program (FDA) 1980-1981 Chairman, International Visiting Scientist Program (FDA) 1980-19'81 Chairman, Agency-Wide Research Review and Planning Group (FDA) 1981 Ex-Officio Member National Cancer Advisory Board, 1980-1981

Member, Interagency Regulatory Liaison Group on 1-Mutagenesis; 2-Cancer Risk, 1979-1981 Organizing Committee for First World Congress on Toxicology and Environmental Health, 1983 Organizing Committee for "Symposium on Health Risk Analysis' 1981 Chairman, Toxicology Committee, National Conference for Food Protection, 1985-1986 Member, NAS Committee on Biomedical Models, 19'83-1985

INVITED PRESENTATIONS:

'Kinetics of Homogentisate Oxidase: Federation of American Societies of Experimental Biology, Atlantic City, New Jersey, 1961.

'Historic Synthesis,' invited speaker, First International Conference on Historic Chemistry and Biology, Santa Fe, California, 1963.

'Free and Bound Ribosomes' FASEB, Chicago, Illinois, 1963.

'Historic Synthesis' Seminar, California Institute of Technology, Pasadena, California, 1963. 'Association and Dissociation of RNP particles' Seminar, University of Cincinnati, Cincinnati, Ohio, 1963.

"Ribosome Synthesis," California Institute of Technology, Pasadena, California, 1964 'Protein and Nucleic Acid Biosynthesis,' University of California, Santa Barbara, California, 1964. "Biosynthesis and Assembly of Ribosomes," Dupont Laboratories, Wilmington, Delaware, 1964. "Isopycnie Density Gradient Centrifugation," University of Pennsylvania, Institute for Cancer Research, Philadelphia, Pennsylvania, 1905.

"Use of fixed-angle rotors" Seminar, Carnegie Institution of Washington, Washington, D.C., 1965. "Conversion of 21S to 16S RNA," Biophysical Society, Boston, Massachusetts, 1965.

Participant at Gordon Conference on Ccll Structure and Function, Meriden, New Hampshire, 1965. "Turn-Over of Mitochondrial DNA" Seminar, National Cancer Institute, Bethesda, Maryland, 1966. "Isolation and Fractionation of DNA,* invited speaker, Symposium on Subcellular Fractional ion, London, England, 1967.

- "Isolation and Properties of satellite DNA, University of Edinburgh, Scotland, 1967.
- "Properties of Mouse Satellite DNA," University of Glasgow, Glasgow, Scotland, 1967.
- "Isolation of Complementary Strands from mouse satellite, Oxford University, Oxford, England, 1967
- "Highly Repetitive Sequences of DNA,* St. Andrews University, St. Andrews, Scotland, 1968
- "Repetitive Sequences in Rodents, Department of Molecular Biology, University of Edinburgh, Edinburgh, Scotland, 1968.
- "Satellite DNA from the Guinea Pig, Newcastle University, Newcastle, England, 1968 "Isolation, Preparation, and Fractionation of DNA,* Imperial Cancer Research Fund, London, England, 1968.
- "Properties and Possible Role of Satellite DNAs," Oak Ridge National Laboratory, Oak Ridge, Tennessee, 1968
- "Highly Repetitive DNA, Yale University, New Haven, Connecticut, 1968
- "Structure and Function of Repetitive DNA,* invited speaker at Conference on Satellite DNA, American Association for the Advancement of Science, Chicago, Illinois, 1968.
- "Properties of Guinea Pig DNA,* Symposium on Hybridization of Nucleic Acids, Biochemical Society, Newcastle, England, 1968.
- "Complementary Strands of Satellite DNAs, Biophysical Society Meeting, Los Angeles, California, 1969. Participant at Gordon Conference on Cell Structure and Function, Hanover, New Hampshire, 1969
- "Classes of DNA in mammals," University of North Carolina, Chapel Hill, North Carolina, 1969
- 'Structure and Function of Repetitive DNA," Duke University, Durham, North Carolina, 1969
- 'Satellite DNAs in rodent species, University of Chicago, Chicago, Illinois, 1969 "Synthesis of DNA following allylation, Temple University, Philadelphia, Pennsylvania, 1970.
- "Repetitive DNA," Case Western Reserve University, Cleveland, Ohio, 1970.
- "Repetitive sequences of higher organisms, University of Nebraska, Lincoln, Nebraska, 1970.
- "Alkylation of DNA," Biophysical Society Meeting, Baltimore, Maryland, 1970
- "Structure and Function of Mammalian DNA," University of Texas, Austin, Texas, 1971
- 'Repair of Human DNA," National Institute for Environmental Health Sciences, 1971
- 'Alkylation and Repair of DNA,' Oak Ridge National Laboratory, Oak Ridge, Tennessee, 1971
- 'Repetitive Sequences of DNA,' Brooklyn College, New York, New York, 1971 'A Gene Mutational Assay in Mouse Cells,' North Carolina State University, Raleigh, North Carolina, 1971

"Lectures on Chemical Mutagencsis: University of Sao Paulo, Sao Paulo, Brazil, 1971 "Lectures and Demonstrations on Ultraoenlrifugation,' University of Sao Paulo, Sao Paulo, Brazil, 1971

'Chemical Mutageas in the Biosphere,' Environmental Mutagen Society, Washington, D.C., 1971

"Molecular Mechanisms of Mutagenesis, invited participant in Workshop on Chemical Mutagens as Environmental Contaminants, sponsored by the Fogarty International Center, Bethesda, Maryland, 1971.

'Leetureson Chemical and Radiation Biology, Winter Biochemistry Course, sponsored by Organization of American States, 1971

'Structure and Function of Human Chromosome; National Science Foundation, Bolder, Colorado, 1971

Chairman of Workshop on 'Somatic Cell Mutagenesis, sponsored by National Institute of Environmental Health Sciences, 1972

'Repetitive DNA, Chromosome Defects and Neoplasia; sponsored by National Science Foundation, Minneapolis, Minnesota, 1972

"Mutagenesis in Mammalian Cells; Duke University, Durham, North Carolina, 1972 'Mutagenicity of Hycanthone,' University of Sao Paulo, Sao Paulo, Brazil, 1972 'Gene Mutations at the Thymidine Kinase Locus, John Hopkins University, Baltimore, Maryland, 1972

'Repetitive Sequences and Neoplasia,' University of Minnesota, Minnesota, Minnesota, 1972

'Mutagenicity of Chemical Substances; George Washington University, Washington, D.C., 1973

"Test Systems for Measuring Mutagenicity,' Howard University, Washington, D.C., 1973.

"Lectures on Molecular Biology," University of Zurich, Zurich, Switzerland, 1973

'Mutagenesis and Repair," Swiss Institute for Experimental Cancer Research, Lucerne, Switzerland, 1973

"Mutagenic Test Systems," Food and Drug Administration, Washington, D.C., 1973 "Relationship of DNA Repair to Mutagenesis," invited participant to Workshop on Mutagenic Test Methods, sponsored by National Institutes of Health, Research Triangle Park, North Carolina, 1973.

"A Tier System Approach to Mutagen Testing," invited speaker at International Conference on Chemical Mutagens, Asilomar, California, 1973.

'Lectures on Molecular Genetics, Symposium on Molecular Hybridization, Zurich, Switzerland, 1973

'A New Approach to Mutagen Testing," invited speaker at Symposium on Chemical Mutagenesis, Moscow, USSR, 1974.

"Introduction to Toxicology," Chairman of Symposium on Collaborative Studies in Toxicology, sponsored by Society of Toxicology and the Association of Official Analytical Chemists, Wash. D.C., 1974

"Relevance of Mutagenicity Tests in Toxicology," Saratoga Conference on Molecular Biology and Pathology, Saratoga Springs, New York, 1974

"Test Systems for Assessing Mutagenic Potential," invited speaker at Symposium on Collaborative Studies in Toxicology, sponsored by SOT and AOAQ, Washington, D.C., 1974.

'Use of Gene Mutational Assays as a Model for Risk Assessment, Symposium on Risk Assessment, sponsored by NIH, Wrightsville Beach, North Carolina, 1974.

Tier System Approach to Mutagen Testing,' National Institutes of Health, Research Triangle Park, North Carolina, 1974.

"Carcinogenesis and Mutagenesis, Procter and Gamble Co., Cincinnati, Ohio, 1975

"The Need to Quantify Risk," National Cancer Advisory Board, Bethesda, Maryland, 1975

"Mechanisms of Mutagenesis, General Foods Corporation, New York, New York, 1975.

"Problems in Carcinogenesis, Worcester Foundation for Experimental Biology, Worcester, Massachusetts, 1975

Chairman of Workshop for Developing a Document on "Mutagenic Test Procedures," Ocean City, Maryland, 1975

"Mutagenesis as a Toxicologic Problem, Chairman of Gordon Conference Session on Mutagenesis, Meriden, New Hampshire, 1975.

'Open Meeting on Mutagenesis' sponsored by NIH, Bethesda, Maryland, 1975

'Mutagenic Test Systems,' Chairman of Session on Short-Term Tests, Symposium entitled, "Toxicology and the Food Industry; Aspen, Colorado, 1975.

Session Chairman, Symposium on <u>In Vitro Mutagenicity Tests</u>, Environmental Mutagen Society, Miami, Florida, 1975.

Workshop on 'Principals for Evaluating Chemicals in the Environment, sponsored by the National Academy of Sciences, San Antonio, Texas, 1975.

Open Meeting on Mutagenesis, sponsored by DHEW, Bethesda, Maryland, 1976.

"Carcinogenicity Assays, Problems, and Progress,' Gordon Conference on Toxicology and Safety Evaluation, Meriden, New Hampshire, 1976.

'Value of Short-Term Tests in Carcinogenesis,' Toxicology Forum, Aspen, Colorado, 1976. "Presumptive Tests,' Symposium on Risk Assessment entitled, *Extrapolation 11, sponsored by DHEW, Pinchurst, North Carolina, 1976.

'Programs of the National Cancer Institute,' invited speaker on cancer, sponsored by the American Association of Science, Boston, Massachusetts, 1976.

'Assessment of Risks from Carcinogenic Hazard,' invited speaker to Symposium on Toxicology, sponsored by Synthetic Organic Chemists Manufacturing Association, Atlanta, Georgia, 1976.

Chairman of Session on Short-Term Tests, Symposium on 'Status of Predictive Tools in Application to Safety Evaluation," Little **Rode**, Arkansas, 1976.

'Relevance of Carcinogenicity Testing to Humans,' invited speaker at Origins of Human Cancer, Cold Spring Harbor Symposium, 1976.

"Human Genetic Disease Versus Mutagenicity Assays, Symposium sponsored by Pharmaceutic Manufacturers Associated, Sea Island, Georgia, 1976.

Open Meeting on Mutagencsis, sponsored by DHEW, Bethesda, Maryland, 1976

"Role of the NCI in the National Cancer Program on Environmental Carcinogenesis, invited speaker at Conference on Aquatic Pollutants and Biological Effects with Emphasis on Neoplasia, New York Academy of Sciences, New York, New York, 1976.

"Genetic Disease in Human and Mutagenic Test Systems,' Albany Medical School, Albany, New York, 1976.

"Statistical Problems in Carcinogenesis, University of California, Berkeley, California, 1976. "Carcinogenesis and Animal Bioassay," Grocery Manufacturers of America, Washington, D.C., 1976. 'Problems and Needs in Assessing Carcinogenicity Data, National Clearinghouse for Environmental Carcinogens, 1976.

"Carcinorcnesis and Cancer Prevention," University of Eastern Virginia Medical College, Norfolk, Virginia, 1977

"Overview of Mutagenesis, Food and Drug Administration, Washington, D.C., 1977 Workshop on Carcinogenicity of Aromatic Amines and Hair Dyes, International Agency for Research in Cancer, Lyon, France, 1977.

'Strcngths and Weaknesses of Current Approaches in Carcinogenesis, session Chairman and speaker on "Federal Regulation of Environmental Carcinogens, Center for Continuing Education., Washington, D.C, 1977.
"Program in Carcinogenesis,' Cancer Research Safety, NIH, Dulles Airport, Virginia,

"Program in Carcinogenesis,' Cancer Research Safety, NIH, Dulles Airport, Virginia, 1977. "Predictive Value of Short-Term Tests, invited speaker at Animal Health Institute, Lake Tahoe, Nevada, 1977.

Open Meeting on Mutagenesis, sponsored by DHEW, Bethesda, Maryland, 1977

"Risk Evaluation, in the Federal Regulation of Environmental Carcinogens, sponsored by Center for Continuing Education, Washington, D.C., 1977.

'Statistical Considerations of the Dominant Lethal and Heritable Translocation Test,' The Washington Statistical Society, 1978

Testing: Short-Term, 3rd Toxic Substances Control Conference, Government Institutes, Inc., Washington, D.C, 1978.

"the Degree of Concern as Defined by Short Term Carcinogenicity Assays,

Pharmaceutical Manufacturers Association, Point Clear, Alabama, 1978.

"Short Term Predictive Tests, Pharmaceutical Manufacturers Association, Lincolnshire, Illinois, 1978. Chairman of 'Scien1ificRevicwMeetingon the US. Environmental Protection Agency Diesel Emission Health Effects Research Program, US. EPA, Washington, D.C., 1978.

"Strengths and Weaknesses of Tests for Mutagenesis,' Banbury Center of the Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, 1978.

'Directing and Measuring Carcinogens,' Seminar on Government Regulation of Cancer Causing Chemicals, National Center for Administrative Justice, Washington, D.C., 1978. Workshop on 'Chemical Scoring Systems,' Interagency Testing Committee (17SCA), San Antonio, Texas, 1978.

"Needs for Regulatory Utility of Short-Term Test Data, International Update on Short Term Tests, The Toxicology Forum, Washington, D.C, 1979.

"Proposed Application of Short-Term Tests,' International Update on Short Term Tests, The Toxicology Forum, Washington, D.C, 1979.

'Current and Proposed Use of Short Term Tests, Cosmetic, Toiletry and Fragrance Association, Washington, D.C, 1979

'Application of Mutagenicity Testing on SOM Food Animal Drugs, Subcommittee on Environmental Mutagenesis, DHEW/CCIRP, 1979

'Application of Mutagenicity Testing in Cyclic Review of Food Additives, Subcommittee on Environmental Mutagenesis, DHEW/CCTRP, 1979

'Recent Developments on Sorbate/Nitrite,' Tripartite (US., Canada, U.K), Annapolis, Maryland, 1979. 'What is Risk?' International Course on the Detection of Environmental Mutagens, Concepcion, Chile, 1979

'Status of Regulations and Proposed Regulation Covering Environmental Mutagens; International Course on the Detection of Environmental Mutagens, Concepcion, Chile, 1979

'Food Safety Guidelines,' Tripartite (US., Canada, U.IC), Ottawa, Canada, 1980. 'History and Progress in Carcinogenesis,'Society of Cosmetic Chemists, 1978

'Introduction sad History of Mutagenicity Testing,' Annual Meeting of the American College of Toxicology, 1980

Mutagenicity and Neoplastic Transformation Assays, Course on 'Identification and Quantification of Environmental and Occupational Carcinogenic Risks, sponsored by the American College of Toxicology, 1980.

Lectured on Molecular Mechanisms at the American College of Toxicology's course on 'Identification of Environmental and Occupational Carcinogenic Risks.'

"Introduction and History of Environmental Mutagenesis,' Second Annual Meeting of the American College of Toxicology.

'Risk-Benefit Considerations in Toxicology, The Toxicology Forum, 1981 Winter Meeting "Trends in Bioassay Methodology," 75th Anniversary of the Food and Drugs Act, Sponsored by the Animal Health Institute

"Relationship Between Science & Regulation,' Food and Drug Administration Risk Assessment for Carcinogenic Focal Ingredients - EPA, 1982.

FDA Experience with Risk Assessment for Carcinogens in Foods, Food and Drug L:rw institute, 1982. Practical Applications of Risk Analysis, The Food and Drug and h⁻1w Institute Conference, 1982.

The Future of Carcinogen Testing: Implications for Food Safety; A Symposium on Food Safety Laws: Delaney and Other Dilemmas, sponsored by Boston University, 1982.

Regulatory Use of Genetic Toxicity Tests, Society of Toxicology - Mid Atlantic Chapter Meeting on Genetic Toxicology/Predictive or Not, 1983

Aerosol Spray Adhesives, A Workshop on Principles and Applications of Cytogenetic, Sister Chromatid Exchange, Gene Damage to Problems of Human Health, sponsored by the American COllege of Toxicology, 1982

Food and Drug Administration Viewpoint on Problem Tumor, Toxicology Forum, Winter Meeting, 1983. Food-Borne Carcinogens, Second International Conference on Safety Evaluations and Regulations of Chemicals, sponsored by Boston University, 1983 Carcinogenicity of Hair Dyes, Formaldehyde, Nitrates and Beryllium, Symposium on Interpretation of Epidemiological Evidence, sponsored by International Agency for Research on Cancer, 1983.

Use of Acute Toxicity Studies in the Bureau of Foods, Acute Toxicity Workshop, sponsored by the Food and Drug Administration, 1983

Critical Issues on Science, Technology and Future, The Brookings Institution, 1983 Challenge to Animal Testing, Chemical Manufacturers Association, 1983.

Regulatory Significance of Workshop Recommendation on Alternatives to Animal Testing, Workshop on Acute Toxicity Testing - Alternative Approaches, sponsored by John Hopkins University, 1983.

Role of Mathematical Models in Assessment of Risk and in Attempts to Define Management Strategy, Safety Assessment: The Interface Between Law and Regulation, sponsored by International Life Science Institute, 1983.

Impact of Short Term Tests on Regulatory Actions, Conference on Cellular Systems for Toxicity Testing, sponsored by New York Academy of Sciences, 1984.

Requirements of Pre-Market Evaluation, Toxicology Forum, April Meeting, 1984 Use of Short Term Tests in Risk Assessment, Workshop on RA/RM: Carcinogenesis, sponsored by Society for Risk Analysis, 1986

A Regulator's Viewpoint, Workshop on Risk Assessment, sponsored by Procter and Gamble Co., 1986

Risk Assessment, Sensitivity Analysis, GMA Technical Committee Food Protection Meeting, Grocery Manfacturers of America, 1986

Update on Current Approaches in Addressing Threshold of Regulations and DcMinimus Risk, Toxicology Forum, Winter Meeting, 1986.

Toxicity Update on BHA/BHT, Toxicology Forum, Aspen Meeting, 1985

Food Regulatory Issues, Washington Chemical Society, 1984

Issues in Decision Making, Interdisciplinary Discussion Group in Carcinogenicity Studies, sponsored by ILSI, 1986.

Recent Developments in Risk Assessment, Medical Issues in Toxic Tort Cases: Risk Assessment, Cancer, and Immunological Injuries, sponsored by the American Bar Association, 1987

Replacement of the LD₅₀ Tests at the Food and Drug Administration, Work shop on Alternative Tests, sponsored by Mobil Oil, 1987.

Risk Assessment/Oncology and Regulatory Issues, The American College of Toxicology, Annual Meeting, 1987

The Need for Situational Analysis and Scientific Judgement in Assessing the Risk from Chemical Carcinogens, New York Academy of Sciences, 1987

Summary of 'Workshop on the Role of Liver Enzyme Induction in Carcinogenesis and Drug Interaction, sponsored by Merck, Sharp and Dohme Laboratories 1988

Issues and Directions for the Future, Society for Risk Analysis, Annual Meeting, 1988 Pros and Cons of Quantative Risk Analysis, Institute for Food Technology, Basic Symposium, 1988

Threshold of Regulation for Indirect Food Additives, Workshop on DeMinimus Risk, 1985 Possible Mechanisms of BHA Carcinogenicityin the Rat, Food Antioxidants: International Perspectives, sponsored by ILSI, 1986.

In Vitro Toxicology, General Principles and Concepts in Toxicology and Toxicologic Pathology, Course sponsored by University of Cincinnati, 1987.

Risk Assessment in Product Regulation, Prevention 85, sponsored by the American College of Preventive Medicine, 1985.

Establishment of Acceptable Limits of Intake, Second National Conference for Food Protection, 1984

Use of Short Term Test Data in Cancer Risk Assessment, Society of Toxicology Annual Meeting (Course), 1938

Critical Assessment of Carcinogen Risk Policy, Internalional Society of Regulatory Toxicology and Pharmacology, 1988

The Food and Drug Administration Procedures and Policies to Estimate Risks of Injury to

the Male Reproductive System, Sperm Measures and Reproductive Success, sponsored by Georgetown University, 1983.
Risk Assessment of Food and Color Additives, United States-Japan Workshop on Risk Assessment/Risk Management sponsored by The Environmental Protection Agency and Osaka University, 1988. How Molecular Data is Used in Risk Assessment, Banbury Conference on New Directions in the Quantative and Qualitative Aspects of Carcinogen Risk Assessment, 1988.

How Has the Delaney Clause Impacted on The Food and Drug Administration and Public Health, Food and Drug Law Institute Symposium on The Delaney Clause, 1988

PUBLICATIONS:

Shirkey, H.C, Schmidt, G.C., Miller, RG. and Flamm, W.G, 'Animal Sera and Specific Enzymes in the Treatment of Poisoning, Journal of Pesticides, 60:711, 1962

Flamm, W.G. and Crandall, D.I., 'Evidence for the Existence of Ferrous Mercaptans in the Active Center of Homogentisate Oxidase,' Federation Proc., 21:250, 1962

Flamm, W.G. and Crandall, D.I., Purification of Mammalian Homogentisate Oxidase and Evidence for the Existence of Ferrous Mercaptans in the active center; J. Biol. Chem., 238:389, 1963

Flamm, W.G., 'Purification of Homogentisate Oxidase and an Investigation of its Properties and Active Center,' Dissertation Abstracts, 23:1503, 1962

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