



VENKAT RAO, Ph.D., DABT

Contact Information

Highlights

Summary Experience

Education

Subject Area Expertise

Health Research and Informatics

- Health Research
- Toxicology
- Pharmacology
- Biodefense Technologies
- Public Health Informatics
- Toxicoinformatics
- Health Information Technologies
- Risk Analysis

Science Policy

- Environmental Policy
- Health Risk Communication
- Scientific Reviews

Professional Assignments and Extramural Activities

- Invited Lectures
- Fellowships and Awards

Publications

- Papers presented at Meetings
- Book Chapters
- Professional Publications
- Technical Reports

Publications in Popular Newspapers and Magazines

- American Affairs
- Indian American Community
- US-India Relationship
- South Asian Affairs
- Inter-faith Related Topics



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HIGHLIGHTS

Dr. Venkat Rao is the Director of the Health Research and Informatics Practice at CSC. He brings a unique combination of highly specialized biomedical science expertise with proven experience in developing information systems-based scientific tools and methodologies in biomedical subjects, public health and healthcare technologies.

- Dr. Rao is a Board-Certified toxicologist with 14 years of research experience in the fields of pharmacology and biochemistry with a specialized focus on drugs and chemical-biological interactions, pharmacological hazard analysis, vaccine and biologics product safety and efficacy study design, analysis and review.
- Dr. Rao was Board Certified by the American Board of Toxicology in 1996 and Re-certified in 2000. He was formerly a Fellow of the U.S. National Academy of Sciences under the Young Investigators Program (1994-95), Fellow of the American Association for Advancement of Sciences Environmental Fellowship Program (1992), Robert C. Barnard Environmental Scholarship (1992), and 1985 Recipient of the Graduate Scholarship of the Rotary

International Foundation (USA). Dr. Rao has numerous publications in peer-reviewed journals, technical reports, book chapters, and meeting proceedings in the areas of toxicology, pharmacology, and risk assessment

- He serves as the principal science officer for the CSC (DynCorp's) Mission Support Services Group and manages CSC's Health Research and Informatics practice area with a focus on public health/medical informatics, infectious disease surveillance and hazard analysis (TB and HIV), risk assessment and environmental health.
- CSC (DynCorp) principal investigator of the NIH Clinical Research Information System (CRIS) study assessing the technical and functional area requirements, costs, efforts and risks in the clinical information system modernization project. The Integrated Analysis Report (IAR) from the study described the framework for the NIH CRIS modernization program.
- As a pharmacist holding advanced educational qualifications in pharmacology and research experience in biochemical pharmacology, Dr. Rao made key contribution to the early phases in concept development for drug interaction and computerized patient record for the DoD's Composite Health Care System (CHCS, under contract to SAIC). Involved in the technology assessment of commercially available drug interaction systems for a major pharmaceutical company and a HMO. Dr. Rao served as a senior consultant in drug information systems for the Institute for Clinical Information, a healthcare technology network based in Northern Virginia
- Extensive experience in developing scientific and informatics tools and methodologies for application in health risk analysis, toxicoinformatics, and product safety assessment.

- Project manager and principal investigator of a two-year comprehensive analysis of the Army's health risk appraisal program, involving analysis of five database representing a combined population of over 625,000 military personnel in a five-year period (1991-95) and a total of over 21 million health-related data points.
- As principal investigator of a SAIC R&D program, Dr. Rao lead development of model algorithms and associated concepts on the molecular mechanism of action of dioxins and new methodologies in non-cancer risk assessment. Technical topics referred in these sections were published as papers in peer-reviewed journals, journal meeting proceedings and technical reports.
- Director for Biosafety for the biodefense vaccine development program of the Joint Vaccine Acquisition Program of the Department of Defense (under contract to CSC). Oversee the non-FDA requirements for clinical and pre-clinical studies for biodefense vaccines under various stages of development.
- Defined and developed the core data for EPA's Integral Search System, a specialized toxicoinformatics tool for hazard analysis of carcinogenic chemicals and mixtures. A number of technical publications resulted from these efforts.
- Dr. Rao was a principal scientist and project manager providing specialized support services to Research Area Directorate of the US Army Medical Research and Materiel Command, including telemedicine, and evaluation of advanced medical technologies, operational medicine research program, combat care casualty program, and breast cancer research program. Managed the evaluation of program elements under the

Telemedicine and Advanced Technology Research Center (TATRC).

- He provided biomedical support services for the Army Operational Medicine Research Program on physiological monitoring systems; served as technical liaison for the Director of Operational Medicine Research Program at the Federal Interagency Committee on Emergency Medical Services. Performed physiological studies monitoring for environmental exposure and environmental impact of demilitarization program.
- More than 14 years of project and program management experience (principal investigator, project manager, and program manager) with experience managing up to 25 geographically dispersed staff, including subcontracting personnel.
- Member of expert panel on toxicology and hazard assessment of chemical mixtures, dioxin risk assessment (EPA, CDC); lead toxicologist in the development of Integral Search System; principal scientist (under contract to SAIC) in the assessment and validation of the Integrated Exposure Uptake and Biokinetic Model for lead uptake by children; member of expert panel on advanced biomedical technologies (DARPA, DOD, and Private Sector).
- Published over 80 articles, technical papers, white papers, technology assessment reviews, book chapters in professional peer-reviewed journals, books, conference proceedings, and client deliverables.
- Dr. Rao received his Professional Bachelor's Degree in Pharmacy from Bangalore University (1980), Masters Degree in Pharmacology from Bangalore University (1983), a Masters Degree in Toxicology from Wayne State

University (1988), and a Ph.D. in Biochemistry from the Indian Institute of Science (1988). Dr. Rao's postdoctoral work was in the area of biochemical mechanisms in chemical carcinogenesis at the George Washington University Medical Center, Department of Biochemistry (1987).

1.0 SUMMARY EXPERIENCE

Dr. Venkat Rao is the Director of the Health Research and Informatics Practice at CSC. He brings a unique combination of highly specialized technical expertise in biomedical science with extensive experience in developing scientific tools and methodologies in the development of national policies in the areas of public health and environmental protection. Dr. Rao is a Board-Certified toxicologist with 14 years of research experience in the fields of pharmacology and biochemistry with a specialized focus on the chemical-biological interactions in hazard analysis and product performance evaluation. As the program manager of the EPA's Antimicrobial Pesticide Efficacy Evaluation Contract with the Office of Pesticide Programs (OPP) and the Hazardous Waste Listing Program of the Office of Solid Waste (OSW) he is responsible for the technical direction, staffing, performance, and contract oversight. Dr. Rao was the project manager of the EPA's highly regarded Toxicant Interaction Program of the Office of Toxic Substances (OPPT) which was involved in highly specialized scientific tools (chemical structure-activity relationships) as the basis for analysis of chemicals for carcinogenicity under pre-manufacturing notification program (PMN).

Dr. Rao is the Program Director for the CDC-PHPPO Assessment of Laboratory Testing of Mycobacterium tuberculosis Program (under contract to CSC) and the lead for the CDC-PHPPO

program on the performance evaluation and quality assurance of human molecular genetic testing (hMGT) under a joint program with Duke University and CSC (subcontract). These programs provide highly specialized laboratory system testing and analysis of critical importance to CDC mission in public health and disease prevention.

Dr. Rao has over 10 years of technical and project management experience covering an array of federal government agencies and program that include, All offices of EPA, U.S. Army, Centers for Disease Control and Prevention (CDC), Agency for Toxic Substances and Disease Registry (ATSDR), Department of Energy and the Joint Vaccine Acquisition Program.

As the Director of the Biosafety and Environmental Affairs of the DynPort Vaccine Company, Dr. Rao has the oversight of over 20 subcontractors on the microbiologic risks and safety of products under Joint Vaccine Acquisition Program of the U.S. Department of Defense. Dr. Rao leads a practice area with a focus on public health/medical informatics in infectious disease surveillance and hazard analysis (TB, HIV), risk assessment (Antimicrobial products and vaccines), and environmental health. These projects support development of the scientific framework, which would then form the elements of regulatory programs by the EPA, CDC and U.S. Army. Ongoing projects with the private sector include studies and assessment of in-door biological pollution, development of microbial resistance to Antimicrobial products, and industrial hygiene.

Dr. Rao was the project manager and principal investigator of a large analysis of the Army's health risk appraisal program, which contributed to a major programmatic review of the Army's health promotion program. As principal investigator, Dr. Rao has performed studies physiological monitoring for environmental exposure and environmental impact of demilitarization program. These studies were performed under contract to Army Operational Medicine Research Program, U.S. Army Center for

Health Promotion and Preventive Medicine (USACHPPM, Aberdeen PG, MD); Army Combat Casualty Care Program (USAMRMC), Chemical and Biological Defense Command (CBDCOM, Aberdeen PG, MD).

Dr. Rao received his Professional Bachelor's Degree in Pharmacy from Bangalore University (1980), Masters Degree in Pharmacology from Bangalore University (1983), a Masters Degree in Toxicology from Wayne State University (1988), and a Ph.D. in Biochemistry from the Indian Institute of Science (1988). He was Board Certified by the American Board of Toxicology in 1996 and Re-certified in 2000. Dr. Rao was formerly a Fellow of the U.S. National Academy of Sciences under the Young Investigators Program (1994-95), Fellow of the American Association for Advancement of Sciences Environmental Fellowship Program (1992), Robert C. Barnard Environmental Scholarship (1992), and 1985 Recipient of the Graduate Scholarship of the Rotary International Foundation (USA). Dr. Rao has numerous publications in peer-reviewed journals, technical reports, book chapters, and meeting proceedings in the areas of toxicology, pharmacology, and risk assessment.

2.0 EDUCATION

Ph.D. Biochemistry, Indian Institute of Science, 1988
M.S. Toxicology, Wayne State University, Detroit, 1988
M.Pharm Pharmacology, Bangalore University, 1983
B.Pharm Pharmacy, Bangalore University, 1980

PROFESSIONAL

Diplomate American Board of Toxicology (DABT), 1996, re-certified 2001

Postdoctoral Research Fellow—Biochemical pharmacology in lung cancer. George Washington University Medical Center (Washington DC). 1987-1988

American Association for the Advancement of Science, Fellowship (1992)

U.S. National Academy of Science, Young Investigator Fellowship (1993-94)

DynCorp Corporate Leadership and Program Management Courses (1998)

Electronic Communication of Clinical Data: An Introduction to HL7. MEDINFO2001. The Center for Health Informatics Research and Development, September 1, 2001. London. UK.

Evaluation in Health Informatics. MEDINFO2001. The Center for Health Informatics Research and Development, September 1, 2001. London, UK.

3.0 SUBJECT AREA EXPERTISE AND WORK EXPERIENCE

**Health Research, Toxicology, Public Health Informatics,
Healthcare Technology Applications, Toxicoinformatics and
Risk Analysis**

3.1 Toxicology and Health Risk Assessments

Board Certified Toxicologist with 14 years of research experience in the fields of biochemical toxicology and pharmacology at the

graduate and post-doctoral levels. Senior toxicologist risk assessor with over 11 years of professional experience in environmental and health sciences with a focus on the assessment of the impact of toxic chemicals and hazardous wastes on environmental and biological systems:

- As the principal toxicologist and task leader, for the Lower East Fork Poplar Creek RI/FS (under contract with DOE). In what was considered to be one of the most extensive remedial investigation study for a DOE site, Dr. Rao was the principal scientist in the development of several unique tasks. Examples are (a) Dr. Rao developed several site-specific oral Reference doses (RfD) for insoluble mercury, which was used as the basis for developing a unique strategy to assess risks for mercury exposure, both in the human and ecological risk assessments; (b) Dr. Rao was responsible for the development of a bioavailability study strategy to assess soluble doses from insoluble mercury species, using a combination of in vitro experiments; (c) Dr. Rao was the lead in the development of unique strategies to link soil and tissue level mercury and other contaminant concentrations, which was the basis of discussion with DOE and EPA on remedial goals; and (d) Dr. Rao a key member in the team in discussions with EPA (ECAO) on the toxicological aspects of insoluble mercury.
- In-charge of the toxicant interaction project of EPA (under contract) and provided the Agency for over 8 years with a highly specialized information support for a structure-activity relationship based risk assessment methods
- Dr. Rao used the IEUBK lead model to compare model-derived blood-lead concentrations and soil concentrations with short-term toxicity parameters. These efforts resulted in the development of various clean-up alternatives for the high-lead sites in the non-populated areas of Bunker Hill.

- Principal investigator and project manager of a large Health Risk Appraisal Analysis for the US Army Center for Health Promotion and Preventive Medicine (USCHPPM) Aberdeen PG, MD. Under this project a comprehensive quantitative health risk analysis of data collected from over 500,000 military personnel during 1991-1995.
- Senior toxicologist in the characterization of serum dioxin mobility and pharmacokinetics in the epidemiological investigations of long-term health consequences of herbicide exposure in Air Force personnel in Southeast Asia.
- Principal risk assessor for the Naval Arctic Research Laboratory (under contract to EPA). Under this project, Dr. Rao was in-charge of developing the risk assessment study design, performance, report writing, review, and participated in the discussion with the clients (EPA and US Navy). Extensive exposure scenarios for varying weather conditions and the impact on the unique Permafrost ground water resource were modeled. A total of 5 sites including a lake were under this study. petroleum hydrocarbons, Heavy metals, PAHs, PCBs, and VOCs were investigated for possible impact on public health and ecosystem.
- Principal investigator of a dioxin cellular uptake modeling study (R&D). The study aimed at characterizing the cellular-level doses of TCDD and other congeners to better characterize the dose-response at the lower end of the dose-response curve. Project goals were, (a) examine the biochemical and molecular evidences of competitive binding of dioxin congeners to *Ah* receptor, (b) develop quantitative estimates for the differential contributions of various congeners on the *Ah* receptor saturation, and (c) develop a competitive binding model that would estimate the probability of formation of receptor complexes of various congeners of dioxins and dibenzofurans.

- Dr. Rao was a collaborating scientist in a study with the Institute for Clinical and Preventive Medicine (Bratislava, Slovakia) on the health effects of low levels of lead on children in Bratislava.

3.2 Risk Assessment Methodologies Development

- In-charge of the toxicant interaction project of EPA (under contract) and provided the Agency for over 8 years with a highly specialized information support for a structure-activity relationship based risk assessment methods
- Dr. Rao used the IEUBK lead model to compare model-derived blood-lead concentrations and soil concentrations with short-term toxicity parameters. These efforts resulted in the development of various clean-up alternatives for the high-lead sites in the non-populated areas of Bunker Hill.
- Dr. Rao was a key-level scientist working in several projects in CERCLA RI/FS and RCRA RFA/RFI (under contract).
- Principal scientist and risk assessor of over 25 sites for federal, state and private agencies.

3.3 Development of Risk Assessment Information Systems

- Supported development of Integral Search System, a specialized toxicological information for development of intelligent systems for EPA that is capable of identifying the hazard of multiple chemical interactions.
- Supported the Army with specialized biomedical research in the formulation, design, and development of a

ambulatory physiological monitoring system for USAMRMC (Ft. Detrick, MD),(Under contract).

- Conducted requirement analysis on the Pesticide Label User's Information System (LUIS) system, with a particular focus on the information needs of the end-users, problem areas, and knowledge base available in the LUIS system.
- Principal scientist (under contract) in the assessment and validation of the Integrated Exposure Uptake and Biokinetic Model (IEUBK) model (version 0.99d) for lead exposure assessment in children.

3.4 Chemical-Specific Assessment

- Board Certified Toxicologist with 13 years of research experience in the fields of biochemical toxicology and pharmacology at the graduate and post-doctoral levels.
- Performed numerous specialized toxicological analysis of drugs, environmental mutagenic and carcinogenic chemicals, chemical mixtures, pesticides, industrial chemicals, and complex toxic substances.
- Senior reviewer of the toxicological studies performed by the federal, state agencies and private sector
- Designed and co-investigated a lead and arsenic bioavailability study in pigs (under contract to EPA).
- Short-term toxicity risk characterization of lead, arsenic, antimony, and cadmium for the RI/FS of Bunker Hill, Idaho (under contract to EPA).

- Comprehensive toxicological evaluation of 2,3-dimethyl-2,3-dinitrobutane (DMDNB) for the Army Environmental Hygiene Agency (AEHA).
- Principal investigator and project manager of a dioxin cellular uptake modeling study
- Principal investigator in the characterization of serum dioxin mobility and pharmacokinetics on the long-term health consequences of herbicide exposure in Air Force personnel in Southeast Asia.

4.0 POLICY AND SCIENCE

- Selected by the National Academy of Sciences under the Young Investigators Program (YIP) for a two-year collaborative research and development in the area of environmental health with the Czech Republic and the Republic of Slovakia.
- Selected by the American Association for the Advancement of Science to receive the 1992 Environmental Science Fellowship. As a AAAS Environmental Science fellow, Dr. Rao developed methods to integrate noncancer toxicity-related issues in the formulation of resident exposure scenarios under the Clean Air Act Amendments.
- Member of the visiting team on the World Bank India Project (under contract) that evaluated the capabilities of Environmental Pollution Control Board (PCB) laboratories in the Indian states of Gujarat, Maharashtra, Uttar Pradesh, and Tamil Nadu.

- Under the National Academy of Science Fellowship (YIP Program), visited highly polluted industrial regions in these countries, and reviewed the ongoing public health projects in the northwestern Bohemia, Moravia, Bratislava, and central Slovakia. A collaborative project on the long-term effects of lead pollution in Slovakia is in progress. Dr. Rao is currently collaborating with the Institute for Clinical and Preventive Medicine (Bratislava, Slovakia) on the possible effects of lead from automobile emissions on the neurobehavioral performance of children in Bratislava.
- Member of the selection committee for the 1997 and 1998 Environmental and Engineering Fellows of the American Association for the Advancement of Science, Washington, DC

4.1 Risk Characterization

- Principal investigator and project manager of a large Health Risk Appraisal Analysis for the USCHPPM (Aberdeen PG, MD). Under this project a comprehensive quantitative health risk analysis of data collected from over 500,000 military personnel during 1991-1995.
- Senior toxicologist in the characterization of serum dioxin mobility and pharmacokinetics in the epidemiological investigations of long-term health consequences of herbicide exposure in Air Force personnel in Southeast Asia.
- Collaborating scientist in an ongoing study with the Institute for Clinical and Preventive Medicine (Bratislava, Slovakia) on the health effects of low levels of lead on children in

4.2 Risk Communication

- Written several technical status papers for the federal and state governments on risk assessment, risk management, dioxin toxicity, Class C carcinogens, drug interactions, cancer risk characterization, chemical mixture effects in experimental carcinogenesis, toxicity of heavy metals such as Chromium, Mercury and Arsenic.
- Member of the Expert Panel on Toxicology and Hazard Assessment of Chemical Mixtures. Agency for Toxic Substances and Disease Registry (ATSDR), Center for Diseases Control and Prevention, Atlanta, GA.

4.3 Scientific Reviews

- As project manager and senior toxicologist, provided highly specialized technical support services in the area of biomedical research and development activities to the US Army Medical Research and Materiel Command (USAMRMC, Ft. Detrick).
- Senior reviewer to the Army's Breast Cancer Research Program (BCRP) and has peer-reviewed technical and contractual performance of more than 60 extra-mural BCRP research grants
- Performed toxicity/hazardous analysis of bioremediation technologies developed by the BioTrol Soil Treatment System, developed by BioTrol Inc. (for pentachlorophenol and dioxins), RETEC Soil/Sediment Treatment System (for PAHs), and Allied Signals bioremediation processes (for VOCs) (under contract).

4.4 Military-Specific Health Risk Analysis

- Senior risk assessor with over 10 years of professional experience in environmental and health sciences with a focus on the assessment of the impact of toxic chemicals and hazardous wastes on environmental and biological systems.
- Principal investigator and project manager of a large Health Risk Appraisal Analysis for the USCHPPM (Aberdeen PG, MD).

5.0 PROFESSIONAL ASSIGNMENTS AND EXTRAMURAL ACTIVITIES

- CSC Corporate Representative, International Medical Informatics Association (2001-present).
- Member, Task Group 3 (Informatics Tools). Washington Hospital Center, Bioterrorism Hospital Preparedness Project (ER One). 2002.
- Member, Work Group 1 (Informatics Training and Education). International Medical Informatics Association 2003.
- Member, EPA External Peer-Reviewer for Toxicology of Soluble Nickel Salts (2002).
- Member, EPA External Peer-Review Committee on Disinfectant byproducts risk assessment (2000).
- Member, Ecological Soil Screening Levels Workgroup (Task Group 7, Exposure Models), EPA/OERR, Washington, DC (1998).

- Member, Expert Panel, Risk Reduction Environmental Indicators: Human Health and Ecological Risks. EPA/OERR, Washington, DC (1998).
- Member, Expert Panel on Toxicology and Hazard Assessment of Chemical Mixtures. Agency for Toxic Substances and Disease Registry (ATSDR), Center for Diseases Control and Prevention, Atlanta, GA. (1997).
- Expert member of the Health Effects Advisory Panel of the Department of Defense Non-Lethal Weapons Directorate (1998-present).
- Member, Peer Review Panel on Chemical Mixtures Toxicology Research, at Agency for Toxic Substances and Disease Registry (ATSDR), Center for Diseases Control and Prevention, Atlanta, GA. (1997).
- Member, Selection Committee for the Environmental and Engineering Fellows of the American Association for the Advancement of Science, Washington, DC (1997-present).
- Member, Selection Committee for the Robert C. Barnard Environmental Science Scholarship Award to AAAS/EPA Environmental Science and Engineering Fellowship Program (1997-present).
- Member, EPA expert panel to review risk assessment in support of the proposed revised regulations for burning hazardous wastes in incinerators under 40 CFR Part 264/265/266 (1996).
- Subject expert in Toxicology for Interfaith Community Organization (ICO) in the ICO v. State of New Jersey in connection with ICO's risk assessment of hazardous wastes at Liberty State Park, NJ (1996).

- Chairman, Panel Discussion of scientists from the Health Sciences Division, Oak Ridge National Laboratory (Oak Ridge, TN) and visiting scientific delegation-supported by the National Academy of Science's Young Investigator's Program on *Changing Focus of Environmental Health Research in the US and Eastern Europe* (June, 1994).
- Adjunct Associate Professor, Department of Biology, George Mason University, Fairfax, VA. Supported and lectured a graduate-level course in risk assessment (1990-95).
- Member, EPA's expert panel to review and revise the technical methodologies in non-cancer risks assessment. Environmental Criteria and Assessment Office, Cincinnati, OH (Sept, 1990, and July, 1992).
- Invited by the Department of Agricultural Sciences, Kyoto University, Kyoto, Japan, to study and conduct research on tissue culture methods to produce pharmacologically active secondary metabolites (June-July 1984).
- Selected to participate in a joint program organized by the International Cell Research Organization (ICRO) and UNESCO to develop modern biochemical techniques to monitor the prevalence of tropical diseases in southeast Asia, Institute of Public Health, Hanoi, Republic of Vietnam (March-April 1982).
- Member of the Board on the ARMA Medical Foundation and Laboratory, Madras, India. The Foundation aims to develop projects on public health monitoring using serodiagnostic methods for major tropic diseases (1998-2000).
- External peer reviewer for the Journal of the American College of Toxicology, Journal of Toxicology and Environmental Health, and Regulatory Toxicology and Pharmacology.

- Member, Sigma Xi
- Member, American Medical Informatics Association
- Member, American Association of Advancement of Science
- Member, American College of Toxicology
- Member, Society of Toxicology, National Area Chapter

6.0 INVITED LECTURES

Invited Panelist, Healthcare Conference, Government Electronics and Information Technology Association, Ronald Reagan Center, Washington, DC, April 30, 2002.

Invited Lecturer, Toxicology and Toxicokinetics. DynPort Vaccine Company. August-November, 2002.

Invited Panelist. CBRN Countermeasures in Homeland Security. GEIA Vision 2002 Conference. Government Electronics and Information Technology, October 30, 2002. McLean, VA.

Invited Speaker, GSA Regions 4 & 7 ADP Council of Southeastern States. 2001. Information Technology Acquisition Training Conference, November 2001. Biloxi, MS.

Invited Delegate, MEDINFO2001: Towards Global Health—the Informatics Route to Knowledge. September 1-6, 2001. London (UK).

Speaker at the III Chemical Biological Medical Treatment Symposium (CBMTS III), AC-Laboratorium, Spiez, Switzerland, May 2000.

Speaker at the Interactive Poster Session, "Derivation of Ecologically-based Soil Screening Levels" 19th Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Charlotte (NC), November 1998.

Speaker at Howard University, "Environmental Regulations impact on Pharmacist Profession." Department of Pharmacology at Howard University Medical School, Continuing Education Program. September 1998.

Invited to present a paper on "Drug as Carcinogens: Carcinogenic and Tumor Promoter Potential of Approved Drugs" at a special symposium of the Ninety-sixth Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, March 15-17, 1995, San Diego, CA.

Addressed the 1995 and 1997 class of the Environmental and Engineering Fellows of the American Association for the Advancement of Science on the "various technical resources at EPA for risk assessment-related research activity." June 1995 and 97.

Graduate Seminar Series in Risk Assessment, Department of Biology, George Mason University, March-April, 1990-1995.

Informal Workshop on *Toxicological Interaction Data and Risk Assessment of Chemical Mixtures*. Environmental Criteria and Assessment Office, Office of Research and Development, Environmental Protection Agency, September 19, 1990, Cincinnati, Ohio, September 19, 1990.

Workshop on *Carcinogenic Mixtures*, National Research Council [National Academy of Sciences (USA)], Board on Environmental Studies and Toxicology, Jan 18-19, Tucson, Arizona, Jan 18-19, 1990.

Wayne State University, Department of Occupational and Environmental Health, College of Pharmacy and Allied Health Professions, Detroit, September, 1988.

7.0 FELLOWSHIPS AND AWARDS

US National Academy of Sciences 1993-94 Young Investigators Program Fellowship for Collaborative Research on Health Impact due to Environmental Degradation with the Czech and Slovak Republics.

American Association for the Advancement of Science 1992 Robert C. Barnard Environmental Science Scholarship Award for the best research contribution to EPA in the 1992 class of AAAS/EPA Environmental Science and Engineering Fellowship.

SAIC Environmental Science and Health Group 1992 Special Achievement Award.

American Association for the Advancement of Science Environmental Science and Engineering Fellowship for Summer of 1992.

SAIC Environmental Science and Health Group 1991 Technical Excellence Award for Continued Superior Performance.

Mrs. H.S. Hanumantha Rao Medal of the Indian Institute of Science for the best doctoral thesis 1988-1989.

NIH-supported postdoctoral fellowship at George Washington University Medical Center, Department of Biochemistry (1987 to April 1988).

Rotary Foundation (Rotary International) to receive Rotary Foundation Graduate International Scholarship Award to study at Wayne State University, Detroit, MI. 1985-86.

Indian National Science Academy Fellowship to attend a training course at the Department of Chemistry on tissue culture at Kyoto University, Japan (June to July 1984).

UNIDO/RCTT travel Fellowship to attend the III Federation of Asian and Oceanic Biochemists meeting at Bangkok (November 1983).

International Cell Research Organization (ICRO/UNESCO) Fellowship to attend a course on *Tissue Culture Techniques Applied to Study Biological Interactions* at Hanoi (March to May 1982).

Graduate Research Fellowship of the Indian Institute of Science, Bangalore (July 1983 to 1987).

8.0 PUBLICATIONS

8.1 Papers Presented at Meetings

Rao, V.R. 2002. *CBRN Countermeasures Technology and Opportunities*. GEIA 2002 Vision Conference. October 31, 2002. McLean, VA. (Invited Presentation).

Rao, V.R. 2002. *Consolidation—Is it Relevant Outside the Federal Healthcare?* GEIA Federal Healthcare IT Conference Ronald Regan Center, April 30, 2002. Washington, DC (Invited Presentation).

Rao, V.R. 2001. *Background Concentrations of Hazardous Chemicals and Site Cleanup Levels for Protection of Ecosystems*. Eco-Infoma 2001—DOE Conference on Environmental Risks and the Global Community. Argonne National Laboratory, May 14-18, 2001, Argonne, IL.

Rao, V.R. 2001. *Information Assurance in the Context of Public Health Informatics*. GSA Regions 4 & 7 ADP Council of Southeastern States. 2001. Information Technology Acquisition Training Conference, November 2001. Biloxi, MS

Rao, V.R. 2000. *Long-term Toxic Effects: Emerging Challenges to Chemical Biological Risk Analysis and Medical Treatment Strategies*. CBMTS III AC-Laboratorium, Spiez, Switzerland, May 2000.

Rao, V.R. 1998. *Comparative Analysis of the Guiding Rationale and Modeling Concepts in the Derivation of Ecological Soil Screening Criteria in the US, Europe, and Canada*. 19th Annual Meeting of the Society of Environmental Toxicology and Chemistry, Charlotte (NC), November, 1998.

Rao, V.R. 1995. *Drug as Carcinogens: Carcinogenic and Tumor Promoter Potential of Approved Drugs*. Ninety-sixth Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, March 15-17, 1995, San Diego, CA.

Rao, V.R., M. Scharff, M. Lustik, A. Unger, and J. Penhune 1994. *Biological Dosimetry and DNA Imaging Techniques As Biomarkers for Exposure – Application in Clinical and Epidemiological Studies*. Symposium on the Development and Applications of Biomarkers. DOE-EH-0377T. US Department of Energy, Office of Environment, Safety and Health and Office of Occupational Medicine, April 15. Washington, DC p:39-42.

Rao, V. R. and Levy, K. 1992. *Noncancer Risks for Residents Located in the Vicinity of Drycleaners*. 13th Annual Meeting of the American College of Toxicology, San Francisco, California, October 22-24. Abstract published in the *J. Am. College Toxicol.*, 12:107, 1993.

Rao, V. R. 1991. *Effects of Retinoids on Carcinogenesis Modification & Implication on its Effects as a Morphogen*. 12th Annual Meeting of the American College of Toxicology, Savannah, Georgia, October 21-23. Abstract published in the *J. Am. College Toxicol.*, 10:623, 1991.

Willett, J. D., V. R. Rao, S. Madan, and B. M. Zukerman (1991) *Voltage-gated Calcium Channels of the L type in Caenorhabditis elegans*, 8th International *C. elegans* Meeting, University of Wisconsin, Madison, June 1-5, 1991.

Rao, V. R. 1990. *Hazard Identification and Toxicity Testing Methods in Occupational and Environmental Risk Assessment*. Graduate Seminar Series in Risk Assessment, Department of Biology, George Mason University August 28 - December 4 1990.

Rao, V. R. 1990. *Carcinogen Interactions Database Informal Workshop on Toxicological Interaction Data and Risk Assessment of Chemical Mixtures*. Environmental Criteria and Assessment Office, Office of Research and Development, Environmental Protection Agency, September 19, 1990, Cincinnati, Ohio.

Rao, V. R. 1990. *Binary Combination Effects of Carcinogenic and Non-Carcinogenic Chemicals*. Workshop on Carcinogenic Mixtures, National Research Council [National Academy of Sciences (USA)], Board on Environmental Studies and Toxicology, Jan 18-19, Tucson, Arizona. (meeting proceedings: Krewski, D. and R. D. Thomas. Carcinogenic Mixtures, *Risk Analysis*. Vol 12(1), March 1992.

Rao, V. R. 1988 *Environmental Factors Modulating the Biochemical Mechanisms of Tumor Promotion*. Wayne State University, Department of Occupational and Environmental Health, College of Pharmacy and Allied Health Professions, Detroit, MI.

Rao, V. R., J. W. Banning, K. Sankara Rao and C. S. Vaidyanathan (1986) *Chemical Characterization and Studies on the Effect of Cryptosin on Cardiac β -Adrenoceptors*. Proc. 4th Federation of Asian and Oceanic Biochemists Congress, Singapore, pp.310.

Rao, V. R., K. Sankara Rao and C. S. Vaidyanathan (1986) *Effects of Cryptosin on the B-adrenergic receptor densities in mammalian heart*. Proc. IV Fed. Asian & Oceanic Biochemists Congress. Singapore, p. 311.

Rao, V. R., J. W. Banning, K. Sankara Rao, and C. S. Vaidyanathan (1986). *Effect of Cryptosin—a new cardiac glycoside on the Calcium channel densities in guinea pig heart sarcolemmal membranes in vitro*. Proc 55th Ann. Meet of Soc. Biol. Chemists (India), Trivandrum India, pp.12.

Rao, V. R., and R. G. Battu (1983). *Phytochemical constituents of Erythrina umbrosa. H.B & K bark* Proc III Fed. Asian & Oceanic Biochemists Congress, Bangkok, p. 76.

8.2 Book Chapters

Rao, V.R. and A. Unger. 1995. *Dioxin Congeners Distribution in Biological Samples as Biomarkers for Exposure*. In: Biomarkers and Occupational Health: Progress and Perspective. Joseph Henry Press (National Academy Press), Washington, DC, p:227-237.

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