

JOHN PAUL BEDERKA, JR.

EDUCATION:

Waynesburg College
Waynesburg, Pennsylvania, 1955-56

B.S. Chemistry
West Virginia University, 1959

M.S. Organic Chemistry
West Virginia University, 1961

Doctoral Candidate, Chemistry
Washington State University, 1962

Ph.D., Pharmacology
Medical College of Virginia, 1967

Postdoctoral Trainee, Neuropharmacology
Department of Pharmacology
University of Minnesota, 1967-68

EMPLOYMENT:

Employer: ACCU-Lab Medical Testing, Inc.
Position: Laboratory Director
Duration: 1994-Present
Experience: Drugs of Abuse Analysis, Expert Witness Testimony-Toxicology

Employer: Tox-I-Cull, Associates
Position: Director
Duration: 1988-Present
Experience: Therapeutic and Environmental Chemical Exposure evaluations; site inspections; health and environmental data acquisition; fire-associated health assessments; technical in-service development;

Employer: Doctor's Data, Inc., Research & Development; West Chicago, Illinois
Position: Vice President, R&D; Laboratory Director
Duration: 1983-1988
Experience: New test development, multi-element and amino acid and intermediary metabolite analyses; professional presentations; laboratory director; consultant on toxicology and nutrition

Employer: Department of Pathology
Abraham Lincoln School of Medicine University of Illinois Medical Center
Position: Section Head, Toxicology-Pharmacometrics-Clinical Pathology
Duration: 1976-1983
Experience: Directed the laboratory specializing in toxicology and drug monitoring; medical, graduate and undergraduate student training and education; consultations

Employer: Illinois College of Podiatric Medicine, Chicago, Illinois
Position: Visiting Associate Professor of Pharmacology
Duration: 1975-1977
Experience: Basic and clinical pharmacology teaching with a focus on diseases of the foot

Employer: University of Illinois, College of Pharmacy and School of Public Health, Chicago, IL.
Position: Associate Professor of Occupational and Environmental Medicine
Duration: 1973-1976
Experience: Teaching and research faculty in the area of occupational and environmental toxicology with emphasis on lead poisoning; undergraduate, graduate and professional students

Employer: University of Illinois, College of Pharmacy, Department of Pharmacognosy and Pharmacology, Chicago, Illinois
Position: Assistant/Associate Professor of Pharmacology
Duration: 1971-1976
Experience: Teaching faculty for pharmacy students with the charge of reorganizing the pharmacology curriculum; and, tenured teaching and research faculty; animal toxicity studies with chemicals and natural products

Employer: Department of Pharmacology, Faculty of Science, Mahidol University, Bangkok, Thailand
RE: Special Staff, The Rockefeller Foundation
Position: Visiting Professor of Pharmacology
Duration: 1968-1971
Experience: Participated in the establishment of a new medical and graduate school in the medical sciences; teaching and research in pharmacology and toxicology

RESEARCH PUBLICATIONS:

1. Herbert McKennis, Jr., Edward R. Bowman, Antonio Horvath and John P. Bederka, Jr., June (1964). Metabolic Release of Methyl Groups From a Series of N-Methylpyridinium Compounds. *Nature*, 202:699-700.
2. Anthony Winston, John P. Bederka, Jr., William G. Isner, Peter C. Juliano and John C. Sharp, (1965). Trichloromethylation of Anhydrides Ring-Chain Tautomerism. *J. Org. Chem.*, 30:2784-2787.
3. John P. Bederka, Jr., Eskil Hansson, Edward R. Bowman and Herbert McKennis, Jr. (1967). The Fate and Distribution of 1-(3-Pyridyl)-ethanol Methiodide in Relation to the Toxicity of 1-(3-Pyridyl)-ethanol and 3-Acetylpyridine. *Biochem. Pharmacol.* 16:1-10.
4. John P. Bederka, Jr., A.E. Takemori and Jack W. Miller (1971). Absorption Rates of Various Substances Administered Intramuscularly. *European J. Pharmacol.* 15:132-136.
5. M.A.Q. Khan, R.I. Morimoto, J.P. Bederka, Jr., and J.M. Runnels (1973). Control of the Housefly Microsomal Mixed-Function Oxidase by Oxidase-2 and Oxidase-5 Genes. *Biochem. Genetics* 10:243-252.

6. N.R. Farnsworth, J.P. Bederka, Jr. and M. Moses (1974). Modern Approaches for Selecting Biologically Active Plants. I: CNS Depressants. *J. Pharm. Sci.* **63**:457-459.
7. W.J. Dunn, III and J.P. Bederka, Jr. (1974). The Role of Hydrophobicity in the Antiserotonin Activity of LSD Analogs. *Res. Comm. Chem. Path. Pharmacol.* **2**:275-285.
8. D.G. Penny, J.P. Bederka, Jr., J.S. McLellan, W.F. Coello, Z.A. Saleem and M.A.Q. Khan, Ecological and Health Effects of Pollutants in Automobile Exhaust, in: *Survival in Toxic Environments*. M.A.Q. Khan and J.P. Bederka, Jr. (eds.), Academic Press, Inc., New York, 1974 pp. 465-510.
9. John P. Bederka, Jr., Danis Divitiyananda, Mikel L. Moses and Nasim Ahmad (1975), Drug-Biomolecule Interactions: Toxicity and Vitamin-Coenzyme Depletion. *J. Pharm. Sci.* **64**:528-534 (1975).
10. J.P. Bederka, Jr. and J.S. McLellan (1974). Developmental Effects of Lead. In: *Survival in Toxic Environments*. M.A.Q. Khan and J.P. Bederka, Jr. (eds.), Academic Press, Inc., New York, 1974, pp. 515-520 (see #8).
11. W.F. Boggs, H.P. Elam, J.J. Christian, E. Hudson and J.P. Bederka, Jr. (1976). Two-month Assessment in Ambulatory Pediatrics: A Lead Screening-Treatment Protocol—Its significance as a predictor of efficiency of a therapeutic regimen. (*Pediatrics Digest*, Dec. 1976, pp. 10-11).
12. R.F. Schlemmer, Jr., J.A. Jackson, K.L. Preston, J.P. Bederka, Jr., D.L. Garver and J.M. Davis (1978). Phencyclidine-Induced Stereotyped Behavior in Monkeys: Antagonism by Pimozide. *European J. Pharmacol.* **52**:379-384.
13. H.P. Elam, W. Boggs, J.P. Bederka, Jr., and J.R. Christian (1977). Seasonal Approach to the Etiology of Childhood Urban Environmental Lead Poisoning. *Pediatrics Digest*, July, pp. 11-20.
14. V. Papa and J.P. Bederka, Jr. (1981). Mass Spectroscopy in Drug Abuse (in preparation for a Symposium on Applications of Mass Spectroscopy in Medicine, Venice, Italy, and for publication in a Symposium volume). Accepted, 1982, Springer-Verlag
15. Immunological Consequences of Delta-9 Tetrahydrocannabinol (Δ -9THC) Administration to Lymphoid Cells In Culture. In. *Chromatography and Mass Spectrometry in Bio-medical Sciences*, 2. A. Frigerio (ed.) Elsevier Scientific Publishing Company, Amsterdam pp. 433-441.
16. S. Niazi, et al. (1982). Effect of Ascorbic Acid on Renal Excretion of Lead in the Rat. *J. Pharm. Sci.*, **71**:1189-1190.
17. A. Odenbro, et al. (1983). Behavioral and Intellectual Consequences of Early Childhood Lead Poisoning, *Ambio* **12**(1):40-44.
18. J.P. Bederka, Jr., R.S. Waters, T.E. Lueken and S. Brudno, (1985). Element Balances in the Human. In: *Trace Elements and Environmental Health-XIX*. D. D. Hemphill (ed.), University of Missouri, pp. 407-416.
19. Plasma Amino Acids/Intermediary Metabolites in the Racing Horse (1987). L.M. McLean et. al. *Proc. 10th Equine Nutrition & Physiology Symposium*, pp. 437-442

BOOK:

1974 M.A.Q. Khan and J.P. Bederka, Jr. (eds.), *Survival in Toxic Environments*. Academic Press, Inc., N.Y. 1974, 558 pp.

REVIEW ARTICLES - Continuing Education:

1. John P. Bederka, Jr. (1971). On the Toxicity of Our Environment. *J. Med. Assoc. Thailand* 54:335-348.
2. N.R. Farnsworth and J.P. Bederka, Jr. (1973). Ginseng—A Biological Appraisal. *Tile and Till* 59:30-32.
3. R. Joseph and J.P. Bederka, Jr. (1975). Food-Drug Interactions I: Tetracyclines and Erythromycins. *Illinois Pharmacist* 39:21-23.
4. R. Graham and J.P. Bederka, Jr. (1976). Effectiveness of Tetracycline Therapy with Iron-supplemented Diets. *Illinois Pharmacist*.
5. J.P. Bederka, Jr. (1977). Teratology—Congenital Malformations in the Human. CommuniCourse, University of Illinois, College of Pharmacy, Continuing Education Development Unit.
6. J.P. Bederka, Jr. (1976). An Assessment of "Vitamin E" in Pharmacy Practice. Audio Medicus, Inc., Morton Grove, IL EDUTAPE.
7. J.P. Bederka, Jr., et al. (1977). National Toxicology Workshop. "Clinical and Forensic Toxicology and Pharmacometrics." University of Illinois at the Medical Center.
8. Managing the TDM (therapeutic drug monitoring) Laboratory, A six-person printed interview format. *Clinical Chemistry News* 7(4), April 1981.
9. J.P. Bederka, Jr. (1993). Under-the-Influence of Alcohol. *Safety Brief* (Triodyne, Inc.) 8(4): July pp. 1-11.
10. Lead "Poisoning" and Pharmacotherapy: Is the Cure Necessary; and, Worse than the "Disease"? (1995) *J. Phar. Prac. (In Press)*.

RESEARCH ABSTRACTS:

1. John P. Bederka, James L. Hedtke and Amedeo S. Marrazzi (1968). Effects of Dopamine and Metabolites on Cerebral Synaptic Transmission. *Fed. Proc.*
2. Amedeo S. Marrazzi, John P. Bederka and Scott H. Davis (1968). Synaptic Properties Evidenced in a Cerebral Pharmacological Generalization. XXIV. *Int. Cong. Physiol. Sci.*
3. John Paul Bederka, Jr., Akira E. Takemori and Jack W. Miller (1969). The Disappearance of Radioactively Labeled Drugs from an Intramuscular Site. IV. *Int. Cong. Pharmacol.*

4. John P. Bederka, Jr. and Winyoo Mintranum (1970). Analogs of Nicotinamide and NAD⁺ and Drug Metabolism. Fed. Proc.
5. John P. Bederka, Jr. and Gordon B. Bailey (1971). Molecular Toxicity of Nicotinamide and Analogs in Mice Extended to *Entamoeba invadens*. Fed. Proc.
6. John P. Bederka, Jr. and Prasan Dhumma-Upakorn (1973). Correlative Peripheral Vascular and Central Electrical Effects of Biogenic Amines, Acetyl Choline, and 2-Phenylalanine-8-Lysine Vasopressin (PLV). Fed. Proc.
7. John P. Bederka, Jr., Nasim Ahmad and Mikel Moses (1972). Drug Toxicity and Vitamin-Coenzyme Depletion. Aph.A Academy of Pharmaceutical Sciences, Chicago Meeting.
8. B.M. Boulos, B. Carnow, N. Naik, J.P. Bederka, Jr., R.F. Kauffman and D.L. Azarnoff (1973). Placental Transfer of Lithium and Environmental Toxicants and Their Effect on the Newborn. Fed. Proc.
9. R.I. Morimoto, M.A.Q. Khan and J.P. Bederka, Jr., Drug Interactions with rat, rabbit, monkey and human lung P-450 (1973). Ill. State Acad. Sci. Annual Meeting, April
10. B. Boulos, B. Carnow and J.P. Bederka, Jr. (1973). Placental Transfer of Lead. 66th Ann. Meeting of Air Pollution Control Association.
11. F. Schlemmer and J.P. Bederka, Jr., A Model Screening Procedure for the Detection of Hallucinogenic Activity of Natural and Synthetic Products (1973). Am. Soc. Peog. Annual Meeting, July.
12. J.P. Bederka, Jr., R.I. Morimoto, B.W. Carnow and B.M. Boulos (1973). Toxicology and Teratology of Some Nicotinic Acid Analogs. Fall Meeting, Am. Soc. Pharmacol. Exp. Therap.
13. R.I. Morimoto and J.P. Bederka, Jr., (1973) A Pharmacological Approach to Nicotinamide Analog-Induced Mouse Teratogenesis. Annual Meeting American Zoological Society, Dec.
14. R.F. Schlemmer, Jr., N.R. Farnsworth, G.A. Cordell and J.P. Bederka, Jr. (1973). Nutmeg Pharmacognosy. New Eng. J. Med. 289. 922.
15. R.F. Schlemmer, Jr. and J.P. Bederka, Jr. (1974). A Chemo-Pharmacologic Analysis of Psycho-Toxins. Amer. Pharmaceut. Ass. Ann. Meet. Chicago, Illinois.
16. R.F. Schlemmer, Jr., D.L. Garver, J.M. Davis and J.P. Bederka, Jr. (1974). Behavioral Evidence of a CNS neurotransmitter balance using primate social colonies. Society for Neuroscience Ann. Meeting, St. Louis, Missouri.
17. J.P. Bederka, Jr., N.C. Naik and L.E. Bauer (1975). Toxicological Studies with 3, 4-Disubstituted Pyridines. Society of Toxicology Ann. Meeting, Williamsburg, Virginia (not presented).
18. J.P. Bederka, Jr., and A. Purohit. (1975). The kinetics of unlearning? Am. Assoc. Colleges of Pharmacy, Annual Meeting, Kiamesha Lake, N.Y.

19. R.F. Schlemmer, Jr., J.A. Jackson, K.L. Preston, J.P. Bederka, Jr., D.L. Garver and J.M. Davis (1975). Behavioral changes in selected members of a primate social colony after Acute and Chronic administration of Phencyclidine (PCP). Society for Neuroscience. New York.
20. H. McKennis, Jr., E. Hansson, J.P. Bederka, Jr., E.R. Bowman and C.G. Schmitterlow (1975). Studies on the distribution and excretion of nicotine isomethonium-¹⁴C-methyl ion in the mouse. 27th Tobacco Chemists Research Conference. College Park, MD.
21. H. McKennis, Jr., E. Hansson, J.P. Bederka, Jr., E.R. Bowman, C.G. Schmitterlow and E.R. Bowman (1975). The role of pyridine-N-methylation in the urinary elimination of nicotine and its metabolites. Southeast-Southwest Regional Meeting of the American Chemical Society. Memphis, TN.
22. R.F. Schlemmer, Jr., J.A. Jackson, K.L. Preston, J.P. Bederka, Jr., D.L. Garver and J.M. Davis (1976). Behavioral evidence of the interaction of Phencyclidine with catecholamines in primate social colonies. FASEB Meeting. Anaheim, CA.
23. J.P. Bederka, Jr., R. Farland, D. Fruin, D. Hicks, B. Hinden, J. Plachetka, M. Rajski, G. Snodgrass, J. Stewart, D. Waller and H. Watters (1976). Pharmacology in Community-based Group Pharmacy Practice. Am. Assoc. Col. Pharmacy, Annual Meeting, Minneapolis, MN.
24. W. Boggs, Jr., J.R. Christian, H.P. Elam, and J.P. Bederka, Jr. (1977). Assessment of seasonal variations in childhood lead poisoning. First International Congress on Toxicology, Toronto, Canada.
25. A.H. Rossof, B.E. Palac, M.A. Hashmi, J.P. Bederka, Jr. and J.E. Harris (1979). Survey of Plasma zinc concentrations in cancer patients. American Association of Cancer Research Meeting. New Orleans, LA, May 12.
26. R.A. Curtis, J.P. Bederka, Jr., R.A. Hutchinson, W. Troyer and J. Velasco (1981). The impact of an emergency room EMIT system and clinical pharmacy consultation on utilization of serum drug levels. Drug Intelligence and Clinical Pharmacy. Vol. 15, June.
27. J.P. Bederka, Jr., D. DiBernardo, J.J. Errera and A. Odenbro (1982). Urinary Element Composition In Chelant-Treated Children. Neuro-Toxicology of Selected Chemicals. A Symposium. Sept. 20-24, Chicago, IL USA
28. J.P. Bederka, Jr., Ph.D. and S. Duckett, M.D., Ph.D. (1983). Elemental Analysis of Drugs and Fluids Given to Human Patients. Conference on Aluminum Analysis in Biological Materials. Charlottesville, VA. June 29-30.
29. J.P. Bederka, Jr. 1984. The Analysis of Biological Samples by ICP and Inductively-Coupled Argon Plasma Mass Spectroscopy (ICPMS). in: A Symposium on "Practical ICP Spectroscopy," via the Spectroscopy Society of Pittsburgh. Duquesne University. May 13.
30. J.P. Bederka, Jr., 1985. Element Balances in the Human. in: A Symposium on Trace Elements and Environmental Health. Columbia, MO. June 14-17.
31. J.P. Bederka, Jr. 1985. Comparative Reporting of Toxicologic and Nutritional Data. Annual Meeting of the Amer. Assoc. for Med. Preventives. San Francisco, CA. Nov. 20.

32. J.P. Bederka, Jr. 1986. Toward Optimizing Individual Health: A Clinical Laboratory-Based Perspective. Annual Meeting of the Great Lakes Association for Preventive Medicine. Akron, OH March 20-22.
33. J.P. Bederka, Jr., D. DiBernardo, and R.S. Waters (1988). Nutritional Status via Urinary Amino Acid and Element Analyses. 1st International Congress on Nutrition and Health. New Orleans, October.

PROFESSIONAL AFFILIATES:

1. Library Member, University of Illinois at Chicago Health Center
2. Technical Advisory Service for Attorneys, Fort Washington, PA 19422
3. Triodyne, Environmental Engineering, Niles, IL 60714
4. Associated Pharmacists, Inc., Inverness, IL 60067
5. Nelson Associates, Consulting Scientists, Arlington Heights, IL 60078
6. LRP Publications - Testifying Expert Database, Horsham, PA 19044

STUDENT RESEARCH SUPERVISION:

- 1971 A Study of the Effects of Some Vasoactive Drugs on Cerebrospinal Fluid Pressure in Cat.
Prasan Dhumma-Upakorn, M.S.
- 1973 Effects of Chronic Alcohol Treatment on Hypothalamic Norepinephrine Rhythm in the Rat.
Susan Reed, M.D.
- 1973 Novel Approach to Teratogenesis: Nicotinamide Analogues in the Mouse.
Richard I. Morimoto, M.S.
- 1974 Structural and Toxicological Evaluation of Some Disubstituted Pyridines.
Nandkishor C. Naik, M.S.
- 1974-76 Quantitative Behavioral Responses to Psychotoxins (Hallucinogens) in Primate Social Colonies. R. F. Schlemmer, Jr. (Predoctoral; Deptl. change)
- 1975-77 Computer-assisted Environment—Health Assessments. W. F. Boggs (Predoctoral)
- 1976-77 Lead Ingestion and Behavior: A 9-parameter assessment including blood and urinary lead values in the 17-60 month old child. Agneta Odenbro (Pre-doctoral exchange student, University of Uppsala, Sweden)
- 1977-84 Detection and Effects of Marijuana Constituents in the Human and cells in culture.
(V. F. Papa, Ph.D.)
- 1979-84 Immunotoxicology of Some-Environmental Chemicals. (J. Prince, Ph.D.)

Alcohol

Benzene

Carbon Monoxide

Drugs of Abuse

Ethylene Chlorides

Formaldehyde

Gases

Halogenated Hydrocarbons

Isocyanates

Jaundice

Ketones

Lead

Mercury

Nitrosamines

O-T-C Drugs . . .

Polynuclear Aromatic Hydrocarbons

Quality Control

Relative Causality

Solvents

Toluene

Urine, Blood, and Breath Data Analyses

Vascular Toxicity

Workplace Hazards

Xenobiotics

Yusho Disease

Zinc

CONSULTING ASSIGNMENTS

JOHN P. BEDERKA, JR., PH.D.

TOXICOLOGIST

ENVIRONMENTAL EXPOSURE

SOLVENTS - VAPORS

- Benzene
- Toluene
- Xylene
- Hexane
- Ketone
- Methylene Chloride
- Trichloroethylene
- Napthas
- Methyl Ethyl Ketone
- Peroxides

METALS

- Arsenic
- Lead
- Chromium
- Mercury
- Zinc
- Copper

INSECTICIDES

- Organophosphates
- Carbamates
- Halogenated Hydrocarbons
- Combustion Toxicities

WOOD PRESERVATIVES

- Pentachlorophenol
- Creosotes
- Chromated Copper Arsenate
- Zinc Meta Arsenite

CONTAMINANTS

- Chlorodibenzo Dioxins
Hydrocarbons
- Chlorodibenzo Furans
- Polynuclear Aromatic
- Other Carcinogens/Promoters

PCBs

- Transformer Fires
- Food Contamination
- Isomer Kinetics
- Soil Pollution

CHEMICAL SPILL INCIDENTS

- Railroad Tank Cars
- Tank Trucks
- Workplaces
- Residences

SMOKE INHALATION

- Carbon Monoxide
- Hydrogen Cyanide
- Other Toxic Gases
- Effects of Depressants
- Interactions
- Soot Inspiration

PRESCRIPTION DRUGS

- Adverse Reactions
- Drug Interactions
- Drug/Chemical Interactions
- Drug/Food Interactions
- Hypersensitivities
- Birth Defects
- Hazard Warning
- Monitoring

GENERAL TOXICOLOGY

- Quality Control
- Chemical Carcinogenesis
- Therapeutic Drug Monitoring
- Toxicogenetics

ASBESTOS

- Toxicology
- Effects of Cofactors
- Delayed Response
- Risk Assessment

OCCUPATIONAL EXPOSURE

DI-ISOCYANATES

- Monomers
- Aerosols
- Bio-Reactivities
- Combustion Toxicities

PESTICIDES/HERBICIDES

- Inhalation
- Ingestion
- Skin Contact
- Combustion
- Delayed Response
- Personal Protection

SOLVENT UTILIZATION

- Degreasing
- Painting

VAPORS - GASES

- Ammonia
- Aliphatic Amines
- Aromatic Amines
- Fumigants
- Hydrogen Chloride
- Chloroform
- Cresols
- Pyrolysates

RESIDENTIAL EXPOSURE

- Smoke Inhalation
- Lead-Based Paint
- Formaldehyde
- Acids/Alkalis
- Cleaning Agents
- Hair-Care Products

ADVERSE HEALTH EFFECTS

- Contact Dermatitis
- Chloracne
- Skin Cancer
- Emphysema
- Asthma
- Thrombotic Events
- Effects of Lifestyle
- Euphoria
- Anesthesia
- Basal Ganglia
- Depression
- Organic Brain Syndrome
- Enzyme Markers
- Genetic Determinants

CHEMICAL SUBSTANCES OF ABUSE

ALCOHOL

- Rate of Metabolism
- Behavioral Responses
- Physiological Responses
- Breath Test Validity
- Effects of Cofactors
- Blood Alcohol Testing
- Test Data Interpretation
- Dose-Response Basics

COCAINE

- Behavioral Responses
- Physiological Responses
- Pharmacodynamics
- Test Data Interpretation

MARIJUANA

- Active vs. Inactive Exposure
- Urine Test Data Validity

ANGEL DUST (PCP)

- Behavioral Responses
- Physiological Responses
- Body Fluid Testing
- Test Data Interpretation



TOXICOLOGIC HEALTH AND ENVIRONMENTAL EVALUATIONS

Selected Consultations:

Alcohol
Benzene
Carbon Monoxide
Drugs of Abuse
Ethylene Chlorides
Formaldehyde
Gases
Halogenated Hydrocarbons
Isocyanates
Jaundice
Ketones
Lead
Mercury
Nitrosamines
O-T-C Drugs . . .
Polynuclear Aromatic Hydrocarbons
Quality Control
Relative Causality
Solvents
Toluene
Urine-, Blood-, Breath-Data Analyses
Vascular Toxicity
Workplace Hazards
Xenobiotics
Yusho Disease
Zinc

SCHEDULE OF FEES FOR SERVICES

1. Investigative and review efforts such as reading technical materials, site inspection, medical records, report preparation, etc., where printed materials is the primary focus..... \$300/hr.
2. Telephone conferences are billed in twelve (12) minute increments at the rate of..... \$300/hr.
3. Deposition and testimony at trial (exclusive of delays, conferences, and the like)..... \$500/hr.
4. Travel and waiting-at-trial times are mostly integral to the efforts noted above; and, considered in view of a typical day's effort. Thus, travel in a public conveyance is usually accompanied by either reading and/or writing, and will be billed as per the time of the work effort. Out-of-town travel will be billed at 2 hours per ½ day or less at the rate of \$300/hr. Expert witness-in-waiting time will be billed in consideration of any associated work efforts and will not exceed 2 hours per ½ day at \$300/hr.
5. Direct costs related to the efforts noted above are billed as incurred.

TOX-I-CULL Associates
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