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Table: Evaluation of Short-Term Bioassays to Predict Functional Impairment (U)

**Title:** Evaluation of Short-Term Bioassays to Predict Functional Impairment (U)

**Authors:** P. Greenaway, J. Konz

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EVALUATION OF SHORT-TERM BIOASSAYS TO PREDICT FUNCTIONAL IMPAIRMENT

Development of Neurobehavioral Bioassays in Laboratory Animals

Directory of Institutions/Individuals

Final Report

Purna Greenaway, James Konz

Oct 1980

Supported by
US Army Medical Research and Development Command
Fort Detrick, Frederick, Maryland 21701

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The MITRE Corporation
1820 Dolley Madison Boulevard
McLean, Virginia 22102

Contracting Officer's Technical Representative: Mary C. Henry, Ph.D.

US Army Medical Bioengineering Research and Development Laboratory
Fort Detrick, Maryland 21701

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The findings in this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.
**Title:** Evaluation of Short-Term Bioassays to Predict Functional Impairment, Development of Neurobehavioral Biossays in Laboratory Animals, Directory of Institutions/Individuals, Final Report

**Performing Organization:** The MITRE Corporation

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**Abstract:** This directory catalogues the organizations currently engaged in neurobehavioral bioassay utilization or development and provides information concerning specific measurements performed, test systems employed and compounds tested for the U.S. Army Medical Bioengineering Research and Development Laboratory.
EXECUTIVE SUMMARY

The MITRE Corporation, Metrek Division, is currently assisting the United States Army Medical Bioengineering Research and Development Laboratory (USAMBRDL) in the development of a hierarchical short-term testing scheme for screening substances for functional or morphological impairment in animal test systems. Effects in several organ systems are being considered.

As part of this effort, Metrek has been requested to prepare a directory of organizations and individuals presently involved in development and/or utilization of tests applicable to toxicity screening in the organ systems. The directory of organizations and individuals involved in neurobehavioral testing has been completed and is presented in the following pages.

There are entries in this directory for each organization currently involved in neurobehavioral bioassay use or development. For each entry at least one individual's name appears under the organization name and address at the top of the page. These are the people who, during the process of directory compilation, described either their activities or the activities of their group regarding neurobehavioral testing, and thereby provided the information presented in the entry. The information provided includes the specific tests performed (e.g., sensory, motor, arousal deficits), the test systems utilized (e.g., cats, dogs), and the substances (e.g., heavy metals, pesticides) administered to elicit neurobehavioral response.
In order to facilitate use and the processes of amending and adding to the directory, it has been arranged in alphabetical order by organization.

The objective of this directory is to provide a readily usable guide to that segment of the scientific community currently active in neurobehavioral testing in small animals. Because research associate and graduate student positions are often temporary in nature, a deliberate attempt was made to exclude these individuals from the directory. Their efforts, however, are likely to be represented by activities associated with their organization, as in most cases these individuals are conducting research under the auspices of someone more senior and more permanently allied with the organization, who was included in the directory. In addition, there are individuals who were active in neurobehavioral function testing at one time but are no longer; these have been omitted from the directory also.

Some of the entries in this directory may be less detailed, and less specific in the detail that is presented, than others. In addition, the information presented for an organization may not be reflective of all the neurobehavioral efforts ongoing at that organization. This is due largely to the reluctance of some individuals contacted to communicate the information and, in small part, to an inability to contact a few individuals at the time this directory was being compiled.
FOREWORD

This Directory was compiled by MITRE staff by means of a survey of the recent literature, and by discussions with leaders in the field and other personal contacts. We are grateful to all those who responded so patiently to our questions regarding their activities. All of the "contact persons" were given an opportunity to review the information relating to their organization. We recognize there may be inadvertent omissions for which we offer our sincere apologies.

Citations of organizations and trade names in this report do not constitute an official Department of the Army endorsement or approval of the products or services of these organizations.
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DIRECTORY OF ORGANIZATIONS CURRENTLY INVOLVED IN
UTILIZATION OR DEVELOPMENT OF NEUROBEHAVIORAL
TESTS IN LABORATORY ANIMALS
DIRECTORY OF ORGANIZATIONS CURRENTLY INVOLVED IN
UTILIZATION OR DEVELOPMENT OF NEUROBEHAVIORAL
TESTS IN LABORATORY ANIMALS
ORGANIZATION:

ALBERT EINSTEIN COLLEGE OF MEDICINE
INSTITUTE OF NEUROTOXICOLOGY
BRONX, NEW YORK 10461

D. CROW, ADMINISTRATOR (212) 430-2000, 430-2519

TESTS PERFORMED:

INDUSTRIAL WORK IS CONFIDENTIAL

TESTS ON MONKEYS ARE MAINLY BEHAVIORAL AND NEUROPHYSIOLOGICAL;
TESTS ON OTHER ANIMALS ARE MAINLY MORPHOLOGICAL

TEST SYSTEMS UTILIZED:

RATS, CATS, MONKEYS, CHICKENS

COMPOUNDS TESTED:

ACRYLAMIDE; ARSENIC; ADRIAMYCIN; AETT* (FRAGRANCE COMPOUND);
\( n \)-HEXANE; \( n \)-BUTYL METHYL KETONE

REMARKS:

H. SCHAUMBURG and M. SABRI ARE ALSO INVOLVED IN NEUROTOXICOLOGICAL TESTING AT THIS ORGANIZATION.

* ACETYLETHYL TETRAMETHYTETRALIN
ORGANIZATION:

ALBERT EINSTEIN COLLEGE OF MEDICINE
BRONX, NEW YORK 10461

M. SABRI (212) 430-3359

TESTS PERFORMED:

BIOCHEMICAL TESTS: TESTS FOR ENZYMES AND PROTEINS
MORPHOLOGICAL TESTING
BEHAVIORAL TESTS: CLINICAL SYMPTOMS OF NEUROPATHY
PHYSIOLOGICAL TESTS: ELECTROPHYSIOLOGICAL
NEUROPATHOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

IN VITRO: RATS

COMPounds TESTED:

ACRYLAMIDE; 2,5-HEXANEDIONE AND CARBON DISULFIDE

REMARKS:

P. SPENCER AND H. SCHAUMBURG ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
TESTS PERFORMED:

SENSORY TESTS:
NEGATIVE GEOTOXIS
TAIL FLICK

MOTOR TESTS:
ROTOROD
SPONTANEOUS MOTOR ACTIVITY
GRIP STRENGTH (FORE- AND HIND-LIMB)
TREMOR (SUBJECTIVE)

COGNITIVE FUNCTIONS:
DISCRIMINATED ESCAPE TASK (M-MAZE - SHOCK AND WATER ESCAPE)
SHOCK AVOIDANCE

AROUSAL DEFICITS: STARTLE RESPONSE

PHYSIOLOGICAL TESTS:
BODY WEIGHT
RECTAL TEMPERATURE
FOOD/WATER CONSUMPTION

OTHER TESTS:
CLINICAL CHEMISTRY, HEMATOLOGY
GROSS AND HISTOLOGIC PATHOLOGY
METABOLISM, PHARMACOKINETICS
IMMUNOLOGIC FUNCTION

TEST SYSTEMS UTILIZED:

RATS, MICE (ADULT AND DEVELOPING)

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY - INDUSTRIAL AND ENVIRONMENTAL
CHEMICALS AND DRUGS.
TESTS PERFORMED:

MOTOR TESTS:
SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, SURFACE RIGHTING)
GRIP STRENGTH
SWIMMING
AROUSAL DEFICITS: STARTLE RESPONSE
COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE RESPONSE (SHUTTLE BOX)
PHYSIOLOGICAL CONSUMMATORY TESTS

TEST SYSTEMS UTILIZED:

RATS, MICE, SWINE

COMPOUNDS TESTED:

PHYSICAL AGENTS - IONIZING RADIATION, PCB*, SYN FUEL MATERIALS

REMARKS:

R. H. LOVELY, F. D. ANDREW AND R. JAFFE ARE ALSO INVOLVED IN
NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

*POLY CHLOR INATED BIPHEN YLS
ORGANIZATION:

BOSTON UNIVERSITY
SCHOOL OF MEDICINE
BOSTON, MASSACHUSETTS 02118

C. KORNESKY  (617) 247-6212

TESTS PERFORMED:

SENSORY TESTS:
  PAIN (HOT-PLATE)
  REFLEX TESTING

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
  ROTAROD

AROUSAL DEFICITS: STARTLE RESPONSE

COGNITIVE FUNCTIONS:
  PASSIVE AVOIDANCE
  ESCAPE BEHAVIOR (OPERANT)

PHYSIOLOGICAL:
  BODY WEIGHT
  GROWTH

NEUROLOGICAL TESTS: BRAIN STIMULATION (SELF-STIMULATION)

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

NEUROLEPTICS, OPIATES, CNS STIMULANTS, PHENCYCLIDINE NARCOTICS

REMARKS

G. FRIEDLER AND H. ROSETTE ARE ALSO INVOLVED IN NEUROTOXICOLOGY
TESTING AT THIS ORGANIZATION.

* POLYCHLORINATED BIPHENYLS
ORGANIZATION:

BRIGHAM YOUNG UNIVERSITY
ZOOLOGY DEPARTMENT
PROVO, UTAH 84601

S. BRADSHAW  (801) 378-3677

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (JIGGLE CAGE, OPEN FIELD)
COGNITIVE TESTS: ESCAPE (SWIMMING)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

CADMIUM, LEAD, DES

*DIETHYLSILBSTEROL
ORGANIZATION:

CHILDREN'S HOSPITAL RESEARCH FOUNDATION
PSYCHOTERATOLOGY LABORATORY
INSTITUTE FOR DEVELOPMENTAL RESEARCH
CINCINNATI, OHIO 45229

C. VORHEES (513) 559-4451

TESTS PERFORMED:

SENSORY TESTS:
- Negative Geotaxic (Inclined Plane)
- Surface Righting
- Olfactory Orientation
- Pain (Tail Flick)
- Swimming Development
- Cliff Avoidance
- Startle Response (Auditory)

MOTOR TESTS:
- Spontaneous Motor Activity (Running wheels, Open Field, Residential Activity Maze)
- Rotarod
- Food Grasping
- Pole Walking
- Non-nutritive Sucking
- Grasp Strength

AROUSAL DEFICITS: Emergence

COGNITIVE FUNCTIONS:
- Avoidance (Passive and Wheel Turn Active; Auditory or Visual Cues)
- Discriminated Avoidance (Y-Maze)
- Water Maze (M-Maze and Biel Complex Maze)
- Problem Solving Strategies (Radial Maze)
- Spontaneous Alternation

PHYSIOLOGICAL TESTS:
- Body Weight
- Food Consumption
- Regional Brain Weight
- Neurohistology (Brain)
- Teratology
- Neurotransmitters (Brain)

TEST SYSTEMS UTILIZED:

RATS AND MONKEYS
COMPonents TESTED:

1) FOOD ADDITIVES - MSG*, CARRAGEENAN, ASPARTAME, BHT**, BHA***, RED DYE 3 & 40, BROMINATED VEGETABLE OIL, TBHQ****, PHENYLALANINE, SODIUM NITRITE, VITAMIN A, METHYL SALICYLATE, POTASSIUM IODIDE, ORGANIC TIN (TRIBUTYL-)

2) DRUGS - VALIUM, DARVON, FENFLURAMINE, COMPAZINE, NALOXONE, HYDROXYUREA, ASPIRIN, 5-AZACYTADINE, ETHANOL, ACETAZOLAMIDE, PHENOBARBITAL, DILANTIN, TRIMETHADIONE

REMARKS:

THE FOUNDATION WILL SOON USE PRIMATES AND STUDY ANTICONVULSIVES.

*MONOSODIUM GLUTAMATE  
**BUTYLATED HYDROXYTOLUENE  
***BUTYLATED HYDROXYANISOLE  
****TERTIARY BUTYL HYDROQUINONE
ORGANIZATION:

CORNELL MEDICAL SCHOOL
DEPARTMENT OF PHARMACOLOGY
NEW YORK, NEW YORK 10021

T. Baker (212) 472-5966

TESTS PERFORMED:

MOTOR TESTS:
- Spontaneous Motor Activity
- Incline Climbing
- Gait
- Hindlimb Reflex
- Tightening Reflex
- Muscle Tone
- Clonic Convulsions

PHYSIOLOGICAL TESTS:
- Pupil Size
- Piloerection
- Adventitious Movement

NEUROLOGICAL TEST: Motor spindle reflex (dynamic and static response)

TEST SYSTEMS UTILIZED:

CAT

COMPOUNDS TESTED:

Organic Phosphates (especially DFP*); Acrylamide

REMARKS:

The cat was chosen because the cat's motor system is very efficient; therefore motor function performance is easily evaluated.

*Diisopropyl phosphorofluoridate
ORGANIZATION:
DUKE UNIVERSITY MEDICAL CENTER
DURHAM, NORTH CAROLINA  27710
M. B. ABOU-DONIA  (919) 684-2221

TESTS PERFORMED:
SENSORY TESTS:  PAIN
MOTOR TESTS:
  GAIT
  BALANCE MAINTENANCE

TEST SYSTEMS UTILIZED:
RATS (n-HEXANE),  CHICKENS, CATS (ORGANOPHOSPHOROUS ESTERS)

COMPOUNDS TESTED:
ORGANIC SOLVENTS:  HEXANE; METHYL BUTYL KETONE; 2,5-HEXANEDIONE; 2,5-HEXANEDIOL  .

ORGANOPHOSPHORUS ESTERS:
DEF  S, S, S-TRI-n-BUTYL PHOSPHOROTRITHIOATE
DFP  DIISOPROPYL PHOSPHOROFLUORIDATE
DICHLORVOS  2,2-DICHLOROETHENYL DIMETHYL PHOSPHATE
EPN  O-ETHYL O-4-NITROPHENYL PHENYLPHOSPHONOTHIOATE
LEPTOPHOS  O-4-BROMO-2,5-DICHLOROPHENYL O-ETHYL PHENYLPHOS-
           PHONOTHIOATE
MERPHOS  S, S, S-TRI-n-BUTYL PHOSPHORORITHIOITE
MIPAFOX  N,N'-DIISOPROPYLPHOSPHORODIAMIDIC FLUORIDE
PARATHION  O,O-DIETHYL O-4-NITROPHENYL PHOSPHATE
TOTP  TRI-O-TOLYL PHOSPHATE
TRICHLORPHON  2,2,2-TRICHLORO-1-HYDROXETHYL PHOSPHONATE
CYANOFENPHOS  O-4-CYANOPHENYL O-ETHYL PHENYLPHOSPHONOTHIOATE
DUKE UNIVERSITY MEDICAL CENTER (CONCLUDED)

RPDP  0-2,4-DICHLOROPHENYL 0-ETHYL PHENYLPHOSPHONOTHIOATE

COUMAPHOS  0-3-CHLORO-4-METHYLCOUMARIN-7-YL-O,O-DIETHYL
            PHOSPHOROTHIOATE
ORGANIZATION:

EASTMAN KODAK COMPANY
TOXICOLOGY DIVISION
ROCHESTER, NEW YORK

J. O'DONOGHUE (716) 458-4048

TESTS PERFORMED:

SENSORY TESTS: OPHTHALMOLOGICAL EXAM
MOTOR TESTS: REFLEX ACTIVITY
PHYSIOLOGICAL TESTS: ELECTROKYOGRAPHY

TEST SYSTEMS UTILIZED:

RATS, DOGS, CATS

COMPENDS TESTED:

KETONES AND CHLORINATED SOLVENTS

REMARKS:

D. TOPPING AND G. D. DIVINCENZO ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

ELI LILLY AND COMPANY
LILLY RESEARCH LABORATORIES
TOXICOLOGY DIVISION
GREENFIELD, INDIANA 46285

D. C. HOFFMAN  (317) 462-8200

TESTS PERFORMED:

SENSORY TESTS: EXPLORATORY BEHAVIOR (HOLE-BOARD TEST)
MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (OPEN-FIELD)
  ROTAROD
AROUSAL DEFICITS: STARTLE RESPONSE (AUDITORY)
PHYSIOLOGICAL TESTS:
  BODY WEIGHT
  FOOD CONSUMPTION

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY
TESTS PERFORMED:

NEUROLOGICAL TESTS: AXONAL TRANSPORT
NEUROPHYSIOLOGICAL TESTS: EFFECTS ON NEUROMUSCULAR FUNCTION (IN VITRO TISSUE CULTURE)
HISTOPATHOLOGICAL TESTS: PURSUING GLYCOLYSIS INHIBITION BY NEUROTOXIC AGENTS

TEST SYSTEMS UTILIZED:

RODENTS, DOGS

COMPOUNDS TESTED:

FUELS: PETROLEUM PRODUCTS, BUNKER AND MARINE FUELS, MARINE DIESELS, PETROLEUM LUBRICANTS, GREASES, COAL LIQUEFACTION AND GASIFICATION PRODUCTS; ORGANIC SOLVENTS; RUBBERS; PLASTICS; FERTILIZERS

REMARKS:

DR. J. EAGEN, CHEMICAL PRODUCTS MEDICAL RESEARCH, IS ALSO INVOLVED IN NEUROTOXICOLOGICAL TESTING AT THIS ORGANIZATION.

EXXON IS INVOLVED WITH AN INDUSTRY-WIDE NEUROTOXICITY TESTING PROGRAM OF SOLVENTS CONDUCTED BY THE AMERICAN PETROLEUM INSTITUTE.
ORGANIZATION:

HARVARD UNIVERSITY
DEPARTMENT OF PSYCHIATRY
BOSTON, MASSACHUSETTS 02115

P. B. DEWS  (617) 732-1680

TESTS PERFORMED:

FIXED INTERVAL OPERANT BEHAVIOR

TEST SYSTEMS UTILIZED:

MICE

COMPounds TESTED:

ORGANIC SOLVENTS
ORGANIZATION:

RAZLETON LABORATORIES, INC.
DIVISION OF TOXICOLOGY
VIENNA, VIRGINIA 22180

A. HOBERMAN (703) 893-5400

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
COGNITIVE FUNCTIONS: WATER MAZE

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY
ORGANIZATION:

HOFFMAN-LaROCHE, INC.
TERATOLOGY DEPARTMENT
NUTLEY, NEW JERSEY 07110

R. M. HOAR (201) 235-4528

REMARKS:

PROCEDURES FOR POST-NATAL EVALUATION AND VALIDATION ARE BEING DEVELOPED.
ORGANIZATION:

INDIANA UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
BLOOMINGTON, INDIANA 47401

G. A. HEISE (812) 337-1330

TEST SYSTEMS UTILIZED:

RATS

REMARKS:

THIS ORGANIZATION WILL DEVELOP TESTS USING OPERANT CONDITIONING (MEMORY, COGNITIVE FUNCTIONS).
ORGANIZATION:

INTERNATIONAL RESEARCH AND DEVELOPMENTAL CORPORATION
MATTAWAN, MICHIGAN 49071

D. RODWELL (616) 668-3336

TESTS PERFORMED:

SENSORY TESTS:
  AUDITORY LOCALIZATION
  VISUAL LOCALIZATION

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (SURFACE RIGHTING, ACTIVITY CAGE)
  ROTAROD

COGNITIVE FUNCTIONS: CLIFF AVOIDANCE

PHYSIOLOGICAL TESTS: BODY WEIGHT

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY
TESTS PERFORMED:

SENSORY TESTS:
- VISUAL DISCRIMINATION
- AUDITORY DISCRIMINATION

COGNITIVE FUNCTIONS:
- COMPUTERIZED PATTERN RECOGNITION
- SUCCESSIVE DISCRIMINATION REVERSAL TASKS

TEST SYSTEMS UTILIZED:

MONKEYS

COMPOUNDS TESTED:

CURRENTLY IN USE: LEAD NITRATE, METHYL MERCURY CHLORIDE, THALLIUM CHLORIDE

COMPUNDS USED IN THE PAST: PESTICIDES, LEAD, LEAD ACETATE

REMARKS:

THE COMPUTERIZED TEST IS BELIEVED TO BE THE SHORTEST TEST AVAILABLE TO DETERMINE DEFICITS IN COGNITIVE FUNCTIONS; IT REQUIRES NO TRAINING AND CAN BE ADAPTED TO THE RAT.

PAST WORK WITH RATS AND SHEEP USED SUCCESSIVE DISCRIMINATION REVERSAL, AUDITORY VIGILANCE, AUDITORY DETECTION, SHUTTLE BOX, TWO CHOICE DISCRIMINATION, CONDITIONED AVOIDANCE, MAZE AND OPEN FIELD.

ELECTROPHYSIOLOGIC TESTS USED INCLUDED EEG AND DEPTH ELECTRODE RECORDING.

SENSORY/MOTOR TESTS HAVE INCLUDED VISUAL CLIFF AND REFLEX DEVELOPMENT.
ORGANIZATION:

JEFFERSON PROFESSIONAL SERVICES
13924 RIVERCREST DRIVE
LITTLE ROCK, ARKANSAS 72212

J. SPYKER-CRANMER (501) 661-5100

TESTS PERFORMED:

SENSORY TESTS:
- PAIN
- AUDITORY STIMULUS
- VISUAL ORIENTATION

MOTOR TESTS:
- SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, ULTRA SOUND, INFRARED)
- ROTAROD
- TREMOR

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS:
- PASSIVE AVOIDANCE
- Y-MAZE
- ESCAPE

COMPOUNDS TESTED:

HYDROCARBONS, PESTICIDES, HEAVY METALS

REMARKS:

D.L. AVERY, K. BAETCKE, M. CRANMER, C. FRITH, T. GAINES,
B. HIGHNAN, S. IVY, S. LOUIE, AND C. SCOTT ARE ALSO INVOLVED
IN NEUROTOXICITY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

JOHNS HOPKINS UNIVERSITY
SCHOOL OF HYGIENE AND PUBLIC HEALTH
DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE
BALTIMORE, MARYLAND 21205

L. Fechter (301) 955-3029

TESTS PERFORMED:

COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE (SHUTTLE BOX)
MOTOR TESTS: ACTIVITY TEST (OPEN FIELD)
AROUSAL DEFICITS: AUDITORY STARTLE RESPONSE

TEST SYSTEMS UTILIZED:

RATS

COMPounds TESTED:

CARBON MONOXIDE, MANGANESE, LEAD

REMARKS:

Z. Anau is also involved in neurotoxicology testing at this organization.
ORGANIZATION:

JOHNS HOPKINS HOSPITAL
DEPARTMENT OF NEUROLOGY
BALTIMORE, MARYLAND 21205

J. GRIFFIN (301) 955-6435

TESTS PERFORMED:

NEUROPATHOLOGY: PERIPHERAL NERVE DISORDERS (e.g., AXONAL TRANSPORT)

TEST SYSTEMS UTILIZED:

RATS, DOGS

COMPOUNDS TESTED:

PROPIONITRILES; RADIATION SENSITIZERS (e.g., MISONIDAZOLE);
HEXACARBONS; ACRYLAMIDE; CIS-PLATINUM; VACOR

REMARKS:

D. PRICE, E. STANLEY AND A. PESTRON: ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

JOHNS HOPKINS UNIVERSITY
SCHOOL OF HYGIENE AND PUBLIC HEALTH
DEPARTMENT OF EPIDEMIOLOGY
BALTIMORE, MARYLAND 21205

A. A. MONJAN (301) 955-3289

TESTS PERFORMED:

COGNITIVE FUNCTIONS:
  AVOIDANCE (PASSIVE AND ACTIVE)
  ESCAPE (SHUTTLE BOX)
  OPERANT CONDITIONING

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY
  OPEN FIELD

AROUSAL DEFICITS: STARTLE RESPONSE

PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ALCOHOL, LEAD, VIRUSES, TERATOGENS
ORGANIZATION:
LEDERLE LABORATORIES
PEARL RIVER, NEW YORK 10962
F. CANN  (914) 735-5000

TESTS PERFORMED:
SENSORY TESTS: PRESENCE OF NORMAL FUNCTION
MOTOR TESTS: REFLEX TESTING
NEUROLOGICAL TESTS: EEG
MORPHOLOGICAL TESTS: ELECTRON-MICROSCOPY

TEST SYSTEMS UTILIZED:
RODENTS AND OTHER MAMMALIAN SPECIES

COMPONDS TESTED

PROPRIETARY INFORMATION
ORGANIZATION:

LITTON BIONETICS, INC.
FALLS CHURCH, VIRGINIA

J. SEKERKE (703) 532-1085

TESTS PERFORMED:

OPEN FIELD

TEST SYSTEMS UTILIZED:

RATS OR MICE

COMPOUNDS TESTED:

VARIOUS (PRIVILEGED INFORMATION)

REMARKS:

THE ORGANIZATION HAS THE CAPABILITY OF STUDYING COGNITIVE FUNCTIONS USING AVOIDANCE TESTS.
ORGANIZATION:

McNEIL LABORATORIES, INC.
DRUG SAFETY EVALUATION
FORT WASHINGTON, PENNSYLVANIA

R. STEELMAN (215) 836-4500

TESTS PERFORMED:

SENSORY TESTS: HEARING
TESTING BY STIMULATION OR DEPRESSION

TEST SYSTEMS UTILIZED:

RATS, MICE, DOGS, PRIMATES, RABBITS, GUINEA PIGS, PIGS, CATS

COMPOUNDS TESTED:

THERAPEUTIC DRUGS, e.g., HALOPERIDOL; ZOMEPIRAC

REMARKS:

J. GARDOCKI, DEPARTMENT OF PHARMACOLOGY, IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

MEAD JOHNSON RESEARCH CENTER
MEAD-JOHNSON PHARMACEUTICAL DIVISION
DEPARTMENT OF BIOLOGIC RESEARCH
EVANSVILLE, INDIANA 47721

L. RIBLET (812) 838-5561, ext. 200

TESTS PERFORMED:

SENSORY TESTS: PAIN (TAIL FLICK, HOTPLATE)
MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (ACTIVITY CAGE)
  ROTAROD
COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE RESPONSE (SHUTTLE BOX)

PHYSIOLOGICAL AND CONSUMMATORY TESTS

TEST SYSTEMS UTILIZED:

RATS, DOGS, MONKEYS, MICE

COMPOUNDS TESTED:

BARBITURATES, ALCOHOL

REMARKS:

H. STANTON IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

MEDICAL COLLEGE OF VIRGINIA
DEPARTMENT OF ANATOMY
MCV STATION
RICHMOND, VIRGINIA 23298

R. L. JORDAN  (804) 786-9000

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

PCP*, TETRAETHYL TIN, ACRYLAMIDE

REMARKS:

R. BALSTAR IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

* PHENCYCLIDINE
ORGANIZATION:
MEDICAL UNIVERSITY OF SOUTH CAROLINA
DEPARTMENT OF BIOCHEMISTRY
CHARLESTON, SOUTH CAROLINA 29403

L. MIDDAUGH  (803) 792-2331

TESTS PERFORMED:
SENSEY TESTS: LIGHT-DARK DISCRIMINATION
MOTOR TESTS:
   SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, PHOTOCCELL, CONTACT PLATE)
AROUSAL TESTS: STARTLE RESPONSE
COGNITIVE FUNCTIONS:
   OPERANT CONDITIONING
   AVOIDANCE (SHUTTLE BOX)

TEST SYSTEMS UTILIZED:

MICE

COMPOUNDS TESTED:

METHADONE, PHENOBARBITAL, AMPHETAMINE, ALCOHOL
ORGANIZATION:

MERCK, SHARPE AND DOHME
DEPARTMENT OF SAFETY ASSESSMENT
WEST POINT, PENNSYLVANIA 19486

R. ROBERTSON (215) 699-5311, ext. 5530

TESTS PERFORMED:

SENSORY TESTS: NEGATIVE GEOTAXIS (PIVOTING)

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (RIGHTING REFLEX, OPEN FIELD)
  CONFINED MOTOR ACTIVITY
  ROTAROD

AROUSAL DEFICIT: STARTLE REFLEX (AUDITORY)

COGNITIVE FUNCTIONS:
  ESCAPE
  PASSIVE AVOIDANCE (STEP THROUGH)
  WATER T-MAZE

PHYSIOLOGICAL TESTS
  SWIMMING (ONTOGENIC IMPAIRMENT)

TEST SYSTEMS UTILIZED:

RATS

COMPounds TESTED:

PHARMACEUTICAL (REFERENCE AND NEW) PRODUCTS

REMARKS:

D. MINSKER IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:
MISSISSIPPI STATE UNIVERSITY
DEPARTMENT OF ENTOMOLOGY
MISSISSIPPI STATE, MISSISSIPPI 39762
D. SHANKLAND (601) 325-4541

TESTS PERFORMED:

NEUROPHYSIOLOGICAL TESTS:
SYNAPTIC FUNCTION
ELECTROPHYSIOLOGICAL RESPONSE

BIOCHEMICAL TESTS:
ACTION ON ISOLATED SYNAPTOSOMES
TRANSMITTER RELEASE ESPECIALLY WITH ACETYLCHOLINE

TEST SYSTEMS UTILIZED:
FISH

COMPOUNDS TESTED:
BICYCLODIENES; MIREX; LINDANE

REMARKS:
J. CHAMBERS AND J. YARBOROUGH, DEPARTMENT OF BIOLOGY, ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
TESTS PERFORMED:

SENSORY TESTS:
  PAIN (TAIL FLICK)
  NEGATIVE GEOTAXIS

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (ACTIVITY CHAMBER)
  GRIP STRENGTH (FORE- AND HIND-LIMB)

AROUSAL DEFICITS:
  STARTLE RESPONSE
  EMERGENCE

COGNITIVE FUNCTIONS:
  CONDITIONED AVOIDANCE (2-WAY SHUTTLE BOX)

PHYSIOLOGICAL TESTS:
  BODY WEIGHT
  RECTAL TEMPERATURE

CONSUMMATORY TESTS

TEST SYSTEMS UTILIZED:

RATS, MICE (ADULT AND DEVELOPING)

COMPOUNDS TESTED:

KNOWN NEUROTOXINS, HEAVY METALS, PESTICIDES, HYDROGENATED
HYDROCARBONS, VOLATILE SOLVENTS

REMARKS:

C. MITCHELL, P. CABLE AND R. SQUIBB ARE INVOLVED IN BEHAVIORAL
STUDIES AT THIS ORGANIZATION.

S. BONDIE, J. HONG, L. APHOUSE AND B. WILSON ARE INVOLVED IN
NEUROCHEMICAL STUDIES AT THIS ORGANIZATION.
TEST SYSTEMS UTILIZED:

RATS, MONKEYS, OCCUPATIONALLY EXPOSED HUMANS

COMPOUNDS TESTED:

PERCHLRETHYLENE, 2-ETHOXYETHANOL

REMARKS:

K. NELSON, V. PUTZ, D. CHRISLIP, J. RUSSO, J. V. SETZER AND B. L. JOHNSON ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS INSTITUTION.

HUMAN OCCUPATIONAL AND LABORATORY STUDIES HAVE INCLUDED EXPOSURE TO LEAD, CARBON DISULFIDE, CARBON MONOXIDE, METHYL KETONE, BUTYL KETONE, METHYL BROMIDE, CARBARYL, MMT*, LITHIUM TOCP**, METHYLENE CHLORIDE, METHYL CHLORIDE, METHYL CHLORIDE WITH ETHANOL, CAFFEINE AND VALIUM, TOLUENE AND MEK***, SEPARATELY AND IN COMBINATION.

*METHYL-M-TYROSINE

**TRI-O-TOLYL PHOSPHATE

***METHYL ETHYL KETONE
ORGANIZATION:

NEW JERSEY MEDICAL SCHOOL
DEPARTMENT OF PATHOLOGY
NEWARK, NEW JERSEY

E. S. CHO (201) 456-4145

TESTS PERFORMED:

MORPHOLOGICAL TESTS:
LIGHT AND ELECTRON MICROSCOPY
TEASED-NERVE PREPARATION
ENZYME HISTOCHEMISTRY

TEST SYSTEMS UTILIZED:

CATS, RATS

COMPOUNDS TESTED:

ADRIAMYCIN, QUELAMYCIN, VINCristine AND ACRYlamIDE

REMARKS:

B. S. JORTNER IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

NEW JERSEY MEDICAL SCHOOL
DEPARTMENT OF PHARMACOLOGY
NEWARK, NEW JERSEY

H. E. LOWNES (201) 456-5469

TESTS PERFORMED:

CLASSIC NEUROPHYSIOLOGICAL APPROACH:
   CLINICAL NEUROPATHY
   BIOCHEMICAL ALTERATIONS
   MORPHOLOGICAL ALTERATIONS
   SENSORY AND MOTOR FUNCTIONS

TEST SYSTEMS UTILIZED:

RATS, CATS

COMPOUNDS TESTED:

ORGANOPHOSPHATES (DFF* AND PARATHION); ACRYLAMIDES: IMINO
   DIPROPYL NITRILE; VINCristINE

REMARKS:

R. D. HOWLAND, DEPARTMENT OF PHARMACOLOGY, E. S. CHO, DEPARTMENT
   OF PATHOLOGY, AND B. S. JORTNER, DEPARTMENT OF PATHOLOGY, ARE
   ALSO INVOLVED WITH NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

*DIISOPROPYL PHOSPHOFURODIATE
ORGANIZATION:

NEW YORK STATE DEPARTMENT OF MENTAL HYGIENE
DEPARTMENT OF BEHAVIORAL PHYSIOLOGY
NEW YORK, NEW YORK 10032

D. HUTCHINGS (212) 568-4000

TESTS PERFORMED:

ELECTRONIC ACTIVITY MONITOR
COGNITIVE FUNCTIONS:
  OPERANT CONDITIONING
  DISCRIMINATION

TEST SYSTEMS UTILIZED:

RATS

COMPONDS TESTED:

VITAMIN A EXCESS, METHADONE
ORGANIZATION:

NEW YORK STATE INSTITUTE FOR RESEARCH IN MENTAL RETARDATION
NEUROTERATOLOGY DEPARTMENT
STATEN ISLAND, NEW YORK 10314

R. K. HADDAD (212) 698-1122, ext. 750

TESTS PERFORMED:

MOTOR TESTS:
  REFLEX DEVELOPMENT
  SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
  REARING AND AMBULATION (PHOTO CELLS)

COGNITIVE FUNCTIONS:
  MAZE DISCRIMINATION
  OPERANT CONDITIONING
  ESCAPE
  AVOIDANCE
  RETENTION

PHYSIOLOGICAL TESTS
NEUROLOGICAL TESTS:
  EEG
  SEIZURE THRESHOLDS
  PKU MODELS

TEST SYSTEMS UTILIZED:
  MICE, RATS, RABBITS, HAMSTERS, CATS, MONKEYS, DOGS

COMPOUNDS TESTED:
  METHYL AZOXYMETHANOL ACETATE, ETHANOL, ALUMINUM

REMARKS:

A. RABE AND M. HELEE ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS INSTITUTION.
ORGANIZATION:

NEW YORK UNIVERSITY MEDICAL CENTER
INSTITUTE OF ENVIRONMENTAL MEDICINE
TUXEDO, NEW YORK 10987

H. L. EVANS (212) 340-7300, EXT. 5263 (NEW YORK CITY)
(914) 351-4249 (TUXEDO)

TESTS PERFORMED:

SENSORY TESTS: COMPREHENSIVE
MOTOR TESTS: REFLEX ACTIVITY
COGNITIVE FUNCTIONS: CONDITIONED BEHAVIOR
PHYSIOLOGICAL: FOOD INTAKE AND METABOLISM

TEST SYSTEMS UTILIZED:

PRIMATES, RODENTS, FISH, BIRDS

COMPUNDS TESTED:

ACRYLAMIDE, METALS, PESTICIDES, DRUGS, AIR POLLUTANTS:
FORMALDEHYDE, ORGANIC SOLVENTS, ASBESTOS, COMBUSTION PRODUCTS

REMARKS:

E.D. PALMES IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.
ORGANIZATION:

NORTH CAROLINA STATE UNIVERSITY
DEPARTMENT OF ZOOLOGY
RALEIGH, NORTH CAROLINA 27650

G. T. BARTHALMUS (919) 737-2698

TESTS PERFORMED:

SENSORY TESTS: PHOTOTAXIS BEHAVIOR USING 2,4-D *
MOTOR TESTS: LOCOMOTOR BEHAVIOR
COGNITIVE FUNCTIONS:
OPERANT CONDITIONING
AVOIDANCE (SHUTTLE BOX)
UNSIGNALED AND SIGNALLED (ON FISH AND QUAIL)

TEST SYSTEMS UTILIZED:

MARINE ORGANISMS; GRASS SHRIMPS; GOLDFISH; JAPANESE QUAIL

COMPPOUNDS TESTED:

MERCURY AND 2,4-D

* (2,4-DICHLOROPHENOXY) ACETIC ACID
ORGANIZATION:

NORTHEASTERN ILLINOIS UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
NEUROPSYCHOLOGY LABORATORY
CHICAGO, ILLINOIS 60625

W. PIZZI (312) 583-4050, ext. 667

TESTS PERFORMED:

SENSORY TESTS:
- EXPLORATORY BEHAVIOR (HOLE-BOARD TEST)
- NEGATIVE GEOTAXIS

MOTOR TESTS:
- SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, ACTIVITY WHEELS, ACTIVITY CAGE)
- ROTAROD

COGNITIVE FUNCTIONS:
- MAZES
- OPERANT CONDITIONING
- AVOIDANCE (ACTIVE AND PASSIVE)

PHYSIOLOGICAL AND CONSUMMATORY TESTS

NEUROLOGICAL TESTS: EEG

TEST SYSTEMS UTILIZED:

MICE, RATS

COMPOUNDS TESTED:

EXCITOTOXIC AMINO ACIDS - GLUTAMATE, ASPARTATE; AMPHETAMINE,
VALIUM, LIBRUM, AGONISTS AND ANTAGONISTS, DYES (FOOD ADDITIVES)

REMARKS:

MIDWEST BEHAVIORAL TOXICOLOGY ASSOCIATION IS BEING FORMED BY:

DR. GENE YOUKILIS
394 DELTA ROAD
HIGHLAND PARK, ILLINOIS 60035
ORGANIZATION:

OHIO STATE UNIVERSITY
COLLEGE OF MEDICINE
COLUMBUS, OHIO 43210

D. COURI (614) 422-0168

TESTS PERFORMED:

BIOCHEMICAL TESTS
LOCOMOTOR ACTIVITY

TEST SYSTEMS UTILIZED:

HUMAN TISSUES-IN VIVO; MICE; RATS

COMPOUNDS TESTED:

CARCINOGENS: BENZO-PYRENE; AFLATOTOXIN AND SELINIUM COMPOUNDS
MECHANISM: PCB; PHENOBARBITOL; SOLVENTS

*POLYCHLORINATED BIPHENYLS
ORGANIZATION:

PSARMAX LABORATORIES
SCRANTON, PENNSYLVANIA 18510

R. MATTHEWS (717) 344-9536

TESTS PERFORMED:

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (INCLINED SCREEN)
  ROTAROD
AROUSAL DEFICIT: STARTLE RESPONSE
COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE RESPONSE
NEUROLOGICAL TESTS: EEG
IRVIN RESPONSE

TEST SYSTEMS UTILIZED:

MOUSE, RAT

COMPpounds TESTED:

AETI OR ACETYLETHYL TETRAMETHYL TETRALIN (FRAGRANCE);
2,5-HEXANEDIONE

REMARKS:

R. NAISMITH AND R. PANASCVICH ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS INSTITUTION; ORGANOPHOSPHATES WILL BE TESTED LATER.
TESTS PERFORMED:

MOTOR TESTS: ROTAROD
COGNITIVE FUNCTIONS:
  PASSIVE AVOIDANCE (STEP-DOWN)
  ACTIVE AVOIDANCE (SHUTTLE-BOX)
  SPONTANEOUS ALTERNATION (T-MAZE)
  WATER MAZE
  HABITUATION
PHYSIOLOGICAL TESTS: BODY WEIGHT
BIOCHEMICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ALCOHOL
MARIJUANA
ORGANIZATION:

SANDOZ, INC.
DEPARTMENT OF PRECLINICAL SAFETY ASSESSMENT
EAST HANOVER, NEW JERSEY 07936

R. BAGDON (201) 386-7518

TESTS PERFORMED:

DIRECT OBSERVATION

TEST SYSTEMS UTILIZED:

RATS, DOGS, MICE, RABBITS

COMPOUNDS TESTED:

PHARMACEUTICALS
AGRICULTURAL CHEMICALS
INDUSTRIAL CHEMICALS

REMARKS:

R. J. VAN RYZIN IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
TESTS PERFORMED:

SENSORY TESTS:
- AUDITORY AND VISUAL MODIFICATION OF STARTLE REFLEX
- NEGATIVE GEOTAXIS
- RIGHTING
- OLFATORY DISCRIMINATION
- PAIN SENSITIVITY

MOTOR TESTS:
- RESIDENTIAL (FIGURE 8) MAZE ACTIVITY
- PIVOTING
- OPEN FIELD
- RUNNING WHEEL
- ROTAROD

COGNITIVE FUNCTIONS:
- OPERANT CONDITIONING
- ACTIVE AND PASSIVE AVOIDANCE
- DISCRIMINATED AVOIDANCE
- WATER MAZE LEARNING

PHYSIOLOGICAL TESTS:
- UNRESTRAINED WHOLE ANIMAL RESPIROMETRY
- GROWTH AND PHYSICAL DEVELOPMENT

TEST SYSTEMS UTILIZED:

RAT, MOUSE

COMPOUNDS TESTED:

COMPOUNDS ARE PROPRIETARY INFORMATION OF CLIENTS
TESTS PERFORMED:

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (INCLINED SCREEN, OPEN FIELD)
  GAIT
  TREMOR
  ROTAROD
  AROUSAL DEFICIT: STARTLE RESPONSE
  PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS, DOGS

COMPOUNDS TESTED:

DEVELOPMENTAL DRUGS
TEST PERFORMED:

INFORMATION IS PROPRIETARY

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY
ORGANIZATION:

SOUTHWEST FOUNDATION FOR RESEARCH AND EDUCATION
P.O. BOX 28147
SAN ANTONIO, TEXAS 78284

I. GELLER (512) 674-1410

TESTS PERFORMED:

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (ACTIVITY BOX)
  NEUROMOTOR FUNCTION (FOOT SPREAD TECHNIQUE)
AROUSAL DEFICIT: STARTLE RESPONSE
COGNITIVE FUNCTIONS:
  OPERANT CONDITIONING
  PASSIVE AVOIDANCE
  DISCRIMINATION

TEST SYSTEMS UTILIZED:

RATS

REMARKS:

THIS ORGANIZATION IS COMPARING OBSERVATIONAL TESTS WITH OPERANT TESTS.
ORGANIZATION:

SRI INTERNATIONAL  
MENLO PARK, CALIFORNIA 94025

G. PRYOR (415) 326-6200, ext. 3500

TESTS PERFORMED:

SENSORY TESTS:
- PAIN (TAIL FLICK)
- NEGATIVE GEOTAXIS (ROTATION ORIENTATION)

MOTOR TESTS:
- GRIP STRENGTH (FORE- AND HIND-LIMB)
- UNDIFFERENTIATED MOTOR ACTIVITY

AROUSAL DEFICITS: STARTLE RESPONSE (AUDITORY, AIR PUFF)

COGNITIVE FUNCTIONS: MULTISENSORY CONDITIONED AVOIDANCE TASK

PHYSIOLOGICAL TESTS: BODY WEIGHT

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ACRYLAMIDE, TETRAETHYL Tin, ARSENIC, KEPONE, METHYL MERCURY, LEAD ACETATE, d-AMPHETAMINE, MONOSODIUM SALICYCLATE, TRIETHYL LEAD CHLORIDE, HEXANE, ANTINEOPLASTIC AGENTS
ORGANIZATION:
STATE UNIVERSITY OF NEW YORK, ALBANY
DEPARTMENT OF PSYCHOLOGY
ALBANY, NEW YORK 12222
E. RILEY (518) 457-8482

TESTS PERFORMED:

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, NOSE POKE/HEAD DIPPING)
AROUSAL DEFICIT: STARTLE RESPONSE
COGNITIVE FUNCTIONS:
  REVERSAL LEARNING
  OPERANT CONDITIONING
  PASSIVE AVOIDANCE (STEP-THROUGH)
  T-MAZE
  SPONTANEOUS ALTERNATION
PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:
RATS

COMPONDS TESTED:
ALCOHOL, METHADONE
ORGANIZATION:

STATE UNIVERSITY OF NEW YORK, BINGHAMTON
DEPARTMENT OF PSYCHOLOGY AND CENTER FOR
NEUROBEHAVIORAL SCIENCES
BINGHAMTON, NEW YORK 13901

L. SPEAR (607) 798-2825

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
COGNITIVE FUNCTIONS: AVOIDANCE (ACTIVE AND PASSIVE)
PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPounds TESTED:

STIMULANTS, OPIATES, ANTIPSYCHOTICS, OTHER DRUGS, PEPTIDES

REMARKS:

L. RASTINE IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.
ORGANIZATION:

STATE UNIVERSITY OF NEW YORK, BUFFALO
DEPARTMENT OF PHARMACOLOGY
BUFFALO, NEW YORK

G. WINTER (716) 831-3649, 831-5122

TESTS PERFORMED:

OPERANT BEHAVIOR: AFFECT OF DRUGS ON OPERANT BEHAVIOR
GROSS BEHAVIOR: SPONTANEOUS MOTOR ACTIVITY

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

NICOTINE, CAFFEINE, AND HALLUCINOGENIC AGENTS: OPIATES AND
PHENCYCLIDENE, LSD*, MESCALINE

*LYSERGIC ACID DIETHYLAMIDE
ORGANIZATION:

STERLING-WINTHROP RESEARCH INSTITUTE
DEPARTMENT OF TOXICOLOGY
RENSSELAER, NEW YORK 12144

J. C. BRADFORD  (518) 445-8330

TESTS PERFORMED:

MOTOR TESTS:
RIGHTING REFLEX
GAIT
STARTLE REFLEX

TEST SYSTEMS UTILIZED:

RATS
ORGANIZATION:

SYRACUSE UNIVERSITY
BRAIN RESEARCH LABORATORY
SYRACUSE, NEW YORK 13210

M.J. WAYNER (315) 423-2923

TESTS PERFORMED:

SENSORY TESTS:
  PAIN (TAIL FLINCH)
  AUDITORY LOCALIZATION
MOTOR TESTS: REFLEX (GRASPING)
AROUSAL DEFICITS: STARTLE RESPONSE
PHYSIOLOGICAL TESTS:
  BODY TEMPERATURE
  AUTONOMIC SIGNS
  ELECTROPHYSIOLOGY (EVOKED POTENTIAL; SINGLE UNIT RECORDING)
  EEG
NEUROCHEMICAL TESTS

TEST SYSTEMS UTILIZED:

RATS/MICE, RABBITS

COMPOUNDS TESTED:

ACETYL PYRIDINE, ACRYLAMIDE, TOLUENE, NITROBENZENE, TRIETHYL TIN

REMARKS:

F. BARONE IS DEVELOPING A NEUROBEHAVIORAL TEST INVOLVING SCHEDULE-INDUCED BEHAVIOR.
ORGANIZATION:

THE PROCTOR AND GAMBLE COMPANY
HUMAN ENVIRONMENTAL SAFETY DIVISION
CINCINNATI, OHIO 45239

G. A. NOLAN (513) 977-2438

TESTS PERFORMED:

SENSORY TESTS: PAIN (PINCH TEST)
MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (PHOTOCELL CAGE)
AROUSAL DEFICIT: STARTLE RESPONSE
COGNITIVE FUNCTIONS: CLIFF AVOIDANCE

TEST SYSTEMS UTILIZED:

RATS

COMPounds TESTED:

HYPERVITAMINOSIS (A)

REMARKS:

THIS ORGANIZATION WILL EXPAND ITS PROGRAM TO INCLUDE MORE TESTS AND CHEMICALS.
ORGANIZATION:

THE UPJOHN COMPANY
DEPARTMENT OF PATHOLOGY AND TOXICOLOGY RESEARCH
KALAMAZOO, MICHIGAN 49001

J. STUCKHARDT  (616) 385-7179

TESTS PERFORMED:

SENSORY TESTS: VISUAL PLACING
MOTOR TESTS:
  SWIMMING PERFORMANCE
  ROTAROD
  SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, SURFACE RIGHTING, PIVOTING)
AROUSAL DEFICITS: STARTLE RESPONSE (AUDITORY)
COGNITIVE FUNCTIONS: M-MAZE (SWIMMING)

PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

MICE, RATS

COMPOUNDS TESTED:

METHYL MERCURY; DEVELOPMENTAL DRUGS; OCHRATOXIN #A

REMARKS:

S. POPPE IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF ARKANSAS
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF PHARMACOLOGY
LITTLE ROCK, ARKANSAS 72201

D.E. MCMILLAN (501) 661-5516

TESTS PERFORMED:

SENSORY TESTS: PAIN, TOUCH, VISUAL, ETC.
MOTOR TESTS: LOCOMOTOR ACTIVITY
COGNITIVE FUNCTIONS: OPERANT CONDITIONING (MEMORY, CHANGE IN PERFORMANCE)

MAINLY INVOLVED IN MATCHING BEHAVIORAL EFFECTS OF DRUGS WITH BLOOD LEVELS OF DRUGS

TEST SYSTEMS UTILIZED:

RATS, MICE, PIGEONS

COMPounds TESTED:

HEAVy METALS: SOLVENTS, INSECTICIDES, ETC.
PSYCHOACTIVE DRUGS

REMARKS:

G. WENGER IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF ARKANSAS MEDICAL CENTER
DEPARTMENT OF PHARMACOLOGY
LITTLE ROCK, ARKANSAS 72201

J. SPYKER-CRANMER (501) 661-5100

TESTS PERFORMED:

SENSORY TESTS:
- PAIN
- AUDITORY STIMULUS
- VISUAL ORIENTATION

MOTOR TESTS:
- SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, ULTRA SOUND, INFRARED)
- ROTAROD
- TREMOR

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS:
- PASSIVE AVOIDANCE
- Y-MAZE
- ESCAPE

COMPOUNDS TESTED:

HYDROCARBONS, PESTICIDES, HEAVY METALS

REMARKS:

D. L. AVERY IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF CALIFORNIA
CALIFORNIA PRIMATE RESEARCH CENTER
PERINATAL BIOLOGY UNIT
DAVIS, CALIFORNIA 95616

M. GOLUB (916) 752-2119

TESTS PERFORMED:

MOTOR TESTS:
  REFLEX DEVELOPMENT TESTS
  SEIZURE THRESHOLD
  AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS:
  SHOCK-AVOIDANCE CONDITIONING
  RADIAL MAZE
  OPERANT CONDITIONING

PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

THC*, CHLORPROMAZINE

*THIOCARBANIDINE
ORGANIZATION:

UNIVERSITY OF CHICAGO
DEPARTMENT OF BEHAVIORAL SCIENCES
CHICAGO, ILLINOIS 60637

S. P. GROSSMAN (312) 753-4715

TESTS PERFORMED:

GENERAL EFFECTS: FOOD AND WATER INTAKE
COGNITIVE FUNCTIONS:
  PERFORMANCE OF PREVIOUSLY LEARNED BEHAVIOR (SKINNER AND SHUTTLE BOXES)
  CONDITIONED BEHAVIOR (LEVER PRESSING FOR FOOD; SHOCK AVOIDANCE)
  MAZE LEARNING
HISTOLOGICAL EFFECTS: NEURON CELL LOSS

TEST SYSTEMS UTILIZED:

RATS: SUBCORTICAL AREAS

COMPOUNDS TESTED:

KANIC ACID; 6-HYDROXYDOPAMINE ARE INJECTED INTO SUBCORTICAL AREAS

REMARKS:

A. HALARIS, DEPARTMENT OF PSYCHIATRY, AND C. MUÑOZ, DEPARTMENT OF BEHAVIORAL SCIENCES, ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE
KETTERING LABORATORY
CINCINNATI, OHIO 45267

R. BORNSCHEIN (513) 872-5713

TESTS PERFORMED:

SENSORY TESTS:
NEGATIVE GEOTAXIS
VISUAL DISCRIMINATION

MOTOR TESTS:
SPONTANEOUS MOTOR ACTIVITY (RUNNING WHEEL, JIGGLE CAGE, PHOTOCCEL ACTIVITY CAGE, OPEN FIELD, REFLEXES)
GAIT
CIRCADIAN ACTIVITY
TREMOR
ROTAROD

COGNITIVE FUNCTIONS:
AVOIDANCE (ACTIVE AND PASSIVE)
SCHEDULE-CONTROLLED BEHAVIOR
DISCRIMINATION (T-MAZE)

NEUROPHYSIOLOGICAL: EEG

METABOLIC TESTS

TEST SYSTEMS UTILIZED:

MICE, RATS

COMPPOUNDS TESTED:

LEAD, CADMIUM, HYDROCARBON SOLVENTS, AUTOMOBILE EXHAUST, ACRYLAMIDE, ETHYLNITROSOUREA, DRUGS

REMARKS:

L. HASTINGS, L. RAFFLES, H. ZENICK, S. LASLEY, A. MICHAELSON, AND G. COOPER ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF CINCINNATI MEDICAL CENTER
DEPARTMENT OF ENVIRONMENTAL HEALTH
CINCINNATI, OHIO 45267

L. HASTINGS  (513) 872-5711

TESTS PERFORMED:

SENSORY TESTS:
VISUAL DISCRIMINATION
PAIN (TAIL FLICK)

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (RUNNING WHEEL,
PHOTOCELL ACTIVITY CAGE, JIGGLE PLATFORM)

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS: OPERANT CONDITIONING

PHYSIOLOGICAL TESTS: AUTOMATIC SIGNS (HEART RATE)

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPONDS TESTED:

HEAVY METALS - LEAD, CADMIUM
SOLVENTS - METHYL CHLOROFORM, METHYL CHLORIDE

REMARKS:

H. ZENICK IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:
UNIVERSITY OF KANSAS MEDICAL CENTER
MENTAL RETARDATION RESEARCH CENTER
KANSAS CITY, KANSAS 66103
S. NORTON

TESTS PERFORMED:

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (RIGHTING REFLEX, PHOTOCELL
  ACTIVITY CAGE, OPEN FIELD, WALKING)
  GRIP STRENGTH
  AROUSAL DEFICITS: AUDITORY STARTLE
  COGNITIVE FUNCTIONS: RESIDENTIAL MAZE
  DRUG CHALLENGE

TEST SYSTEMS UTILIZED:

RATS, CHICKENS

COMPOUNDS TESTED

HYPOTHYROID COMPOUNDS, IONIZING RADIATION, CARBON MONOXIDE

REMARKS:

THE COMPUTERIZED PATTERN RECOGNITION TEST IS USED WITH
AMPHETAMINE-EXPOSED RATS INVOLVING THE USE OF PHOTOGRAPHIC
METHODS TO DETERMINE BEHAVIORAL SEQUENCES.
ORGANIZATION:

UNIVERSITY OF MICHIGAN MEDICAL CENTER
PATHOLOGY DEPARTMENT
ANN ARBOR, MICHIGAN 48109

S. P. HICKS (313) 764-8170

TESTS PERFORMED:

MOTOR DEVELOPMENT (GAIT ANALYSIS)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

RADIATION

REMARKS:

C. D'AMATO IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL
ANN ARBOR, MICHIGAN 48109

W. STEBBINS  (313) 764-8532

TESTS PERFORMED:

SENSORY TESTS: AUDITORY RESPONSE UNDER OPERANT CONDITIONS
MOTOR TESTS: REACTION TIME TO STIMULUS
MORPHOLOGICAL TESTS: INNER EAR AND COCHLEAR (RECEPTOR CELLS)
FUNCTION

TEST SYSTEMS UTILIZED:

MONKEYS, CHINCHILLAS, GUINEA PIGS, CATS

COMPounds TESTED:

NOISE, AMINOGLYCOCIDE ANTIBIOTICS, DIURETICS, SALICYLATES, QUININE

REMARKS:

D. MOODY, L. DAVIDSON, AND C. PROSEN ARE ALSO INVOLVED IN
NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
COGNITIVE FUNCTIONS:
   OPERANT CONDITIONING
   LEARNING
   CONDITIONED BEHAVIOR (POSITIVE REINFORCEMENT)
BIOCHEMICAL TESTS

TEST SYSTEMS UTILIZED:

RATS, MICE, CHICKENS

COMPOUNDS TESTED:

AMPHETAMINES, OPIATES, METHYL MERCURY

REMARKS:

THIS ORGANIZATION IS SEARCHING FOR APPROPRIATE TESTING METHODS TO TEST ENVIRONMENTAL EXPOSURE LEVELS FOR THE PURPOSE OF DEFINING THRESHOLD LEVELS.

ANY FURTHER WORK IN THIS FIELD SHOULD INCLUDE A DISCUSSION WITH DR. SPARBER.
TESTS PERFORMED:

 COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE (SHUTTLE BOX) RESPONSE
 SENSORY TESTS: PAIN (TAIL FLICK)
 PHYSIOLOGICAL TESTS
 MOTOR TESTS:
 TREADMILL ROTAROD
 SPONTANEOUS MOTOR ACTIVITY (PHOTOCCELL, OPEN FIELD)

TEST SYSTEMS UTILIZED:

 RATS, DOGS, MONKEYS

COMPOUNDS TESTED:

 ABUSE DRUGS - CANNABIS, COCAINE METABOLITES, HALLUCINOGENS

REMARKS:

 J. BEDFORD AND M. WILSON ARE WORKING WITH ALCOHOL AND OPERANT BEHAVIOR.
ORGANIZATION:

UNIVERSITY OF NORTH CAROLINA
SCHOOL OF MEDICINE
BIOLOGICAL SCIENCES RESEARCH CENTER
DEPARTMENT OF PSYCHIATRY'S PHARMACOLOGY
CHAPEL HILL, NORTH CAROLINA 27514

DR. RICHARD MAILMAN  (919) 966-3081

TESTS PERFORMED:

MOTOR TESTS:
- SPONTANEOUS MOTOR ACTIVITY (JIGGLE CAGE)
- DRUG-INDUCED SPONTANEOUS MOTOR ACTIVITY
- STEREOTYPED BEHAVIOR
- DRUG-INDUCED STEREOTYPED BEHAVIOR
- ROTAROD
- RIGHTING REFLEX

PHYSIOLOGICAL TESTS:
- RESPIRATION
- ECG
- BODY WEIGHT
- CONSUMPTION

COGNITIVE TESTS:
- OPERANT CONDITIONING

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPPOUNDS TESTED:

- PRO AND ANTIDOPAHINARGIC DRUGS
- ENVIRONMENTAL POLLUTANTS (METALS, PCBs *)

REMARKS:

DR. GEORGE BREESE IS ALSO INVOLVED WITH NEUROTOXICOLOGY TESTING
AT THIS ORGANIZATION.

* POLYCHLORINATED BIPHENYLS
ORGANIZATION:

UNIVERSITY OF NORTH CAROLINA
BIOSCIENCES RESEARCH CENTER
CHAPEL HILL, NORTH CAROLINA 27514

D. MILLER (919) 966-3081

TESTS PERFORMED:

COGNITIVE FUNCTIONS:
  PASSIVE AVOIDANCE TEST (LICK SUPPRESSION)
  OPERANT CONDITIONING (2-LEVER ALTERATION)

PHYSIOLOGICAL TESTS

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (PHOTOCCELL CAGE)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ORGANOTIN (TRIETHYL-, TRIMETHYL-)

REMARKS:

L. D. GRANT IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF NORTH CAROLINA
CHAPEL HILL, NORTH CAROLINA 27514

M. KRIGHAN (919) 966-4584

TESTS PERFORMED:

BIOCHEMICAL TESTS: MYELIN AND AXONAL TRANSPORT
NEUROPHARMACOLOGICAL TESTS: PUTATIVE TRANSMITTERS
MORPHOLOGICAL TESTS: LIGHT AND ELECTRON MICROSCOPY

TEST SYSTEMS UTILIZED:

RATS, PIGEONS

COMPOUNDS TESTED:

INORGANIC LEAD; TRIETHYL AND TRIETHYL TIN; CADMIUM; TRIPROPYL TIN, TRIBUTYL TIN; TRICYCLOHEXYL TIN and TRIPHENYL TIN;
TRIMETHYL AND TRIETHYL LEAD; TRIMETHYL GERMANIUM
ORGANIZATION:

UNIVERSITY OF ROCHESTER
DEPARTMENT OF PSYCHOLOGY
ROCHESTER, NEW YORK 14642

J. ISON (716) 275-2453

TESTS PERFORMED:

REFLEX MODIFICATION: JUMPING BEHAVIOR PRECEDED BY "STARTLE-FLINCH"

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

CADMIUM; MISONIDOZOLE; DIAZEPAM; METHYL MERCURY

REMARKS:

P. CONROY, CANCER CENTER; C. KELLOG, DEPARTMENT OF PSYCHIATRY; B. WEISS, RADIATION BIOLOGY AND BIOPHYSICS; AND V. LATIES, RADIATION BIOLOGY AND BIOPHYSICS, ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF SOUTHERN CALIFORNIA
BIOLOGICAL SCIENCES SECTION
SCHOOL OF PHARMACY
LOS ANGELES, CALIFORNIA 90033

J. SCHIH (213) 226-2565

TESTS PERFORMED:

BIOCHEMICAL TESTS:
HORMONAL SECRETION
RECEPTOR BINDING

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPPOUNDS TESTED:

ANTIDEPRESSANTS; SEROTONIN-uptake BLOCKERS; RECEPTOR AGONIST AND
ANTAGONISTS

REMARKS:

S. CHENG AND H. YOUNG ARE ALSO INVOLVED IN NEUROTOXICOLOGY
TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF WASHINGTON
DEPARTMENT OF PSYCHOLOGY
SEATTLE, WASHINGTON

B. BURBACHER (206) 543-9300

TESTS PERFORMED:

DEVELOPMENTAL BEHAVIOR:
- BASIC REFLEXES
- HEART RATE
- TEMPERATURE
- SUCKING RESPONSE IMMEDIATELY AFTER BIRTH
- SKELETAL AND VISUAL DEVELOPMENT

TEST SYSTEMS UTILIZED:

RATS, MICE, MONKEYS

COMPOUNDS TESTED:

METHYL MERCURY, CADMIUM, ARSENIC AND OTHER HEAVY METALS

REMARKS:

K. MOTTET, DEPARTMENT OF PATHOLOGY; W. CHEN, DEPARTMENT OF PATHOLOGY; AND DR. SHAW, DEPARTMENT OF PATHOLOGY, ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:

UNIVERSITY OF WISCONSIN, MADISON
DEPARTMENT OF PSYCHOLOGY
PRIMATE LABORATORY
MADISON, WISCONSIN 53706

R. E. BOWMAN (608) 263-3550

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (ACTIVITY BOX)
COGNITIVE FUNCTIONS:
  DISCRIMINATION (MAZE)
  OPERANT CONDITIONING

TEST SYSTEMS UTILIZED:

MONKEYS, RATS

COMPOUNDS TESTED:

PCB*, PBB**, DIOXIN, HALOTHANE

REMARKS:

J. ALLEN AND R. GOY ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING
AT THIS ORGANIZATION.

* POLYCHLORINATED BIPHENYLS
** POLYBROMINATED BIPHENYLS
ORGANIZATION:

U.S. ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE
BEHAVIORAL SCIENCES DEPARTMENT
EXPERIMENTAL PSYCHOLOGY DIVISION
BETHESDA, MARYLAND 20014

R. YOUNG (703) 295-0114

TESTS PERFORMED:

SENSORY TESTS: VISUAL DISCRIMINATION
MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
COGNITIVE FUNCTIONS:
  OPERANT CONDITIONING
  DISCRIMINATED AVOIDANCE
  SIDMAN AVOIDANCE
CONSUMMATORY AND PHYSIOLOGICAL TESTS
NEUROLOGICAL TESTS:
  EEG
  NERVE CONDUCTION VELOCITY

TEST SYSTEMS UTILIZED:

  RODENTS, MONKEYS, MINIATURE PIGS

COMPOUNDS TESTED:

  IONIZING RADIATION, NITRATE ESTERS, #5 FUELS, ACRYLAMIDE, LEAD,
  METHYL MERCURY, ETHANOL

REMARKS:

  V. BOGO IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
  INSTITUTION.
ORGANIZATION:
U.S. ENVIRONMENTAL PROTECTION AGENCY
NEUROTOXICOLOGY DIVISION
MD-74B
RESEARCH TRIANGLE PARK, NORTH CAROLINA 27711

L. REITER (919) 541-2671

TESTS PERFORMED:

MOTOR TESTS:
- SPONTANEOUS LOCOMOTOR ACTIVITY (FIGURE-8-MAZE, OPEN FIELD)
- NEUROMOTOR FUNCTION (FOOT SPREAD TECHNIQUE, GAIT)
AROUSAL DEFICIT: STARTLE RESPONSE (FORCE PLATFORM)
COGNITIVE FUNCTIONS:
- PASSIVE AVOIDANCE (STEP-THROUGH)
DEVELOPMENTAL NEUROTOXICITY TESTING

TEST SYSTEMS UTILIZED:
- RATS, MICE

COMPounds TESTED:
- HEAVY METALS, ALKYL TINS, PESTICIDES, TOXIC SUBSTANCES

REMARKS:
- F. RUPPERT IS A MEMBER OF THIS ORGANIZATION.
ORGANIZATION:

U.S. ENVIRONMENTAL PROTECTION AGENCY
NEUROTOXICOLOGY LABORATORY
RESEARCH TRIANGLE PARK, NORTH CAROLINA 27711

R. PETTINELLI  (919) 541-2450

TESTS PERFORMED:

COGNITIVE FUNCTIONS:
DISCRIMINATION (T-MAZE)
OPERANT CONDITIONING

TEST SYSTEMS UTILIZED:

RATS, MONKEYS

COMPOUNDS TESTED:

PESTICIDES

REMARKS:

M. GAGE AND R. G. MCPHAIL ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:
U.S. ENVIRONMENTAL PROTECTION AGENCY
TOXIC EFFECTS BRANCH
HEALTH REVIEW DIVISION
OFFICE OF TESTING AND EVALUATION
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
W. SETTE (TS-792) (703) 755-4863

REMARKS:
T. LEVINE AND J. MURPHY ARE INVOLVED IN PROPOSING RULES AND
REGULATIONS REGARDING BEHAVIORAL TERATOLOGY AND BEHAVIORAL
TOXICOLOGY.
TESTS PERFORMED:

SENSORY TESTS:
  PAIN
  NEGATIVE GEOTAXIS

MOTOR TESTS:
  SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, INCLINED SCREEN)
  ROTAROD
  CIRCADIAN ACTIVITY

AROUSAL DEFICITS: STARTLE RESPONSE

COGNITIVE FUNCTIONS:
  SCHEDULE-CONTROLLED BEHAVIOR
  ESCAPE
  AVOIDANCE (ACTIVE AND PASSIVE)
  DISCRIMINATION (MAZE)
  RETENTION

PHYSIOLOGICAL TESTS: AUTONOMIC SIGNS

TEST SYSTEMS UTILIZED:

RATS, DOGS, PIGS

COMPOUNDS TESTED:

GRAS COMPOUNDS
FOOD ADDITIVES
CNS STIMULANTS:
  AMPHETAMINE
  CAFFEINE
MYCOTOXINS
ACRYLAMIDE
HEAVY METALS (LEAD, CADMIUM, METHYL MERCURY)
ORGANIZATION:

WARNER-LAMBERT/PARKE-DAVIS
ANN ARBOR, MICHIGAN 48106

J. SCHARDEIN  (313) 994-3500, ext. 339

TESTS PERFORMED:

SENSORY TESTS:
- PAIN (TAIL FLINCH)
- VISUAL PLACING

MOTOR TESTS:
- SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
- GRIP STRENGTH (TRACTION TEST)

AROUSAL DEFICITS:
- STARTLE REFLEX (AUDITORY)

COGNITIVE FUNCTIONS:
- CONDITIONED AVOIDANCE

PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

DEVELOPMENTAL COMPOUNDS

REMARKS:

J. PETRETE IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.
ORGANIZATION:
WASHINGTON STATE UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
FULMAN, WASHINGTON 99164

R. H. ETTINGER (509) 335-2631

REMARKS:
R. ETTINGER IS DEVELOPING MORE SENSITIVE SCREENING PROCEDURES,
ESPECIALLY OPERANT CONDITIONING, USING MULTIPLE AND CONCURRENT
REINFORCMENT SCHEDULES.
ORGANIZATION:

WASHINGTON UNIVERSITY
SCHOOL OF MEDICINE
DEPARTMENT OF PHARMACOLOGY
ST. LOUIS, MISSOURI

J. FERRENDELLI (314) 454-2309

TESTS PERFORMED:

BEHAVIORAL TESTS: MOTOR AND SENSORY FUNCTIONS BY OBSERVATION
NEUROLOGICAL:
EEG
SINGLE-CELL ACTIVITY
BIOCHEMICAL TESTS:
NEUROTRANSmitter'S RELATIONSHIP WITH DRUGS
CEREBRAL RESPIRATION
ENERGY AND CARBOHYDRATE METABOLISM

TEST SYSTEMS UTILIZED:

MICE, RATS, GUINEA PIGS

COMPpouNDS TESTED:

THERAPEUTIC DRUGS; e.g., ANTICONVULSIVE AND CONVULSIVE DRUGS

REMARKS:

T. CICERO, AT THE DEPARTMENT OF PSYCHIATRY, IS TESTING NARCOTIC AGENTS.
APPENDIX A

INDEX OF INDIVIDUALS IN THE DIRECTORY
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<tr>
<td>Abel, E. L.</td>
<td>Research Institute of Alcoholism</td>
</tr>
<tr>
<td>Abou-Donia, M. B.</td>
<td>Duke University Medical Center</td>
</tr>
<tr>
<td>Allen, T.</td>
<td>University of Wisconsin</td>
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<td>Andrew, F. D.</td>
<td>Battelle-Pacific Northwest Laboratory</td>
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<td>Anger, K.</td>
<td>National Institute for Occupational Safety and Health</td>
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<td>Annau, Z.</td>
<td>Johns Hopkins University</td>
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<td>Aphouse, L.</td>
<td>National Institute of Environmental Health Sciences</td>
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<td>Avery, D. L.</td>
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<td>Medical College of Virginia</td>
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<td>Bogo, V.</td>
<td>U.S. Armed Forces Radiobiology Research Institute</td>
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<td>Bradshaw, S.</td>
<td>Brigham Young University</td>
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<td>Breese, G.</td>
<td>University of North Carolina</td>
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<td>Burbacher, B.</td>
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<td>Butcher, R.</td>
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<td>Dews, P. B.</td>
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<td>Eastman Kodak Company</td>
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<td>Eagen, J.</td>
<td>Exxon Corporation</td>
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<td>Ettinger, R. H.</td>
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<td>Ferrendelli, J.</td>
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<td>Friedler, G.</td>
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<td>U.S. Environmental Protection Agency, Research Triangle Park</td>
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<td>Southwest Foundation for Research and Education</td>
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<td>Golub, M.</td>
<td>University of California, Davis</td>
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<td>Grossman, S. P.</td>
<td>University of Chicago</td>
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<td>Haddad, R. K.</td>
<td>New York State Institute for Research in Mental Retardation</td>
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<td>Halaris, A.</td>
<td>University of Chicago</td>
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<td>University of Cincinnati College of Medicine</td>
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<td>Heise, G. A.</td>
<td>Indiana University</td>
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<td>Helee, M.</td>
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<td>University of Michigan Medical Center</td>
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</table>
EVALUATION OF SHORT-TERM BIOASSAYS TO PREDICT FUNCTIONAL IMPAIRMENT...
<table>
<thead>
<tr>
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<th>ORGANIZATION</th>
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<tr>
<td>Hoar, R. M.</td>
<td>Hoffmann-LaRoche, Inc.</td>
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<tr>
<td>Hoberman, A.</td>
<td>Hazleton Laboratories, Inc.</td>
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<td>Hutchings, D.</td>
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<td>University of Rochester</td>
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<td>Laties, V.</td>
<td>University of Rochester</td>
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APPENDIX B

INDIVIDUALS UNAVAILABLE FOR COMMENT
BUT LIKELY TO BE ACTIVE IN
NEUROBEHAVIORAL TESTING
APPENDIX B

INDIVIDUALS UNAVAILABLE FOR COMMENT
BUT LIKELY TO BE ACTIVE IN
NEUROBEHAVIORAL TESTING
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