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Environmental Protection
Agency

Office of Pesticides
and Toxic Substances
Washington, DC 20460

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EPA 560/7-82-002
August 1982

Toxic Substances

EPA

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August 1982

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES SCIENTIFIC AND TECHNICAL REPORTS 1968 - 1982

U.S. Environmental Protection Agency
[illegible]
[illegible] Street
Chicago, Illinois 60604

Robin Heisler

Management Support Division
Office of Toxic Substances
Washington, D.C. 20460

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
U.S. ENVIRONMENTAL PROTECTION AGENCY
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U.S. Environmental Protection Agency

* Includes the Office of Pesticide Programs and the Office of Toxic Substances

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ABSTRACT & BIBLIOGRAPHY

NTIS price code

NTIS order number → **PB81-102659** PC **A13**/MF **A01** ← PC = paper copy; MF = microfiche

Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

Title → **Investigation of Selected Potential Environmental Contaminants: Styrene, Ethylbenzene, and Related Compounds.** Final rept.

Sponsoring EPA Office

Corporate Author → Syracuse Research Corp., NY. Center for Chemical Hazard Assessment

Personal Author → Joseph Santodonato, William M. Meylan, Leslie N Davis, Philip H. Howard, and Denise M Orzel. May 80, 279p TR-80-569, EPA-560/11-80-018 ← EPA report number

Contract number → Contract EPA-68-01-3250

Abstract → This report reviews the potential environmental hazard from the commercial use of four related compounds: ethylbenzene, styrene, alpha-methylstyrene, and divinylbenzene. Both ethylbenzene and styrene are produced in 6-7 billion pounds per year while the other two compounds are produced in much smaller quantities. Ethylbenzene is used to produce styrene and styrene and the other monomers are used to make polystyrene and other resins, elastomers, and rubbers. Significant noncommercial sources of the compounds are also possible including automobile exhaust, gasoline, and other combustion sources.

Keywords. *Environmental surveys, *Styrene, Air pollution, Water pollution, Toxicity, Exposure, Chemical reactions, Manufacturing, Monitoring. ← Keywords descriptors and identifiers

Title: Reports are listed alphabetically by title; **A, An,** and **The** at the beginning of a title are ignored in alphabetizing.

Title → Investigation of Selected Potential Environmental Contaminants Styrene, Ethylbenzene, and Related Compounds
PB81-102659 PC **A13**/MF **A01**

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Contract/Grant Number → **EPA-68-01-3250**
Syracuse Research Corp., NY, Center for Chemical Hazard Assessment PC **A13**/MF **A01**

NTIS Order/Report Number: Entries are sequenced by NTIS order, report, or monitor agency number.

NTIS Order/Report Number → **PB81-102659**
Investigation of Selected Potential Environmental ontaminants Styrene, Ethylbenzene, and Related Compounds.
PB81-102659 PC **A13**/MF **A01**

Corporate Author: Entries are sequenced by corporate author name, report title, and NTIS order number. The monitor agency number is given following the report title.

Corporate Author → Syracuse Research Corp., NY Center for Chemical Hazard Assessment.
Investigation of Selected Environmental Contaminants: Styrene, Ethylbenzene, and Related Compounds (EPA 560/11-80-18)
PB81-102659

Personal Author: Entries are sequenced by personal author, report title, and NTIS order number.

Personal Author → Santodonato, Joseph et al
Investigation of Selected Environmental Contaminants Styrene, Ethylbenzene, and Related Compounds. PB81-102659

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Keywords → Environmental Surveys, Styrene
Air Pollution, Water Pollution, Toxicity, Exposure, Chemical Reactions, Manufacturing, Monitoring.
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PB-240 658/5 75-12 PC **A04**/MF **A01**

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PB80-216807 80-25 PC **A03**/MF **A01**

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PB-257 610/6 76-25 PC **A13**/MF **A01**

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A Study of Federally Financed Research on Pests, Pesticides and Pest Control
PB-270 666/1 77-23 PC **A03**/MF **A01**

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PB-274 264/1 78-03 PC **A25**/MF **A01**
PB-281 938/1 78-19 PC **A03**/MF **A01**
PB-284 950/3 78-25 PC **A07**/MF **A01**

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PB-270 642/2 77-23 PC **A11**/MF **A01**

A Study of the Short Term Agricultural User Adjustment Problems Associated with Major Pesticide Regulatory Restrictions. Executive Summary
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PB-251 566/6 76-12 PC **A06**/MF **A01**

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PB-260 415/5 77-05 PC **A10**/MF **A01**

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PB-261 006/1 77-05 PC **A08**/MF **A01**

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Summary Tabulation of Selected EPA Activities Concerning Toxic Chemicals
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PB80-213465 80-25 PC **A03**/MF **A01**

Support Document for Proposed Rule on Friable Asbestos-Containing Materials in School Buildings Health Effects and Magnitude of Exposure Proposed Rule, Section 6 Toxic Substances Control Act
PB81-141657 81-10 PC **A06**/MF **A01**

Support Document Test Data Development Standards Chronic Health Effects Toxic Substances Control Act Section 4
PB80-194939 80-20 PC **A09**/MF **A01**

Support Document, Test Data Development Standards, Physical/Chemical and Persistence Characteristics Density/Relative Density, Melting Temperatures, Vapor Pressure, Octanol/Water Partition Coefficient, Soil Thin Layer Chromatography Proposed Rule, Section 4, Toxic Substances Control Act
PB81-141616 81-11 PC **A07**/MF **A01**

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PB-243 641/8 75-21 PC **A09**/MF **A01**

Survey of Industrial Processing Data Task II - Pollution Potential of Polybrominated Biphenyls
PB-243 690/5 75-21 PC **A04**/MF **A01**

A Survey of Polybrominated Biphenyls (PBBs) Near Sites of Manufacture and Use in Northeastern New Jersey
PB-296 290/0 79-19 PC **A04**/MF **A01**

Survey of the Manufacture, Import, and Uses for Benzidine, Related Substances, and Related Dyes and Pigments
PB-296 544/0 79-20 PC **A10**/MF **A01**

Survey of the Occurrence of Mercury, Lead, and Cadmium in the Washington, D C Area
PB-281 725/2 78-18 PC **A05**/MF **A01**

Technical and Microeconomic Analysis of Arsenic and Its Compounds
PB-253 980/7 76-18 PC **A11**/MF **A01**

Technical and Microeconomic Analysis of Cadmium and Its Compounds
PB-244 625/0 75-23 PC **A10**/MF **A01**

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PB82-232992 82-21 PC **A99**

Test Methods for Assessing the Effects of Chemicals on Plants
PB-248 198/4 76-05 PC **A11**/MF **A01**

Test Methods for Definition of Effects of Toxic Substances on Behavior and Neuromotor Function
PB80-109101 80-02 PC **A10**/MF **A01**

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Third Report of the TSCA Interagency Testing Committee to the Administrator, Environmental Protection Agency
PB-293 278/6 79-14 PC **A11**/MF **A01**

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PB80-216732 80-25 PC **A03**/MF **A01**

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Toxic Effects of the Herbicide Paraquat
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78-16 (Order as PB-279 718, MF **A01**)

Toxic Substances Control Act Chemical Substances Inventory Cumulative Supplement, July 1980
PB80-220007 80-25 CP **T02**

Toxic Substances Control Act Grants to States
PB81-232969 81-24 PC **A04**/MF **A01**

The Toxic Substances Control Act, Public Law 94-469 Reporting for the Chemical Substances Inventory Instructions for Reporting for the Revised Inventory
PB80-147499 80-11 PC **A03**/MF **A01**

Toxic Substances Control Act (TSCA) Chemical Substance Inventory Cumulative Supplement II to the Initial Inventory
PB82-203290 82-21 MF **E04**

Toxic Substances Control Act (TSCA) PL-94-469 Candidate List of Chemical Substances Volume I Substance Name Section (Part 1) Volume II Substance Name Section (Part 2) Volume III Formula Section CAS Number Section Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials (UVCB) Section
PB-265 371/5 77-12 PC-**GPO**

Toxic Substances Control Act (TSCA) Report to Congress for Fiscal Year 1981
PB82-195330 82-16 PC **A03**/MF **A01**

The Toxicity of Amitrole in the Rat
PB-280 842/6
78-16 (Order as PB-280 830, MF **A01**)

The Toxicity of Hexachlorobenzene in a Twelve Month Study in Beagle Dogs
PB-276 434/8 78-08 PC **A14**/MF **A01**

Toxicity of Organic Chemicals to Embryo-Larval Stages of Fish
PB80-101637 80-01 PC **A04**/MF **A01**

Toxicity Studies of Selected Chemicals Task I The Developmental Toxicity of Ethylene Dibromide Inhaled by Rats and Mice During Organogenesis
PB-256 659/4 76-23 PC **A02**/MF **A01**

Toxicity Studies of Selected Chemicals Task II. The Developmental Toxicity of Vinylidene Chloride Inhaled by Rats and Mice during Gestation
PB-281 713/8 78-18 PC **A04**/MF **A01**

Toxicity Studies of Selected Chemicals Task IV The Developmental Toxicity of Ethylene Dibromide Inhaled by Rats and Mice During Organogenesis
PB-273 267/5 78-01 PC **A02**/MF **A01**

Toxicology Handbook, Mammalian and Aquatic Data Book 1· Toxicology Data
PB80-196876 80-19 PC **A99**/MF **A01**

Toxicology Handbook, Mammalian and Aquatic Data Book 2 Chemicals, Index, Test Methods
PB80-196884 80-19 PC **A12**/MF **A01**

Trifluralin (Treflan) Position 1/2/3
PB80-213937 80-25 PC **A05**/MF **A01**

TSCA Chemical Assessment Series Assessment of Testing Needs Acrylamide Support Document for Decision Not to Require Testing for Health Effects, Toxic Substances Control Act, Section 4
PB80-220312 80-24 PC **A03**/MF **A01**

TSCA Chemical Assessment Series Assessment of Testing Needs Chlorinated Benzenes Support Document for Proposed Health Effects Test Rule, Toxic Substances Control Act, Section 4
PB80-220296 80-24 PC **A08**/MF **A01**

TSCA Chemical Assessment Series Assessment of Testing Needs Chloromethane Support Document for Proposed Health Effects Test Rule, Toxic Substances Control Act, Section 4
PB80-220304 80-24 PC **A05**/MF **A01**

TSCA Chemical Assessment Series Chemical Screening Initial Evaluations of Substantial Risk Notices, Section 8(e), January 1, 1977-June 30, 1979 Volume 1
PB80-221609 80-24 PC **A99**/MF **A01**

TSCA Chemical Assessment Series Preliminary Risk Assessment, Phase 1 Benzidine, Its Congeners and Their Derivative Dyes and Pigments
PB82-225376 82-21 PC **A04**/MF **A01**

TSCA Chemicals in Commerce Inventory Regional and State Perspectives
PB81-232076 81-24 PC **A06**/MF **A01**

TSCA Status Report for Existing Chemicals - Volume 2, Issue 1
PB82-225954 82-21 PC **A03**/MF **A01**

TSCA (Toxic Substances Control Act) Confidential Business Information Security Manual
PB82-177767 82-13 PC **A04**/MF **A01**

TSCA (Toxic Substances Control Act) Status Report for Existing Chemicals
PB82-112293 82-02 PC **A04**/MF **A01**

The Ultrastructure of the Paraquat Lung Lesion in the Rat
PB-279 722/3
78-16 (Order as PB-279 718, MF **A01**)

Uptake, Excretion, and Physiological Effects of Hexachlorobenzene in Growing Lambs
PB-276 480/1 78-08 PC **A04**/MF **A01**

Volatile Corrosion Inhibitors and Boiler Water Additives Potential for Nitrosamine Formation Task III Chemical Technology and Economics in Environmental Perspectives
PB80-221195 80-24 PC **A05**/MF **A01**

Voluntary Environmental Activities of Large Chemical Companies to Assess and Control Industrial Chemicals
PB-271 907/8 77-24 PC **A02**/MF **A01**

Wood Preservative Pesticides Creosote, Pentachlorophenol and the Inorganic Arsenicals (Wood Uses) Position Document 2/3
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EPA OPTS PUBLICATIONS BIBLIOGRAPHY

PB-227 053/6 PC **A02**/MF **A01**
Diagnosis and Treatment of Poisoning by Pesticides
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
1974, 16p
Report on Project Safeguard: Safe Pesticide Practices.

With the DDT ban, effective January 1, 1973, the use of a variety of other chemicals must be increased to substitute for DDT in the control of insects. Replacement chemicals will probably include among others. organophosphates; carbamates; chlorinated hydrocarbons; and botanicals. Chemicals replacing DDT will be less persistent in the environment than DDT. Some replacement chemicals will be more acutely toxic to man and, therefore, will present greater potential hazards. An intensive short-term educational program, Project Safeguard, is underway to train the farmer in the safe use of these replacement chemicals, and this program should minimize the hazards from improper use The potential still exists, however, for an increased incidence of toxic exposure and resulting clinical illness, in which accurate diagnosis and prompt treatment could mean the difference between life and death.

Keywords: *Toxic diseases, *Pesticides, Diagnosis, Therapy, Drug therapy, Antidotes, EPAO.

PB-230 321/2 PC **A07**/MF **A01**
Mercurial Pesticides, Man, and the Environment
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
1971, 127p

The staff report represents a scientific and technical assessment of mercurial products registered with the U.S. Environmental Protection Agency for pest control purposes. The information was developed to assist the Agency in evaluating the past, present, and future impact of these pesticides on man and his environment prior to determining whether their continued use is in the public interest.

Keywords· *Mercury(Metal), *Pesticides, *Public health, *Air pollution effects(Humans), *Water pollution effects(Humans), EPAO.

PB-238 074/9 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Preliminary Environmental Hazard Assessment of Chlorinated Naphthalenes, Silicones, Fluorocarbons, Benzenepolycarboxylates, and Chlorophenols Interim rept.
Syracuse Univ., Research Corp., N.Y.
Philip H Howard, and Patrick R. Durkin. Nov 73, 277p* EPA/560/2-74-001
Contract EPA-68-01-2202

A literature search of pertinent information and data on chlorinated naphthalenes, silicones, fluorocarbons, benzenepolycarboxylates, and chlorophenols was conducted to determine any hazard to man or the environment from commercial use of these chemicals Information was gathered on physical and chemical properties, production and usage, environmental contamination, monitoring and analysis, environment transport and fate, environmental effects, and toxicity.

Keywords: *Hazardous materials, *Naphthalenes, *Air pollution, *Water pollution, *Silicones, *Phenols, *Fluorohydrocarbons, *Phthallic acids, Hazards, Toxic diseases, Chlorine aromatic compounds, Toxicity, Physical properties, Phthallates, Fluids, Elastomers, Silicone resins, Siloxanes, Carboxylic acid anhydrides, Chemical properties, Chemical analysis, Production, Degradation, Excretion, Absorption(Biology), Air pollution effects(Humans), Air pollution effects(Animals), Water pollution effects(Animals), Water pollution effects(Humans), Path of pollutants.

PB-238 088/9 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Summary of the Office of Toxic Substances Requirements Resulting from the Toxic Substances Control Act and a Preliminary Specification for a Data Management System Final rept.
National Bureau of Standards, Washington, D.C. Inst. for Computer Sciences and Technology.
John L. Berg, Josephine Walkowicz, Dennis Branstad, and Michael Keplinger Aug 74, 143p* EPA/560/3-74-001
Contract EPA-IAG-D4-0404

The report presents a requirements analysis and feasibility study for the data management system needed to use effectively industrial reporting data resulting from the proposed Toxic Substances Control Act. The study finds that the Office of Toxic Substances requires a system with flexibility, extensibility of data content, ability to handle a wide and confidential nature of the reports, and suitability for immediate installation on a production basis In the study both a manual system that minimally satisfies the basic requirements and a computerized system with much extended capabilities are found technically feasible In addition, the study presents feasible enhancements to the manual system which extend the manual system capabilities and show that a continuum of system decisions exists between the manual and the computerized system. The study recommends immediate preparation for the computerized system in parallel with the adoption of a cost-saving manual system that has a four-year life expectancy.

Keywords· *Information systems, *Toxicology, Management systems, Documents, Data processing, Feasibility, Requirements, Systems analysis, Data management.

PB-238 196/0 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Identification Systems for Selecting Chemicals or Chemical Classes as Candidates for Evaluation Final rept.
Battelle Columbus Labs , Ohio
James E. Flinn, Theodore J. Thomas, and Milo D. Bishop Nov 74, 153p* EPA/560/1-74-001
Contract EPA-68-01-2108

The report summarizes the state of the art on systems, either existing or conceptual, that can be used or adapted for use to select, assess, and prioritize chemicals for their health or environmental effects. It is found that, while numerous systems can be identified, none have been formulated with sufficient breadth to permit accomplishing all the functions which include· Identification of chemical hazards to man and his environment; selecting chemicals not already in use, assessing potentially hazardous degradation products or synergistic effects; assessing hazards to plants, animals, and the nonliving environment

Keywords: *Identification systems, *Chemical compounds, *Toxicology, *Hazardous materials, Classifications, Public health, Ecology, Assessments, Tables(Data), Bibliographies.

PB-238 908/8 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances
Review of the Environmental Fate of Selected Chemicals Final rept on Task 1
Stanford Research Inst , Menlo Park, Calif
Shirley B. Radding, Buford R. Holt, Jerry L. Jones, David H. Liu, and Theodore Mill 10 Jan 75, 44p EPA/560/5-75-001
Contract EPA-68-01-2681

A search of the scientific literature and an evaluation of such literature on the environmental fate of the following compounds has been reported· benzidine and its salts; 3,3'-dichlorobenzidine; 1-naphthylamine; -propiolactone; 4,4'-methylenebis(2-chloroaniline); ethylenimine; and bis(chloromethyl)ether. Some intelligent guessing based on structural analogies for the chemicals is made where little information was available These chemicals are known carcinogens but little is known of their environmental fate Emphasis is placed on reporting or estimating kinetic values for potentially important pathways of degradation. In cases where no data were available, independent calculations for free radical reactivity were made

Keywords: *Decomposition, *Carcinogens, *Oxidation, Chemical reactivity, Anilines, Imines, Naphthalenes, Photolysis, Hydrolysis, Free radicals, Water pollution, Air pollution, Toxicity, Photochemical reactions, Degradation, Chemical reactions, *Ether/bis(chloromethyl), *Benzidine/dichloro, *Benzidines, *Naphthylamines, *Ethylidenimines, *Propiolactone, *Aniline/methylene-bis(chloro).

PB-239 110/0 PC **A06**/MF **A01**
Preliminary Assessment of the Environmental Problems Associated with Vinyl Chloride and Polyvinyl Chloride Interim rept
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Sep 74, 106p* Rept no EPA/560/4-74-001
Report on the Activities and Findings of the Vinyl Chloride Task Force.

The report summarizes the activities and findings of a task force to assess the character and extent of the problems associated with the production, distribution, use, and disposal of vinyl chloride and polyvinyl chloride The first Section discusses the nature and magnitude of problems. The second discusses previous and planned activities within the Federal Government of particular significance and the role of industry. The report concludes with some specific recommendations.

Keywords. *Air pollution, *Water pollution, *Toxicity, *Vinyl chloride, *Polyvinyl chloride, Surveys, Problem solving, Health, Ecology, Tests, Industrial relations, Air pollution abatement

PB-239 416/1 PC **A14**/MF **A01**
EPA Symposium: Alternative Chemicals Program with an Overview of Pesticide Research and Development, Held at Denver, Colorado on 14-16 August 1974
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Aug 74, 323p* Rept no EPA/540/9-75-002

This report is a compilation of papers on the subject of the substitute chemicals program. Papers deal with such related areas as. purpose, organization, and operation of the substitute chemicals program, initial scientific, mini-economic, biosphere, and socioeconomic reviews; progress in EPA research - new directions and overview, worldwide pesticide research and perspectives, WHO in pesticide research, as well as food and griculture organization, U S participation in Codex, prerequisite conditions for determination and efficient realization of substitute chem. program in some European and developing countries, EPA's pesticide monitoring program; research in USDI; nonagricultural use pesticides; future of pesticide research,

overview of ecological effects; terrestrial effects, and marine life, and fresh water effects; preliminary systems analysis as a tool for research program design; intra-and extramural health effects research and long-range health effects.

Keywords· *Pesticides, *Meetings, *Research management, *Agricultural chemistry, *Environmental surveys, *Insecticides, Substitution, Ecology, Water pollution, Air pollution, Marine biology, Toxicology, Public health, Biosphere.

PB-239 840/2 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Industry Survey of Test Methods of Potential Health Hazard Final rept.
Woodard Research Corp., Herndon, Va.
Geoffrey Woodard Nov 74, 96p* EPA/560/5-75-002
Contract EPA-68-01-2104

Nine companies selected as representing a cross section of prominent producers of chemicals identified through four-digit Standard Industrial Classification (SIC) codes were surveyed with respect to methods used to assess toxicological and environmental properties of new and existing chemicals Four progressive levels of investigational effort depending upon extent, frequency, and nature of chemical use are identified. single or infrequent exposure, occasional low-level exposure; frequent low-level, occasional high-level exposures; and frequent high-level, general consumer, unavoidable exposures. Factors influencing the decisions regarding the level(s) of investigation needed or the initiation of the next higher level series of studies are explored. No mathematical formula has emerged to specify the level of testing required A chemical-by-chemical assessment by competent pharmacologists, toxicologists, and chemists is still needed. Lack of a mechanism to trigger expanded levels of testing is a serious problem.

Keywords: *Industrial medicine, *Hazardous materials, *Chemical compounds, Toxicity, Test methods, Recommendations, Industrial hygiene, Industrial atmospheres, Identifying, Chemical industry

PB-240 133/9 PC **A03**/MF **A01**
Activities of Federal Agencies Concerning Selected High Volume Chemicals Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Feb 75, 39p Rept no. EPA/560/4-75-001

The report summarizes the nature and extent of many of the research and regulatory activities of the Environmental Protection Agency and other Federal Agencies directed towards fifty high volume chemicals. The text surveys past and on-going research supported by EPA and the other agencies which concerns any of the fifty high volume chemicals. It also discusses the regulatory authorities which are being or could be used to control these chemicals. The appendix includes twenty-three charts indicating the various activities directed toward these chemicals.

Keywords· *Chemicals, *Hazardous materials, *Regulations, National government, Water pollution, Waste disposal, *Scientific research

PB-240 658/5 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Structure-Activity Correlation Bibliography: With Subject and Author Index Interim rept.
Franklin Inst. Research Labs , Philadelphia, Pa Science Information Services Dept.
Frank D. Kover. Mar 75, 74p* EPA/560/1-75-001
Contract EPA-68-01-2657

The bibliography provides references to the literature on two principle methods of chemical structure-biological activity correlation which employ multiple regression, the multiple parameter approach (Hansch) and the additive model (Free-Wilson) The coverage of the literature includes major and representative papers. Important references, both from older and current literature, are being added to this compilation, which will be updated at the end of 1975. The bibliography also contains citations to papers employing factor analysis, discriminant analysis, pattern recognition, and cluster analysis to correlate chemical structure to biological activity As these techniques and new ones are published in the literature, they are being included in the compilation This edition of the bibliography covers the literature to November, 1974.

Keywords· *Chemical compounds, *Bibliographies, Toxicity, Hazardous materials, Chemical properties, Regression analysis, Pattern recognition, Discriminate analysis, Statistical analysis, Correlation techniques, *Toxic agents.

PB-241 505/7 PC **A21**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Laboratory Test Methods to Assess the Effects of Chemicals on Terrestrial Animal Species Final rept.
Ryckman, Edgerley, Tomlinson and Associates, Inc., St. Louis, Mo.
17 Apr 75, 483p* EPA/560/5-75-004
Contract EPA-68-01-1896

This report presents a review of test species and methodologies utilized in toxicological research on terrestrial animals. It involved an extensive survey of available literature, interviews with toxicologists, physiologists and ecologists, and visits to research facilities around the country. The report contains reviews of each major animal group and individual species where specific information was available, that have been used as test subjects in past or present toxicological research programs. Suitability for use in such testing, both actual and potential, and general information relative to laboratory maintenance and possible alternative species is presented for each group. Brief synopses of general characteristics for each group and/or species are also included Existing methodologies used in toxicological research are discussed and evaluated.

Keywords. *Toxicology, *Wildlife, Toxicity, Bioassay, Tests, Invertebrates, Vertebrates, Mammals, Animals, Chemical compounds, Ecology, Toxic tolerances, Dosage, Laboratory animals, Assessments, *Laboratory procedures

PB-241 641/0 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances
Identification of Organic Compounds in Effluents from Industrial Sources Final rept
Versar, Inc , Springfield, Va. General Technologies Div.
Ed F. Abrams, D Derkics, C V Fong, D. K Guinan, and K. M. Slimak. Apr 75, 211p* EPA/560/3-75-002
Contract EPA-68-01-2926

Initial assessment of the possible sources of 154 organic compounds which have been identified in drinking water supplies It lists those chemicals which may be formed by chlorination of sewage treatment or water treatment, from leachates from natural sources, and those which may be from industrial effluents Appendix C has a data sheet for each chemical which shows possible sources, its biodegradability and effective treatment.

Keywords *Organic compounds, *Drinking water, *Water pollution, Manufacturing, Chlorination, Biodeterioration, Degradation, Sewage treatment, Wastes(Sanitary engineering), Industrial wastes, Chemical industry, Water pollutants, Water pollution control.

PB-241 801/0 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div
Substitute Chemical Program--Initial Scientific and Minieconomic Review of Bromacil
Midwest Research Inst., Kansas City, Mo.
Mar 75, 88p* EPA-540/1-75-006
Contract EPA-68-01-2448

This report is one of a series of in-depth scientific literature searches which review the safety and efficacy of substitute chemicals registered by EPA as possible replacements for cancelled or suspended pesticides or pesticides in litigation This report on bromacil, a registered substitute chemical for certain cancelled and suspended uses of 2,4,5-T, covers all uses of bromacil and is intended to be adaptable to future needs. It also, where applicable, identifies areas where technical data may be lacking so that appropriate studies may be initiated to develop desirable information. The review is a compilation and summarization of published and unpublished scientific test and use data from various sources. It discusses manufacture, toxicity, uses and cost effectiveness.

Keywords: *Herbicides, Chemical properties, Uracils, Toxicity, Chemical reactions, Manufacturing, Degradation, Safety, Hazards, Metabolism, Residues, Cost effectiveness, Utilization, Food, Reviews, *Bromacil, Water pollution effects(Animals), Air pollution effects(Animals).

PB-241 818/4 PC **A12**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Substitute Chemical Program--Initial Scientific and Minieconomic Review of Malathion
Midwest Research Inst., Kansas City, Mo.
Mar 75, 262p* EPA-540/1-75-005
Contract EPA-68-01-2448

The review is an in-depth scientific literature search on the safety and efficacy of substitute chemical registered by EPA as a possible replacement for cancelled or suspended pesticide or pesticides in litigation. This report on Malathion, a pesticide substituting for some uses of DDT, reviews the chemistry and analytical methods, its toxicity to laboratory and domestic animals and to humans, its effects on the environment, and its use patterns, costs and efficacy. The review is a compilation and summarization rather than an interpretation of published and unpublished scientific test and use data from various sources.

Keywords: *Insecticides, *Malathion, Chemical properties, Chemical reactions, Phosphorus organic compounds, Toxicity, Degradation, Residues, Safety, Hazards, Reviews, Cost effectiveness, Chemical analysis, Food, Manufacturing, Utilization, Water pollution effects(Animals).

PB-241 819/2 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, D C. Criteria and Evaluation Div.
Substitute Chemical Program--Initial Scientific and Minieconomic Review of Parathion
Midwest Research Inst., Kansas City, Mo.
Jan 75, 283p* EPA-540/1-75-001

This report is part of a program to review the safety and efficacy of substitute chemicals registered by EPA as possible replacements for cancelled or suspended pesticides or pesticides in litigation This report on parathion, a pesticide substituting for DDT, reviews the substitute chemical's chemistry and analytical methods, its toxicity to laboratory and domestic animals and to humans, its effects on the environment, and its use patterns, costs and economic efficacy The review is a compilation and summarization rather than an interpretation of published and unpublished scientific test and use data from various sources.

Keywords: *Insecticides, *Parathion, Degradation, Residues, Food, Toxicity, Manufacturing, Cost effectiveness, Chemical reactions, Chemical properties, Phosphorus organic compounds, Chemical analysis, Utilization, Reviews, Safety, Hazards, Water pollution effects(Animals)

PB-241 840/8 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D C Criteria and Evaluation Div.
Substitute Chemical Program--Initial Scientific and Minieconomic Review of Methyl Parathion
Midwest Research Inst., Kansas City, Mo
Feb 75, 187p* EPA/540/1-75-004
Contract EPA-68-01-2448

This report contains a scientific and minieconomic review of methyl parathion ((0,0)-dimethyl O-p-nitrophenyl phosphorothioate). Methyl parathion was identified as a registered substitute chemical for certain cancelled and suspended uses of DDT. The substitute chemical is reviewed for suitability considering all applicable scientific factors such as: chemistry, toxicology, pharmacology and environmental fate and movement; and socio-economic factors such as. use patterns and costs and benefits The review covers all uses of methyl parathion and is intended to be adaptable to future needs.

Keywords *Insecticides, Food, Residues, Manufacturing Toxicity, Chemical reactions, Chemical properties,

Degradation, Hazards, Chemical analysis, Phosphorus organic compounds, Utilization, Cost effectiveness, Reviews, Safety, *Methyl parathion, Water pollution effects(Animals), Phosphorothioates.

PB-242 293/9 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Literature Study of Selected Potential Environmental Contaminants, Titanium Dioxide Final rept.
Little (Arthur D.), Inc , Cambridge, Mass
May 75, 131p* ADL-C-77354, EPA/560/2-75-001
Contract EPA-68-01-2688

A comprehensive review of the literature published since 1 January 1954 was conducted to prepare this preliminary report on the physical and chemical properties of titanium dioxide (TiO2), on the environmental exposure factors related to its consumption and use, on the health and environmental effects resulting from exposure to TiO2, and on the regulations and standards governing its use Current problems include concern about the future availability of rutile ore to supply the increasing number of facilities using this ore in the chloride manufacturing process, and the disposal of the high volume of TiO2 manufacturing wastes, particularly the spent sulfuric acid and ferrous sulfate from the sulfate manufacturing process On the basis of reported information, TiO2 does not pose substantial environmental hazard.

Keywords *Titanium dioxide, *Reviews, *Air pollution, *Water pollution, Physical properties, Chemical properties, Toxicity, Dust, Production, Chemical industry, Bibliographies, Exposure, Public health, Air pollution effects(Humans), Air pollution effects(Animals)

PB-242 559/3 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div
Substitute Chemical Program. Initial Scientific and Minieconomic Review of Captan
Midwest Research Inst., Kansas City, Mo
Apr 75, 184p* EPA/540/1-75-012
Contract EPA-68-01-2448

This is the 5th in a series of in-depth scientific literature searches which review the safety and efficacy of substitute chemicals registered by EPA as possible replacements for cancelled or suspended pesticides or pesticides in litigation. The review covers all uses of captan and is intended to be adaptable to future needs. Chemistry, pharmacology and toxicology, fate and significance in the environment, and production and use are reviewed

Keywords *Fungicides, *Pesticides, Utilization, Chemical properties, Degradation, Chemical reactions, Residues, Toxicity, Food, Reviews, Safety, Hazards, Manufacturing, Cost effectiveness, Chemical analysis, Cyclohexene dicarboximide/N-trichloromethyl, *Captan, Water pollution effects(Animals)

PB-242 826/6 PC **A03**/MF **A01**
Draft Economic Impact Assessment for the Proposed Toxic Substances Control Act (S.776)
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Jun 75, 35p* Rept no. EPA/560/4-75-002

A draft report estimates the direct costs to industry associated with the implementation of the principal provisions of the proposed Toxic Substances Control Act (S 776) The annual direct costs are estimated to be between $78 5 and 141 5 million About two-thirds of these costs are shown to be attributable to the areas of premarket screening and regulatory actions, with about one-third attributable to the requirements concerning industrial testing and reporting

Keywords. *Chemical compounds, *Toxicity, *Legislation, *Economic impacts, *Hazardous materials, Control, Evaluation, Cost estimating, Federal policies, Chemical industry, National government, Prediction, Regulations, Tests, *Toxic substances

PB-243 009/8 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Estimating Limiting Risk Levels from Orally Ingested DDT and Dieldrin Using an Up-Dated Version of the Mantel-Bryan Procedure Final rept.
George Washington Univ., Washington, D.C
Nathan Mantel 9 Apr 74, 38p* EPA/560/5-75-003

Mathematical extrapolations of the upper limits on risk of cancer at various low levels of exposure to dieldrin and DDT are presented The statistical model used is that described by Mantel, et al., Cancer Research, 35, 865-872, 1975, the so-called 'updated' Mantel-Bryan procedure The data upon which the extrapolations are based are derived from the studies by Tomatis, et al , International Journal of Cancer, 10, 489-506, 1972 for DDT and by Walker, et al Food and Cosmetics Toxicology, 11, 415-432, 1972 for dieldrin Several alternative methods of treating the data are presented, and pesticide levels associated with various levels of risk are estimated Certain precautions which must be observed in applying the 'updated' Mantel-Bryan technique are discussed.

Keywords· *Carcinogens, *DDT, *Dieldrin, Laboratory animals, Malignant neoplasms, Ingestion(Biology), Dosage, Experimental data, Insecticides, Chlorine organic compounds, Liver, Statistical analysis, Biostatistics, Tables(Data).

PB-243 459/5 PC **A04**/MF **A01**
A Framework for the Control of Toxic Substances (A Compilation of Speeches)
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Glenn E Schweitzer Apr 75, 57p Rept no. EPA/560/4-75-004

This collection of speeches in large measure reflects the evolution of the interests, policies, and programs of the Office of Toxic Substances from April 1973 to March 1975. The speeches deal with questions that are of broad national concern: the identification of chemical hazards, the need for development of toxicological and other data on chemicals, the pending Toxic Substances Control Act, and need for regulation to control toxic chemicals

Keywords *Public health, *Toxicology, *Environmental impacts, *Industrial medicine, Environmental surveys, Government policies, National government, Legislation, Economic impacts, Inorganic compounds, Organic compounds, Vinyl chloride, Regulations, Decision making, Hazards, *Hazardous materials, Toxic Substances Control Act.

PB-243 641/8 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Survey of Industrial Processing Data. Task I - Hexachlorobenzene and Hexachlorobutadiene Pollution from Chlorocarbon Processing Final rept. Jun 73-Oct 74
Midwest Research Inst., Kansas City, Mo
Charles E Mumma, and Edward W Lawless Jun 75, 187p* EPA/560/3-75/003
Contract EPA-68-01-2105

This study was made to evaluate the potential for environmental contamination by hexachlorobenzene and hexachlorobutadiene Information acquisition and evaluation activities were designed to identify proven or potential sources of HCB and HCBD and the environmental and health effects of these substances In addition to HCB and HCBD, this study included 21 other domestically produced chemicals which were either known sources of HCB and/or HCBD or theoretically capable of generating these substances as by-products, waste materials, or impurities in a commercial product The scope of the study for each of these chemicals included identification of production sites and volumes, descriptions of manufacturing processes and environmental and health aspects, description of waste disposal methods, and identification of commercial uses for these products An important goal was the recommendation of specific plant sites that should be monitored by EPA to determine if they were sources of significant discharges or emissions of HCB and/or HCBD into the environment

Keywords· *Chlorine organic compounds, *Chemical industry, *Industrial wastes, *Environmental impacts, Surveys, Benzenes, Butadienes, Air pollution, Water pollution, Toxicology, Solid waste disposal, Manufacturing, Butadienes, *Benzene/hexachloro, *Butadiene/hexachloro

PB-243 690/5 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Survey of Industrial Processing Data. Task II - Pollution Potential of Polybrominated Biphenyls Final rept. Dec 74-Jun 75
Midwest Research Inst., Kansas City, Mo.
Charles E. Mumma, and Dennis D. Wallace. Jun 75, 57p* EPA/560/3-75/004
Contract EPA-68-01-2105

This study was made to help the EPA evaluate the potential for environmental contamination by brominated biphenyls. The information collection and evaluation activities were designed to identify sources of brominated biphenyls and the environmental and health effects of these substances The scope of the study included identification and evaluation of production sites and volumes, manufacturing processes and waste disposal practices, commercial uses and substitutes for products and environmental and health aspects.

Keywords: *Bromine aromatic compounds, *Chemical industry, *Industrial wastes, *Environmental impacts, Surveys, Biphenyls, Air pollution, Water pollution, Solid waste disposal, Toxicology, Manufacturing, *Biphenyl/bromo.

PB-243 743/2 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C Criteria and Evaluation Div.
Substitute Chemical Program. Initial Scientific and Minieconomic Review of Aldicarb
Midwest Research Inst., Kansas City, Mo
May 75, 130p* EPA/540/1-75/013
Contract EPA-68-01-2448
See also PB-242 559.

This is the sixth in a series of in-depth scientific literature searches which review the safety and efficacy of substitute chemicals registered by EPA as possible replacements for cancelled or suspended pesticides or pesticides in litigation The reviews are part of the Substitute Chemical Program, initiated under PL 93-135 (October 1973). This report is on aldicarb, a registered substitute chemical for certain cancelled and suspended uses of DDT Where applicable, it also identifies areas where technical data may be lacking so that appropriate studies may be initiated to develop desirable information. The review covers all uses of aldicarb and is intended to be adaptable to future needs The data contained in this report was not intended to be complete in all areas. The report summarizes rather than interprets scientific data reviewed during the course of the studies. Data is not correlated from different sources Opinions are not given on contradictory findings.

Keywords *Insecticides, *Environmental impacts, Substitutes, Reviews, Toxicity, Carbamates, Chemical properties, Degradation, Chemical reactions, Residues, Food, Safety, Manufacturing, Cost effectiveness, Performance evaluation, Agriculture, *Temik, *Aldicarb

PB-243 748/1 PC **A17**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Pesticide Programs
Guide for Estimating Toxic Residues in Animal Feeds or Diets
Utah State Univ , Logan International Feedstuffs Inst
Lorin E Harris Jan 75, 384p* EPA-540/9-75-019
Contract DI-68-01-2658

The report is a tabulation developed to aid EPA pesticide petition reviewers in constructing typical animal diets for the purpose of estimating residues in meat/milk/eggs The scope of the tabulation is to cover all feed components currently used in animal husbandry, the range of their percentage composition of commercial livestock diets, the physical state of the feed component as ingested (wet weight, dry weight), and limitations which might apply to the feeding practice (from economics of shipping, availability, etc)

Keywords *Feeding stuffs, *Toxicity, *Pesticides, *Diets, Manuals, Beef cattle, Dairy cattle, Plants(Botany), Animal nutrition, Forage crops, Milk, Poultry, Horses, Sheep, Swine, Classifications, Drying, Forage grasses, Silage, Eggs, Fish protein concentrates, Food additives, Tables(Data)

PB-243 825/7 PC **A24**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Review and Evaluation of Available Techniques for Determining Persistence and Routes of Degradation of Chemical Substances in the Environment Final technical rept.
Syracuse Univ. Research Corp., N.Y. Life Sciences Div.
P. H. Howard, J. Saxena, P. R. Durkin, and L. T. Ou.
May 75, 560p* SURC-TR-74-577, EPA/560/5-75/006
Contract EPA-68-01-2210

This report reviews and evaluates the present state of techniques which have been used to determine the environmental persistence (biological, chemical and photochemical degradation) and routes of degradation of chemicals released in the environment by human activities. The techniques that were identified were reviewed and then evaluated for their ability to simulate natural environmental conditions, convenience of procedure, time requirements, necessary equipment and reproducibility. The ultimate evaluation was based on how well the methods have worked with well-known environmental contaminants. A Cost analysis of the test methods was undertaken to determine the feasibility of comprehensive screening of chemicals for environmental persistence. A relationship between chemical structure and environmental persistence is presented and some theoretical grounds for such correlations are discussed. An Attempt has been made to categorize chemicals for their suitability to various test methods based on consideration of physiochemical properties, toxicity, environmental release factors and commercial economic factors.

Keywords: *Air pollution, *Water pollution, *Biodeterioration, *Decomposition, *Reviews, *Water analysis, Water pollution detection, Photochemical reactions, Polymers, Chemical analysis, Measurement, Metabolism, Indicator species, Gas analysis, Plastics, Sewage, Soil chemistry, Chemical reactions, Molecular structure, Absorption(Biology), Residues, *Bioaccumulation.

PB-243 910/7 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Preliminary Study of Selected Potential Environmental Contaminants - Optical Brighteners, Methyl Chloroform, Trichloroethylene, Tetrachloroethylene, Ion Exchange Resins Final rept.
Franklin Inst. Research Labs., Philadelphia, Pa. Science Information Services Dept.
Frank D. Kover. Jul 75, 295p* EPA/560/2-75/002
Contract EPA-68-01-1897

A comprehensive review of the literature published from 1953 through 1973 was conducted to prepare this preliminary investigation report on the physical and chemical properties of optical brighteners, methyl chloroform, trichloroethylene, tetrachloroethylene and ion exchange resins, on environmental exposure factors related to their consumption and use, on the health and environmental effects resulting from exposure to the substances and on any applicable regulations and standards governing their use.

Keywords: *Optical brighteners, *Bleaching agents, *Chlorine aliphatic compounds, *Organic solvents, *Ion exchange resins, *Toxicology, *Environmental impacts, *Tetrachloroethylene, Metabolism, Food chains, Cleaning agents, Water pollution, Chemical properties, Physical properties, Chloroform, Path of pollutants, Bioaccumulation, *Ethylene/trichloro, *Ethane/trichloro.

PB-244 139/2 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Benzene. Environmental Sources of Contamination, Ambient Levels, and Fate Final rept.
Syracuse Univ. Research Corp, N.Y. Life Sciences Div.
P. H. Howard, and P. R Durkin. Dec 74, 73p SURC-TR-74-591, EPA/560/5-75/005
Contract EPA-68-01-2679

This report reviews and evaluates available information pertinent to an assessment of benzene contamination of the environment Benzene losses from commercial (production and use) and non-commercial (automotive emissions and oil spills) sources were considered. It is estimated that of the total quantity that is released to the environment more than half results from motor vehicle emissions. Monitoring data somewhat support this contention. Available information on the environmental persistence of benzene suggests that it degrades slowly.

Keywords: *Benzene, *Water pollution, *Air pollution, Sources, Exhaust gases, Industrial wastes, Decomposition, Biodeterioration, Photochemical reactions, Monitoring, Automobile exhaust, Persistance.

PB-244 172/3 PC **A19**/MF **A01**
Environmental Protetection Agency, Washington, D.C Office of Toxic Substances.
Proceedings of Conference on Environmental Aspects of Chemical Use in Rubber Processing Operations Held in Akron, Ohio, on March 12-14, 1975
Research Triangle Inst., Research Triangle Park, N.C Center for Technology Operation.
Jul 75, 442p* EPA/560/1-75/002
Contract EPA-68-01-2928

This conference was the first in a series of three on the environmental impact of chemicals in various industrial operations. The objective of this conference was to cover and discuss current chemical use, functions of chemicals in the operations, byproducts likely to be introduced, known health or environmental effects from chemicals used, and measures used or available for use to control environmental contamination. More specifically, papers were presented and discussions held that covered industrial emissions and effluent surveys, chemicals and their effects, reclamation and disposal and academic programs

Keywords: *Rubber industry, *Meeting, *Water pollution, *Solid waste disposal, *Air pollution, *Chemical industry, *Tires, Odors, Industrial waste treatment, Toxicology, Halohydrocarbons, Carbon black, Particles, Occupational diseases, Materials recovery, Environmental surveys, *Waste recycling

PB-244 412/3 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Papers of a Seminar on Early Warning Systems for Toxic Substances
Battelle Memorial Inst, Seattle, Wash. Research Center
Benigna Carroll. Jul 75, 215p EPA/560/1-75/003
Contract EPA-68-01-2108
Prepared in cooperation with National Science Foundation, Washington, D.C.

Contents Early-warning system for toxic substances human health effects; Landscape geochemistry and environmental problems, Legislation and laws concerning early warning systems for toxic substances; An incident of industrially related toxic peripheral neuropathy; Establishing environmental priorities for synthetic organic chemicals. Focusing on the next PCS's; A laboratory model ecosystem as an element in early-warning systems for toxic substances; The World Health Organization's Environmental Health Criteria and Air Monitoring Programs; A cost-risk-benefit analysis of toxic substances, Review of health/environmental systems with potential early warning application; A research program to acquire and analyze information on chemicals that impact on man and his environment; Environmental impact of chemicals; Public interest methods for assessing chemcial hazards.

Keywords. *Meetings, *Toxicology, Early warning systems, Industrial medicine, Physiological effects, Legislation, Benefit cost analysis, Malignant neoplasms, Hazardous materials, Air pollution, Water pollution, Carcinogens, *Environmental health, Cancer, Environmental impact assessments, *Toxic agent alarms, Toxic agents

PB-244 415/6 PC **A03**/MF **A01**
Preliminary Assessment of Suspected Carcinogens in Drinking Water Interim rept. to Congress.
Environmental Protection Agency, Washington, D C Office of Toxic Substances
Jun 75, 39p* Rept no. EPA/560/4-75/003
See also PB-244 416.

The report is a compilation of the efforts ongoing in EPA to identify the nature and extent of the contamination of the nation's drinking water, to determine the possible health effects of exposure, and to develop the technically and economically feasible means of removing those contaminants of concern. It was prepared in response to the Section 1442(a)(9) of the Safe Drinking Water Act. It is accompanied by an Appendix which presents the technical details of many of the studies described more briefly in the report

Keywords. *Carcinogens, *Potable water, *Public health, Water pollution, Chemical compounds, Organic compounds, Water quality, Criteria, Sources, Water supply, Contaminants, Water treatment, Tables(Data), Economic factors, *Water pollution effects(Human), Water pollution control

PB-244 416/4 PC **A10**/MF **A01**
Preliminary Assessment of Suspected Carcinogens in Drinking Water. Appendices Interim rept. to Congress
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Jun 75, 214p* Rept no. EPA/560/4-75/003A
See also PB-244 415.

This document contains detailed technical explanations of the research described briefly in the main report. The seven sections of the Appendix include presentation of the methodology and analysis of the National Organics Reconnaissance Survey, preliminary results of pilot plants to remove water contaminants; preliminary health effects assessment and other studies

Keywords. *Carcinogens, *Potable water, *Public health, Water pollution, Chemical compounds, Organic compounds, Water quality, Criteria, Sources, Water supply, Contaminants, Water treatment, Tables(Data), Economic factors, Appendice, Water pollution effects(Human), Water pollution control.

PB-244 568/2 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D C Criteria and Evaluation Div.
Substitute Chemical Program: Initial Scientific and Minieconomic Review of Crotoxyphos. (Ciodrin)
Midwest Research Inst., Kansas City, Mo.
Jun 75, 107p* EPA/540/1-75/015
Contract EPA-68-01-2448

The report on crotoxphos, a registered substitute chemical for certain cancelled and suspended uses of DDT, covers all uses of crotoxyphos and is intended to be adaptable to future needs Should crotoxphos be identified as a substitute for a problem pesticide other than DDT, the review can be updated and made readily available for use The substitute chemical is reviewed for suitability considering all applicable scientific factors such as: chemistry, toxicology, pharmacology and environmental fate and movement, and socioeconomic factors such as: use patterns and costs and benefits.

Keywords. *Environmental impacts, *Pesticides, Insecticides, Cholinesterase inhibitors, Chemicals, Toxicology, Pharmacology, Ecology, Benefit cost analysis, Cost effectiveness, Utilization, Organic phosphates, Substitutes, Evaluation, *Ciodrin

PB-244 625/0 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Technical and Microeconomic Analysis of Cadmium and Its Compounds Final rept on task 1
Versar, Inc, Springfield, Va
Donald H Sargent, and John R Metz Mar 75, 213p* 454-1, EPA/560/3-75-005
Contract DI-68-01-2926

The role of cadmium (and its compounds) in the environment and in the economy of the United States was studied, to evaluate the need for and the projected effect of controlling its production, use and dissipation Technologically and economically feasible control alternatives were developed from (1) A systematic documentation of cadmium production, uses, prevalence, and sources of pollution; and (2) An evaluation of the present and projected health hazards Available information was then used to directly compare and optimize the various alternatives The results led to two sets of recommended controls The first, aimed at preventing increases in the present cadmium health hazards, consists of continued air and water pollution abatement, environmentally-sound land disposal of in-

dustrial wastes and residuals, and regulation of application rates to agricultural lands of cadmium-bearing materials. The second set of controls exhibits a more aggressive posture towards limiting cadmium dissipation, which could be implemented in the future should a more precise definition of the health hazard justify such a posture.

Keywords: *Cadmium, *Environmental impacts, *Air pollution, *Water pollution, Electroplating, Plastics industry, Metal industry, Chemical industry, Toxicity, Concentration(Composition), Abatement, Economic analysis, Public health, Market surveys, Pigments, Demand(Economics), Metal scrap, Nickel cadmium batteries, Zinc industry, Air pollution abatement, Water pollution abatement.

PB-244 734/0 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Screening Study to Development Background Information and Determine the Significance of Air Contaminant Emissions from Pesticide Plants
Battelle Columbus Labs., Ohio.
C. N. Ifeadi. Mar 75, 85p EPA/540/9-75/026
Contract EPA-68-02-0611

In this study, available background information is developed and the significance of air contaminant emissions from the manufacture of six pesticides determined. Pesticides studies are (1) insecticides: methyl parathion and toxaphene; (2) herbicides: monosodium acid methanearsonate (MSMA) and trifluralin; (3) fungicides and wood preservatives: pentachlrophenol; and (4) fumigant: paradichlorobenzene. Background information is gathered from published data and responses to the questionnaries sent to the pesticide manufacturing firms. Based on the available data, production projections are made up to the year 1980. A list of manufacturers of each pesticide is presented. Manufacturing processes, raw and waste material handling, air contaminant emission sources, quantity or quality, and pollutants, together with their present practical control methods are discussed Significance of air contaminant emissions from the pesticide industries is evaluated on the basis of available data on the emission quantities and/or toxicity of the pollutants emitted. Gaps in the data required to make a complete evaluation of significance are identified and recommendations to fill those gaps are made.

Keywords: *Air pollution, *Pesticides, *Herbicides, *Fungicides, *Insecticides, Industrial plants, Questionnaires, Predictions, Industrial wastes, Fumigation, Wood preservatives, Materials handling, Manufacturing, Manufacturers, Management planning, Terpenes, Chlorine alyshatic compounds, Arsenic organic compounds, Phenols, Surveys, Cost analysis, Chlorine aromatic compounds, MSMA herbicide, Pesticide industry, Methyl parathion, Air pollution control, Toxaphene, Methane arsonic acid/monosodium salt, Trifluralin, Phenol/pentachloro, PCP herbicide, Benzene/dichloro

PB-245 020/3 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
An Evaluation of the Scouting Activities of Pest Management Programs Final rept.
Animal and Plant Health Inspection Service, Washington, D.C. Plant Protection and Quarantine Programs
Charles D Reese, Jeff Kempter, James R. Brazzel, and Gary Moorehead. 1974, 72p EPA/540/9-75/014

The study evaluates the results of Government sponsored and private pest scouting activities as part of organized pest management. It discusses past and present scouting objectives, pest management objectives, mechanics of implementation, resource implications and effectiveness. It also deals with future constraints and projected costs as well as probable effectiveness of present scouting programs.

Keywords. *Pest control, *Insects, *Weeds, *Plant diseases, Management, Objectives, National government, Cost effectiveness, Constraints

PB-245 023/7 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Evaluation of the Possible Impact of Pesticide Legislation on Research and Development Activities of Pesticide Manufacturers
Little (Arthur D.), Inc., Cambridge, Mass
Aldred E. Wechsler, Joan E. Harrison, and John Neumeyer. Feb 75, 124p* EPA/540/9-75/018
Contract EPA-68-01-2219

The report discusses research and development activities of pesticide manufacturers as R and D is affected by pesticide legislation. It deals with trends in the pesticide industry and the R and D process and decision making, product development, and innovation. It compares the Federal Insecticide, Fungicide and Rodenticide Act with the Federal Environmental Pesticide Control Act and notes specific and general impacts of legislative and regulatory actions. It also makes recommendations to reduce adverse effects of FEPCA implementation.

Keywords: *Pesticides, *Legislation, *Chemical industry, *Government policies, Regulations, Research management, Trends, Environmental impacts, Marketing, Cost analysis, Chemical properties, Toxicity, Data processing, National government, Industries, Federal Environmental Pesticide Control Act, Federal Insecticide, Fungicide and Rodenticide Act.

PB-245 029/4 PC **A14**/MF **A01**
DDT: A Review of Scientific and Economic Aspects of the Decision to Ban Its Use as a Pesticide
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Jul 75, 307p* Rept no. EPA/540/1-75-022

The report reviews the 1972 decision cancelling many of the registrations of DDT. It takes into consideration all of the costs and benefits and the importance of protecting the Nation's supply of food and fiber. It centers on the key findings of the Administrator in his decision of June 14, 1972, and is divided into four major areas. Fish and wildlife effect; human effect; residues in the environment and man; economic aspects.

Keywords: *DDT, *Pesticides, *Ecology, Aquatic animals, Fishes, Wildlife, Humans, Toxicity, Public health, Plants(Botany), Insecticides, Economic factors, Carcinogens, Regulations, Reviews, Bioaccumulation, Pesticide residues.

PB-245 984/0 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds. Volume I - Boron Final rept.
Versar, Inc., Springfield, Va.
Aug 75, 120p* EPA/560/2-75/005a
Contract EPA-68-01-2215
See also Volume 2, PB-245 985.

Contents:
- Boron industry in the United States;
- Production;
- Uses of boron compounds;
- *Current practices;*
- Environmental contamination;
- Monitoring and analysis;
- Chemical reactivity;
- Biology;
- Environmental effects;
- Toxicity,
- Current regulations and effects levels,
- Standards

Keywords: *Boron, Metalloids, Toxicology, Standards, Regulations, Chemical analysis, Biochemistry, Manufacturing, Metabolism, Physiological effects, Contamination, Humans, Animals, Physical properties, Chemical properties, Air pollution, Water pollution, Industrial medicine, Plants(Botany), *Environmental health, Water pollution effects(Animals), Water pollution effects(Humans), Air pollution effects(Animals), Air pollution effects(Humans).

PB-245 985/7 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds. Volume II - Indium Final rept.
Versar, Inc., Springfield, Va.
Aug 75, 45p* EPA/560/2-75/005b
Contract EPA-68-01-2215
See also Volume 1, PB-245 984 and Volume 3, PB-245 986.

Contents:
- Indium industry in the United States,
- Production;
- Uses;
- Current practices;
- Environmental contamination;
- Analysis;
- Chemical reactivity;
- Biology;
- Environmental effects:
- bioaccumulation;
- *Toxicity;*
- Current regulations;
- Standards.

Keywords: *Indium, Metals, Toxicology, Standards, Regulations, Chemical analysis, Biochemistry, Manufacturing, Metabolism, Physiological effects, Contamination, Humans, Animals, Physical properties, Chemical properties, Air pollution, Water pollution, Plants(Botany), *Environmental health, Air pollution effects(Humans), Air pollution effects(Animals), Water pollution effects(Humans), Water pollution effects(Animals), Air pollution effects(Plants), Water pollution effects(Plants).

PB-245 986/5 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds. Volume III - Nickel Final rept
Versar, Inc., Springfield, Va.
Aug 75, 99p* EPA/560/2-75/005c
Contract EPA-68-01-2215
See also Volume 2, PB-245 985 and Volume 4, PB-245 987.

Contents:
- Producers, sites, and costs;
- Production and uses,
- Current practice;
- Environmental contamination;
- Monitoring and analysis;
- Chemical reactivity,
- Biology;
- *Environmental effects;*
- Toxicity;
- Standards

Keywords· *Nickel, Metals, Toxicology, Standards, Chemical analysis, Contamination, Monitors, Electrophysiology, Manufacturing, Metabolism, Physiological effects, Humans, Animals, Plants(Botany), Chemical properties, Physical properties, Air pollution, Water pollution, *Environmental health, Air pollution effects(Humans), Air pollution effects(Animals), Water pollution effects(Humans), Water pollution effects(Animals), Air pollution effects(Plants), Water pollution effects(Plants)

PB-245 987/3 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds. Volume IV - Selenium Final rept.
Versar, Inc., Springfield, Va.
Aug 75, 102p* EPA/560/2-75/005d
Contract EPA-68-01-2215
See also Volume 3, PB-245 986 and Volume 5, PB-245 988.

Contents:
- Producers, sites and costs;
- Production,
- Uses;
- Current practice;
- Environmental contamination,
- Monitoring and analysis,
- Chemical reactivity;

Biology;
Environmental effects;
Toxicity;
Current regulations;
Standards

Keywords: *Selenium, Standards, Nonmetals, Monitors, Toxicology, Regulations, Chemical analysis, Therapy, Biochemistry, Manufacturing, Metabolism, Physiological effects, Contamination, Humans, Animals, Physical properties, Chemical properties, *Environmental health, Water pollution effects(Animals), Water pollution effects(Humans), Air pollution effects(Animals), Air pollution effects(Humans).

PB-245 988/1 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds. Volume V - Tin Final rept.
Versar, Inc., Springfield, Va
Aug 75, 116p* EPA/560/2-75/005e
Contract EPA-68-01-2215
See also Volume 4, PB-245 986 and Volume 6, PB-245 989

Contents.
Environmental effects;
Toxicity,
Tin industry in the United States,
Production;
Uses,
Current practice;
Environmental contamination,
Monitoring and analysis;
Chemical reactivity;
Biology,
Current regulations;
Standards

Keywords: *Tin, Metals, Toxicology, Standards, Regulations, Chemical analysis, Biochemistry, Manufacturing, Metabolism, Physiological effects, Contamination, Humans, Animals, Physical properties, Chemical properties, Air pollution, Water pollution, *Environmental health, Air pollution effects(Animals), Air pollution effects(Humans), Water pollution effects(Animals), Water pollution effects(Humans)

PB-245 989/9 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds. Volume VI - Vanadium Final rept.
Versar, Inc , Springfield, Va.
Aug 75, 94p* EPA/560/2-75/005f
Contract EPA-68-01-2215
See also Volume 5, PB-245 988.

Contents·
Vanadium industry in the United States;
Production,
Uses;
Current practices;
Environmental contamination;
Monitoring and analysis,
Chemical reactivity,
Biology;
Environmental effects,
Toxicity;
Standards and current regulations

Keywords. *Vanadium, Metals, Toxicology, Standards, Regulations, Chemical analysis, Biochemistry, Manufacturing, Metabolism, Physiological effects, Contamination, Humans, Animals, Physical properties, Chemical properties, Air pollution, Water pollution, *Environmental health, Water pollution effects(Animals), Water pollution effects(Humans), Air pollution effects(Animals), Air pollution effects(Humans).

PB-246 213/3 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Sampling and Analysis of Selected Toxic Substances Task II - Ethylene Dibromide Final rept.
Midwest Research Inst , Kansas City, Mo.
John Going, and Sue Long. Sep 75, 39p EPA/560/6-75/001

Ethylene dibromide has recently been reported by the National Cancer Institute to be a potential carcinogen. Its commercial use is predominately as a scavenging agent for lead in gasoline. A minor usage is a pesticide fumigant. A protocol was developed for the sampling and analysis of ethylene dibromide in ambient air and surface water. The range in concentration of ethylene dibromide in the air and the site where it was collected are as follows: manufacturing sites, 4.2 to 115 micrograms per cu m oil refinery, 0.23-1.65 micrograms per cu m, urban locations near retail gasoline stations and with heavy vehicular traffic, 0.069 to 0 11 micrograms per cu m. Two water samples collected from streams near an oil refinery and a manufacturing site were found to contain 1.13 and 1.05 parts per billion ethylene dibromide, respectively. Further work to clarify ambient air levels and to assess whether they may represent a health risk is anticipated, but the very low levels detected to date are not thought to present a significant risk to health.

Keywords· *Toxicology, *Carcinogens, Public health, Bromine aliphatic compounds, Halogenated hydrocarbons, Sampling, Lead(Metal), Analyzing, Tables(Data), Gasoline, Recommendations, Pesticides, Exposure, Malignant neoplasms, Air pollution, Petroleum industry, *Ethane/dibromo, Air sampling, Cancer, *Air pollution sampling, *Water pollution sampling, Environmental health.

PB-246 356/0 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Haloethers Final technical rept
Syracuse Univ Research Corp., N Y. Life Sciences Div.
Patrick R. Durkin, Philip H. Howard, and Jitendra Saxena. Sep 75, 178p* SURC-TR-75-561, EPA/560/2-75/006
Contract EPA-68-01-2996

This report reviews the potential environmental hazard from the commercial use of haloether compounds The fluorinated anesthetic ethers, methoxyfurane (2,2-dichloro-1,1-difluoroethyl methyl ether) and fluroxene (2,2,2-trifluoroethyl vinyl ether), are only peripherally treated. Major focus is on the alpha-chloroethers, bis(chloromethyl)-ether and chloromethyl methyl ether, and the beta-chloroethers, bis(2-chloroisopropyl)-ether, bis(2-chloroethyl)ether, and bis(2-chloroethoxy)methane. The alpha-chloroethers are used as chemical intermediates for production of ion exchange resins while the beta-chloroethers are used mostly for solvents but have some chemical intermediate uses. Specific topics discussed include the following. Physical and chemical data; Environmental exposure factors - (Production and consumption, uses, environmental contamination potential, current handling practices and control technology, monitoring and analysis); Health and environmental effects - (environmental effect, biology, toxicity - humans, toxicity - birds and mammals, toxicity - invertebrates, phytotoxicity, toxicity - microorganisms); Regulations and standards - (current regulations, concensus and similar standards); summary and conclusions

Keywords: *Pollution, *Ethers, *Halogen organic compounds, *Enviromental surveys, *Chlorine aliphatic compounds, *Toxicology, *Industrial medicine, Physical properties, Invertebrates, Microorganisms, Chemical properties, Animals, Birds, Humans, Hydrolysis, Photochemistry, Manufacturing, Storage, Materials handling, Waste disposal, Degradation, Physiological effects, Industrial atmospheres, Hazardous materials, Industrial hygiene, Carcinogens, Accumulation, Air pollution, Exposure, Anesthetics, Organic solvents, Water pollution, Reviews, Regulations, Standards, Occupational safety and health, Ether/bis(chloromethyl), Ether/chloromethyl-methyl, Environmental impact assessments, Ether/bis(chloroethyl), Ether/bis(isopropyl), Feedstocks, Toxic hazards, *Air pollution effects(Humans), *Air pollution effects(Animals), Air pollution detection.

PB-246 419/6 PC **A12**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Environmental Hazard Assessment of One and Two Carbon Fluorocarbons Final technical rept.
Syracuse Univ , Research Corp., N Y Life Sciences Div.
P. H Howard, P R. Durkin, and A. Hanchett. Sep 74, 260p* SURC-TR-74-572 1, EPA/560/2-75/003
Contract EPA-68-01-2202

This report reviews the potential environmental hazard from the commercial use of large quantities of saturated, one and two carbon fluorocarbon compounds which are used for the most part as aerosol propellants, refrigerants, solvents, foaming agents, and fire extinguishing agents. The following seven compounds were of major interest: trichlorofluoromethane, dichlorodifluoromethane, chlorodifluoromethane, trichlorotrifluoroethane, dichlorotetrafluoroethane, chloropenafluoroethane, and bromotrifluoromethane. Information on physical and chemical properties, production methods and quantities, commercial uses and factors affecting environmental contamination as well as information related to health and biological effects are reviewed. Portions of this document are not fully legible.

Keywords· *Toxicology, *Pollution, *Fluorine organic compounds, *Chlorine organic compounds, *Bromine organic compounds, *Environmental surveys, *Industrial medicine, Chemical properties, Utilization, Manufacturing, Production, Aerosols, Refrigerants, Organic solvents, Animals, Plants(Biology), Storage, Materials handling, Waste disposal, Cardiovascular system, Physiological effects, Industrial atmospheres, Dichlorodifluoromethane, Physical properties, Air pollution, Water pollution, Absorption(Biology), Elimination, Industrial hygiene, Humans, Microorganisms, Methane/fluoro-trichloro, Methane/chloro-difluoro, Ethane/trichloro-trifluoro, Ethane/dichloro-tetrafluoro, Ethane/chloro-pentafluoro, Methane/bromo-trifluoro, Environmental impact, Assessments, Toxic hazards, Air pollution effects(Humans), Air pollution effects(Animals), Air pollution effects(Plants).

PB-246 646/4 PC **A17**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
A Study of the Efficiency of the Use of Pesticides in Agriculture Final rept.
Midwest Research Inst., Kansas City, Mo.
Rosmarie von Rumker, Gary L. Kelso, Freda Horay, and Kathryn A Lawrence. 1975, 384p* EPA/540/9-75/025
Contract EPA-68-01-2608

A study was made of the efficiency of the use of pesticides to identify and quantify the wastes and losses which occur in the treatment of agricultural crops. The study was reported in two volumes. The first volume identified the management practices and decisions for three crops--corn, sorghum, and apples--that may lead to wasteful pesticide use, and quantified the pesticide wastes occurring on each crop as a result of these management practices The second volume identified the physical factors that cause pesticide waste and losses both during and after crop treatment for agriculture in general, and estimated the application and post-application pesticide losses and wastes that occurred in 1971 for each of the three above crops. The physical factors which were examined extensively in this study were pesticide overapplication and nonuniform distribution, pesticide drift, and pesticide losses from crops due to runoff and soil erosion

Keywords. *Pesticides, *Agricultural wastes, *Farm crops, Efficiency, Utilization, Plant growth, Vegetable crops, Apple trees, Insect control, Windward drift, Runoff, Soil erosion, Management, Corn plants, Grain sorghum plants, Illinois, Pennsylvania, Washington(State), Insecticides, Herbicides, Acaricides, Fumigation, Sprays, Tables(Data), Atmospheric circulation, Texas, Oklahoma, Kansas, Nebraska, *Pesticide drift, Clay County(Nebraska).

PB-246 947/6 PC **A25**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Conference Proceedings on Environmental Aspects of Chemical Use in Well-Drilling Operations Held at Houston, Texas on 21-23 May 1975
Research Triangle Inst., Research Triangle Park, N.C. Center for Technology Operations.
Sep 75, 582p EPA/560/1-75/004
Contract EPA-68-01-2928

Contents·
Techniques and chemicals used in well drilling;
Toxicity of chemical additives in drilling muds;
Potential toxic effects of chemical additives on the environment;

Environmental impact of chemicals used in well drilling;
Contamination and transport of additives in ground water;
Environmental impact of the byproducts in well drilling.

Keywords: *Wells, *Drilling fluids, *Water pollution, *Chemical compounds, *Meetings, Oil wells, Geothermal wells, Additives, Toxicity, Environmental impacts, Ground water, Transport properties, Hydrology, Offshore drilling, Waste disposal, Regulations, Liquid waste disposal, Water pollution effects(Plants), Water pollution effects(Animals).

PB-247 000/3 PC **A19**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Materials Balance and Technology Assessment of Mercury and Its Compounds on National and Regional Bases Final rept.
URS Research Co., San Mateo, Calif.
William Van Horn. Oct 75, 433p* EPA/560/3-75/007
Contract EPA-68-01-2931

The role of mercury and its compounds in the environment and the economy of the United States was studied. A detailed material balance for mercury and its compounds was developed on a national basis and for selected geographical regions, including estimates of the environmental fate of all emissions. Current and projected process technologies for mercury products were examined, and estimates of environmental losses for 1973 and 1983 were presented. A set of regulatory alternatives was developed for each of the major technologies involving substantial losses of mercury to the environment, and the economic impact of these alternatives was examined.

Keywords· *Economic impacts, *Mercury(Metal), *Air pollution, *Water pollution, *Industrial wastes, *Environmental surveys, Hazardous materials, Solid waste disposal, Utilization, Drug industry, Government policies, Regulations, Legislation, Sources, Dental materials, Storage batteries, Paints, Chemical industry, Mercury lamps, Transportation, Risk, Pesticides, Abatement, Fuels, Management planning, Regional planning, Benefit cost analysis, Economic analysis, Transport properties, United States, Technology assessment, Chlor alkali plants, Computer aided analysis

PB-247 778/4 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances
Assessment of Liquid Siloxanes (Silicones) Final technical rept.
Syracuse Univ. Research Corp., N.Y. Life Sciences Div.
P H. Howard, P R. Durkin, and A Hanchett. Sep 74, 122p* SURC-TR-74-572.2, EPA/560/2-75/004
Contract EPA-68-01-2202

This report reviews the potential environmental hazard from the commercial use of large quantities of liquid siloxanes which are used for the most part in waxes, polishes, cosmetics, and in the foaming of polyurethane; and as lubricants, antifoaming agents, release agents, and protective coatings for textiles, glass and leather. Polydimethylsiloxane and polymethylphenylsiloxane were of major interest as commercial products, although low molecular weight siloxanes were also reviewed. Information is presented on the chemical properties, production methods, quantities produced and released, commercial uses and factors affecting environmental contamination as well as data on health and biological effects.

Keywords: *Siloxanes, *Silicones, *Pollution, *Reviews, *Toxicology, Public health, Waste disposal, Physical properties, Industrial plants, Chemical properties, Plant location, Production rate, Utilization, Cost estimates, Manufacturing, Storage, Safety, Monitoring, Chemical reactions, Photochemical reactions, Hydrolysis, Oxidation, Metabolism, Absorption(Biology), Industrial medicine, Carcinogens, Humans, Animals, Plants(Botany), Microorganisms, Ecology, *Environmental impacts, Liquid waste disposal, Bioaccumulation, Mutagens, Teratogens, *Environmental health.

PB-247 946/7 PC **A21**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
A Review of Concentration Techniques for Trace Chemicals in the Environment Interim rept Jul 74-Feb 75.
Energy Resources Co., Inc., Cambridge, Mass.
Nov 75, 489p* EPA/560/7-75/002
Contract EPA-68-01-2925

This report contains a discussion of the techniques which are currently available for the concentration of trace pollutants prior to their analysis. Methods for the accumulation of metals and organic compounds from air, water, and solids are covered as well as a review of recent literature on bioaccumulation Each section includes tables in which concentration methods, and the accumulated materials are listed along with the pertinent literature references

Keywords: *Trace elements, *Pollution, *Concentrating, *Reviews, *Chemical analysis, Sampling, Organo metallic compounds, Inorganic compounds, Parameters, Accumulation, Extraction, Adsorption, Ion exchanging, Chelation, Precipitation, Crystallization, Particles, Filtration, Electrostatic precipitation, Condensation, Soils, Plants(Botany), Tables(Data), Food chains, Absorption(Biology), Animals, Transport properties, Indicator species, Air pollution, Water pollution, Environmental impacts, Air pollution sampling, Solid waste disposal, Bioaccumulation, Bioindicators.

PB-248 110/9 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Pesticide Programs.
Initial Scientific and Minieconomic Review of Monuron. Substitute Chemical Program
Midwest Research Inst., Kansas City, Mo.
Nov 75, 120p* EPA/540/1-75/028
Contract EPA-68-01-2448

This is the 8th in a series of in-depth scientific literature searches which review the safety and efficacy of substitute chemicals registered by EPA as possible replacements for cancelled or suspended pesticides or pesticides in litigation. The reviews are part of the Substitute Chemical Program, initiated under PL 93-135 (Oct. '73). This report on Monuron, a registered substitute herbicide for certain cancelled and suspended uses of 2,4,5-T, covers all uses of Monuron and is intended to be adaptable to future needs. The data contained in this report was not intended to be complete in all areas. Data searches ended in April, 1975. The review was coordinated by a team of EPA scientists in the Criteria and Evaluation Division of the Office of Pesticide Programs. Draft copies of the report have been reviewed by the scientific staffs of EPA's National Environmental Research Centers and their associated laboratories. E.I. du Pont de Nemours and Co , a manufacturer of monuron, reviewed the draft of this report and made certain comments and additions.

Keywords: *Pesticides, *Environmental impacts, *Herbicides, Reviews, Residues, Chemical properties, Photolysis, Chemical reactions, Utilization, Manufacturing, Toxicity, Rats, Physiological effects, Marine biology, Grasses, Cost estimates, Physical properties, Degradation, Plants(Botany), Synthesis(Chemistry), Pathology, Soil microbiology, Oncogenic viruses, Public health, Insects, Herbicides, Fungi, Law enforcement, California, Arizona, Weeds, Production rate, *Monuron, Chemical reaction mechanisms, Environmental effects, Enzyme activity, Water pollution effects(Animals).

PB-248 198/4 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances
Test Methods for Assessing the Effects of Chemicals on Plants Final rept.
Franklin Inst. Research Labs., Philadelphia, Pa.
Richard Rubinstein, Eunice Cuirle, Herbert Cole, Charles Ercegovich, and Leonard Weinstein. 30 Jun 75, 246p* EPA/560/5-75/008
Contract EPA-68-01-2249
Prepared in cooperation with Pennsylvania State Univ., University Park

The report is the result of a survey undertaken to develop a series of acceptable test protocols for assessing the effects of chemicals on plants. Plant exposure to air, soil, and water contaminants were considered. Test species were selected on the basis of physiology, anatomy, importance as crops, and their susceptibility to chemicals. Bioassay methods were chosen because they are most representative of natural conditions. The recommended sequence of test procedures includes. growth chamber or laboratory testing, greenhouse testing, field plot testing, progeny testing and, finally, population studies in the ecosystem It is suggested that the extent of testing should depend upon the quantity of the chemical to be manufactured and its potential hazard to the environment

Keywords: *Air pollution, *Water pollution, *Pesticides, *Plant ecology, Bioassay, Pesticides, Indicator species, Plant physiology, Toxicity, Soil microbiology, Plant anatomy, Tolerances(Physiology), Field tests, Hazards, Airborne wastes, Bioindicators, *Chemicals, Ecosystems, *Air pollution effects(Plants), *Water pollution effects(Plants), *Phytotoxins.

PB-248 426/9 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Epidemiology Studies. Task III. Vinyl Chloride Final rept.
American Public Health Association, Washington, D.C
Emanuel Landau, Charles P Brinkman, and Nicholas E. Manos. Nov 75, 106p* EPA/560/6-75/002
Contract EPA-68-01-2490

Using data from the 1970 Census of Population estimates of the number of people living within a 5 mile radius of industrial plants producing vinyl chloride and vinyl chloride resins was prepared. Findings are reported The sex, and age characteristics are provided.

Keywords. *Epidemiology, *Vinyl chloride, *Industrial medicine, *Public health, Vinyl chloride resins, Industrial plants, Exposure, Populations, Demography, Tables(Data), Environments.

PB-248 634/8 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Chlorinated Paraffins Final rept.
Syracuse Univ Research Corp , N Y Life Sciences Div.
Philip H Howard, Joseph Santodonato, and Jitendra Saxena. Nov 75, 122p* SURC-TR-75-622, EPA/560-2-75-007
Contract EPA-68-01-3101
See also report dated Sep 75, PB-246 356.

This report reviews the potential environmental hazard from the commercial use of chlorinated paraffins Chlorinated paraffins, in most cases, contain 10 to 30 carbon atoms and a chlorine content of 40-70%. They are used as lubricating oil additives, secondary plasticizers, and flame retardants Information on physical and chemical properties, production methods and quantities, commercial uses and factors affecting environmental contamination, as well as information related to health and biological effects, are reviewed.

Keywords *Pollution, *Chlorohydrocarbons, *Environmental surveys, *Toxicology, *Industrial medicine, *Chlorine aliphatic compounds, Physical properties, Hydrolysis, Photochemistry, Manufacturing, Storage, Materials handling, Waste disposal, Public health, Degradation, Photolysis, Physiological effects, Industrial atmospheres, Hazardous materials, Industrial hygiene, Accumulation, Air pollution, Exposure, Anesthetics, Water pollution, Reviews, Regulations, Standards, Chemical properties, Invertebrates, Microorganisms, Animals, Birds, Public health, Humans, Carcinogens, Plants(Botany), Monitoring, Composition(Property), Plasticizers, Lubricating oils, Occupational safety and health, Toxic hazards, *Air pollution effects(Humans), *Air pollution effects(Animals), Air pollution detection, Biphenyl/Chloro, Feedstocks.

PB-248 659-SET PC **E99**
Environmental Protection Agency, Washington, D C Office of Toxic Substances
Compilation of State Data for Eight Selected Toxic Substances
Mitre Corp., McLean, Va
Sep 75, 1,210p-in 5v
Set includes PB-248 660 thru PB-248 664

No abstract available

PB-248 660/3 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.

Compilation of State Data for Eight Selected Toxic Substances. Volume I Final rept.
Mitre Corp., McLean, Va.
Elisabeth Roberts, R. Spewak, S. Stryker, and S. Tracey. Sep 75, 165p* MITRE-75-52-Vol-1, EPA/560/7-75/001-1
Contract EPA-68-01-2933
Paper copy also available in set of 5 reports as PB-248 659-SET, PC E99.

In June 1974, toxic substances data in the U.S. was collected and analyzed in 20 key states. This report describes that effort and discusses the amount, type and usefulness of the data and the toxic substances monitoring capabilities of the state agencies contacted.

Keywords: *Environmental surveys, States(United States), Monitors, Toxicology, Arsenic, Beryllium, Cadmium, Cyanides, Lead(Metal), Mercury(Metal), Chlorine aromatic compounds, Data acquisition, Data processing, Water pollution, Air pollution, Chemical compounds, *Toxic agents, Biphenyl/chloro, State agencies.

PB-248 661/1 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Compilation of State Data for Eight Selected Toxic Substances. Volume II. Directory of State Toxic Substances Monitoring Agencies Final rept.
Mitre Corp., McLean, Va
Elisabeth Roberts, R. Spewak, S. Stryker, and S Tracey. Sep 75, 28p* MITRE-75-52-Vol-2, EPA/560/7-75/001-2
Contract EPA-68-01-2933
Paper copy also available in set of 5 reports as PB-248 659-SET, PC E99.

The appendix is a listing of key points-of-contact, phone numbers, agencies, and addresses, for each agency in the 20 states contacted which monitored toxic substances.

Keywords· *Environmental surveys, *Directories, Data, States(United States), Monitors, Arsenic, Beryllium, Cadmium, Cyanides, Lead(Metal), Mercury(Metal), Chlorine aromatic compounds, Toxicology, Chemical compounds, Water pollution, Air pollution, *State agencies, *Toxic agents, Biphenyl/chloro, Appendices.

PB-248 662/9 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances
Compilation of State Data for Eight Selected Toxic Substances. Volume III. Annotated Bibliography of State Data and Information Sources Final rept.
Mitre Corp., McLean, Va.
Elisabeth Roberts, R. Spewak, S Stryker, and S Tracey. Sep 75, 40p* MITRE-75-52-Vol-3, EPA/560/7-75/001-3
Contract EPA/68-01-2933
Paper copy also available in set of 5 reports as PB-248 659-SET, PC E99.

The appendix is a cross-reference bibliography by state and by substance of every body of data and report collected from the state agencies in the course of the project

Keywords *Bibliographies, States(United States), Data, Sources, Arsenic, Beryllium, Cadmium, Cyanides, Lead(Metal), Mercury(Metal), Chlorine aromatic compounds, Toxicology, Chemical compounds, Water pollution, Air pollution, *Toxic agents, Biphenyl/chloro, Appendices, State agencies.

PB-248 663/7 PC **A99**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances
Compilation of State Data for Eight Selected Toxic Substances. Volume IV. Compilation of Summaries and Analyses of State Data Final rept
Mitre Corp , McLean, Va.
Elisabeth Roberts, R Spewak, S Stryker, and S Tracey Sep 75, 663p* MITRE-75-52-Vol-4, EPA/560/7-75/001-4
Contract EPA-68-01-2933
Paper copy also available in set of 5 reports as PB-248 659-SET, PC E99.

The appendix contains all the summaries and analyses of state agency data that were presented in the four quarterly reports during the course of the project

Keywords: *Environmental surveys, States(United States), Data processing, Arsenic, Beryllium, Cadmium, Cyanides, Lead(Metal), Mercury(Metal), Chloride aromatic compounds, Toxicology, Water pollution, Air pollution, Chemical compounds, State agencies, *Toxic agents, Biphenyl/chloro, Appendices.

PB-248 664/5 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Compilation of State Data for Eight Selected Toxic Substances. Volume V. Monitoring Program Capability Descriptor Tables Final rept.
Mitre Corp , McLean, Va.
Elisabeth Roberts, R. Spewak, S. Stryker, and S. Tracey. Sep 75, 314p* MITRE-75-52-Vol-5, EPA/560/7-75/001-5
Contract EPA-68-01-2933
Paper copy also available in set of 5 reports as PB-248 659-SET, PC E99.

The volume comprises 160 charts which summarize state agency toxic substances monitoring capabilities by state, substance, and agency for 25 monitoring program descriptors.

Keywords: *Environmental surveys, Data, Tables(Data), States(United States), Monitors, Sampling, Arsenic, Beryllium, Cadmium, Cyanides, Lead(Metal), Mercury(Metal), Chloride aromatic compounds, Toxicology, Water pollution, Air pollution, Chemical compounds, *State agencies, *Toxic agents, Biphenyl/chloro.

PB-248 796/5 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Pesticide Programs
Alternative Futures for Environmental Policy Planning, 1975-2000
Stanford Research Inst , Menlo Park, Calif. Center for the Study of Social Policy.
Duane S Elgin, David C MacMichael, and Peter Schwartz Oct 75, 285p* EPA/540/9-75/027
Contract EPA-68-01-2698

This report covers the next twenty-five years -- 1975 to 2000, essentially from the perspective of possible futures for the United States placed within a world context. By exploring the uncertainty of the near-term future and placing boundaries on it, the authors believe they have provided the environmental policy planner with an important tool for anticipating issues and gauging the utility of policies designed to meet them The approach to the construction of the alternative futures entailed the projection of certain driving, or key, trends over the next 25 years and estimating the social, economic, and political consequences of a varying combination of their impacts Certain key policy questions provided by EPA were placed in the context of these futures and conclusions were drawn therefrom.

Keywords *Pollution, *Environmental surveys, *Forecasting, *Government policies, Scenarios, Trends, Planning, Environmental impacts, Reviews, Pesticides, Methodology, Social effect, Economic impact, Political intelligence, Projection, National government, Agriculture, Alternative scenarios, *Hypothetical futures, Risks.

PB-248 834/4 PC **A03**/MF **A01**
Environmental Hazard Assessment Report: Chlorinated Naphthalenes Final rept.
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Frank D. Kover. Dec 75, 43p Rept no EPA/560/8-75/001
See also PB-248 835

The report is an analysis of available information on chlorinated naphthalenes pertinent to an assessment of the potential environmental hazard posed by these compounds Aspects discussed are environmental exposure factors, biological effects, general information on uses, production and chemical properties as well as associated handling practices, and applicable standards and regulations Conclusions as to current hazard potential are presented and recommendations for further study made

Keywords *Chlorohydrocarbons, *Naphthalene compounds, *Pollution, Assessments, Standards, Environmental impacts, Hazardous materials, Toxicity, Monitoring, Physical properties, Chemical properties, Dyes, Metabolism, Law enforcement, Environmental impact assessments.

PB-248 835/1 PC **A02**/MF **A01**
Environmental Hazard Assessment Report: Higher Benzenepolycarboxylates Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Frank J. Letkiewicz. Nov 75, 25p Rept no. EPA/560/8-75/002
See also PB-248 834 and PB-238 074.

This report is an analysis of available information on the higher benzenepolycarboxylates (i.e., benzenecarboxylates through benzenehexacarboxylate) pertinent to an assessment of the potential environmental hazard posed by these compounds. Aspects discussed are production and uses of the subject compounds, environmental aspects and biological aspects The study concludes that current uses of these compounds do not present an environmental hazard, but makes recommendations for additional studies to be undertaken prior to initiation of new and potentially dispersive uses

Keywords. *Pollution, *Benzoic acids, Carboxylic acids, Environmental impacts, Assessments, Public health, Molecular structure, Physical properties, Toxicity, Enzyme inhibitors, Hazardous materials, Degradation, Environmental impact assessments.

PB-250 073-SET PC **E99**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Current Awareness Service for Toxic Substances (CATS)
Little (Arthur D), Inc., Cambridge, Mass.
Dec 75, 1007p-in 2v
Set includes PB-250 074 thru PB-250 075.

No abstract available.

PB-250 074/2 PC **A21**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Current Awareness Service for Toxic Substances (CATS). Cumulative Report No. 1, Part 1
Little (Arthur D.), Inc., Cambridge, Mass.
Dec 75, 500p* ADL-C-77355-Pt-1, EPA/560/7-75/003-1
Contract EPA-68-01-2694
Paper copy also available in set of 2 reports as PB-250 073-SET, PC E99.

The two part cumulative report contains 26 current awareness documents prepared biweekly from 26 August 1974 through 11 August 1975, during the first year of a two year project The purpose of this project was to provide the Office of Toxic Substances (OTS), U S Environmental Protection Agency with information on new uses of existing chemical products and with information of obvious potential environmental concern for both new and existing chemical products. For each biweekly document a core list of approximately 80 journals was scanned for information of interest to OTS on more than 30 topics (compounds, classes of compounds, and subject areas, e.g., model ecosystems) Abstracts were prepared for all items selected and these abstracts were presented biweekly under the assigned topics. In addition, a 'General Information' section was added to accommodate abstracts for topics not included in the original list of scanning topics Biweekly subject indexes were cumulated for this annual compilation, and an author index was added.

Keywords. *Bibliographies, *Toxicology, *Chemical compounds, Abstracts, Indexes(Documentation), Authors, Subject indexing, Ecology, Pesticides, Plastics, Organic compounds, Inorganic compounds, Ecosystems, Environmental health.

PB-250 075/9 PC **A22**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Current Awareness Service for Toxic Substances (CATS). Cumulative Report No. 1, Part 2
Little (Arthur D.), Inc., Cambridge, Mass

Dec 75, 507p* ADL-C-77355-Pt-2, EPA/560/7-75/003-2
Contract EPA-68-01-2694
Paper copy also available in set of 2 reports as PB-250 073-SET, PC E99.

The two part cumulative report contains 26 current awareness documents prepared biweekly from 26 August 1974 through 11 August 1975, during the first year of a two year project. The purpose of this project was to provide the Office of Toxic Substances (OTS), U.S. Environmental Protection Agency with information on new uses of existing chemical products and with information of obvious potential environmental concern for both new and existing chemical products. For each biweekly document a core list of approximately 80 journals was scanned for information of interest to OTS on more than 30 topics (compounds, classes of compounds, and subject areas, e.g., model ecosystems). Abstracts were prepared for all items selected and these abstracts were presented biweekly under the assigned topics. In addition, a 'General Information' section was added to accommodate abstracts for topics not included in the original list of scanning topics. Biweekly subject indexes were cumulated for this annual compilation, and an author index was added.

Keywords· *Bibliographies, *Toxicology, *Chemical compounds, Abstracts, Ecology, Pesticides, Organic compounds, Inorganic compounds, Plastics, Environmental health.

PB-250 948/7 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
The Environmental Fate of Selected Polynuclear Aromatic Hydrocarbons Final rept. on task 2
Stanford Research Inst., Menlo Park, Calif.
S. B. Radding, T Mill, C. W. Gould, D. H. Liu, and H. L. Johnson. Feb 76, 131p* EPA/560/5-75/009
Contract EPA-68-01-2681

A review of the recent literature on polynuclear (polycyclic) aromatic hydrocarbons (PAH) has been carried out for general information on PAH and specific details about six selected PAH. The sources, transport, chemical and physical transformations, structure-reactivity relationships, and biological (non-carcinogenic) properties have been reviewed with recommendations for further research.

Keywords: *Reviews, *Aromatic polycyclic hydrocarbons, *Environmental impacts, Methylcholanthrene, Toxicology, Air pollution, Physical properties, Chemistry properties, Biodeterioration, Water pollution, Solid waste disposal, Reaction kinetics, Particles, Carcinogens, Concentration(Composition), Anthracene, Phenanthrene, Anthracene compounds, Photochemical reactions, Molecular structure, Exhaust gases, Combustion products, *Path of pollutants, Benzoanthracene, Benzopyrenes, Chrysenes.

PB-250 961/0 PC **A06**/MF **A01**
Preliminary Assessment of Suspected Carcinogens in Drinking Water: Report to Congress
Environmental Protection Agency, Washington, D.C Office of Toxic Substances
Dec 75, 107p Rept no EPA/560/4-75/005
See also report dated Jun 75, PB-244 415.

The Report is a compilation of the efforts ongoing in EPA to identify the nature and extent of the contamination of the nation's drinking water, to determine the possible health effects of exposure, and to develop the technically and economically feasible means of removing those contaminants of concern. It was prepared in response to Section 1442(a)(9) of the Safe Drinking Water Act. This Report fulfills the requirements of that Section in that it includes recommendations which the interim report of June 1975 did not include. An Appendix is included in this volume

Keywords: *Carcinogens, *Potable water, *Water pollution, *Public health, Chemical compounds, Organic compounds, Industrial wastes, Water treatment, Water quality, Criteria, Radioactive contaminants, Sewage treatment, Cost estimates, Water supply, Tables(Data), Regulations, Government policies, Legislation, Cost estimates, Economic factors, Water pollution effects(Humans), Water pollution control

PB-250 963/6 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Incremental Cost Impacts of the 1972 Federal Insecticide Fungicide and Rodenticide Act as Amended Final rept.
Development Planning and Research Associates, Inc., Manhattan, Kans.
R. E. Seltzer, Claude L. Fly, and Edwin O Schneider 1976, 167p EPA/540/9-76/002
Contract EPA-68-01-3181

This study attempts to evaluate the economic impacts of 1972 Federal Insecticide, Fungicide, and Rodenticide Act as amended on the pesticide industry, pesticide users and consumers and will describe inflationary impacts which may result. Specific tasks included are as follows: (1) Identification of pesticide categories, use types and geographic areas that will be most affected. (2) Evaluation of economic impacts on the pesticide industry. (3) Quantification, under varying assumptions, of any cost increases to pesticide users (4) Quantification, under varying assumptions, of any cost increases to consumers of final products. (5) The overall assessment of all costs and benefits to society attributable to the implementation of selected sections of 1972 FIFRA as amended.

Keywords· *Pesticides, *Legislation, *Government policies, *Economic impacts, Chemical industry, Insecticides, Rodenticides, Regulations, Classification, Income, Productivity, Tests, Energy consumption, National government, Utilization, Consumers, Agricultural economics, Benefit cost analysis, Solid waste disposal, State government, Storage, Food industry, Electric power consumption, Federal Insecticide Fungicide and Rodenticide Act.

PB-250 988/3 PC **A15**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Pesticide Programs.
A Benefit-Cost System for Chemical Pesticides Final rept.
CONSAD Research Corp., New York.
Ralph Kennedy, Robert Lowrey, Alan Bernstein, and Frederick Rueter. Jun 75, 335p* EPA/540/9-76/001
Contract EPA-68-01-2970

The application of benefit-cost analysis in the registration of chemical pesticides is developed A comprehensive benefit-cost system, designed to be used both in the registration of new pesticides, as well as in the reregistration of existing pesticides, is described It is a workable system, not an ideal one, that is, it reflects the current state-of-the-art and it uses the presently available data. As technology improves, more data become available, and knowledge increases, components of the system can be upgraded to reflect these changes. Nevertheless, the present system is intended to provide convenient, summary formats of the most prominent indicators of benefits and costs, so that all benefits and costs, especially those which are conceptually and empirically difficult to measure -- such as long-term human health and indirect environmental effects -- are formatted and depicted in the most comparable presentation possible

Keywords *Pesticides, *Public health, *Ecology, Benefit cost analysis, Chemical compounds, Pest control, Efficiency, Measurement, Hazards, Economics, Environmental health, Registration, Pesticide residues, Bioaccumulation

PB-251 003/0 PC **A02**/MF **A01**
Report of the Lindane Advisory Committee
Environmental Protection Agency, Washington, D C Office of Pesticide Programs
J T. Litchfield, D G Crosby, W B Deichmann, M B Shimkin, and J C. Street 2 Jul 70, 23p Rept no. EPA/540/5-70/001

In the advisory committee report, the Committee recommends maintenance of the cancellation of all lindane products intended for vaporization. The data collection was begun by the US Department of Agriculture and Committee members were chosen from a list supplied by the National Research Council.

Keywords: *Chlorobenzenes, *Hazardous materials, *Toxicity, *Pesticides, Chlorine aromatic compounds, Chlorohydrocarbons, Vaporizing, Recommendations, Public health, Central nervous system, Toxicology, Humans, Physiological effects, Food, Blood, Liver, Laboratory animals, Experimental data, Environmental health, Toxic hazards.

PB-251 005/5 PC **A09**/MF **A01**
Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels--Third Edition
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Robert L. Caswell, Merry Lou Alexander, and Hudson Boyd. Dec 75, 187p Rept no EPA/540/9-75/011

This report is an alphabetical listing of common and chemical names of active ingredients, to be used on pesticide labels. This is the third edition Reference is made in the Proposed Guidelines for Registering Pesticides to 'Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels'.

Keywords· *Pesticides, *Insecticides, *Herbicides, *Chemical notation systems.

PB-251 074/1 PC **A05**/MF **A01**
Report of the Mirex Advisory Committee to William D. Ruckelshaus, Administrator of the Environmental Protection Agency
Environmental Protection Agency, Washington, D.C. Mirex Advisory Committee
C. H. Van Middelem, Gerald Bakus, J. R M. Innes, Charles Lincoln, and Leo Newsom 1 Mar 72, 78p Rept no. EPA-540/5-72/002
Revision of report dated 4 Feb 72.

On March 18, 1971, EPA sent a notice to Allied Chemical Corporation to cancel the registration of products containing Mirex The firm requested that the matter be referred to an advisory committee as is its right under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) The committee was chosen by the EPA Administrator from a list of names furnished by the National Academy of Sciences The report is divided into two primary sections The first covers advantages and disadvantages associated with the use of Mirex for the control of the imported fire ant and other insects as well as possible present and future alternative means of control. The second section deals primarily with possible hazards associated with Mirex uses

Keywords *Insecticides, *Pesticides, Formicidae, Insects, Pest control, Benefit cost analysis, Toxicology, Chemical analysis, Control, *Mirex, Melhenocyclobuta(cd)pentalenes, Fire ant, Solenopsis, Pesticide residues.

PB-251 146/7 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances
Chemical Technology and Economics in Environmental Perspectives. Task I. Technical Alternatives to Selected Chlorofluorocarbon Uses Final rept Jun 75-Jan 76
Midwest Research Inst , Kansas City, Mo
Thomas W Lapp, G. Joe Hennon, Howard M. Gadberry, Ivan C Smith, and Kathryn Lawrence Feb 76, 233p* EPA/560/1-76/002
Contract EPA-68-01-3201

The purpose of this study was to identify technically feasible substitute chemicals and/or alternative methods of delivering the goods and services presently provided through the use of the five commercial chlorofluorocarbons FC-11, -12, -13, -113, and -114 This study did not involve an assessment of the risks associated with environmental discharge of these chemicals. For the purposes of this study, recovery and/or recycling were not to be considered as eligible alternatives Four categories currently account for 99% of the usage of these compounds These areas are: refrigeration and air conditioning, aerosol propellants, plastic foam blowing agents, and cleaning and drying applications In addition to these four areas, the Rankine Cycle engine was considered as it appears to have potential for expanding future consumption of chlorofluorocarbons Limited evaluations were made on the direct economic consequences which could result from a reduction or elimination of chlorofluorocarbon consumption in each of the current use areas.

Keywords *Fluorohydrocarbons, *Environmental impacts, *Air pollution, *Economics, Dichlorodifluoromethane, Aerosols, Refrigerants,

Blowing agents, Foaming agents, Cleaning agents, Chemical properties, Polyurethanes, Solvents, Desiccants, Ozone, Atmospheric chemistry, Hazardous materials, Air conditioning, Propellants, Cellular plastics, Stratosphere, Methane/chloro-trifluoro, Ethane/trichloro-trifluoro, *Freons.

PB-251 181/4 PC **A06**/MF **A01**
The Impact of Intensive Application of Pesticides and Fertilizers on Underground Water Recharge Areas Which May Contribute to Drinking Water Supplies. A Preliminary Review
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
David Garrett, Francis P. Maxey, and Herbert Katz. 11 Dec 75, 107p Rept no EPA/560/3-75/006

A report was submitted on an assessment of the impact of intensive application of pesticides and fertilizers on underground water recharge areas which may contribute to drinking water supplies and also a plan for developing additional information required to define the nature and extent of the impact of agricultural practices on groundwater supplies for public water systems, as required by the Safe Drinking Water Act (PL-93-523). Both the assessment and the plan were subsumed under the four headings of nitrates, pesticides, economic impacts, and modeling and simulation. Sources of groundwater pollutants were considered with a view towards determining their relative contribution to the overall problem.

Keywords: *Ground water recharge, *Pesticides, *Fertilizers, *Water pollution, Potable water, Environmental impacts, Assessments, Beef cattle, Agricultural wastes, Livestock, Septic tanks, Nitrogen cycle, Economic impact, Water supply, Inorganic nitrates, Inorganic phosphates, Agronomy, Cultivation, Tables(Data), Benefit cost analysis, *Drinking water, *Feedlot wastes.

PB-251 406/5 PC **A20**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances
Environmental Aspects of Chemical Use in Printing Operations Held at King of Prussia, Pa. on September 22-24, 1975
Research Triangle Inst , Research Triangle Park, N.C. Center for Technology Applications.
Jan 76, 468p* EPA/560/1-75-005
Contract EPA-68-01-2928

This conference was the last in a series of three on the environmental impact of chemicals in various industrial operations. The objective of this conference was to cover and discus current chemical use, functions of chemicals in the operations, byproducts likely to be introduced, known health or environmental contamination. More specifically, papers were presented and discussions held that covered industrial emissions and effluent surveys, chemicals and their effects, reclamation and disposal and academic programs.

Keywords· *Meetings, *Environmental impacts, Printing, Air pollution, Water pollution, Solid waste disposal, Chemicals, Industrial processes, Combustion products, Industrial wastes, Public health, Toxicology, *Printing industry.

PB-251 433/9 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Assessment of Wastewater Management, Treatment Technology, and Associated Costs for Abatement of PCBs Concentrations in Industrial Effluents. Task II Final rept
Versar, Inc , Springfield, Va
Gayaneh Contos, Robert L. Durfree, E E. III Hackman, and Kenneth Price. 30 Jan 76, 282p EPA/560/6-76/006
Contract EPA-68-01-3259

This document presents the findings of a study of available wastewater management and treatment technology for the purpose of determining toxic pollutant effluents concentrations and daily load achievable in three industrial categories. polychlorinated biphenyls (PCBs) manufacturing; capacitor manufacturing, and transformer manufacturing All plants in the above categories have PCB discharges to either waterways or sewage treatment plants, under normal operating conditions All plants have discharges to storm sewers or directly to waterways under heavy rainfall conditions. For scrap oils and burnable solid wastes generated at these plants, high temperature, controlled incineration offers a straightforward method of destruction, whereas scientific landfilling appears to be the best suited mode of disposal for nonburnable contaminated solids. Zero discharge objectives can be best achieved by eliminating discharge streams and developing recycle systems. All non-contact cooling water would be segregated, cooled, and recycled. All other wastewater streams would be pretreated. The portion of the pretreated water which would be used in the plant would be treated with carbon, while the excess water would be incinerated in a specially designed system which would allow for energy recovery. Supporting data, rationale for the selection of above recommended treatment technologies and associated costs are contained in this report. Even some on air pollution control is discussed along with the other pollution factors.

Keywords. *Water pollution control, *Industrial waste treatment, *Sewage treatment, *Chlorine aromatic compounds, Chemical removal(Sewage treatment), Activated carbon treatment, Concentration(Composition), Adsorbents, Solid waste disposal, Incineration, Effluents, Capitalized costs, Operating costs, Capacitors, Ozonization, Ultraviolet radiation, Air pollution control, Cost estimates, Filtration, Chemical removal(Water treatment), *Biphenyl/chloro, *Polychlorinated biphenyls.

PB-251 438/8 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Literature Study of Selected Potential Environmental Contaminants, Antimony and Its Compounds Final rept.
Little (Arthur D), Inc., Cambridge, Mass.
Feb 76, 163p* ADL-C-78341, EPA/560/2-76/002
Contract EPA-68-01-3198
See also report dated May 75, PB-242 293

A comprehensive review of the literature published since 1 January 1954 was conducted to prepare this preliminary investigation report on the physical and chemical properties of antimony (Sb) and its compounds, on the environmental factors related to their consumption and use, on the health and environmental effects resulting from exposure to Sb and antimonials, and on the regulations and standards governing their use. Antimony and its compounds, although not ranked among the biggest volume chemicals in the U.S., are industrially significant because of their contribution to the manufacture of many commonly-used products, such as alloys, paint, paper, plastics, and textiles. Antimony trioxide (antimony oxide) is used to impart flame resistance to plastics, textiles, and other products Antimony dusts have been associated with the development of pneumoconiosis in miners and other workmen. Some antimony compounds are toxic, or give rise to toxic decomposition products, but no serious occupational poisoning has been associated with the industrial use of antimony.

Keywords· *Reviews, *Antimony, *Air pollution, *Water pollution, Antimony inorganic compounds, Chemical properties, Industrial plants, Monitoring, Solid waste disposal, Toxicity, Public health, Physical properties, Dusts, Particles, Combustion products, Water analysis, Gas analysis, Industrial hygiene, Law enforcement, Standards, Air pollution effects(Humans), Air pollution effects(Animals).

PB-251 441/2 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
A Study of Flame Retardants for Textiles Final rept
Auerbach Associates, Inc., Philadelphia, Pa
Thomas J. McGeehan, and Jerome T Maddock Feb 76, 178p* AUER-2200-TR-4, EPA/560/1-76/004
Contract EPA-68-01-2209

As part of a program for identifying potential environmental hazards associated with various branches of technology, a review of the literature on flame retardants for textiles has been prepared. Covering the periods 1954-74, more than 500 primary documents and consultations with experts have been digested and cited. Chemicals and chemical treatments which are being used or have been proposed for producing flame retardant textiles are listed and discussed. Particular attention is given to toxicological data, to observations of health effects and to studies of environmental fates and effects of the materials which are used. The report is divided into major sections in which classes of natural and man-made textiles are considered separately. Several chemicals are identified as having their major application as flame retardants for textiles. These include certain halogenated monomers, halogenated phosphate esters, and formaldehyde derivatives of phosphorus and nitrogen compounds. The need for further studies of the fate and effects of these compounds is indicated.

Keywords: *Reviews, *Fire resistant materials, *Textile finishing, *Environmental impacts, Industrial waste treatment, Solid waste disposal, Air pollution, Economics, Toxicity, Chemical properties, Water analysis, Washing, Durability, Synthetic fibers, Performance evaluation, Water pollution, Public health, Chemical elements, Monitoring, Chemical analysis, Halogens, Phosphorus inorganic compounds, Phosphorus organic compounds, Nitrogen organic compounds, Nitrogen inorganic compounds, Formaldehyde, Air pollution effects(Humans), Air pollution effects(Animals), Water pollution effects(Humans), Water pollution effects(Animals), Monomers.

PB-251 541/9 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Substitute Chemical Program. Initial Scientific Review of Cacodylic Acid
Midwest Research Inst., Kansas City, Mo
Dec 75, 130p* EPA/540/1-75/021
Contract EPA-68-01-2448

Cacodylic acid was identified as a registered substitute chemical for certain cancelled and suspended uses of 2,4,5-T The report covers all uses of cacodylic acid and is intended to be adaptable to future needs. Should cacodylic acid be identified as a substitute for a problem pesticide other than 2,4,5-T, the review can be updated and made readily available for use. The data contained in this report was not intended to be complete in all areas Data searches ended in March, 1975. The substitute chemical is reviewed for suitability considering all applicable scientific factors, such as chemistry, toxicology, pharmacology, environmental fate and movement, use patterns and efficacy

Keywords: *Reviews, *Pesticides, *Environmental impacts, *Insecticides, Substitutes, Synthesis(Chemistry), Physical properties, Chemical properties, Chemical analysis, Chemical reactions, Toxicology, Public health, Marine biology, Arsenic, Water analysis, Soil analysis, Law enforcement, California, Manufacturing, Performance evaluation, Utilization, Defoliants, Ecology, Pharmacology, *Cacodylic acid

PB-251 542/7 PC **A06**/MF **A01**
Report of the Aldrin/Dieldrin Advisory Committee to William D. Ruckelshaus, Administrator, Environmental Protection Agency
Environmental Protection Agency, Washington, D C Aldrin/Dieldrin Advisory Committee
28 Mar 72, 106p Rept no. EPA/540/5-72/001

The report deals with the following aspects of aldrin/dieldrin· human intakes and their significance, effects on wildlife and plants, aldrin and dieldrin in sediments, and economic considerations.

Keywords *Aldrin, *Insecticides, *Pesticides, *Ecology, *Toxicology, Environment, Toxicity, Metabolism, Humans, Animals, Wildlife, Plants(Botany), Food chains, Biochemistry, Physiological effects, Carcinogens, Mutations, Aquatic animals, Economics, Dieldrin, Pesticide residues, Dimethanonaphthalenes.

PB-251 566/6 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D C Criteria and Evaluation Div
Substitute Chemical Program. Initial Scientific Review of MSMA/DSMA
Midwest Research Inst , Kansas City, Mo
Dec 75, 124p* EPA/540/1-75/020
Contract EPA-68-01-2448

The substitute chemical is reviewed for suitability considering all applicable scientific factors, such as chemistry, toxicology, pharmacology, environmental fate and movement, use patterns and efficacy The major objective of this report is to cover all uses of MSMA/

DSMA and is intended to be adaptable to future needs MSMA/DSMA were identified as registered substitute chemicals for certain cancelled and suspended uses of 2,4,5-T. The data contained in this report was not intended to be complete in all areas. Data searches ended in January, 1975.

Keywords· *Environmental impacts, *Pesticides, *Herbicides, Ecology, Arsenic organic acids, California, Substitutes, Pharmacology, Toxicology, Performance evaluation, Utilization, Synthesis(Chemistry), Physical properties, Chemical analysis, Chemical reactions, Alkylation, Public health, Marine biology, Soil analysis, Water analysis, Law enforcement, Utilization, *MSMA herbicide, *DSMA herbicide, Methane arsonic acid.

PB-251 570/8 PC **A04**/MF **A01**
Report of the DDT Advisory Committee, September 1971
Environmental Protection Agency, Washington, D.C
Office of Pesticide Programs.
William D. Ruckelshaus. 9 Sep 71, 63p Rept no. EPA/540/5-71/004

The DDT report deals with the following areas. use and residue estimates, analytical interference with the determination of DDT by polychlorinated biphenyls in the environment, toxicology, needs, and conclusions of the committee.

Keywords: *DDT, *Insecticides, *Toxicity, *Pollution, Pesticides, Toxicology, Air pollution, Water pollution, Stream pollution, Environmental surveys, Pesticide residues, Environmental health, *Biphenyl/chloro, Chlorine aromatic compounds

PB-251 576/5 PC **A08**/MF **A01**
Toxaphene Status Report Special rept
Environmental Protection Agency, Washington, D.C
Hazardous Materials Advisory Committee.
Gordon Guyer, Perry Adkisson, Kenneth DuBois, Calvin Menzie, and H. Page Nicholson. Nov 71, 171p EPA/540/9-71/005

This report deals with the status of toxaphene and its uses in 1971 It discusses use patterns, future trends, chemistry and composition, methods of analysis, fate and implication in the environment, residues in food crops and foods, toxicology in man and animals, and toxaphene resistance.

Keywords· *Pesticides, *Environmental impacts, Toxicology, Concentration(Composition), Insecticides, Terpenes, Chlorine aliphatic compounds, Ecology, Chemical analysis, Tissue extracts, Marine biology, Water analysis, Chemical properties, Chromatography, Infrared spectrophotometers, Soil analysis, Pharmacology, Food analysis, Crystallization, *Toxaphene.

PB-251 582/3 PC **A05**/MF **A01**
Report of the Advisory Committee on 2,4,5-T to the Administrator of the Environmental Protection Agency
Environmental Protection Agency, Washington, D C.
Office of Pesticide Programs.
7 May 71, 82p Rept no EPA/540/5-71/002

Contents:
- Factors influencing exposure to man--Patterns of use of 2,4,5-T,
- Fate in soil, air, water and plants, Fate in animals,
- Toxicity of 2,4,5-T and TCDD in animals and man--Nonteratogenic toxicity, Teratogenic potential of 2,4,5-T, Human exposure during pregnancy,
- General conclusions;
- Recommendations,
- Statement of views of Dr Theodor D Sterling entitled, 'Objections to and modifications of the final report and recommendations of the 2,4,5-T advisory committee'

Keywords *Herbicides, *Toxicity, *Hazardous materials, Acetic acid, Chlorine aromatic compounds, Pesticides, Exposure, Humans, Animals, Soils, Air, Physiological effects, Water, Plants(Botany), Weed control, Pregnancy, Toxicology, Congenital abnormalities, Embryos, Laboratory animals, Recommendations, Teratology, *Acetic acid/trichlorophenoxy, *T 2-4-5 herbicide, Environmental health.

PB-251 583/1 PC **A03**/MF **A01**
Report of the Mercury Advisory Committee of the Environmental Protection Agency to the Administrator
Environmental Protection Agency, Washington, D.C.
Office of Pesticide Programs.
6 Jul 71, 40p Rept no. EPA/540/5-71/003

The report on mercury deals with: efficacy of mercurial algicides and nonmercurial substitutes, risks to handlers and swimmers, contribution to environmental pollution and the need for control.

Keywords: *Water pollution, *Mercury(Metal), Algicides, Swimming, Handling, Risk, Algimycin

PB-251 611/0 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C.
Office of Pesticide Programs.
Amitrole Advisory Committee Report
Department of Agriculture, Washington, D.C.
William Neissner, Chester Foy, James Hilton, William House, and Svend Nielsen 12 Mar 71, 21p EPA/540/5-71/001

The Committee recommends continuation of the cancellation of registration of Amitrole for use on food crops as listed on Page 25 of the USDA Summary of Registered Agricultural Pesticide Uses (2nd Edition); it does not recommend reclassification of these listed uses as non-food uses. A discussion of the reasons or basis for the recommendations are summarized.

Keywords· *Herbicides, *Pesticides, Toxicology, Bioassay, Rats, Laboratory animals, Plant physiology, Food, Vegetable crops, Deposits, Recommendations, *Amitrole, Pesticide residues, Bioaccumulation.

PB-251 630/0 PC **A99**/MF **A01**
Environmental Protection Agency, Washington, D C.
Office of Pesticide Programs
Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health. Parts I and II
Secretary's Commission on Pesticides and Their Relationship to Environmental Health, Washington, D.C
Emil M. Mrak Dec 69, 679p EPA/540/9-69/001(HEW)

The Secretary's Commission on Pesticides and Their Relationship to Environmental Health was appointed in April 1969 and charged with the responsibility of gathering all available evidence on both the benefits and risks of using pesticides, evaluating it thoroughly, and reporting their findings to the Secretary, HEW. The Commission concluded that there is adequate evidence concerning potential hazards to the environment and to man's health to require corrective action Part I contains the Commission's unanimous recommendations along with summaries of the reports of four Subcommittees to the Commission Part II contains the complete reports and conclusions of four Subcommittees and the four Advisory Panels to the Commission.

Keywords. *Pesticides, *Toxicology, Environments, Ecology, Public health, Hazards, DDT, Chlorine organic compounds, Insecticides, Recommendations, *Environmental health, DDE pesticide, DDD pesticide, Aldrin, Dieldrin.

PB-251 662/3 PC **A06**/MF **A01**
Council on Environmental Quality, Washington, D.C
Evaluation of Pest Management Programs for Cotton, Peanuts and Tobacco in the United States
RvR Consultants, Shawnee Mission, Kan.
Rosmarie von Rumker, Gerald A Carlson, Ronald D Lacewell, Richard B Norgaard, and Donald W. Parvin, Jr Nov 75, 118p* EPA/540/9-75/031
Contract EQ4AC036
See also report dated Oct 75, PB-248 113.

Nineteen cotton pest management programs, three peanut pest management programs and three tobacco pest management programs were evaluated in regard to the users, locations and characteristics of each program, program costs, program effects on crop yield, pesticide use, production costs and growers' profits. The environmental impact and the biological and economic feasibility of each program were studied, and constraints on the expansion of pest management programs and the applicability of the findings of this study to other crops were assessed Most of the data were collected during the period July through September, 1974. The findings, conclusions and recommendations presented are based largely on the state of affairs as of the fall of 1974

Keywords: *Pest control, Project planning, Evaluation, Project management, Cotton plants, Peanut plants, Tobacco plants, Performance evaluation, Cost analysis, Profits, Environmental impacts, Economic factors, Benefit cost analysis, Pesticides, Arkansas, Alabama, Arizona, California, Louisiana, Mississippi, North Carolina, Texas, Feasibility, Effectiveness

PB-251 678/9 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C.
Office of Toxic Substances.
The Manufacture and Use of Selected Aryl and Alkyl Aryl Phosphate Esters Final rept. 1 Sep 74-14 Mar 75 on Task 1
Midwest Research Inst., Kansas City, Mo.
T. W. Lapp. Feb 76, 147p EPA/560/6-76/008
Contract EPA-68-01-2687

Eleven aryl and alkyl aryl phosphate esters were selected for investigation as potential environmental contaminants. Information was collected on the production quantities, manufacturers and their processes, users and their processes, and the environmental management of both the producers and users Alternatives for selected organophosphate esters are considered.

Keywords: *Fire resistant materials, *Organic phosphates, *Chemical industry, *Esters, Pollution, Lubricant additives, Utilization, Plasticizers, Hydraulic fluids, Toxicology, Manufacturing, Chemical reactions, Forecasting, Public health, Physical properties, Phosphorous organic compounds, Energy consumption, *Phosphoric acid/(tolyloxy-ester), *Phosphoric acid/(diphenyl-ester)-(tolyloxy-ester), *Phenyl phosphates, *Phosphoric acid/(diphenyl-ester)-(isopropylphenyl-ester), *Phosphoric acid/(trixylyl-ester), *Phosphoric acid/(diphenyl-ester)-(ethylhexyl-ester), *Phosphoric acid/(diphenyl-ester)-(isodecyl-ester), *Phosphoric acid/(diphenyl-ester)-(phenyl-ester), *Phosphoric acid/(diphenyl-ester)-(methyl-ester), *Phosphoric acid/(chlorophenyl-ester)-(diphenyl-ester), *Phosphoric acid/(dimethyl-ester)-(xylyl-ester), *Phosphoric acid/(biphenylyl-ester)-(diphenyl-ester).

PB-251 699/5 PC **A16**/MF **A01**
Environmental Protection Agency, Washington, D.C
Office of Pesticide Programs.
Informal Working Papers for the Report: Alternative Futures for Environmental Policy Planning: 1975-2000
Stanford Research Inst , Menlo Park, Calif.
David C MacMichael, Duane S. Elgin, and Peter Schwartz. Aug 75, 374p EPA/540/9-76/008
Contract EPA-68-01-2698
See also PB-248 796.

This volume contains the informal papers used in preparation of the final report, Alternative Futures for Environmental Policy Planning: 1975-2000 (PB-248 796) These working papers are provided for use by the client in its development of a futures planning capability. These are not part of the formal report and are solely intended for use as informal documents to supplement the final report. This volume consists of three major sections: Section I· An extended discussion of the alternative futures methodology which was described only briefly in the final report Section II A review of key trend areas which were critical in developing a plausible range of alternative futures scenarios (a summary of each of these is presented in the final report) Section III: A review of selected futures literature which provided a multi-dimensional source of competing perspectives which, in turn, aided us in putting some 'flesh' on the skeletal futures that were developed.

Keywords: *Environmental surveys, *Forecasting, *Pollution, *Government policies, Scenarios, National government, Agriculture, Pesticides, Planning, Social effect, Economic impact, Political intelligence, Risk, Projection, Alternatives, *Hypothetical futures.

PB-251 819/9 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C.
Office of Toxic Substances.

Study on Chemical Substances from Information Concerning the Manufacture, Distribution, Use, Disposal, Alternatives, and Magnitude of Exposure to the Environment and Man. Task II. The Manufacture and Use of Selected Alkyltin Compounds Final rept.
Midwest Research Inst., Kansas City, Mo.
Thomas W. Lapp. Mar 76, 129p* EPA/560/6-76/011
Contract EPA-68-01-2687

The purposes of this study were to identify the production methods, importation, exportation, use patterns, and exposure to man and the environment for selected alkyltin compounds from 1965 to 1974. For this study, only organotin compounds having alkyl groups with eight carbon atoms or less attached to the tin were considered. Data for the production methods included the specific process, raw materials, annual production quantities, major manufacturers, waste products, environmental management of process wastes, and other production data. Use patterns were identified and annual consumption data were compiled for each compound in the respective areas of utilization Major consumers in each use area were identified Various possible methods for the exposure of man and the environment to alkyltin compounds were discussed and evaluated. Future production quantities and areas of usage were estimated for the next 10 years.

Keywords: *Tin organic compounds, *Industrial plants, Combustion products, Manufacturing, Vulcanization, Polyvinyl chloride, Biocides, Cellular plastics, Elastomers, Utilization, Cost estimates, Synthesis(Chemistry), Industrial wastes, Pollution, Public health, Market research, Physical properties, Esters, Acetic acid, Acetates, Water analysis, Maleates, Maleic acid, Laurates, Solid waste disposal, Energy consumption, *Acetic acid/butyl-(isooctyl-ester)-mercapto-stannylene, *Mercaptide/bis(dodecyl)-dibutylstannylene, *Maleic acid/(dibutylstannylene-ester), *Lauric acid/(dibutylstannylene-ester)-di, *Acetic acid/(isooctyl-ester)-mercapto-methylstannylene, *Acetic acid/bis(isooctyl-ester)-mercapto-dioctylstannylene, *Maleic acid/(dioctylstannylene-ester), *Bis(tributyltin) oxide

PB-251 820/7 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Study on Chemical Substances from Information Concerning the Manufacture, Distribution, Use, Disposal, Alternatives, and Magnitude of Exposure to the Environment and Man. Task III. The Manufacture and Use of Selected Inorganic Cyanides Final rept.
Midwest Research Inst., Kansas City, Mo
Ralph R. Wilkinson, and Gary R Cooper. 2 Apr 76, 229p* EPA/560/6-76/012
Contract EPA-68-01-2687

The purposes of the study were to identify the production methods, importation, exportation, use patterns, and exposure to man and the environment of selected inorganic cyanides, including hydrogen cyanide, from 1965 to 1975. Data for the production methods included the specific process, raw materials, annual production quantities, major manufacturers, waste products, environmental management of process wastes, and other production data. Use patterns were identified and annual consumption data were compiled for each compound in the respective area of utilization. Major consumers in each use area were identified Various possible methods for the exposure of man and the environment to inorganic cyanides were discussed and evaluated. Future production quantities and areas of usage were estimated to 1985.

Keywords. *Iron cyanides, *Industrial plants, *Hydrogen cyanide, *Sodium cyanide, *Potassium cyanides, Cyaniding(Benefication), Pesticides, Metal finishing, Electroplating, Pigments, Mining, Case hardening, Heat treatment, Public health, Pollution, Manufacturing, Industrial wastes, Soild waste disposal, Water analysis, Cyanide hardening, Industrial waste treatment, Market research, Utilization, Synthesis(Chemistry), Cost estimates, Photographic processing chemicals, *Calcium cyanide, *Heavy metals, Energy consumption.

PB-251 842/1 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances
Development of a Study Plan for Definition of PCBS Usage, Wastes, and Potential Substitution in the Investment Casting Industry. Task III Final rept.
Versar, Inc., Springfield, Va.
James D. Barden, and Robert L. Durfee. Jan 76, 41p 474-3, EPA/560/6-76/007
Contract EPA-68-01-3259
See also report on Task 2, dated Jan 76, PB-251 433.

A study plan, designed to define the usage of polychlorinated biphenyls (PCBs) and terphenyls (PCTs) in the investment casting industry, was developed under the subject task. Current knowledge was reviewed and used as input to the study plan development. Methods of information gathering and data sources, as required to define industry scope and technology, wastes, and substitution technology, were also determined.

Keywords. *Industrial plants, *Casting, Utilization, Industrial wastes, Public health, Air pollution, Water pollution, Terphenyls, Combustion products, Economics, Sampling, Water analysis, Gas analysis, Chlorine aromatic compounds, Investment casting, *Biphenyl/chloro, *Terphenyl/chloro, *Environmental chemical substitutes.

PB-251 851/2 PC **A99**/MF **A01**
Tracor Jitco, Inc., Rockville, Md.
An Ordering of the NIOSH Suspected Carcinogens List Based Only on Data Contained in the List
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Mar 76, 607p* Rept no. EPA/560/1-76/003
Prepared in cooperation with Tracor Jitco, Inc., Rockville, Md., Contract EPA-68-01-3255.

The document is the first product of an effort to arrange the substances presented in the NIOSH Suspected Carcinogens Subfile in a meaningful and useful way. Utilizing carcinogenic related data presented in the NIOSH Subfile, a four-digit number was computed for each substance to indicate the relative degree of concern that might be warranted regarding its possible carcinogenic potential. The first listing in this document presents the substances in order of the four-digit number computed for each. A second listing presents the substances alphabetically by compound name.

Keywords· *Carcinogens, *Directories, Toxicology, Chemical compounds, Neoplasms, Public health, *Toxic agents, Cancer, Occupational safety and health, Environmental health.

PB-251 874/4 PC **A03**/MF **A01**
Environmental Contamination from Hexachlorobenzene Final rept
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
20 Jul 73, 34p Rept no EPA/560/6-76/014
Rereleased Apr 76

A series of episodes around the world resulted in recognition of the fact that man and his environment are being exposed to hexachlorobenzene (HCB). The finding of grossly elevated levels in domestic animals, such as at Geismar, Louisiana, elicited the attention of local State, and Federal officials. The report summarizes available information in the production, use, and toxicity of HCB and presents conclusions and activities undertaken to gain a fuller understanding of the problems associated with this substance so as to formulate a regulatory posture on this toxic substance.

Keywords· *Toxicity, *Hazardous materials, *Chlorine aromatic compounds, Ecology, Lethal dosage, Chemical analysis, Toxicology, Aromatic hydrocarbons, Exposure, Production, Cattle, Contamination, Air pollution, Fungicides, Laboratory animals, Experimental data, Inhalation, Ingestion(Biology), Benzene, Dosage, Air pollution effects(Animals), *Benzene/hexachloro, Geismar(Louisiana), Toxic hazards, Environmental health, *Air pollution effects(Humans), Maximum permissible exposure

PB-252 012/0 PC **A21**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
PCBs in the United States Industrial Use and Environmental Distribution Final rept. on Task 1
Versar, Inc., Springfield, Va.
Robert L. Durfee, Gayaneh Contos, Frank C. Whitmore, James D. Barden, and E. E. III Hackman. 25 Feb 76, 488p* 474 1, EPA/560/6-76/005
Contract EPA-68-01-3259

This document presents the current state of knowledge about the production, usage, and distribution of polychlorinated biphenyls (PCBs) in the United States. The information presented is derived from detailed studies on the production and first tier user industries, the past and present generation and disposition of PCB-containing wastes, environmental transport and cumulative loads, potential alternatives to PCBs usage, inadvertent losses to and potential formation in the environment, and current regulatory authorities for PCBs control. These results indicated that, although PCBs content of industrial wastes can be reduced through various approaches (treatment, substitution, etc.), there exists a potentially severe future hazard in the form of large amounts of PCBs currently contained in land disposal sites. Further definition of this and other aspects of the PCBs problem, and determination of ways to minimize the hazard, are recommended.

Keywords: *Environmental impacts, *Chlorine aromatic compounds, Hydraulics, Paper industry, Industrial wastes, Production, Utilization, Water pollution control, Air pollution control, Solid waste disposal, Incineration, Law enforcement, Chemical properties, Physical properties, Photochemical reactions, Manufacturing, Capacitors, Combustion products, Transformers, Casting, Heat transfer, Waste treatment, Carbon, Adsorbents(Materials), Ultraviolet radiation, Ozonation, Oxidation, Photodegradation, Earth fills, Phthalic acids, Alkylalton, Silicones, Fire safety, Effluents, Toxicology, Public health, DDT, Pesticides, Environmental chemical substitutes, *Biphenyl/chloro, Sanitary landfills, Polychlorinated biphenyls.

PB-252 402/3 PC **A21**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
PCBs in the United States Industrial Use and Environmental Distribution Final rept. on Task 1
Versar, Inc., Springfield, Va.
Robert L. Durfee, Gayaneh Contos, Frank C. Whitmore, James D. Barden, and E. E. III Hackman 25 Feb 76, 488p* 474.1, EPA/560/6-76/005
Contract EPA-68-01-3259

This document presents the current state of knowledge about the production, usage, and distribution of polychlorinated biphenyls (PCBs) in the United States. The information presented is derived from detailed studies on the production and first tier user industries, the past and present generation and disposition of PCB-containing wastes, environmental transport and cumulative loads, potential alternatives to PCBs usage, inadvertent losses to and potential formation in the environment, and current regulatory authorities for PCBs control. These results indicated that, although PCBs content of industrial wastes can be reduced through various approaches (treatment, substitution, etc.), there exists a potentially severe future hazard in the form of large amounts of PCBs currently contained in land disposal sites Further definition of this and other aspects of the PCBs problem, and determination of ways to minimize the hazard, are recommended.

Keywords: *Industrial wastes, *Environmental impacts, Solid waste disposal, Chemical properties, Forecasting, Law enforcement, Manufacturing, Production, Utilization, Paper industry, Physical properties, Photochemical reactions, Process charting, Industrial waste treatment, Air pollution control, Water pollution control, Capacitors, Casting, Transformers, Earth fills, Dyes, Packaging, Public health, Chlorine aromatic compounds, Adsorbents(Materials), Activated carbon treatment, Chemical removal(Water treatment), *Biphenyl/chloro, *Terphenyls/chloro, *Polychlorinated biphenyls, Environmental chemical substitutes.

PB-252 620/0 PC **E01**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Asbestos in the Water Supplies of the Ten Regional Cities. Part I Final technical rept.
McCrone (Walter C.) Associates, Inc., Chicago, Ill.
Ian M. Stewart. Apr 76, 60 MA-4200, EPA/560/6-76-017
Grant EPA-68-01-2690

The Office of Toxic Substances of the Environmental Protection Agency has sponsored a Nationwide survey

to determine the impact of point and non-point sources on waterborne sources of asbestos This survey covers both natural sites, in which asbestos containing rocks are prevalent, and man made sources (plants producting asbestos-containing products) Additionally, it provides for sampling water supplies in a number of cities and towns. This report records the results of the analyses of water from the ten cities housing Regional Headquarters of the Environmental Protection Agency. These cities are: Boston, Mass., - New York, New York, - Philadelphia, Pa., - Atlanta, Ga., - Chicago, Ill., - Dallas, Texas, - Kansas City, Missouri, - Denver, Colorado, - San Francisco, California, and Seattle, Washington. The determination of asbestos content was by a transmission electron microscopic method.

Keywords: *Water pollution, *Asbestos, *Urban areas, Surveys, Water supply, Reservoirs, Rivers, Sources, Asbestos deposits, Industrial plants, Amphiboles, Serpentine, Massachusetts, New York, Pennsylvania, Georgia, Illinois, Texas, Missouri, Colorado, California, Washington(State), *Water quality data, Boston(Massachusetts), New York City(New York), Philadelphia(Pennsylvania), Atlanta(Georgia), Chicago(Illinois), Dallas(Texas), Kansas City(Missouri), Denver(Colorado), San Francisco(California), Seattle(Washington).

PB-252 651/5 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
An Ecological Study of Hexachlorobenzene (HCB) Final rept.
New Orleans Univ., La Dept. of Biological Sciences.
John L. Laseter, Clelmer K. Bartell, Anthony L. Laska, Doris G. Holmquist, and Donald B. Condie 9 Apr 76, 74p EPA/560/6-76/009
Contract EPA-68-01-2689

Hexachlorobenzene (HCB) has been found in the environment in southeastern Louisiana in addition to other parts of the world. In this region it is a byproduct of the petro-chemical industry. HCB is a fungicide and has been found to accumulate in fatty tissue of wild and domestic animals. It has had toxic effects upon humans. A number of cases of porphyria cutanea tarda were traced to ingestion of treated grain. In this study, soil, water and organism samples were collected periodically in 1974 and 1975 from sites in southeastern Louisiana, with emphasis along the Mississippi River and an industrial region of known contamination of HCB near Geismar, Louisiana Maximum HCB concentrations in water from the two areas were 90.3 and 74 9 microgram/l (ppb). Maximum HCB concentrations in soil from the two areas were 874 and 53,130 microgram/Kg (ppb). Laboratory experiments with the compound included acute toxicity studies in aquatic systems and through injection in fish and crayfish Accumulation and depuration rates were determined and observations made with histological slides of tissue.

Keywords. *Chlorobenzenes, *Toxicity, *Environmental surveys, *Fungicides, Soils, Water pollution, Ecology, Absorption(Biology), Animals, Wildlife, Humans, Aquatic animals, Fishes, Field tests, Pesticides, Petrochemistry, Industries, Louisiana, Bioassay, Chlorine aromatic compounds, *Water pollution effects(Animals), Bioaccumulation, *Benzene/hexachloro, Laboratory tests, Mississippi River

PB-252 671/3 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
An Ecological Study of Hexachlorobutadiene (HCBD) Final rept.
New Orleans Univ., La Dept. of Biological Sciences.
John L. Laseter, Clelmer K Bartell, Anthony L. Laska, Doris G Holmquist, and Donald B. Condie. 9 Apr 76, 71p EPA/560/6-76/010
Contract EPA-68-01-2689

Hexachlorobutadiene (HCBD) has been found in the environment in southeastern Louisiana in addition to other parts of the world. In this region it is a byproduct of the petrochemical industry. HCBD has been used as an insecticide in central European orchards and vineyards where excessive contact has caused illness in humans. In this study, soil, water and organism samples were collected periodically in 1974 and 1975 from sites in southeastern Louisiana, with emphasis along the Mississippi River and an industrial region of known contamination of HCBD near Geismar, Louisiana Maximum HCBD concentrations in water from the two areas were 1.9 and 4.7 microgram/l (ppb). Maximum HCBD concentrations in soil from the two areas were 790 and 1,080 microgram/Kg (ppb). Laboratory experiments with the compound included acute toxicity studies in aquatic systems and through injection in fish and crayfish Accumulation and depuration rates were determined and observations made with histological slides of tissue.

Keywords: *Chlorobutadienes, *Toxicity, *Environmental surveys, *Insecticides, Soils, Water pollution, Ecology, Absorption(Biology), Animals, Wildlife, Aquatic animals, Fishes, Field tests, Pesticides, Petrochemistry, Industries, Louisiana, Bioassay, Chlorine aliphatic compounds, *Butadiene/hexachloro, *Water pollution effects(Animals), Laboratory tests, Bioaccumulation, Mississippi River.

PB-252 966/7 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Sampling and Analysis of Selected Toxic Substances. Task III. Vinyl Chloride, Secondary Sources Final rept. 1 Nov-31 Dec 75
Midwest Research Inst., Kansas City, Mo
John E. Going. Apr 76, 30p EPA/560/6-76/002
Contract EPA-68-01-2646
See also report dated Sep 75, PB-246 213.

A sampling and analysis program was conducted to determine whether and to what extent vinyl chloride was present in ambient air due to the presence of polyvinyl chloride products. Sampling environments were chosen to represent real life, but nonwork situations where a significant exposure to polyvinyl chloride products might occur A sampling and analysis protocol was developed with a recovery efficiency of greater than 90% and a detection limit of 10 ppb (v/v). The two general categories of environments sampled were vehicles and commercial products The interior ambient air was sampled from new and used domestic automobiles, foreign automobiles and domestic mobile homes. No evidence of vinyl chloride was found The following commercial vinyl products, when sampled in their normal environment, did not produce a measurable quantity of vinyl chloride in the ambient air: vinyl wall covering; vinyl swimming pool liners; and vinyl nursery products. A room being painted with a heavily pigmented red paint was found to contain a very low level of vinyl chloride.

Keywords· *Toxicology, *Carcinogens, *Vinyl chloride, Air pollution, Automotive industry, Sampling, Exhaust emissions, Combustion products, Public health, Vehicles, Paints, Fabrics, Gas chromatography, Gas analysis, Charcoal, Adsorbents, Sites, Sources, *Air pollution sampling, Cancer, Environmental health, Secondary sources

PB-252 970/9 PC **A15**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Ketonic Solvents Final rept.
Syracuse Research Corp , N.Y. Center for Chemical Hazard Assessment.
Sheldon S Lande, Patrick R. Durkin, Deborah H. Christopher, Philip H Howard, and Jitendra Saxena. May 76, 348p* TR-76-500, EPA/560/2-76/003
Contract EPA-68-01-3100

This report reviews the potential environmental hazard from the commercial use of ketonic solvents with the exception of acetone. Three ketones - cyclohexanone, methyl ethyl ketone, and methyl isobutyl ketone - dominate the market Other commercial ketonic solvents include diacetone alcohol, isophorone, mesityl oxide, and acetophenone. Information on physical and chemical properties, production methods and quantities, commercial uses and factors affecting environmental contamination, as well as information related to health and biological effects, are reviewed.

Keywords: *Toxicology, *Environmental effects, *Ketones, *Cyclohexanones, *Methyl ethyl ketone, *Pollution, Manufacturing, Combustion products, Photochemical reactions, Solvents, Physical properties, Chemical properties, Chemical reactions, Production rate, Public health, By products, Coating processes, Air pollution, Water pollution, Exhaust emissions, Concentration(Composition), Sewage treatment, Monitoring, Chemical analysis, Biodeterioration, Public health, Storage, Microorganisms, Plants(Botany), Adhesives, Law enforcements, *Pentanone/methyl-2, Air pollution effects(Humans), Air pollution effects(Animals), Water pollution effects(Humans), Water pollution effects(Animals)

PB-253 172/1 PC **A02**/MF **A01**
Summary Tabulation of Selected EPA Activities Concerning Toxic Chemicals Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Apr 76, 19p* Rept no. EPA/560/4-76/001

The tabulation in this Report summarizes EPA's current activities directed to related toxic chemicals, with emphasis on current and near-term regulatory activities. Also, appropriate published references are identified which should help the interested reader understand the details of the activities.

Keywords: *Pollution, *Chemical compounds, *Toxicity, Regulations, Air pollution, Water pollution, Standards, Law(Jurisprudence), Tables(Data), Water quality, Pesticides, Fuel oil, Hydrocarbons, Fuel additives, *Chemicals, Environmental Protection Agency

PB-253 248/9 PC **A20**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances
National Conference on Polychlorinated Biphenyls (November 19-21, 1975, Chicago, Illinois)
Research Triangle Inst , Research Triangle Park, N C. Center for Technology Applications
Franklin A. Ayer. Mar 76, 469p* EPA/560/6-75-004
Contract EPA-68-01-2928
Prepared in cooperation with Department of Agriculture, Washington, D.C , Department of Health, Education, and Welfare, Washington, D.C., and Department of the Interior, Washington, D.C

The objectives of the conference where to bring together the latest data and best available expertise to help clarify the problems associated with the manufacture, use and disposal of PCBs ... help assess the effectiveness of steps taken to reduce the problems associated with PCBs ... provide a platform for interested parties to present previous neglected data concerning PCBs . help clarify the feasibility and complications of steps to reduce the problems associated with PCBs

Keywords. *Meetings, *Manufacturing, *Environmental impacts, *Utilization, *Air pollution. *Water pollution, *Toxicology, Isomers, Public health, Capacitors, Insulating oil, Air pollution control, Water pollution control, Law enforcement, Marine atmosphere, Economics, Biphenyls, Chlorine aromatic compounds, Tissues(Biology), Biochemistry, Bioassay, Laboratory animals, *Biphenyl/chloro, Air pollution effects(Humans), Air pollution effects(Animals), Pollutant identification, Environmental chemical substitutes, Water pollution effects(Animals), Water pollution effects(Humans), *Polychlorinated biphenyls

PB-253 735/5 PC **A07**/MF **A01**
Review of PCB Levels in the Environment Final rept.
Environmental Protection Agency, Dallas, Tex Region VI
Doris J Finlay, Frederick H Siff, and Vincent J DeCarlo Jan 76, 143p* Rept no. EPA/560/7-76-001

This study reviews the current PCB data base to assess the PCB levels in the environment on a national level; the full spectrum of PCB levels reported in man and the environment were of interest Data were obtained from a number of national monitoring programs, the literature and many unpublished reports The data examined was inclusive to December 1, 1975. It should be stressed at the outset, that due to the complexity and difficulty of PCB identification and measurement, that levels reported are not really comparable between different investigators. This aspect could not be compensated for or identified in the data presented.

Keywords: *Chlorine organic compounds, *Pesticides, *Pollution, Monitoring, Water resources, Sediments, Soils, Fishes, Birds, Lakes, Rivers, Ocean environments, Sewage treatment, Industrial plants, Food, Humans, Concentration(Composition), Solubility, Tables(Data), *Biphenyl/chloro, Arochlor, *Polychlorinated biphenyls.

PB-253 794/2 PC **E02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Sampling and Analysis of Selected Toxic Substances. Task 1A - Hexachlorobenzene Final rept. Jun 74-Sep 75
Midwest Research Inst., Kansas City, Mo.
R T. Li, J. L. Spigarelli, and J. E. Going Jun 76, 166
EPA/560/6-76/001
Contract EPA-68-01-2646
See also Task 1, PB-243 641, and Task 2, PB-243 690.

Nine industrial plants were sampled to determine hexachlorobenzene (HCB) levels in air, water, soil and sediment. The plants represent six major industries: perchloroethylene, trichloroethylene, carbon tetrachloride, chlorine, triazine herbicides, and pentachloronitrobenzene. In general, higher levels of HCB were associated with the production of lower chlorinated hydrocarbons than with the production of other chemicals. HCB levels in soil and air at the pentachloronitrobenzene plant were relatively high. The levels of HCB associated with plants producting chlorine and triazine herbicides were very low. Several different waste-disposal methods were used at the perchloro- and trichloroethylene plants that were sampled The highest level of HCB was detected in air and soil at the plant using on-site landfill and open pit storage. High HCB levels were detected in loading and transfer areas at plants using off-site disposal methods Samples were collected from two sewage treatment plants; negligible quantities of HCB were detected.

Keywords: *Water pollution, *Chlorine aromatic compounds, *Air pollution, *Industrial wastes, Sites, Water pollution, Field tests, Sewage treatment, Solid waste disposal, Sampling, Waste waters, Concentration(Composition), Particles, Combustion products, Water analysis, Gas analysis, Soil analysis, Chemical industry, Tables(Data), Monitors, Earth fills, *Benzene/hexachloro, *Water pollution sampling, *Air pollution sampling.

PB-253 941/9 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Sampling and Analysis of Selected Toxic Substances. Task IB. Hexachlorobutadiene Final rept. Jul 74-Sep 75
Midwest Research Inst., Kansas City, Mo
R. T. Li, J. E. Going, and J L Spigarelli Jun 76, 152p
EPA/560/6-76/015
Contract EPA-68-01-2646
See also report on Task 2 dated Sep 75, PB-246 213.

A sampling and analysis program was conducted to determine the extent of environmental contamination by hexachlorobutadiene around nine chemical manufacturers. The plants selected represented six major industries: perchloroethylene, trichloroethylene, carbon tetrachloride, chlorine, triazine herbicides, and pentachloronitrobenzene. Air, water, soil, and sediment samples were collected on and around the plants In general, higher levels of HCBD in air were associated with production of perchloroethylene and trichloroethylene while the level in the vicinity of chlorine and triazine herbicide plants was very low. No HCBD was found in the air at the pentachloronitrobenzene plant. The highest level of HCBD in air and soil was at a plant using on-site landfill and open pit storage waste-disposal methods High levels were detected in loading and transfer areas at plants using off-site disposal methods.

Keywords: *Air pollution, *Water pollution, *Solid waste disposal, Toxicity, Soil analysis, Chemical industry, Sampling, Chemical analysis, Sediments, Water analysis, Combustion products, Industrial wastes, Industrial waste treatment, Earth fill, Sites, Byproducts, Concentration(Composition), Gas analysis, Chlorine organic compounds, Incinerators, Herbicides, *Butadiene/hexachloro, *Air pollution sampling, *Water pollution sampling.

PB-253 980/7 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Technical and Microeconomic Analysis of Arsenic and Its Compounds Final rept. on task 2
Versar, Inc., Springfield, Va.
Robert P Burruss, Jr, and Donald H. Sargent. Apr 76, 242p* 454-2, EPA/560/6-76/016
Contract EPA-68-01-2926
See also report dated Mar 75, PB-244 625.

The role of arsenic (and its compounds) in the environment and in the economy of the United States was studied, to evaluate the need for and the projected effect of controlling its production, use, dissipation, and emission. The occurrence, chemistry, and toxicology were reviewed; the prevalence of arsenic as an impurity in commercial raw materials, processes, and products was systematically documented; the intentional commercial flow of arsenical products was quantified; the sources of pollution were identified and characterized; and the health hazards were evaluated. The intentional production and use of arsenic and its compounds is greatly exceeded by the quantities unintentionally mobilized by industrial activities. The arsenic currently in food and water presents no identifiable health hazard, and the present controls on arsenical products, by a number of Government agencies, appear adequate Emissions to the air from high-temperature processes are large, particulate collection devices appear largely inadequate, and the dangers presented are of serious concern.

Keywords: *Arsenic, *Solid waste disposal, *Air pollution, *Water pollution, *Environmental impacts, Demand(Economics), Pesticides, Arsenic inorganic compounds, Arsenic organic compounds, Public health, Chemical industry, Industrial wastes, Metal industry, Iron, Water analysis, Gas analysis, Particles, Soil analysis, Utilization, Economic analysis, Wood preservatives, Glass, Electronics, Manufacturing, Toxicology, Sewage treatment, Zinc, Lead, Copper, Fossil fuels, Manganese, Mineral deposits, Food contamination, Market surveys, Air pollution control, Water pollution control, Environmental chemical substitutes, Geothermal energy, Point sources, Zinc industry, Lead industry, Copper industry.

PB-253 982/3 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Biological Effects and Environmental Aspects of 1,3-Butadiene. (Summary of the Published Literature) Final rept.
Radian Corp., Austin, Tex.
T B. Parsons, and Glynda E Wilkins May 76, 58p
EPA/560/2-76/004
Contract EPA-68-01-3249

This report is a summary of the literature on the biological effects and environmental aspects of 1,3-butadiene and was prepared from articles and abstracts identified through a search of the technical literature. The report contains information on the effects of 1,3-butadiene in environmental samples and on the reactivity of 1,3-butadiene in environmental media.

Keywords *Butadienes, *Air pollution, *Water pollution, *Reviews, Hydrocarbons, Concentration(Composition), Toxicity, Industrial hygiene, Waste water, Combustion products, Industrial wastes, Photochemical reactions, Physiological effects, Bibliographies, Tables(Data), Metabolism, Air pollution effects(Plants), Air pollution effects(Animals), Air pollution effects(Humans), Water pollution effects(Plants), Water pollution effects(Animals), Water pollution effects(Humans), Environmental health, Toxic agents.

PB-254 246/2 PC **A99**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Chemicals Which Have Been Tested for Neurotoxic Effects Final rept
Tracor Jitco, Inc , Rockville, Md
May 76, 725p* EPA/560/1-76/005
Contract EPA-68-01-3255

An extensive literature search was conducted to prepare this catalog of chemicals which have been tested for neurotoxic effects. The text of the catalog consists of a series of brief extracts of the experimental procedures and findings of studies in which chemicals were tested for neurotoxic effects. The document is indexed by chemical, class of chemical, and selected neurotoxic effects.

Keywords. *Toxicity, *Nervous system, *Chemical compounds, Physicochemical properties, Humans, Toxicology, Histology, Pathology, Physiological effects, Human behavior, Abnormalities, Laboratory animals, Experimental data, Bioassay, Dosage, Indexes(Documentation), Neurotoxicity, Toxic hazards, Teratology.

PB-254 272/8 PC **A02**/MF **A01**
Colorado State Univ., Fort Collins. Inst. of Rural Environmental Health.
Chemical Safety - Pesticides
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Homer R. Wolfe. 19 Jul 74, 24p
Prepared in cooperation with Colorado State Univ., Fort Collins. Inst. of Rural Environmental Health. Proceedings of the Annual Conference of Environmental Chemicals - Human and Animal Health (3rd), Held at Fort Collins, Colorado, July 15-19, 1974.

People who become involved in activities requiring exposure to pesticides should be aware of the potential hazards involved as a result of absorption of toxic compounds. If a person is knowledgeable about such hazards and understands the importance of taking proper precautions, he can do much to insure the safety of himself and others. Although illnesses resulting from over-exposure to toxic compounds do occur among applicators and other workers, most are a result of carelessness or accident. Experience has shown that if proper precautionary measures are observed and directions on the pesticide label are followed, even the more toxic compounds can be used safely. Exposure to less toxic compounds should not be ignored.

Keywords: *Pesticides, *Industrial hygiene, Hazards, Toxicology, Toxicity, Personnel, Education, Safety, Industrial atmospheres, Protective clothing, Protective coverings, Protective masks, Human factors engineering, Respirators, Exposure, Skin(Anatomy), Respiratory systems, Chemical industry, *Occupational safety and health, *Toxic substances.

PB-254 388/2 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, Office of Toxic Substances.
Health Effects of Benzene: A Review Final rept.
National Research Council, Washington, D.C. Committee on Toxicology.
Bertram D. Dinman, Yves Alarie, Mary O. Amdur, Joseph F. Borzelleca, and John J. Burns, Jr. Jun 76, 32p* Rept no. NAS/ACT/P-829
Contract EPA-68-01-2931

Acute exposure to benzene produced toxic effects on the central nervous system; however, in order to evaluate the chronic effects, consideration must be given to the myelotoxic and possible chromosome-damaging and leukemogenic effects of benzene. Most cases of severe benzene intoxication have been reported in workers exposed to rather high concentrations of benzene under somewhat unhygienic working conditions It has been suggested that 'benzene-induced leukemia' may occur only in individuals who are highly sensitive because of genetic constitution or because of synergistic action of other chemical or physical environmental agents. A co-leukemogenic role for benzene would explain the failure to induce leukemia in benzene-exposed animals Based on available literature, it can be concluded that benzene may be associated with leukemia, therefore, benzene must be considered a suspect leukemogen Aplastic anemia associated with benzene exposure may well represent the most significant health hazard.

Keywords: *Benzene, *Toxicology, *Leukemias, *Occupational diseases, Epidemiology, Industrial medicine, Toxicity, Chromosomes, Hemotopoietic system, Bone marrow, Blood diseases, Malignant neoplasms, Carcinogens, Humans, Laboratory animals, Aplastic anemia, Central nervous system, Public health

PB-254 417/9 PC **A07**/MF **A01**
Selected Aspects of the Control of Toxic Substances (A Compilation of Speeches), by the Members of the Staff of the Office of Toxic Substances Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
May 76, 147p Rept no. EPA/560/4-76/002

Contents:
- Chemical and environmental concerns;
- Pesticides and the Toxic Substances Control Act;
- Address to the conference on the environmental impact of water chlorination;

An approach to the control of toxic substances;
Environmental aspects of chemical use in printing operations;
Chemicals and the environment;
Program of the Office of Toxic Substances in relation to microcosm methodology development and the OTS ecological effects program;
Environmental aspects of chemical use in well-drilling operations;
Risk analysis and setting standards for chemical carcinogens;
Environmental aspects of chemical use in rubber processing operations;
Role of the Environmental Protection Agency in establishing standards on trace contaminants.

Keywords: *Toxicology, Chemical compounds, Carcinogens, Pesticides, Chlorination, Monitors, Standards, Mutagens, Fire resistant coatings, Benefit cost analysis, Ecology, Contaminants, Air pollution control, *Toxic substances, Toxic Substances Control Act, Chemical agent detection, *Toxic environments, Water pollution control, Biphenyl/chloro, Environmental impact assessments, Environmental health.

PB-254 919/4 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C
Office of Toxic Substances.
Chemical Technology and Economics in Environmental Perspectives. Task II. Removal of Boron from Wastewater Final rept. Feb-Mar 76
Midwest Research Inst., Kansas City, Mo.
Thomas W. Lapp, and Gary R. Cooper Jun 76, 35p
EPA/560/1-76/007
Contract EPA-68-01-3201
See also report dated Feb 76, PB-251 146.

The purposes of this study were to determine the degree of general concern regarding the presence of boron in industrial waste streams and municipal sewage systems and to ascertain if any industries or cities are currently engaged in the removal of boron from their wastewater. For those methods currently practiced, the specific method of removal, effectiveness, and cost estimates were determined. The current literature was surveyed for other methods of boron removal that may have merit for future application in this area. Efficiency of boron removal and cost estimates were presented for several of the possible methods. A survey of the literature was also conducted to determine the effect of boron on microorganisms present in municipal waste treatment systems.

Keywords: *Boron inorganic compounds, *Boron organic compounds, *Water pollution control, *Industrial waste treatment, Cost estimates, Borates, Borax, Boric acids, Boron oxides, Sewage treatment, Waste waters, Soil analysis, Toxicity, Ion exchange resins, Calcium carbonate, Precipitation, Extraction, Air pollution, Soaps, Detergents, Effluents, Amberlite polymers.

PB-255 019/2 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C
Office of Toxic Substances.
Epidemiology Studies. Task 1, Phase 1: Pilot Study of Cancer Mortality Near an Arsenical Pesticide Plant in Baltimore Final rept.
American Public Health Association, Washington, D.C
Genevieve Matanoski, Emanuel Landau, and Elizabeth Elliott. May 76, 25p EPA/560/6-76/003
Contract EPA-68-01-2490

The present study was a preliminary attempt to determine the feasibility of using cancer mortality data to indicate the carcinogenic effects of possible arsenic exposure in the environment The four census tracts for which fifty percent of the areas lay within a 3/4 mile radius of an arsenical-producing insecticide plant were matched by such demographic characteristics as age, race, sex, and socioeconomic status with all other similar tracts in Baltimore City The matching tracts were then subdivided according to suspected differences in exposure to environmental pollution. The lung cancer mortality was higher for the combined tracts adjacent to the plant as compared to the control tracts. The lung cancer mortality for the tract in which the plant was located was three to four times higher than in controls tracts, a difference which was significant. The data also support a northerly gradient in rates with increasing distance from the plant.

Keywords: *Malignant neoplasms, *Epidemiology, *Carcinogens, *Pesticides, *Arsenic, Chemical industry, Industrial plants, Pulmonary neoplasms, Populations, Communities, Air pollution, Exposure, Mortality, Public health, *Cancer, Carcinogenesis, *Air pollution effects(Humans), Health risks.

PB-255 396/4 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, D.C.
Office of Water Planning and Standards
Assessment of Wastewater Management, Treatment Technology, and Associated Costs for Abatement of PCBs Concentrations in Industrial Effluents Final rept. on Task 2
Versar, Inc., Springfield, Va
Robert Durfee. 3 Feb 76, 281p* EPA/560/6-76/006
Contract EPA-68-01-3259
See also PB-255 397.

This report was prepared to provide technologic supporting information for toxic pollutant effluent standards proposed by EPA under 307(a) of the Federal Water Pollution Control Act Amendments of 1972. The report identified potential technologies, assesses implementation feasibility, estimates final effluent characteristics and estimates installation and operation costs for PCBs manufacturers, manufacturers of electrical capacitors, and manufacturers of electrical transformers.

Keywords· *Water pollution control, *Industrial waste treatment, Design criteria, Activated carbon, Adsorbents(Materials), Diphenyls, Chlorine organic compounds, Manufacturing, Chemical industry, Capacitors, Transformers, Carbon, Capitalized costs, Operating costs, Cost estimates, Process charting, Effluents, Concentration(Composition), Solid waste disposal, Air pollution, Earth fills, Performance evaluation, Ozonation, Incinerators, Filtration, Oils, Standards, Ultraviolet radiation, *Biphenyl/chloro, *Polychlorinated biphenyls, Amberlite polymers.

PB-255 787/4 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C
Criteria and Evaluation Div.
Substitute Chemical Program - Initial Scientific Review of PCNB
Little (Arthur D), Inc., Cambridge, Mass.
Joan Berkowitz, Janet Stevens, Douglas Arnold, Muriel Goyer, and Donald Senechal. Apr 76, 71p*
EPA/540/1-75/016
Contract EPA-68-01-2489

This report contains the safety and efficacy initial scientific review of PCNB. PCNB was identified as a registered substitute chemical for certain problematic uses of ethylenebisdithiocarbamate (EBDC) fungicides which are under EPA review for suspected adverse effects. The report covers all uses of PCNB and is intended to be adaptable to future needs. Should PCNB be identified as a substitute for a problem pesticide other than the EBDC fungicides, the review can be updated in Jan. 1976 The report summarizes rather than interprets scientific data reviewed during the course of the studies Data from different sources is not correlated, nor are opinions presented on contradictory findings.

Keywords. *Environmental impacts, *Herbicides, *Fungicides, *Reviews, Substitutes, Toxicology, Soil analysis, Food analysis, Utilization, Chemistry, Pharmacology, Toxicology, Efficacy, Performance evaluation, Chlorine aromatic compounds, Nitro compounds, Microorganism, Cotton plants, Peanut plants, Wheat plants, Tissues(Biology), Chemical analysis, Physical properties, Chemical properties, Synthesis(Chemistry), Public health, *Environmental chemical substitutes, *Pentachloronitrobenzene, Benzene/hexachloro, Bioaccumulation, *Benze/nitro-pentachloro.

PB-255 817/9 PC **A03**/MF **A01**
Summary Characterizations of Selected Chemicals of Near-Term Interest Final rept.
Environmental Protection Agency, Washington, D C.
Office of Toxic Substances
Apr 76, 50p* Rept no. EPA/560/4-76/004

This report includes summary characterizations of 15 chemicals of near-term concern to EPA. The report summarizes (a) health and ecological effects and environmental behavior, (b) sources, environmental levels and exposed populations, (c) technologic and economic aspects and (d) steps that have been taken and are being taken

Keywords: *Environmental impacts, *Arsenic, *Asbestos, *Benzene, *Cadium, *Hydrogen sulfide, *Mercury, *Platinum, *Vinylidene chloride, *Aromatic polycyclic hydrocarbons, Public health, Economic analysis, Toxicity, Biphenyls, Phosphates, Concentration(Composition), Industrial wastes, Exhaust emissions, Air pollution, Water pollution, Bromide organic compounds, Chlorine organic compounds, *Ethylene/dibromo, *Benzidines, *Ethylene/trichloro, *Phosphate/tris(dibromopropyl), *Biphenyl/bromo.

PB-255 899/7 PC **A03**/MF **A01**
Industry Views on the Use of Polychlorinated Biphenyls in Transformers and Capacitors Final rept.
Environmental Protection Agency, Washington, D.C.
Office of Toxic Substances.
Jun 76, 41p Rept no. EPA/560/4-76/003

Statements presented by representative manufacturers and users of PCB's and PCB containing products at meetings with the EPA Administrator have been compiled. Industry outlines its plans for discontinuing the use of PCB's, but presents summarizations of the problems with the phasing out of capacitor and transformer manufacture. The report represents a consultative step in meeting the EPA goal of banning the use of PCB's in all new products.

Keywords. *Meetings, *Electrical industry, Transformers, Biphenyl, Capacitors, Pollution, Chlorine organic compounds, *Biphenyl/chloro, Polychlorinated biphenyls

PB-256 234/6 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D C
Office of Toxic Substances.
Sampling and Analysis of Selected Toxic Substances. Task IV - Ethylene Dibromide Final rept Jan-May 76
Midwest Research Inst., Kansas City, Mo.
J E Going, and J. L. Spigarelli. Jul 76, 170p EPA/560/6-76/021
Contract EPA-68-01-2646
See also report dated Apr 76, PB-252 966.

Sites representing six categories of potential sources of EDB emission were sampled. The categories are. (1) gasoline mixing, storage, and transfer (refineries); (2) retail gasoline, (3) highly trafficked urban; (4) suburban residential (lightly trafficked); (5) rural; and (6) fumigation centers. Air samples collected near four different bulk loading stations had EDB levels at least twice that of background samples. The effect of heavily trafficked freeways on the EDB levels in two different cities was not discernible. However, EDB was detected in all samples taken in heavily trafficked urban areas The ubiquitous nature of EDB is probably the result of the widely dispersed sources of emission in urban/industrial areas. The levels of EDB in air ranged from 0 05 to 0 10 microgram/cum in rural and suburban areas, and from 0.1 to 0.4 microgram/cum in metropolitan areas. Two fumigation centers where EDB was used to fumigate grapefruit were found to be significant sources of emission.

Keywords: *Toxicology, *Chemical analysis, Automotive industry, Exhaust emissions, Air pollution, Concentration(Composition), Monitoring, Bromine organic compounds, Halogen organic compounds, Water pollution, Wind velocity, Gasoline, Samples, Sites, Soil analysis, Water analysis, Vehicles, Sources, Dust, Combustion products, Industrial wastes, *Air pollution sampling, *Ethane/dibromo, Secondary sources, Environmental sources

PB-256 659/4 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D C.
Office of Toxic Substances
Toxicity Studies of Selected Chemicals. Task I: The Developmental Toxicity of Ethylene Dibromide Inhaled by Rats and Mice During Organogenesis Final rept.
Midwest Research Inst , Kansas City, Mo
Robert D. Short, Jr, Jan L. Minor, Brett Ferguson, Timothy Unger, and Chen-Chun Lee. Apr 76, 15p
EPA/560/6-76/018
Contract EPA-68-01-3242

The purpose of this study was to determine the teratogenic potential of ethylene dibromide (EDB) inhaled by rats and mice during organogenesis. This report de-

scribes the effects of ethylene dibromide (inhaled at a concentration of 32 ppm for 23 hr a day from gestational day 6 through 15) on fetal development.

Keywords: *Toxicity, *Congenital abnormalities, *Bromides, Ethane, Scavengers(Materials), Degassers, Fumigation, Rats, Mice, Laboratory animals, Respiration, Embryos, Exposure, Bioassay, Toxicology, Ethane/dibromo, *Toxic substances, Teratogenesis, Birth defects.

PB-256 662/8 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Mercaptobenzothiazoles Final rept.
Syracuse Research Corp., N.Y. Center for Chemical Hazard Assessment.
Joseph Santodonato, Leslie N. Davis, Philip H. Howard, and Jitendra Saxena. Jun 76, 160p* TR-76-502, EPA/560/2-76-006
Contract EPA-68-01-3128
See also PB-252 970.

This report reviews the potential environmental hazard from the commercial use of 2-mercaptobenzothiazoles (MBT). Most of the mercaptobenzothiazoles are consumed as rubber accelerators in vulcanization processes, although the sodium salt of MBT is used as a corrosion inhibitor in water-based cooling systems Information on physical and chemical properties, production methods and quantities, commercial uses and factors affecting environmental contamination, as well as information related to health and biological effects, are reviewed.

Keywords: *Environmental impacts, *Sulfur organic compounds, Transportation, Storage, Benzothiazoles, Elastomers, Industrial wastes, Water pollution, Air pollution, Corrosion inhibitors, Physical properties, Monitoring, Handling, Market value, Chemical properties, Chemical reactions, Photochemical reactions, Hydrolysis, Oxidation, Utilization, Water analysis, Gas analysis, Biodeterioration, Toxicity, Pharmacology, Microorganisms, Biochemistry, Law enforcement, Drinking water, *Benzothiazole thiols, Carcinogens, Bioaccumulation, Air pollution effects(Humans), Air pollution effects(Animals), Air pollution effects(Plants), Water pollution effects(Plants), Water pollution effects(Humans), Water pollution effects(Animals), Mercaptobenzothiazole/(sodium-salt).

PB-256 839/2 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Formaldehyde Final technical rept.
Atlantic Research Corp., Alexandria, Va.
Judith F. Kitchens, Robert E. Casner, Gordon S Edwards, William E. III Harward, and Bruno J Macri. Aug 76, 217p* 49-5681, EPA/560/2-76/009
Contract EPA-68-01-1955
See also report dated Nov 75, PB-248 634.

This report reviews the potential environmental hazards of formaldehyde resulting from its manufacture, use, production from combustion processes and inadvertent production in the environment. Nascent sources of formaldehyde, such as paraformaldehyde, trioxane and hexamethylenetetramine, are also reviewed. The major source of atmospheric discharge of formaldehyde is combustion processes, specifically from automobile emissions. Formaldehyde is also a product of atmospheric photooxidation of hydrocarbons emitted from automobiles. Photochemical degradation of formaldehyde also occurs in the atmosphere. Formaldehyde is a mutagen is lower animals such as Drosophila and bacteria. This property is the basis of its use as a fumigant. Even though formaldehyde is a strong alkylating agent, information to date indicates that it is not mutagenic or carcinogenic in mammals, probably due to the mammalian body's ability to repair this type of nucleic acid damage. Formaldehyde is an allergen. It is also highly toxic in low concentrations causing eye and lung damage and affecting the central nervous system. However, formaldehyde is also a metabolite in biological systems and can be efficiently metabolized to formic acid, carbon dioxide and water, or utilized in the one carbon pool.

Keywords: *Formaldehyde, *Pollution, *Environmental surveys, *Toxicology, Water pollution, Hexamethylenetetramine, Polymers, Chemical properties, Materials handlings, Public health, Manufacturing, Combustion products, Storage, Sources, Monitoring, Chemical analysis, Microorganisms, Humans, Birds, Plants(Botany), Carcinogens, Animals, Reviews, Industrial hygiene, Physiological effects, Aldehyde polymers, Air pollution, Oxygen heterocyclic compounds, Regulations, Law enforcement, Photochemistry, Waste disposal, Industrial wastes, Exhaust emissions, Degradation, Point sources, Nonpoint sources, *Air pollution effects(Humans), *Air pollution effects(Animals), *Air pollution effects(Plants), Trioxanes, Occupational safety and health.

PB-257 107/3 PC **A06**/MF **A01**
Pesticidal Aspects of Chlordane in Relation to Man and the Environment
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
O. Garth Fitzhugh, and Homer E. Fairchild. Aug 76, 114p* Rept no. EPA/540/4-76/006

The review evaluates scientific data in the areas of fish, wildlife, distribution in the environment, residues in crops and food items, and toxicology and epidemiology. This review summarizes rather than interprets scientific data studied during the process of reviewing chlordane. It is not intended that this report correlate data from different sources. The review also does not present opinions on contradictory findings. The review of chlordane covers all uses of the pesticide in the United States and should be applicable to future needs in the Agency.

Keywords: *Pesticides, *Chlordan, Insecticides, Toxicology, Ecology, Epidemiology, Fishes, Wildlife, Aquatic biology, Environments, Residues, Food chains, Vegetable crops, Chlorine organic compounds, Halohydrocarbons, Tables(Data), Reviews, United States, Pesticide residues, Ecosystems.

PB-257 139/6 PC **A02**/MF **A01**
Core Activities of the Office of Toxic Substances (Draft Program Plan) Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Jul 76, 22p Rept no. EPA/560/4-76/005

The report describes a variety of efforts to identify, characterize, and reduce environmental problems associated with toxic chemicals.

Keywords: *Industrial wastes, Chemical compounds, Toxicology, Pollution, Environments, Identifying, Hazards, Public health, *Toxic substances, *Environmental health, Government agencies

PB-257 244/4 PC **A04**/MF **A01**
Heptachlor in Relation to Man and the Environment
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Homer E. Fairchild. Aug 76, 73p Rept no. EPA/540/4-76/007

This review evaluates scientific data in the areas of fish, wildlife, distribution in the environment (air, soil, water), residues in crops and food items, and toxicology and epidemiology. This review summarizes rather than interprets scientific data studied during the process of reviewing heptachlor.

Keywords: *Heptachlor, *Pesticides, *Environmental impacts, *Ecology, Fishes, Wildlife, Distribution(Property), Air pollution, Soils, Interactions, Dienes, Chlorohydrocarbons, Insecticides, Water pollution, Chlorodane, Epidemiology, Toxicology, Food chains, Reviews, Farm crops, Ecosystems, Path of pollutants.

PB-257 301/2 PC **A07**/MF **A01**
Proceedings of the National Symposium on Pesticide Labeling, (1st), Held on June 3-4, 1974. Part I. Presentations, Part II. Questions and Answers
Environmental Protection Agency, Washington, D.C Office of Pesticide Programs.
1974, 140p

Contents:
- Pesticide labeling-A regulatory perspective;
- Labeling requirements-enforcement;
- Labeling requirements-functional;
- Regulatory requirements-State;
- Labeling problems-Federal;
- Labeling problems-State;
- Labeling problems-private industry;
- Labeling problems-user group;
- Labeling problems-environmental view;
- Labeling-marketing communication view,
- Improving label communications;
- Improving label reading via motivation.

Keywords: *Meetings, *Pesticides, Marking, Standards, Regulations, Requirements, State government, National government, Recommendations.

PB-257 371/5 PC **A08**/MF **A01**
Environmental Hazard Assessment Report. Major One- and Two-Carbon Saturated Fluorocarbons. Review of Data Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Frank J. Letkiewicz. Aug 76, 170p* Rept no. EPA/560/8-76/003
See also report dated Sep 74, PB-246 419.

This report is a review of the available information on the commercially important one- and two-carbon saturated fluorocarbons (i.e., fluoromethanes and fluoroethanes) pertinent to an assessment of the potential environmental hazard posed by these compounds. Aspects discussed are production, uses, environmental effects and biological effects. Major topics are the potential stratospheric ozone depletion effect from continued emissive uses of certain fluorocarbons and the cardiovascular effects resulting from inhalation of these compounds.

Keywords *Reviews, *Fluorine aliphatic compounds, *Environmental impacts, *Fluorohydrocarbons, Plastics, Assessments, Stratosphere, Chemical properties, Physical properties, Gas analysis, Ozone, Exposure, Dichlorofluoromethane, Industrial wastes, Biochemistry, Toxicity, Microorganisms, Cardiovascular system, Law enforcement, Carcinogens, Utilization, Concentration(Composition), Combustion products, Gas chromatography, Public health, Chlorine organic compounds, Bromine organic compounds, Refrigerants, Propellants, Aerosols, Air pollution effects(Animals), Air pollution effects(Humans), *Freons, Spray propellants.

PB-257 490/3 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Epidemiology Studies. Estimation of Population Residing near Vinylidene Chloride Plants. Task IV. Vinylidene Chloride Final rept.
American Public Health Association, Washington, D.C.
Emanuel Landau, and Nicholas E. Manos Aug 76, 128p* EPA/560/6-76/022
Contract EPA-68-01-2490
See also report dated Nov 75, PB-248 426

The report presents estimates of the population residing within five miles of plants currently producing or processing vinylidene chloride and the methodology used for estimation. It is estimated that 3 6 million persons reside within five miles of the 38 plants that have been identified. These estimates are presented by age, sex, direction and distance from the plant for each of the 38 plants individually. For the plants located in Standard Metropolitan Statistical Areas that have been divided into 'census tracts', census tracts and the population was estimated from Bureau of the Census publications giving the 1970 population for census tracts. For plants located in untracted areas, the estimates were made using Bureau of the Census maps of county subdivisions and publications giving the 1970 population for county subdivisions

Keywords: *Vinylidene chloride resins, *Epidemiology, *Industrial medicine, *Public health, Census, Industrial plants, Exposure, Populations, Tables(Data), Census tracts, Toxic substances.

PB-257 494/5 PC **A03**/MF **A01**
Identification of Selected Federal Activities Directed to Chemicals of Near-Term Concern Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Jul 76, 36p Rept no. EPA/560/4-76/006

This Report is intended to assist Federal agencies and other interested organizations obtain current informa-

tion on the on-going activities of EPA directed to selected chemicals of near-term concern. In addition to identifying the principal EPA programs related to these chemicals, the Report also includes significant activities of other organizations when that information is available.

Keywords: *Bibliographies, *Environmental surveys, *Asbestos, *Arsenic, *Vinyl chloride, *Vinylidene chloride resins, Chlorine organic compounds, Bromine organic compounds, Anilines, Water pollution, Air pollution, Drinking water, Monitoring, Industrial wastes, Earth fills, Law enforcement, Toxicology, *Benzidines, *Benzene/hexachloro, *Butadiene/hexachloro, *Biphenyl/bromo, *Biphenyl/chloro, Environmental chemical substitutes, *Polychlorinated biphenyls.

PB-257 524/9 PC **A02**/MF **A01**
Review of Selected Literature on Ethylene Dibromide (EDB) Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Frank D Kover. Jun 76, 23p* Rept no EPA/560/8-76/001

This report discusses dibromo ethane's uses, properties, production, environmental aspects, sampling and analysis methodology, emission estimates, biological and toxicological considerations, mutagenic potential, reproductive effects, carcinogenic activity, regulations, and substitutes.

Keywords: *Reviews, *Gasoline, *Antiknock additives, Bromine aliphatic compounds, Air pollution, Chemical properties, Physical properties, Soil analysis, Water pollution, Sampling, Exhaust emissions, Toxicology, Humans, Industrial wastes, Combustion products, Pesticides, Carcinogens, Law enforcement, Concentration(Composition), *Ethane/dibromo, Environmental chemical substitutes.

PB-257 574/4 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Draft Survey and Evaluation of 'In vitro' Toxicity Test Methods Final rept.
Woodard Research Corp., Herndon, Va.
Geoffrey Woodard Aug 76, 106p* EPA/560/5-75/007
Contract EPA-68-01-1895

The English language literature for the period 1954 to May 1974 has been searched. A computer title search, contacts with scientists currently engaged in related research, and bibliographic references contained in individual papers were pursued Copies of articles were obtained and reviewed under the following groupings: (1) Use of Fertilized Eggs in Studies on Chemicals, (2) Use of Isolated Organs and Tissue in Studies on Chemicals, (3) Use of Mammalian and Avian Cell Culture in Studies on Chemicals, (4) Use of Bacteria, Fungi, Protozoa, and Plant Cells in Studies on Chemicals. An attempt has been made to include all systems within these headings. Where such information was available, the applicability of those in vitro test systems has been evaluated.

Keywords *Toxicity, *In vitro analysis, Chemical compounds, Evaluation, Tests, Assaying, Eggs, Tissue culture, Cells(Biology), Microorganisms, Toxicology, Detection, Carcinogens, Mutagens, Surveys, Organ cultures

PB-257 591/8 PC **A06**/MF **A01**
Study Book for the Training Course: Safety and Pesticide Usage
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs
1971, 114p

Contents:
- Putting pesticides and pollution in perspective;
- Toxicology of pesticides,
- Hazards to and protection of individuals who mix and apply pesticides,
- Selection of the proper pesticide;
- The mathematics of mixing and applying agricultural chemicals;
- Hazards associated with different methods of application;
- Safe use of pesticides on the farm;
- Pesticides and institutional environments;
- Safe use of pesticides in vector control;
- Safe use of pesticides in structural pest control,
- Diagnosis and treatment in pesticide intoxication;
- Evaluation of application from various viewpoints;
- Household use of pesticides;
- Disposal of waste pesticides--problems and suggested solutions;
- Industrial hygiene practice in the manufacture, formulation and packaging of pesticides;
- Herbicides - what we know, what we need to know and where we are going;
- Minimizing fish and wildlife losses from pesticides;
- Future trends in chemical and nonchemical methods of pest control;
- Why some chemicals fail to control;
- Federal legislation - its impact on pesticides safety;
- Pesticide poisoning - a medical examiner's view;
- Safety in transport and storage of pesticides;
- Calibration of equipment

Keywords: *Pesticides, *Safety, Toxicology, Hazards, Mixing, Spraying, Mathematical analysis, Selection, Farms, Pest control, Wildlife, Fishes, Diagnosis, Intoxication, Packaging, Herbicides, Trends, Legislation, Storage, Calibrating

PB-257 597/5 PC **A10**/MF **A01**
Proceedings of the Training Course: Pesticides and Public Health (Advanced)
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Jan 71, 221p

Contents:
- Persistence and fate of pesticides in soils, water and crops -- significance to humans;
- Soil chemistry of pesticides;
- Pesticide regulation;
- Pesticides in food;
- Pesticide contaminants in water and mud and their environmental impact;
- Changing pesticide patterns;
- Pesticides and man;
- Teratology and mutagenicity of pesticides;
- Protection of workers from pesticide exposure;
- Application of solid wastes research to pesticide disposal;
- Conducting field investigations of suspected pesticide incidents,
- Developing laboratory competence;
- Pesticides in air;
- Pesticides and carcinogenesis.

Keywords: *Pesticides, *Public health, *Specialized training, Instructional materials, Soil chemistry, Water supply, Farm crops, Regulations, Food, Environmental impacts, Carcinogens, Exposure, Genetics, Solid waste disposal, Air pollution, Metals, *Path of pollutants

PB-257 610/6 PC **A13**/MF **A01**
Study Book for the Introductory Training Course: Pesticides and Public Health
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
1971, 279p

The study book is made available to students enrolled in the Introductory Course in PESTICIDES AND PUBLIC HEALTH to serve as a training aid and guide in their search for knowledge and understanding of concepts and technological considerations pertaining to pesticides. Such are important in developing and maintaining effective programs in the fields of environmental health and environmental protection.

Keywords: *Pesticides, *Public health, *Instructional materials, Toxicology, Project planning, Research projects, Environmental impacts, Protection, Education, Books, Regulations, Specialized training

PB-257 704/7 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Acrylamides Final rept.
Syracuse Research Corp., N.Y. Center for Chemical Hazard Assessment.
Leslie N. Davis, Patrick R. Durkin, Philip H Howard, and Jitendra Saxena Aug 76, 159p* TR-76-507, EPA/560/2-76/008
Contract EPA/68-01-3127

Contents:
- Physical and Chemical Data;
- Structure and properties;
- Chemistry;
- Environmental Exposure Factors;
- Production and consumption;
- Uses;
- Environmental contamination potential;
- Current handling practices and control technology;
- Monitoring and analysis;
- Health and Environmental Effects;
- Environmental effects;
- Biological effects;
- Regulations and standards.

Keywords: *Acrylamide copolymers, *Polyacrylamides, *Water pollution, *Reviews, *Toxicology, Chemical properties, Physical properties, Flocculants, Drinking water, Carcinogens, Concentration(Composition), Manufacturing, Chemical industry, Monitoring, Water analysis, Law enforcements, Biochemistry, Microorganisms, Exposure, Industrial medicine, Occupational health and safety, Bioaccumulation, Water pollution effects(Humans), Water pollution effects(Plants).

PB-257 910/0 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Haloalkyl Phosphates Final technical rept.
Syracuse Research Corp., N.Y. Center for Chemical Hazard Assessment.
Sheldon S. Lande, Joseph Santodonato, Philip H. Howard, Dorothy Greninger, and Deborah H. Christopher Aug 76, 209p* TR-76-513, EPA/560/2-76-007
Contract EPA-68-01-3124
See also PB-256 662.

This report reviews the potential environmental hazard from the commercial use of haloalkyl phosphates (HAP). Emphasis is placed mostly on the four tris(haloalkyl) phosphates which are used as fire retardants. Data on the two pesticide HAP's, naled and dichlorvos, are used for comparison purposes. The tris-HAP's (1) are produced in significant quantities, (2) have several potential sources of environmental contamination, (3) have an unknown fate in the environment, (4) may act as cholinesterase inhibitors, and (5) are potentially carcinogenic and mutagenic.

Keywords: *Toxicology, *Environmental surveys, *Insecticides, *Fire resistant materials, Public health, Water pollution, Chlorine organic compounds, Bromine organic compounds, Halogen organic compounds, Organic phosphates, Cellulosic plastics, Drinking water, Chemical properties, Physical properties, Photochemical reactions, Oxidation, Production capacity, Marketing, Textiles, Plastics, Utilization, Storage, Materials handling, Chemical analysis, Monitoring, Degradation, Toxicity, Carcinogens, Mutagens, Microorganisms, Biochemistry, Law enforcement, *Phosphoric acid/tris(chloroethyl-ester), *Phosphoric acid/(dibromodichloro)-(ethyl-ester)-(dimethyl-ester), *DDVP, *Phosphoric acid/tris(chloropropyl-ester), *Phosphoric acid/tris(dichloropropyl-ester), *Phosphoric acid/tris(dibromopropyl-ester), Bioaccumulation, Water pollution effects(Humans), Water pollution effects(Animals), Water pollution effects(Plants)

PB-258 119/7 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Analysis and Trial Application of Correlation Methodologies for Predicting Toxicity of Organic Chemicals Final rept.
Franklin Inst Research Labs, Philadelphia, Pa. Science Information Services Dept.
Paul N. Craig, and John H Waite May 76, 54p FIRL-F-C3947, EPA/560/1-76/006
Contract EPA-68-01-2657
See also report dated Mar 75, PB-240 658

An index to the literature on structure-activity correlation methods was prepared and is available through NTIS (PB-240 658). A study of each of the major methods was made to determine requirements for application to toxicity data Simultaneously a study was made of available toxicity data and of physical-chemical properties shown to be useful in correlation studies. These evaluations suggested that the structural fragments contained in chemical structures should be considered in structure-activity relationship studies as well

as the n-octanol partition coefficients A prototype toxicity data base was selected from the 1974 Toxic Substances list for 687 compounds for which oral LD50 values were reported in the rat or mouse. The use of discriminant and multiple regression analyses following preliminary clustering gave useful results, but a new extension of the method called 'substructural analysis' was used to predict the LD50 values in the rat. This method can readily be adapted to computer operation, and is recommended for extension to other sets of toxicity data.

Keywords: *Chemical compounds, *Toxicity, Physicochemical properties, Chemical properties, Molecular structure, Regression analysis, Pattern recognition, Correlation techniques, Discriminate analysis, Statistical analysis, Rats, Bioassay, Predictions, Toxic substances.

PB-258 253/4 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Pesticide Programs.
Sensory Chemical Pesticide Warning System. Experimental, Summary and Recommendations Final rept. Jun 74-Jul 75
Southwest Research Inst., San Antonio, Tex
Donald E. Johnson, Leon M. Adams, and John D. Millar. Jul 76, 99p EPA/540/9-75/029
Contract EPA-68-01-2480

The main purpose of this program was to develop a warning system which would alert individuals against premature reentry into areas treated with organophosphate and carbamate pesticides. The design of the study was such that the disappearance times of the pesticides and odor agents (as well as visual agents) were determined under laboratory climatic conditions and for at least two different temperatures outdoors. The tests were designed to evaluate different sensory agents rather than to test one with varying climatic conditions. The three insecticides involved in this program were methyl parathion, carbofuran, and azinphosmethyl The first quarter of the program was devoted to literature searching and generating experimental approaches. Second, third and fourth quarters were almost exclusively devoted to experimental work, although some literature searching and studying were required throughout the program for the purposes of guidance and evaluation.

Keywords: *Pesticides, *Warning systems, *Safety engineering, *Insecticides, Carbamates, Organic phosphates, Time, Odors, Field tests, Reviews, Visual perception, Contaminants, Azinphosmethyl, Carbofuran, Methyl parathion, Disappearance time

PB-258 338/3 PC **A04**/MF **A01**
Notice of Intent to Cancel Registered Uses of Products Containing Chlordane and Heptachlor
Draft environmental impact statement.
Environmental Protection Agency, Washington, D C. Criteria and Evaluation Div
Aug 76, 64p* Rept no. EPA/540/4-76/003
See also PB-238 339.

A notice of intent to cancel certain registered uses of pesticide products containing chlordane and heptachlor was published in the Federal Register on November 26, 1974 The notice stated that an environmental impact statement would be available in approximately 60 days. However, unforeseen delays were encountered and the statement has only now become available This impact statement is a result of a statement of policy by EPA, announcing its intention to prepare Environmental Impact Statements in connection with its most significant regulatory actions, although not required to do so by law.

Keywords *Environmental impact statements - draft, *Pesticides, *Toxicology, Chlordan, Heptachlor, Cancellation, Contamination, Public health, Carcinogens, Alternatives.

PB-258 339/1 PC **A05**/MF **A01**
Pesticidal Aspects of Chlordane and Heptachlor in Relation to Man and the Environment. A Further Review, 1972-1975
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div
Homer E Fairchild. Aug 76, 93p* Rept no EPA/540/4-76/005
See also PB-258 340

This report presents an additional review of both chlordane and heptachlor, which is intended to present selected papers appearing in the literature from 1972-1975. The review indicates new and significant literature in the areas of fish, wildlife, distribution in the environment (air, soil, water), residues in crops and food items, and toxicology and epidemiology. The chemistry information for 1972-1975 was published as a part of a 1975 amendment to the 1972 reviews. This review summarizes rather than interprets scientific data studies in the process of updating the earlier reviews of chlordane and heptachlor. It is not intended to correlate data from different sources of present opinions on contradictory findings. The review covers all uses of the pesticides in the United States and should be applicable to future needs in the Agency. The review was researched and prepared by the criteria and Evaluation Division, Office of Pesticide Programs, EPA.

Keywords· *Pesticides, *Toxicology, *Environmental impacts, Environmental surveys, Chlordan, Heptachlor, Reviews, United States, Utilization, Hazards, Residues, Food, Farm crops, Epidemiology, Environmental Protection Agency.

PB-258 340/9 PC **A16**/MF **A01**
EPA Actions to Cancel and Suspend Uses of Chlordane and Heptachlor as Pesticides: Economic and Social Implications. Part I
Environmental Protection Agency, Washington, D C Criteria and Evaluation Div.
Fred T. Arnold Aug 76, 362p* Rept no. EPA/540/4-76/004
See also PB-258 338.

This is a composite of economic and social impact studies conducted in relation to the announcements of EPA that it was intended to cancel many of the currently registered pesticidal uses of chlordane and heptachlor (Nov. 18, 1974 Federal Register) On July 29, it was intended to suspend chlordane and heptachlor This publication is divided into two parts: (1) Economic and Social Impact Analysis of Cancelling Certain Uses of Chlordane and Heptachlor, and (2) Economic Testimony Presented by EPA at Chlordane/Heptachlor Suspension Hearings, September 18-19, 1975

Keywords: *Pesticides, *Regulations, *Public health, Cancellation, Hazards, Chlordan, Heptachlor, Environmental impact statements, Corn plants, Soil properties, Apple trees, Economic factors, Social effect, Testimony, Public hearings, Environmental Protection Agency.

PB-258 700/4 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Pesticide Programs.
Substitute Chemical Program: Initial Scientific and Minieconomic Review of Carbofuran Rept. on Phase 1
Midwest Research Inst., Kansas City, Mo.
Jul 76, 199p* EPA/540/1-76/009
Contract EPA-68-01-2448

This report contains the Phase I Initial Scientific Review of carbofuran Carbofuran was identified as a registered substitute chemical for certain problematic uses of chlordane, heptachlor and aldrin which have been cancelled by EPA The report covers all uses of carbofuran and is intended to be adaptable to future needs. Should carbofuran be identified as a substitute for a problem pesticide other than those mentioned above, the review can be updated and made readily available for use. The data searches ended in June, 1975. The report summarizes rather than interprets scientific data reviewed during the course of the studies Data from different sources is not correlated, nor are opinions presented on contradictory findings

Keywords. *Pesticides, *Insecticides, *Reviews, Residues, Soil samples, Chemical properties, Pharmacology, Toxicology, Environmental impacts, Utilization, Agricultural machinery, Biochemistry, Metabolism, Pathology, Manufacturing, Economics, Food contamination, Laboratory animals, Oncogenic viruses, Mutagens, Water pollution, Transport, Pest control, Carbamates, *Environmental chemical substitutes, *Carbofuran, *Carbamic acid/(dihydro-dimethyl-benzofuranyl-ester)-methyl.

PB-258 812/7 PC **A03**/MF **A01**
Analysis of the National Academy of Sciences' Report, 'Decision-Making for Regulating Chemicals in the Environment'
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Jan 76, 35p Rept no. EPA/560/3-76/001

In July, 1975, the National Academy of Sciences, published a report on regulating chemicals in the environment This report included 34 specific recommendations for improving the decision-making process. The Office of Toxic Substances, with input from all interested offices in the Agency, prepared the present analysis of the 34 recommendations. This analysis was undertaken to assist in further consideration of these recommendations

Keywords: *Hazardous materials, *Regulations, *Decision making, Recommendations, Chemical compounds, Environmental impacts, Pollution.

PB-258 855/6 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Health and Environmental Impacts: Task 1. Vinylidene Chloride Final rept.
Tracor Jitco, Inc., Rockville, Md.
Randall D. Huffman, and Purna Desai-Greenaway Oct 76, 62p EPA/560/6-76/023
Contract EPA-68-01-4116

A comprehensive survey of the world literature was conducted to prepare this report on the health and environmental impacts of vinylidene chloride. The available information indicates that vinylidene chloride may have significant health effects, but the information shows inconsistencies and is insufficient for the formulation of conclusions. Very little information is available on the environmental impacts of vinylidene chloride

Keywords· *Toxicity, *Hazardous materials, *Industrial medicine, Reviews, Tables(Data), Air pollution, Toxicology, Exposure, Bibliographies, Pathology, Physiological effects, Experimental data, Pharmacology, Biochemistry, Laboratory animals, Bioassay, *Environmental health, Environmental impact assessments, *Vinylidene chloride resins, Toxic substances

PB-258 951/3 PC **A14**/MF **A01**
National Study of Hospital Admitted Pesticide Poisonings
Environmental Protection Agency, Washington, D.C. Human Effects Monitoring Branch
Jack Griffith, Hale Vandermer, Jerome Blondell, and Eldon P Savage Apr 76, 318p* Rept no EPA/540/9-76/017

The purposes of the study were to use hospital patient records to develop accurate and reliable data on the magnitude and character of hospital-admitted poisoning cases, and to develop for the first time nationwide incidence rates for hospitalized acute pesticide poisoning cases among those persons admitted to general-care hospitals. The study design omitted victims of undiagnosed pesticide poisoning, emergency-room patients who are not assigned a hospital bed, and patients treated by physicians outside the hospital environment Acute poisonings by pesticides are a continuing problem in the United States. All pesticides are considered toxic and can cause illness or even death when misused. The toxicity of a pesticide, route of exposure, or formulation, as well as the age, sex, race, and physical and/or mental health status of the user may play an important role in resulting morbidity or mortality

Keywords. *Pesticides, *Toxic diseases, *Toxicity, Patients, Hospitalizing, Tables(Data), Reviews, Methodology, United States, Health status, Toxicology, Medical records, Exposure, Therapy, Age, Sex, Job analysis, Geography, Sampling, Appendices, Race

PB-260 360/3 PC **A18**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances
Current Awareness Service for Toxic Substances (CATS). *Cumulative Report Number 2. Part I*
Annual rept.
Little (Arthur D), Inc., Cambridge, Mass.
Nov 76, 407p* ADL-C-77355-Pt-1, EPA/560/7-76/002

Contract EPA-68-01-2694
See also Part 2, PB-260 361.

This cumulative report contains 26 current awareness documents prepared biweekly from 25 August 1975 through 9 August 1976 during the second year of a two year project. The purpose of this project was to provide the Office of Toxic Substances (OTS), U.S. Environmental Protection Agency with information on new uses of existing chemical products and with information of obvious potential environmental concern for both new and existing chemical products. For each biweekly document a core list of approximately 80 journals was scanned for information of interest to OTS on more than 30 topics (compounds, classes of compounds, and subject areas, e.g., model ecosystems). Abstracts were prepared for all items selected and these abstracts were presented biweekly under the assigned topics. In addition, a 'General Information' section was added to accommodate abstracts for topics not included in the original list of scanning topics. Biweekly subject indexes were cumulated for this annual compilation, and an author index was added.

Keywords· *Toxicity, *Pollution, Vinylidene chloride resins, Acetonitrile, Acrylonitriles, Arsenic, Phosphates, Cresols, Phenols, Asbestos, Nitrosamines, Lactones, Benzidine, Boron, Biphenyl, Dioxanes, Aziridines, Fire resistant materials, Fluorohydrocarbons, Ethers, Halogenorganic compounds, Coal gasification, Hydrazines, Isocyanates, Ecosystems, Amines, Optical brighteners, Phthalates, Polyurethane resins, Naphthalenes, Shale oil, Extraction, Refining, Vinyl chloride, Biphenyl/bromo, Benzidine/dichloro, Coal liquefaction, Benzene/hexachloro, Butadiene/hexachloro, Aniline/N-N-bis(Chloromethyl), Naphthylamines, Acetric acid/nitrilo-tri, Ethylene/chloro, Ethylene/trichloro, Ethylene/dibromo.

PB-260 361/1 PC **A16**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Current Awareness Service for Toxic Substances (CATS). Cumulative Report Number 2. Part II
Annual rept.
Little (Arthur D.), Inc., Cambridge, Mass.
Nov 76, 364p* ADL-C-77355-Pt-2, EPA/560/7-76/002a
Contract EPA-68-01-2694
See also report dated Dec 75, PB-250 075 and Part 1, PB-260 360.

The scanning topics included in this two part series are the chemicals and subject areas as follows: Acetonitrile, acrylonitrile, arsenic, aryl phosphates (phenyl, cresyl, mixed phenyl-cresyl), asbestos, benzidine, and salts (hydrochloride, sulfate), boron, brominated biphenyls, dichlorobenzidine, dioxane, ethyleneimine, flame retardants, fluorocarbons, haloethers, hexachlorobenzene, hexachlorobutadiene, hydrazine, derivatives, and salts (sym and unsym - dimethyl, monomethyl), isocyanates (organic), liquefaction and gasification of coal, methylenebis (chloroaniline), model ecosystems (environmental fate testing, microecosystems), naphthylamines (alpha, beta, N-phenyl derivatives), nitrilotriacetic acid, optical brighteners (fluorescent whitening agents, fluorescent dyes), perchloroethylene, phthalates (dioctyl, di-2-ethylhexyl), polyurethanes, propiolactone, trichloroethylene, shale oil extraction and refining, vinyl chloride, vinylidene chloride, ethylene dibromide, and nitrosamines.

Keywords: *Toxicity, *Chemical elements, *Pollution, Vinylidene chloride resins, Acetonitrile, Acrylonitriles, Arsenic, Phosphates, Cresols, Phenols, Asbestos, Nitrosamines, Lactones, Benzidine, Boron, Biphenyl, Dioxanes, Aziridines, Fire resistant materials, Fluorohydrocarbons, Ethers, Halogenorganic compounds, Coal gasification, Hydrazines, Isocyanates, Ecosystems, Amines, Optical brighteners, Phthalates, Polyurethane resins, Naphthalenes, Shale oil, Extraction, Refining, Vinyl chloride, Biphenyl/bromo, Benzidine/dichloro, Coal liquefaction, Benzene/hexachloro, Butadiene/hexachloro, Aniline/N-N-bis(Chloromethyl), Naphthylamines, Acetric acid/nitrilo-tri, Ethylene/chloro, Ethylene/trichloro, Ethylene/dibromo.

PB-260 381/9 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Recognition and Management of Pesticide Poisonings
Iowa Univ , Iowa City. Iowa Epidemiologic Studies Program
Donald P. Morgan. Aug 76, 61p* EPA/540/9-76/011
Report is new version of the 'Clinical Handbook on Pesticide Poisonings'

The new treatment manual groups pesticides into major classes such as chlorinated hydrocarbons, chlorophenoxy compounds, arsenicals, etc. Under each major class is listed the general chemical structure, pertinent toxicology related to poisoning, common symptoms, a method for confirmation of diagnosis, and the latest information on management and treatment of pesticide poisonings. The text is aimed mainly at physicians treating patients. However, it will also serve as a valuable reference to those who must evaluate the effects of pesticides on human health and investigators of pesticide accidents will benefit by having information useful to confirm pesticide poisonings.

Keywords: *Pesticides, *Toxic diseases, *Hazardous materials, Manuals, Recognition, Management, Diagnosis, Toxicology, Therapy, Poisons, Chlorohydrocarbons, Signs and symptoms, Patients, Toxic substances, *Environmental health.

PB-260 399/1 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Aquatic Pest Control
California State Polytechnic Univ., Pomona.
Eugene D. Young. 1976, 12p EPA/540/8-76/030
Contract EPA-68-01-2918
See also report dated 1975, PB-257 723.

This guide contains basic information to help the commercial applicator to meet the specific standards for applicators who are engaged in aquatic pest control. Because the guide was prepared to cover the entire nation, some information important to the user's state may not be included. The Guide gives information about. Recognition and control of aquatic pests; environmental concerns in aquatic pest control.

Keywords: *Pesticides, *Manuals, Pest control, Recreational facilities, Fishing, Estuaries, Channels(Waterways), Standards, Environmental impacts, Dust, Spraying, Equipment, Protection, Dispersing

PB-260 414/8 PC **A08**/MF **A01**
Substitute Chemical Program - The First Year of Proceedings of a Symposium: Plenary Session, Volume 1
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
30 Jul-1 Aug 75, 156p* Rept no. EPA/540/6-76/013
See also Volume 2, PB-260 415.

Contents:
- Program overview and review process;
- Status of substitute chemical reviews;
- Regional participation;
- Registrant overview;
- Substitute chemical program,
- Rapid screening, mode of action, and information to develop guidelines for the registration of new generation pesticides;
- Commercial feasibility of new generation pesticides;
- Mathematical modeling to improve the quality of economic impact assessment studies in pesticide policy analysis,
- Mathematical linear programming;
- Integrated pest management;
- Toxicological methods and genetic effects workshop summary;
- Ecosystems/modeling workshop summary;
- Chemical methods workshop summary.

Keywords: *Pesticides, *Meetings, *Project planning, Air pollution, Mathematical models, Water pollution, Economics, Cost estimates, Agricultural chemistry, Genetics, Toxicology, Monitoring, Public health, Law enforcement, Environmental impacts, Reviews, Guidelines, Assessments, Linear programming, *Environmental chemical substitutes, Ecosystems

PB-260 415/5 PC **A10**/MF **A01**
Substitute Chemical Program - The First Year of Proceedings of a Symposium. Volume II. Toxicological Methods and Genetic Effects Workshop
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
30 Jul-1 Aug 75, 219p* Rept no. EPA/540/6-76/014
See also Volume 1, PB-260 414.

Partial contents:
- Toxicological methods and genetic effects research progress session introduction;
- Inhalation toxicology,
- Studies on toxicity to mammals of small particle aerosols of nuclear polyhedrosis virus (NPV) pesticides;
- Metabolism of pesticides;
- Toxicological research:
- acute LD50 studies,
- Pesticide residues in human milk;
- Effect of substitute pesticides on hormone-dependent tissue;
- Effects of pesticides on blood lipoproteins, arteries, and cardiac muscle;
- In vitro and in vivo carcinogenic and mutagenic screen development;
- In vitro and in vivo studies of selected pesticides to evaluate their potential as chemical mutagens;
- Use of mutagenesis test to indicate carcinogenesis;
- Epidemiology of pesticides:
- cancer mortality and pesticides usage in the United States.

Keywords: *Pesticides, *Meetings, *Toxicology, *Genetics, Insecticides, Air pollution, Respiration, Lethal dosage, Carcinogens, Mutagens, Metabolism, Milk, Humans, Food chains, Mammals, Embryology, Epidemiology, Malignant neoplasms, Hormones, Blood proteins, Cardiovascular system, In vivo analysis, In vitro analyses, Bioassay, Environmental health, Teratogens, Pesticide residues, Cancer, Air pollution effects(Humans), Environmental chemical substitutes.

PB-260 906/3 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Index to the Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health
National Library of Medicine, Bethesda, Md.
Sharon L. Valley. 1969, 316p DHEW/PUBL/NIH-72/269, EPA/540/9-69/002(HEW)

Contents.
- Introduction;
- Chemical substance index;
- Subject index;
- Bibliography.

Keywords: *Pesticides, *Toxicology, *Indexes(Documentation), Bibliographies, Environments, Ecology, Public health, Hazards, Chlorine organic compounds, Insecticides, Recommendations, DDT, Aldrin, *Environmental health, Toxic substances, DDE pesticide, DDD pesticide, Dieldrin.

PB-260 996/4 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Agricultural Pest Control - Animal
Nebraska Univ , Lincoln.
Robert J. Florell. 1976, 10p EPA/540/8-76/024
Contract EPA-68-01-2910
Prepared in cooperation with North Carolina State Univ., Raleigh, Florida State Univ., Tallahassee, and Purdue Univ , Lafayette, Ind. See also PB-257 723.

This guide contains basic information to help the commercial applicator meet specific requirements for applicators who are engaged in Agriculture-Animal pest control. Because the guide was prepared to cover the entire nation, some information important to a specific state may not be included

Keywords. *Pesticides, *Pest control, *Livestock, *Poultry, *Agriculture, Manuals, Cattle, Sheep, Goats, Swine, Horses, Mules, Sprayers, Safety, Donkeys.

PB-260 997/2 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Industrial, Institutional, Structural and Health Related Pest Control
Purdue Univ., Lafayette, Ind.

Gary W. Bennet. 1976, 18p EPA/540/8-76/025
Contract EPA-68-01-3117
See also PB-257 723. Prepared in cooperation with North Carolina State Univ., Raleigh, Terminix International, Inc., Memphis, Tenn., and California State Polytechnic Univ., Pomona.

The guide contains basic information to help meet the specific standards for applicators who are engaged in industrial, institutional, structural and health-related pest control. Because the guide was prepared to cover the entire nation, some information important to specific states may not be included. The State agency in charge of training should be contacted for specific State materials.

Keywords: *Pest control, *Pesticides, *Manuals, Personnel, Utilization, Guidelines, Standards, Safety, Rodent control, Insect control, Damage, Sanitary engineering, Herbicides, Rodenticides, Insecticides, Poisons, Parasites, Vertebrates, Weeds, Environmental health, Applicators.

PB-260 998/0 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Seed Treatment
Kansas State Univ., Manhattan.
Frank G. Bieberly. 1976, 9p EPA/540/8-76/021
Contract EPA-68-01-2693
Prepared in cooperation with North Carolina State Univ., Raleigh, California Univ., Los Angeles, and Du Pont de Nemours (E. I.) and Co., Wilmington, Del. See also PB-257 723.

This guide contains basic information to help meet specific standards for applicators who are engaged in seed treatment pest control. Because the guide was prepared to cover the entire nation, some information important to specific states may not be included.

Keywords: *Pesticides, *Pest control, *Seeds, Manuals, Standards, Marking, Protection, Equipment, Coloring.

PB-260 999/8 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Food Processing Pest Control
Minnesota Univ., Minneapolis.
Phillip K. Harein. 1976, 15p EPA/540/8-76/026
Contract EPA-68-01-2651
Prepared in cooperation with North Carolina State Univ., Raleigh, Department of Agriculture, Savannah, Ga., and General Mills, Inc., Minneapolis, Minn. See also PB-257 723.

This guide contains basic information to help meet the specific standards for pesticide applicators in the food and feed industries. Because this guide was prepared to cover the entire nation, some information important to each state may not be included.

Keywords: *Pesticides, *Food processing, *Pest control, Manuals, Industrial plants, Life cycles, Insects, Aerosols, Food storage, Mites, Blattidae, Diptera, Rodents, Birds, Dusting, Fumigation, Standards.

PB-261 000/4 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Aerial Application
North Carolina State Univ., Raleigh.
John H. Wilson, Jr. 1976, 11p EPA/540/8-76/027
Contract EPA-68-01-2903
Prepared in cooperation with Louisiana State Univ., Baton Rouge, Florida State Univ., Tallahassee, and Delaware Univ., Newark. See also Pb-257 723.

This guide contains basic information for aerial applicators. Other guides are available to help meet the specific national standards for commercial applicators in various categories of pest control Because the guides were prepared to cover the entire nation, some information important to specific states may not be included

Keywords: *Pesticides, *Pest control, Manuals, Dispersing, Sprayers, Spray nozzles, Vaporizing, Safety, Weather, *Environmental protection.

PB-261 001/2 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs
Apply Pesticides Correctly. A Guide for Commercial Applicators. Public Health Pest Control
California State Dept. of Health, Berkeley.
Don J. Womeldorf. 1976, 13p EPA/540/8-76/028
Contract EPA-68-01-2908
Prepared in cooperation with North Carolina State Univ., Raleigh, Center for Disease Control, Atlanta, Ga., and Nebraska State Dept of Health, Lincoln. See also PB-257 723.

The guide contains information for meeting the specific national standards for applicators who are engaged in public health pest and vector control. Because the guide was prepared to cover the entire nation, some information important to individual states may not be included For additional information, contact the specific state training agency.

Keywords: *Public health, *Pest control, *Manuals, Utilization, Guidelines, Standards, Safety, Rodent control, Insect control, Damage, Sanitary engineering, Disease vectors, Life cycles, Pesticides, Insecticides, Rodenticides, Vertebrates, Environmental health, Applicators(Personnel)

PB-261 002/0 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Right-Of-Way Pest Control
Washington State Univ., Pullman.
Dean G. Swan. 1976, 17p EPA/540/8-76/029
Contract EPA-68-01-2263
Prepared in cooperation with North Carolina State Univ., Raleigh, Washington State Highway Commission, Olympia, and Minnesota Dept. of Highways, St Paul. See also PB-257 723.

This guide contains basic information to help meet specific standards for applicators who are engaged in right-of-way weed control. Because the guide was prepared to cover the entire nation, some information important to specific states might not be included

Keywords: *Herbicides, *Weed control, *Highways, Manuals, Plant growth, Plant regulators, Standards, Grasses, Shrubs, Vegetation, States(United States), Windward drift, Right of way acquisition

PB-261 006/1 PC **A08**/MF **A01**
Substitute Chemical Program - The First Year of Progress. Proceedings of a Symposium. Volume III. Ecosystems/Modeling Workshop
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
30 Jul-1 Aug 75, 154p* Rept no. EPA/540/6-76/015
See also Volume 2, PB-260 415.

Partial contents.
- Ecosystems/modeling workshop;
- Progress and status report on terrestrial in-house system,
- Progress and status report on terrestrial microcosm development,
- The effects of mirex on the predator-prey interactions in an experimental estuarine ecosystem;
- Effects of mirex on the burrowing activity of the lugworm (Arenicola cristata),
- Mathematical modeling of pesticide fate;
- Effects of pesticide use patterns on the incidence of plant disease and on patterns of pesticide degradation;
- Program of the office of toxic substances in relation to microcosm methodology development, and ecological effects program of the office of toxic substances

Keywords *Meetings, *Pesticides, Environments, Ecology, Plant diseases, Utilization, Degradation, Herbicides, Mathematical models, Fresh water, Environmental chemical substitutes, *Ecosystem models, Terrestrial ecosystems, Aquatic ecosystems, Mirex, Predator prey relationships, Toxic substances, Phytotoxicity, Microcosms.

PB-261 007/9 PC **A10**/MF **A01**
Substitute Chemical Program - The First Year of Progress. Proceedings of a Symposium. Volume IV. Chemical Methods Workshop
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
30 Jul-1 Aug 75, 204p* Rept no. EPA/540/6-76/016
See also Volume 3, PB-261 006.

Volume IV deals with Chemical Methods Workshop. There are 13 papers, dealing with such areas as multiresidue methodology; identification of impurities in technical-grade pesticides; sensory chemical pesticide warning system; analysis of pesticides and pesticide metabolites by hyperfine labeling; mass spectrometry methods development; automated cleanup and specific detector system for pesticide residue analysis; pesticides in ambient air; in situ method for organophosphate insecticides; toxic potentiators as by-products of organophosphorus insecticides; research programs of the chemistry branch; microelectrolytic conductivity detector.

Keywords *Pesticides, *Meetings, *Project planning, Chemical analysis, Residues, Hyperfine structure, Chemical reactions, Spectrum analysis, Detection, Microelectronics, Isotopic labeling, Synthesis(Chemistry), Air pollution, Gas chromatography, Mass spectrometry, Insecticides, Phosphorus organic compounds, Water pollution, *Environmental chemical substitutes, Procedures, Microelectronic conductivity detectors

PB-261 092/1 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Ornamental and Turfgrass Pest Control
North Carolina State Univ., Raleigh.
Robert L. Robertson. 1976, 15p
Contract EPA-68-01-2903
Prepared in cooperation with Connecticut Agricultural Experiment Station, New Haven, Colorado State Univ., Fort Collins, and Virginia Polytechnic Inst. and State Univ., Blacksburg.

This guide contains basic information to help the applicator meet the specific standards for applicators who are engaged in ornamental and turfgrass pest control. Because the guide was prepared to cover the entire nation, some information specific to a state may not be included.

Keywords: *Pesticides, *Pest control, *Ornamental plants, *Turf grasses, Manuals, Weed control, Mites, Insects, Nematoda, Fungus diseases, Plant diseases, Bacterial diseases, Herbicides, Rusts(Fungi), Fungi, Toxicity, Worms, Safety, Repellents, Environmental protection.

PB-261 093/9 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Pesticide Programs.
Apply Pesticides Correctly. A Guide for Commercial Applicators. Forest Pest Control
Oregon State Univ., Corvallis.
Michael Newton. 1976, 14p EPA/540/8-76/023
Contract EPA-68-01-2263
Prepared in cooperation with North Carolina State Univ., Raleigh, Forest Service, Washington, D C, and Georgia Univ, Athens See also PB-257 723.

This guide contains basic information to help commercial applicators meet the specific standards for applicators who are engaged in forest pest control. Because the guide was prepared to cover the entire nation, some information concerning specific states may not be included.

Keywords. *Pesticides, *Pest control, *Forestry, Manuals, Standards, Insects, Weed control, Vertebrates, Plant diseases, Forest trees, Herbicides, Borers(Biology), Coleoptera, Hazards, Marking.

PB-261 514/4 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Evaluation of the National Pesticide Monitoring Program (NPMP) Final rept.
Battelle Columbus Labs., Ohio.
T. E. Carroll, W T Lawhon, D A Holzworth, and R. S. Reimers. Mar 75, 160p
Contract EPA-68-01-2296

The objectives of this program were to evaluate the effectiveness of the National Pesticide Monitoring Pro-

gram (NPMP), identify program strengths and weaknesses, and recommend actions necessary to increase program capability. Specific tasks accomplished included: (1) Compilation of NPMP Data - Available data were grouped by relevant parameters such as environmental component monitored, frequency of collection, number and location of samples taken, chemicals monitored and means of monitoring; (2) Effectiveness of NPMP System - The available data were assessed with respect to drawing statistical inferences on trends in national pesticide residue levels, and data limitation problems identified; (3) Survey State Monitoring Activities - The emphasis of this task was on the determination of data availability to augment a national system; and (4) Recommendations - This task considered implications of project findings with respect to policy options available to Government for improving pesticide monitoring capability.

Keywords: *Pesticides, *Research projects, Monitoring, National government, Recommendations, Assessments, Effectiveness, Data processing, Surveys, Policies, State government, Food supply, Residues, Humans, Wildlife, Water supply, Soils, Trends.

PB-261 717/3 PC **A08**/MF **A01**
Environmental Protection Agency, Gulfport, Miss. Pesticides Regulation Div.
National Soils Monitoring Program for Pesticide Residues, FY 1969
Environmental Protection Agency, Washington, D.C. Pesticides Regulation Div.
G. B. Wiersma, H. Tai, and P. F. Sand. 1 Jul 72, 156p Rept no. EPA/540/9-76/034
Prepared in cooperation with Environmental Protection Agency, Gulfport, Miss. Pesticides Regulation Div. and Animal and Plant Health Inspection Service, Hyattsville, Md. Plant Protection and Quarantine Programs.

This report lists pesticide residues in cropland soil for 43 states and noncropland soil for 11 of these. Tables for each state give arithmetic means, range, number of samples collected and percent of sites with detectable residues. In addition, for selected pesticides and various states and state groupings, a frequency distribution of pesticide residues is presented. Use records for the year of sampling are summarized by the pesticide used, the percent of farms using it, the average application rate and the average amount applied. Comparisons are made between residue levels in different land use areas. The tons of DDT, aldrin and dieldrin residues present in cropland soil are estimated

Keywords: *Pesticides, *Soils, Concentration(Composition), Residues, Farms, Volume, Statistical data, DDT, Aldrin, Dieldrin, Land use, States(United States), Correlation techniques, Estimates, *Pesticide residues

PB-261 812/2 PC **A02**/MF **A01**
Review of Toxicity Test Results Submitted in Support of Pesticide Tolerance Petitions
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Melvin D. Reuber. 9 Apr 76, 24p Rept no. EPA/540/9-76/035

The author examined a small selection of the thousands of pesticide toxicity test reports in EPA's files. He examined reports on chronic feeding studies in rats. In such studies, rats are fed diets containing a pesticide for extended periods. Such studies, together with several others required for registration and tolerance-setting, are designed to provide some indication of the health risks that may be associated with human exposure to pesticides. Test reports on 23 pesticide active ingredients were examined. These were selected from among the 275 active ingredients for which there are pesticide residue tolerances applicable to raw agricultural commodities The ones selected are among those for which tolerances have been established for particularly large numbers of food commodities. The author did not perform a detailed or definitive evaluation of the safety of each of the 23 pesticides, nor did he perform a definitive evaluation of each test report.

Keywords: *Pesticides, *Toxicity, Tests, Laboratory animals, Tolerances(Physiology), Pathology, Bioassay, Rats, Histopathology, Health risks, Maximum permissible exposure level, Threshold limit values, Pesticide residues, Oncology.

PB-262 529/1 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Chemical Technology and Economics in Environmental Perspectives. Task III. Chlorofluorocarbon Emission Control in Selected End-Use Applications Final rept. Apr-Aug 76
Midwest Research Inst., Kansas City, Mo.
Thomas W. Lapp, Ralph R. Wilkinson, Howard Gadberry, and Thomas Weast. Nov 76, 188p EPA-560/1-76/009
Contract EPA-68-01-3201
See also report dated Jun 76, PB-254 919.

The purpose of this study was to identify the potential sources of emission for three of the major end-use applications of F-11, -12, -13, -113, and -114 and to identify current and potential methods for controlling emissions from these sources. For identified methods of control, the efficiency of the method and the economics of its application were determined. In applicable areas, the feasibility, cost, and effectiveness of new or modified operating and/or maintenance procedures were studied as a means of reducing emissions. The areas of study were refrigeration and air conditioning, plastic foam blowing agents, and cleaning and drying applications This study did not include an assessment of the risks associated with the environmental discharge of these chemicals Actual and potential sources of chlorofluorocarbon emission were identified in each of the three areas. Known methods of emission reduction, efficiencies, and economics are discussed for the fields of refrigeration and air conditioning and for solvent and drying applications. Proposed methods were delineated for the plastic foam blowing agent field.

Keywords: *Fluorohydrocarbons, *Air pollution control, Sources, Combustion products, Industrial wastes, Efficiency, Cost analysis, Chlorine organic compounds, Fluorine organic compounds, Refrigerants, Air conditioning, Feasibility, Maintenance, Solvents, Refrigerating, Cellular plastics, Blowing agents, Desiccants, Cost estimates, Cleaning agents, Ozone, Human health, Toxicity, Atmospheric chemistry, Dichlorodifluoromethane, *Freons, *Air pollution detection, Freon 12, Freon 11, Freon 13, Freon 114, Environmental chemical substitutes, Methane/chloro-trifluoro, Methane/bromo-difluoro, Ethane/trichloro-trifluoro, Ethane/dibromo-tetrafluoro.

PB-263 006/9 PC **A03**/MF **A01**
Considerations Relating to Toxic Substances in the Application of Municipal Sludge to Cropland and Pastureland (A Background Summary) Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Frank D. Kover Nov 76, 30p Rept no. EPA/560/8/76/004

This report presents background information pertinent to an assessment of the potential health hazards from toxic substances when disposing/utilizing municipal sludge on agricultural lands, particularly croplands and pasturelands where products enter the human food chain.

Keywords. *Sludge disposal, *Farm crops, *Toxicity, Metals, Trace elements, Cadmium, Biphenyls, Concentration(Composition), Lead(Metal), Mercury(Metal), Chlorine aromatic compounds, Plant growth, Vegetables, Food chains, Biphenyl/chloro, Residues.

PB-263 275/0 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Developing Incentives for Pest Control Methods: Proceedings of a Conference Held in Gaithersburg, Maryland on October 26-27, 1976 Final rept.
Little (Arthur D.), Inc., Cambridge, Mass.
Jan 77, 92p NBS-GCR-ETIP-76-34
Contract EPA-68-01-3133

The purpose of the conference was to assemble representatives of the parties at interest (government agencies, industry and public interest groups) in order to examine and evaluate the incentives that had been developed. The result is a consensus concerning the incentives and their implementation. The report contains summaries of the workshops, their recommendations for the parties at interest to follow, and the reactions of participants after the conference was held.

Keywords: *Pesticides, *Pest control, *Meetings, Recommendations, Safety, Risk, Policies, Incentives.

PB-263 746/0 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Asbestos Fibers in Natural Runoff and Discharges from Sources Manufacturing Asbestos Products. Part II. Non-Point Sources and Point Sources Manufacturing Absestos Products Final technical rept.
McCrone (Walter C.) Associates, Inc., Chicago, Ill.
Ian M. Stewart, Richard E. Putscher, Howard J. Humecki, and Richard J. Shimps. Oct 76, 175p MA-4200, EPA/560/6-76/020
Contract EPA-68-01-2690
See also PB-252 620.

The Office of Toxic Substances of the Environmental Protection Agency has sponsored a nationwide survey to determine the impact of point and non-point sources on levels of waterborne asbestos. Part I of the final report presented the results of analyses of water from the ten Regional cities. Part II of the final report, contained herein, presents the results of the analyses of water from natural sources and from point sources manufacturing asbestos products. The results described indicate that waterborne levels of asbestos originating from natural sources may be as high as 10 to the 8th power fibers per liter and is subject to seasonal variation. Where asbestos was found, fibers were usually below 5 micrometers in length. Levels of asbestos originating from asbestos product manufacture may range from below the detection limits of electron microscopy to values in excess of 10 to the 12th power fibers per liter. Levels of asbestos fibers above 5 micrometers in length were found in excess of 10 to the 11th power fibers per liter. The major impact on the environment due to such sources would be expected from asbestos paper plants which combine a high fiber content with a large effluent flow.

Keywords· *Water pollution, *Asbestos, *Urban areas, Surveys, Fibers, Water analysis, Concentration(Composition), Water supply, Seasonal variations, Electron microscopy, Sources, Environmental impacts, Manufacturing, Nonpoint sources.

PB-263 979/7 PC **A02**/MF **A01**
Identification of Selected Federal Activities Directed to Chemicals of Near-Term Concern (Benzene, Bis (chloromethyl) Ether, Cadmium, Hydrogen Sulfide, Mercury, Platinum, Polynuclear Aromatic Hydrocarbons, Trichloroethylene, Tris(2, 3-dibromopropyl) Phosphate) Final rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Sep 76, 21p Rept no. EPA/560/4-76/007
See also PB-257 494.

This Report is intented to assist Federal agencies and other interested organizations obtain current information on the on-going activities of EPA directed to selected chemicals of near-term concern. In addition to identifying the principal EPA programs related to these chemicals, the Report also includes significant activities of other organizations when that information is available.

Keywords: *Information, *Air pollution, *Water pollution, Aromatic polycyclic compounds, Benzene, Potable water, Chemical analysis, Concentration(Composition), Samplings, Assessments, Public health, Standards, Toxicity, Environmental impacts, Law enforcement, Cadmium, Hydrogen sulfide, Mercury, Platinum, Chlorine organic compounds, Bromine organic compounds, Phosphorus organic compounds, Biological extracts, Food chains, Monitoring, Water pollution control, Air pollution control, Antineoplastic agents, Fire resistant coatings, Sources, Ethylene/trichloro, Ether/bis(chloromethyl), Phosphate/tris(dibromopropyl), Environmental chemical substitutes, Heavy metals.

PB-264 288/2 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Asbestos Fibers in Discharges from Selected Mining and Milling Activities. Part III Final rept.
McCrone (Walter C.) Associates, Inc., Chicago, Ill.
Ian M. Stewart, Richard E. Putscher, Howard J Humecki, and Richard J. Shimps. Jan 77, 50p MA-

4200, EPA/560/6-77-001
Contract EPA-68-01-2690

The Office of Toxic Substances of the Environmental Protection Agency has sponsored a nationwide survey to determine the impact of point and non-point sources on levels of waterborne asbestos. Part 1 of the final report presented the results of analyses of water from the ten Regional cities. Part 2 of the final report presented the results of the analyses of water from natural sources and from point sources manufacturing asbestos products. Part 3 of the final report, contained herein, presents the results of the analyses of water from point sources associated with the mining and milling of potentially asbestos bearing rocks. The results of these analyses indicate that a variety of mineral ore types may have asbestos minerals associated with them and that these fibers are liberated into their effluents. In some instances, however, the final effluent has little impact on levels in the local surface water which already have high asbestos contents

Keywords: *Asbestos, *Mining, *Water pollution, Surveys, Environmental impacts, Urban areas, Water quality, Concentration(Composition), Sources, Manufacturing, Gold, Asbestos deposits, Fibers, Surface waters, Compounding, Vermiculite, Talc, Copper, *Water quality data, *Asbestos industry.

PB-265 371/5 PC-**GPO**
Toxic Substances Control Act (TSCA). PL-94-469. Candidate List of Chemical Substances. Volume I. Substance Name Section (Part 1). Volume II. Substance Name Section (Part 2). Volume III. Formula Section. CAS Number Section. Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials (UVCB) Section
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Apr 77, 2190p*
Paper copy also available from Supt. of Docs.

The Formula Section lists the molecular formulas for all substances of known chemical constitution appearing in the TSCA Candidate List of Chemical Substances, which are in the other two volumes. Where two or more substances share the same molecular formula, their names are ordered alphabetically by the principles described before the Substance Name Section. Element symbols in the molecular formulas are arranged according to the Hill system. The resulting complete molecular formulas are arranged in alphabetical order in the Formula Section, with each chemical element and its particular numerical suffix being considered as a separate unit. Salts, molecular addition compounds, and copolymers are represented in the Formula Section by the molecular formula for only one of their components, rather than by a summation formula which includes all the components. The molecular formula chosen to represent a substance of this type is the formula of the component whose name is selected as the principal heading for the substance in the CA Chemical Substance Index. In general, metal salts of acids appear at the molecular formulas of the acids; salts of organic bases with inorganic acids or common organic acids appear at the molecular formulas of the bases; salts with more complex organic acids appear at the molecular formulas of the acids; molecular addition compounds and copolymers appear at the molecular formula of the component chosen to receive the principal index name for the substance by the nomenclature policies used for CA indexes. Thus, a user of the Formula Section who wishes to find an entry for a salt, molecular addition compound, or copolymer is advised to consult entries at the molecular formulas for each of the components before concluding that the substance is not cited in the Formula Section.

Keywords: *Organic compounds, *Inorganic compounds, *Pollution, Toxic Substances Control Act, *Toxic substances, *Chemicals, Listings.

PB-265 417/6 PC **A07**/MF **A01**
National Bureau of Standards, Washington, D.C. Experimental Technology Incentives Program.
Incentives for Research and Development in Pest Control. Volume I Final rept.
Little (Arthur D.), Inc., Cambridge, Mass.
Alfred E. Wechsler, Joan E. Harrison, Alan Burg, Donald Gibbons, and Joanne Perwak. Dec 76, 138p
EPA/540/9-77/008
Contract EPA-68-01-3133
Prepared in cooperation with National Bureau of Standards, Washington, D.C. Experimental Technology Incentives Program.

The program identified, developed, and evaluated incentives (externally applied influences) that the federal government can offer to reduce barriers to innovation and thereby encourage the continued development of pest control methods by industry. The history of pest control innovation was analyze, and influences on current decision-making concerning industrial pesticide R&D were studied to provide background for the development of incentives. Then, 64 preliminary incentive ideas were devised and evaluated in accordance with a conceptual framework. These incentives were screened and ranked according to their feasibility, the acceptance by parties involved in their implementation, and their potential contribution to realizing the objectives of this program. Nine particularly promising incentive areas were developed further and evaluated in several possible future scenarios.

Keywords: *Research and development, *Pest control, *Pesticides, *Incentives, National government, Economic factors, Environments, Toxicology, Objectives, Regulations, Patents, Public health, Hazardous materials, Insect control.

PB-265 418/4 PC **A11**/MF **A01**
National Bureau of Standards, Washington, D.C. Experimental Technology Incentives Program.
Incentives for Research and Development in Pest Control Volume II. Appendices Final rept.
Little (Arthur D.), Inc., Cambridge, Mass.
Alfred E. Wechsler, Joan E. Harrison, Alan Burg, Donald Gibbons, and Joanne Perwak. Dec 76, 232p
EPA/540/9-77/009
Contract EPA-68-01-3133
Prepared in cooperation with National Bureau of Standards, Washington, D.C. Experimental Technology Incentives Program.

Contents:
- History of pesticides;
- Factors of importance in pesticide development;
- Concept and framework for incentives;
- Preliminary criteria for screening of potential incentives;
- Summary listing of original incentive actions;
- Results of initial screening of incentives;
- Preliminary working papers;
- Industrial, government, and association contacts in this program;
- List of comments on proposed preliminary incentives;
- Comments on preliminary proposed incentives;
- Relative ranking of incentives by government agencies and associations;
- Relative ranking of incentives by industry;
- Average ranking of incentives;
- Incentive suggestions from industry, government, and association staff contacted during review of interim working document;
- The appropriateness of incentives in alternative futures.

Keywords: *Research and development, *Pest control, *Pesticides, *Incentives, Criteria, Tables(Data), Insect control, National government, Economic factors, Environments, Toxicology, Public health, Hazardous materials, Insect control, Government funds, Appendices.

PB-265 451/5 PC **A04**/MF **A01**
Status Report and Action Guide
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
31 Dec 76, 69p Rept no. EPA/540/9-77-012

This is a status report and action guide which reflects the Environmental Protection Agency's commitment to the Subcommittee on Administrative Practice and Procedure of the Committee on the Judiciary, regarding the depth of data review undertaken by the Agency prior to reregistration. While it did not start out to be written for that purpose, two events occurred to turn it in that direction: criticism from that Committee concerning the EPA's depth of data review, and a preliminary injunction issued by the U.S. District Court to require the EPA to consider basic modifications to its reregistration data requirements.

Keywords: *Pesticides, *Regulations, *Organizations, *Law enforcement, Reporting, Revisions, Methodology, Projects, Objectives, Requirements, Standards, Data acquisition, Environmental impacts, Problem solving, Guidelines, Registration, Reregistration.

PB-265 453/1 PC **A03**/MF **A01**
FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): Impact on the Industry
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Edward Gray, Susan Sherman, Anne Lindsay, and Frederick Talcott. 7 Mar 77, 38p Rept no. EPA/540/9-77/011

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates all pesticides marketed in the United States. Statutory and regulatory requirements of the law naturally affect the industry which manufactures and distributes pesticide products. Congress has expressed interest in just how the administration of the FIFRA is impacting the industry as a whole, and particularly the small businessmen involved in the pesticide distribution chain. This paper addresses this Congressional concern, and will discuss the major impacts of the legislation since the 1972 amendments to date, especially those affecting the competitive atmosphere in the pesticide industry

Keywords: *Pesticides, *Regulations, Industrial plants, National government, Impacts, Manufacturing, Safety, Laws, Economic impact, *Pesticide industry, *Federal Insecticide Fungicide and Rodenticide Act.

PB-265 550/4 MF **E15**
Pesticide Product Information on Microfiche: Set B (1976 edition) Annual rept.
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
1977, 155 sheets
Also available with Set A, as NTISUB/C/219

Information on Pesticides has been collected by the U.S. Environmental Protection Agency, Office of Pesticide Programs in its registration process. This information has been sorted into 14 subsets of microfiche, three of which are combined into Set B. Set B includes the: Site/Pest/Chem/Reg. Number; Pest/Chem; and Chem/Site/Pest files. The set is not definitive and is to be used for reference only. Set B is to be updated annually.

Keywords: *Pesticides, *Documentation, Agriculture, Chemical compounds, Insecticides, Herbicides, Rodenticides, Control, Microfilm, Data storage devices, Information, Consumer products.

PB-265 964/7 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C.
Report of the PAX Company Arsenic Advisory Committee to the Environmental Protection Agency
PAX Co. Arsenic Advisory Committee, Schenectady, N.Y.
Douglas V. Frost, D. Birmingham, E. Dustman, A Hiltbold, and P. Zinke. 13 May 73, 143p EPA/540/5-73/001

The purpose of this report is to assist the EPA Administrator to assess the safety in use of the PAX product and of related arsenicals. As a result of the study, there was no unanimity in the attitudes toward the safety of PAX, but the Committee was unanimous in urging further research. The pesticide in question is the PAX Company Three-Year Crabgrass Control product containing 25.11% arsenic trioxide, 8.25% lead arsenate and 4% nitrogen as ammonium sulfate

Keywords: *Assessments, *Safety, *Pesticides, Arsenic oxides, Arsenates, Lead inorganic compounds, Soils, Ammonium sulfate, Toxicology, Fishes, Wildlife, Public health, Industrial hygiene, Efficiency, Plants(Botany), Concentration(Composition), *PAX pesticide, Lead arsenate, Federal Insecticide Fungicide and Rodenticide Act, Environmental chemical substitutes, Crabgrass.

PB-266 181/7 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

Chemical Technology and Economics in Environmental Perspectives. Task IV. Activated Carbon
Final rept. Oct-Dec 76
Midwest Research Inst., Kansas City, Mo.
Gary L. Kelso, and Thomas W. Lapp. Feb 77, 36p
EPA/560/2-77/002
Contract EPA-68-01-3201
See also report dated Nov 76, PB-262 529.

The purpose of this study was to compile selected information concerning the manufacture and use of activated carbon, with particular emphasis on product quality as related to the presence of heavy metal ions and/or polynuclear aromatic compounds. Specific areas of interest were the raw materials and methods of production; manufacturers, production capacities, and actual production; types of final products; and consumption patterns of activated carbon. Product quality specifications for heavy metal ions and polynuclear aromatic compounds in the final products were investigated. U.S. production quantities have exceeded 200 million pounds annually for the past 3 to 4 years. Of the estimated 180 million pounds consumed in the United States in 1975, about 37% was employed in food and pharmaceutical areas, 25% in water or waste treatment processes, and 38% in other applications. Activated carbon for use in foods and pharmaceuticals conforms to the Food Chemicals Codex specifications for heavy metal ions and polynuclear aromatics. Products for municipal water treatment are subject to AWWA standards. Activated carbon for other uses are subject only to customer specifications.

Keywords: *Activated carbon, *Manufacturing, *Product development, *Water pollution control, *Air pollution control, Impurities, Physical properties, Chemical properties, Utilization, Adsorbents, Aromatic polycyclic compounds, Rubber industry, Dry cleaning, Electroplating, Ions, Food industry, Drug industry, Sewage treatment, Industrial wastes, Metal industry, Heavy metals.

PB-266 203/9 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume I. Foliar Treatments I (Deciduous Fruit Trees, Small Fruits, Citrus and Subtropical Fruits, Tree Nuts)
American Inst. of Biological Sciences, Arlington, Va
Dean Asquith, Glenn Carman, Angus Howitt, Robert Horsburgh, and Stanley Hoyt. Jan 77, 88p* EPA/540/10-77/001
Contract EPA-68-01-2457
Also available in set of 8 reports PC E14, PB-266 202-SET.

The report is concerned with efficacy testing of chemical pesticides in foliar applications to citrus and subtropical fruits, deciduous tree fruits, small fruits and tree nuts for protecting these crops from economic injury by insects, mites, and other invertebrate pests. The methods described are not to be considered exclusive of other methods. More specific information may be obtained by referring to the literature references.

Keywords. *Pesticides, *Fruit crops, *Citrus trees, *Nut trees, *Pest control, *Insecticides, Vegetation, Methodology, Horticulture, Arachnida, Dosage, Effectiveness, Insects, Lepidoptera, Mites, Invertebrates, Insect control, Tests, Evaluation.

PB-266 204/7 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume II. Foliar Treatment II (Field Crops, Forage Crops, Rangeland, Vegetables - Field and Greenhouse)
American Inst. of Biological Sciences, Arlington, Va.
R. J. Ledbetter, E J. Armbrust, R. Hale, E W Huddleston, and J. C. Owens. Jan 77, 145p* EPA/540/10-77/008
Contract EPA-68-01-2457
See also Volume 1, PB-266 203.
Also available in set of 8 reports PC E14, PB-266 202-SET

The report is concerned with testing chemicals in foliar applications to field crops, forage crops, rangeland, and vegetable crops (field and greenhouse), to establish their efficaciousness in protecting these crops from economic injury by insects and mites. In addition, test methods should take into consideration environmental involvement from such applications and the effect of pesticides on beneficial organisms. Test methods should be broad enough to provide information on the use of dosages of pesticides often required for pest population regulation in integrated pest management systems. The methods described in this report are not to be considered exclusive of other methods. Certain situations may require special methods, and new methods may be developed which improve on present ones.

Keywords: *Pesticides, *Farm crops, *Vegetable crops, *Forage crops, *Range grasses, *Pest control, Effectiveness, Insects, Mites, Arachnida, Insect control, Insecticides, Methodology, Corn, Cotton plants, Grain sorghum plants, Soybeans, Sugar beets, Sugarcane, Tobacco, Wheat, Dosage, Evaluation, Parasites, Tests, Sunflowers, Rangeland.

PB-266 205/4 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume III. General Soil Treatments
American Inst. of Biological Sciences, Arlington, Va.
Mahlon Fairchild, Christian C. Burkhardt, J Marshall Magner, William Campbell, and Gerald Musick. Jan 77, 106p* EPA/540/10-77/007
Contract EPA-68-01-2457
See also Volume 2, PB-266 204.
Also available in set of 8 reports PC E14, PB-266 202-SET.

The testing of soil insecticides for efficacy is extremely complex and it would be impossible to put together guidelines for all soil insecticides; therefore, an attempt has been made to pull together some test methods for major pests on a few commodities. The commodities selected are corn, vegetables, sugarbeets, peanuts and tobacco. It would be impossible to cover all pests that might require soil insecticides under each of the commodities chosen.

Keywords: *Insecticides, *Pesticides, *Soils, *Vegetable crops, *Corn plants, *Peanut plants, *Tobacco plants, *Sugar crops, *Pest control, Methodology, Effectiveness, Tests, Insect control, Insects, Parasites, Evaluation, Dosage.

PB-266 206/2 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D C. Criteria and Evaluation Div.
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume IV. Livestock, Poultry, Fur and Wool Bearing Animals
American Inst. of Biological Sciences, Arlington, Va.
Roger Drummond, J L Lancaster, and Paul D. Ludwig. Jan 77, 75p* EPA/540/10-77/002
Contract EPA-68-01-2457
See also Volume 3, PB-266 205
Also available in set of 8 reports PC E14, PB-266 202-SET.

The report presents techniques used by researchers to determine the efficacy of insecticides applied to livestock (cattle, horses, sheep and goats, swine and poultry) for the control of the major arthropods that parasitize these animals. Also included are techniques used to determine the effectiveness of insecticides applied to litter, bedding, limited livestock inhabitation areas, and livestock manure. This listing of techniques is not intended to eliminate other procedures to determine efficacy of insecticides for the control of the same arthropod parasites. The compilation of these listed techniques revealed areas in which adequate testing procedures were not available. This report is divided according to the five major commodity groups

Keywords *Insecticides, *Pesticides, *Livestock, *Cattle, *Horses, *Sheep, *Goats, *Swine, *Poultry, *Pest control, Domestic animals, Parasites, Arthropoda, Tests, Methodology, Effectiveness, Insect control, Invertebrates, Insects, Evaluation, Dosage

PB-266 207/0 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D C Criteria and Evaluation Div.
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume V. Stored Products and Premise Treatments
American Inst. of Biological Sciences, Arlington, Va.
Robert Davis, Phillip Harein, Ralph Heal, L. S. Henderson, and Harry Incho. Jan 77, 66p* EPA/540/10-77/003
Contract EPA-68-01-2457
See also Volume 4, PB-266 206.
Also available in set of 8 reports PC E14, PB-266 202-SET.

The document provides a compilation of test methods that appear adequate for purposes of evaluating the effectiveness of pesticides against invertebrate pests of premises and stored products. The methods cited are not intended to exclude other valid procedures but for proprietary or other reasons are not available for reference. Similarly there is no intent to exclude new methods or improvements of current methods that may become available. The procedures presented herein primarily include methods for the invertebrate control agents considered as conventional chemical pesticides Repellents, attractants, growth regulators, pheromones, etc., are not included unless they have been used over the years and there exists a substantial number of published results in the open literature.

Keywords: *Pest control, *Pesticides, *Storage, *Insecticides, Structures, Dust, Vapors, Tests, Methodology, Evaluation, Protective coatings, Fabrics, Marine borers, Effectiveness, Invertebrates, Parasites, Insects, Insect control, Treatment, Aerosols, Fumigation, Smoke, Materials, Marine borer prevention, Marine fouling.

PB-266 208/8 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume VI. Lawns, Ornamentals, Forest Lands
American Inst of Biological Sciences, Arlington, Va.
R. Lee Campbell, Gary N. Clark, Frederick W Honing, Richard K Lindquist, and Henry Willcox. Jan 77, 62p* EPA/540/10-77/004
Contract EPA-68-01-2457
See also Volume 5, PB-266 207.
Also available in set of 8 reports PC E14, PB-266 202-SET.

Test methods, protocols and procedures for evaluating the effectiveness of invertebrate control agents on turf, ornamentals, forest lands and shade trees are discussed in this report. Specific techniques and methods are documented in selected references, exhibits and other appropriate sources of information. All available references using similar procedures and methods are not cited in order to avoid duplication and repetition. Those cited contain generally accepted protocols and methods, but it is realized that they are not all inclusive and other references may include different methods or variations of those presented. Due to the large numbers of host plants and pests and the limited number of researchers working in subject areas, considerable flexibility in requirements for test methods is necessary. The scope of organizing test methods for turf, greenhouse and outdoor ornamentals, shade trees and forest lands is briefly addressed.

Keywords: *Insecticides, *Pesticides, *Pest control, *Turf grasses, *Trees(Plants), *Forestry, *Ornamental plants, Tests, Methodology, Invertebrates, Evaluation, Effectiveness, Insects control, Insects, Parasites, Tables(Data), Vegetation, Plants(Botany), *Lawns.

PB-266 209/6 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C Criteria and Evaluation Div
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume VII. Human and Pet Treatments
American Inst. of Biological Sciences, Arlington, Va.
Harry L. Haynes, D. E. Howell, Fred W Knapp, and Carroll N Smith. Jan 77, 31p* EPA/540/10-77/005
Contract EPA-68-01-2457
See also Volume 6, PB-266 208
Also available in set of 8 reports PC E14, PB-266 202-SET

Testing procedures stated and referenced in this document are accepted methods for determining the effec-

tiveness of pesticides against pests of humans and pets. The procedures mentioned are not intended to exclude other procedures. This document may serve as a guideline for the development of information relating to pesticide efficacy. Species named in this document are not necessarily the only ones which might be used. Other species may also be considered when of economic importance or when they provide practical data. When numbers of test animals are referred to in this document, the minimums are given. However, the researcher may want to increase numbers of test subjects, animals or other organisms when practical or economically feasible.

Keywords: *Insecticides, *Pesticides, *Pest control, *Humans, *Domestic animals, *Dogs(Mammals), *Cats, *Birds, Mammals, Treatment, Insects, Invertebrates, Parasites, Insect control, Methodology, Evaluation, Mites, Diptera, Siphonaptera, Ticks, Effectiveness, Culicidae, Lice, Mosquitoes, Insect repellent treated collars.

PB-266 210/4 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Analysis of Specialized Pesticide Problems Invertebrate Control Agent - Efficacy Test Methods. Volume VIII. Mosquitoes, Black Flies, Midges and Sand Flies
American Inst. of Biological Sciences, Arlington, Va.
George Carmichael, Calvin G. Alvarez, Mir S. Mulla, Gary A. Mount, and Hugo Jamnback. Jan 77, 59p* EPA/540/10-77/006
Contract EPA-68-01-2457
See also Volume 7, PB-266 209.
Also available in set of 8 reports PC E14, PB-266 202-SET.

The document presents test procedures for the assessment of the biological efficacy of pesticides against several groups of important insect pests which pose an economic and public health threat to man in urban, rural, agricultural and wilderness habitats. While these protocols do not cover all procedures and techniques employed to date, they, however, include the most widely used and accepted procedures by researchers in this field. Deviation from and modification of these procedures may be deemed desirable when required by specific conditions. The insects for which evaluation procedures are outlined, belong to four families: Culicidae, Simuliidae, Ceratopogonidae, and Chironomidae. The procedures and techniques outlined are mere guidelines for securing meaningful information on the efficacy of pesticides for the control of pest and vector insects.

Keywords: *Pesticides, *Pest control, *Insecticides, *Culicidae, *Diptera, Invertebrates, Effectiveness, Tests, Methodology, Evaluation, Insects, Insect control, Insect vectors, Larvae, Adults, Disease vectors, Mosquitoes, Midges, *Chironomidae, *Ceratopogonidae, *Chaoboridae, *Simuliidae

PB-266 366/4 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Benzotriazoles Final technical rept
Syracuse Research Corp., N Y. Center for Chemical Hazard Assessment.
Leslie N. Davis, Joseph Santodonato, Philip H. Howard, and Jitendra Saxena. Feb 77, 196p TR-76-585, EPA/560/2-77/001
Contract EPA-68-01-3416

Benzotriazoles are produced in approximately 5-6 million pounds per year in the United States. The majority are used in anticorrosion applications Approximately 20-30% are used as UV stabilizers, many of which are 2-substituted benzotriazoles. Small amounts are used for photographic applications. Information on production, use, transport and handling, environmental fate, and toxicity are reviewed. The document contains. Physical and chemical data--Structure and properties, and chemistry); Environmental exposure factors--(Production, consumption, uses, environmental contamination potential, current handling practice and control technology, and monitoring and analysis); Health and environmental effects--(Environmental effects and biological effects); Regulations and standards--(Current regulation and concensus and similar standards).

Keywords: *Reviews, *Environmental impacts, Chemical analysis, In vitro analysis, Chemical structure, Physical properties, Chemical reactions, Corrosion inhibitors, Bioassays, Photographic materials, Manufacturing, Plastics, Accident prevention, Microorganisms, Transportation, Storage, Utilization, Materials handling, Monitoring, Public health, Toxicology, Humans, Malignant neoplasms, Viruses, Laboratory animals, Biochemistry, Bacteria, Plants(Botany), Fishes, Regulations, Standards, Thermal stability, Azoles, Nitrogen heterocyclic compounds, *Benzotriazoles, Bioaccumulation.

PB-267 085/9 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Sensitivity of Vertebrate Embryos to Boron Compounds Final rept.
Thomas Hunt Morgan School of Biological Sciences, Lexington, Ky.
W. J. Birge, and J. A. Black. Apr 77, 77p* EPA/560/1-76/008
Contract EPA-68-01-3222

Developmental stages of rainbow trout, channel catfish, goldfish, leopard frog, and Fowler's toad were treated in a continuous flow system with boric acid and borax concentrations ranging from 0.001-300 ppm boron. Exposure was initiated subsequent to fertilization and maintained through 4 days posthatching, using water with hardness levels of 50 and 200 ppm CaCO3. Expressed in ppm boron at 4 days posthatching, LC1 values for trout, catfish, and goldfish were 0.1, 0.5, and 0.6 for boric acid in soft water, 0.001, 0.2, and 0.2 for boric acid in hard water, 0.07, 5.5, and 1.4 for borax in soft water, and 0.07, 1.7, and 0.9 for borax in hard water. LC50 values in ppm for trout, catfish, and goldfish were 100, 155, and 46 for boric acid in soft water, 79, 22, and 75 for boric acid in hard water, 27, 155, and 65 for borax in soft water, and 54, 71, and 59 for borax in hard water The LC50 values for amphibian embryos and larvae ranged from 47 for borax in soft water to 145 for boric acid in soft water. By comparison, boron LC50 values for chick embryos, treated by yolk injection, were 1.0 and 0.5 ppm for boric acid and borax, respectively

Keywords: *Toxicity, *Boron, *Embryos, *Aquatic animals, Larvae, Toxicology, Bioassay, Vertebrates, Concentration(Composition), Mortality, Trout, Catfishes, Frogs, Toads, Amphibia, Chickens, Comparisons, Experimental data, *Water pollution effects(Animals), *Teratogenesis, Goldfish, Threshold limit values

PB-267 093/3 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances
Pre-Screening for Environmental Hazards - A System for Selecting and Prioritizing Chemicals Phase I rept.
Little (Arthur D.), Inc , Cambridge, Mass.
Emilio C. Venezian Apr 77, 124p ADL-78486-1, EPA/560/1-77/002
Contract EPA-68-01-3208

A number of alternatives for pre-screening chemicals for their potential to inflict environmental hazards were considered. A system design concept which takes into account both the toxicity of the chemical and the eventual levels which it can be expected to reach in the environment was selected for further analysis. Although neither toxicity nor eventual levels can be predicted with great accuracy, the accuracy attainable by simple methods appeared adequate for selecting and prioritizing chemicals for additional investigation. A specific design which relies on data which is usually available was developed to the point of testing the feasibility of collecting the necessary data and performing the required computations on five chemicals

Keywords: *Hazardous materials, *Ranking, *Air pollution, *Water pollution, Concentration(Composition), Decomposition reactions, Toxicity, Numerical analyses, Soils, Surface waters, Reaction kinetics, Transport properties, Atmospheric diffusion, Tables(Data), Chemical properties, Physical properties, *Chemicals, Bioaccumulation, Toxic substances

PB-267 121/2 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Review of the Environmental Fate of Selected Chemicals Final rept. on Task 3
Stanford Research Inst., Menlo Park, Calif.
Shirley B. Radding, David H. Liu, Howard L. Johnson, and Theodore Mill. May 77, 150p EPA/560/5-77/003
Contract EPA-68-01-2681
See also Final rept. on Task 1 dated 10 Jan 75, PB-238 908.

A review of the recent literature on sources, production, environmental fate, and bioaccumulation has been carried out by SRI on 26 classes of compounds. These included epoxides, haloolefins, aldehydes, alkyl and benzyl halides, peroxides, hydroperoxides and peracids, polyhalomethanes, aromatic amines, polychlorinated biphenyls, azo dyes, carbamic acid esters, hydrazines, acyl halides and ketene, phosphoric acid esters, aziridines, lactones, alkyl sulfates, sulfones, aryl dialkyltriazenes, diazoalkanes, haloalcohols, haloethers, hydroxylamines, nitrosamines, nitrofurans, and azides.

Keywords: *Carcinogens, *Reviews, Inorganic azides, Organic azides, Esters, Carbamic acid, Azo dyes, Sources, Methodology, Aldehydes, Epoxy compounds, Chemical properties, Sulfones, Furans, Kentenes, Hydrazines, Amines, Methane, Polymers, Physical properties, Halohydrocarbons, Benzene, Peroxy organic acids, Peroxy organic compounds, Phosphoric acid, Aziridines, Lactones, Sulfates, Alcohols, Ethers, Azo compounds, Hydroxy organic compounds, Nitroso compounds, Amines, Reaction kinetics, Photochemistry, Industrial wastes, Sources, Manufacturing, Water pollution, Air pollution, Hydrolysis, Bioaccumulation, *Toxic substances, *Path of pollutants, Polychlorinated biphenyls, Triazenes, *Environmental surveys.

PB-267 833/2 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Microeconomic Impacts of the Proposed Marking and Disposal Regulations for PCBs Final rept.
Versar, Inc., Springfield, Va.
26 Apr 77, 184p* 474-7, EPA/560/6-77/013
Contract EPA-68-01-3259

This report summarizes the estimated economic impacts of the marking and disposal regulations for PCBs which are being proposed in fulfillment of the requirements of Section 6(e) of the Toxic Substances Control Act. The scope of this analysis included estimates of the quantities of PCBs and equipment containing PCBs which will be affected by the proposed regulations, the present and required future availability, feasibility, and costs of the required PCB disposal facilities, the secondary costs of controlled disposal including storage, recordkeeping, and transportation, and the costs of satisfying the various marking requirements. The economic analysis included estimates of the additional costs of complying with these regulations as a function of year and economic sector. The analysis also considered the possible economic effects of these costs on price levels, investment requirements, and employment. Finally, the effects of compliance on energy requirements and on the availability of strategic materials were estimated

Keywords: *Economic impacts, *Liquid waste disposal, *Solid waste disposal, *Marking, Energy consumption, Chlorine organic compounds, Regulations, Manufacturing, Cost analysis, Forecasting, Transformers, Capacitors, Cargo transport, Sewage sludges, Storage, Feasibility, Incinerators, Earth fills, Industrial wastes, Utilization, Record management, Containers, Marketing, *Polychlorinated biphenyls, Biphenyl/chloro, Toxic substances.

PB-269 316/6 PC **A02**/MF **A01**
Particle Size of Home and Garden Pesticides Containing Fungicides
Environmental Protection Agency, Corvallis, Oreg. Northwest Biological Investigations Station.
H L Dooley Jun 77, 10p Rept no. EPA/540/9-77/015

Nineteen different commercial home and garden pesticide formulations containing fungicides from 17 manufacturers were evaluated for particle size by wet- and dry-sieve methods Significantly different results were obtained by each method The wet-sieved method showed that at least 90% of the particles were smaller than 75 micrometers in 17 formulations, while the dry-sieved method indicated that 70% of the particles were smaller than most appropriate for the evaluation of dusts. The mean particle size of most currently marketed commercial pesticide dusts for home and garden use is 149 micrometers or smaller.

Keywords: *Particle sizes, *Fungicides, *Size determination, Pesticides, Performance evaluation, Sieve analysis, Wet methods, Dry methods.

PB-269 342/2 PC **A11**/MF **A01**
Digest of State Pesticide Use and Application Laws--Guide for Analyzing Pesticide Legislation
Environmental Protection Agency, Washington, D C. Office of Pesticide Programs.
Emerson R. Baker. Jun 76, 238p* Rept no EPA/540/9-76/036

All state laws (about 120 as of June 1976) relating in some manner to pesticides, or to persons who use pesticides, have been divided into three groups, and those laws, or portions of laws, relating to the use and application of pesticides are included in this digest. The three areas are: Registration Laws, Use And Application Acts, and Consolidated Laws, The Use And Application Acts are divided into 5 other categories. Structural Pest Control Laws; Licensing And Certification Laws; Professional Examining Boards; Restricted Materials Laws; Aerial Applicator Laws.

Keywords: *Pesticides, *Law(Jurisprudence), Manuals, Regulations, Utilization, Legislation, Structures, Licenses, Personnel, Pest control, State government.

PB-269 605/2 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Pesticides Programs.
Ecological Effects of Pesticides on Non-Target Species
Cornell Univ., Ithaca, N.Y. Dept. of Entomology and Limnology
David Pimentel. Jun 71, 225p EPA/540/9-71-006-(OS/T)

This report was done in 1971 when there was no single source of data on the environmental effects of pesticides. It is a comprehensive compilation of published data. The judgments on what to include and what not to include are those of the author, though many individuals in the Federal government offered suggestions and critical review during its preparation. It is published by the Office of Science and Technology as received from the author in the belief that it will be a very useful contribution to the public discussion of pesticides. The report contains information on an extensive number of insecticides, herbicides, and fungicides

Keywords. *Pesticides, *Ecology, *Environmental impacts, Insecticides, Herbicides, Fungicides, Damage, Mammals, Birds, Fishes, Amphibia, Mollusca, Arthropoda, Annelida, Plants(Botany), Microorganisms, Concentration(Composition), Food chains.

PB-270 220/7 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
A First Order Mass Balance Model for the Sources, Distribution and Fate of PCBs in the Environment Final rept.
Versar, Inc., Springfield, Va
Frank C. Whitmore. 27 Jul 77, 180 474-5G, EPA/460/6-77/006
Contract EPA-68-01-3259

A first order model for the sources, distribution and fate of PCBs in an aquatic system is described. The model is then applied to Lake Michigan and to the Great Lakes Systems The results obtained from the model indicate that atmospheric sources are a major PCB input to the Great Lakes. Because of the great water mass of the lakes, the PCB concentration appears to be storage controlled rather than loss controlled The major loss mechanisms are found to be co-evaporation from the airwater interface and entrapment with sediments. It is estimated that if all inputs or PCBs rate Lake Michigan were eliminated, it would take more than 70 years for the concentration of PCBs in the water to decrease by 50 per cent.

Keywords. *Air pollution, *Water pollution, *Chlorine organic compounds, *Lake Michigan, *Great Lakes, Mathematical models, Distribution(Property), Mass transfer, Sediments, Adsorption, Fallout, Sources, Estimates, Atmospheric models, Evaporation, Concentration(Composition), Input, *Polychlorinated biphenyls, Biphenyl/chloro, *Bioaccumulation.

PB-270 225/6 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Assessment of the Environmental and Economic Impacts of the Ban on Imports of PCBs Final rept.
Versar, Inc , Springfield, Va.
Robert P. Burruss, Jr. Jul 77, 175p* 474-5B, EPA/560/6-77/007
Contract EPA-68-01-3259

This report summarizes an investigation into the uses of imported polychlorinated biphenyls (PCBs) in the United States Imported PCBs are presently used only for the maintenance of certain mining machinery. In addition, PCBs are present as a significant impurity in polychlorinated terphenyls (PCTs) imported for use in investment casting waxes Importation of PCBs for these uses will be banned after 1977 by the Toxic Substances Control Act, unless exemptions are allowed in accordance with the provisions of the Act. The recent Directive of the Council of the European Communities (EEC) prohibits use of PCBs and PCTs in investment casting waxes, but allows continued use of PCBs in mining machinery in Europe.

Keywords: *Air pollution abatement, *Hazards, *Chlorine aromatic compounds, Mining engineering, Investment casting, Waxes, Imports, United States, Legislation, Foundries, Environmental surveys, Economic impact, *Polychlorinated biphenyls, Biphenyl/chloro, Polychlorinated terphenyls, Mining machinery, Investment casting waxes, Toxic hazards, Toxic Substances Control Act, Banning.

PB-270 387/4 PC **A06**/MF **A01**
The Douglas Fir Tussock Moth in the Pacific Northwest. A Seminar Sponsored by the United States Environmental Protection Agency, Washington, D.C. November, 1973
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
H. J. Korp, D. A. Graham, B. L. Stevenson, R. E. Buckman, and J E Schroeder. Nov 73, 107p Rept no. EPA/540/9-73/002

The purpose of seminar was to bring experts from Federal, state, industrial, academic and environmental agencies and organizations together in a single meeting to explore technical problems and research needs of tussock moth control for Douglas fir trees Some of the areas covered were: preventing Tussock Moth outbreaks, Tussock Moth virus production, Forest industry's views regarding Tussock Moth and research needs.

Keywords. *Insect control, *Fir trees, *Meetings, Prevention, Management, Insecticides, Viruses, Oregon.

PB-270 513/5 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Pesticide Programs
Development, Testing, and Installation of Instructional Modules for Preparation of Private Pesticide Applicators in Vocational Agriculture Education Programs Final rept.
Ellis Associates, Inc , College Park, Md.
15 Oct 76, 131p EPA/540/9-76/037
Contract EPA-68-01-1936

Public Law 92-516 specifies that all individuals who are applicators of restricted use pesticides must meet Federal and state certification standards by October 1977. The Environmental Protection Agency realized that in order to meet these requirements, a major training effort would be needed. The vocational agriculture education programs which operate as part of the public education system throughout the United States were seen as an appropriate delivery system for the preparation of both youth and adults for certification as pesticide applicators This report represents the final document of a project in which a training package covering the basic principles of pesticide use, handling, and application was designed, tested, and prepared for installation in vocational agriculture education programs in the United States.

Keywords: *Pesticides, *Education, *Personnel development, Regulations, Standards, Materials handling, Agriculture, Instructional materials, Specialized training, Vocational education

PB-270 641/4 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
A Study of the Short Term Agricultural User Adjustment Problems Associated with Major Pesticide Regulatory Restrictions. Executive Summary
CONSAD Research Corp., Pittsburgh, Pa.
A. Bernstein, D. Stewart, and R. Lowrey. 30 Nov 76, 39p EPA/540/9-77/014
Contract EPA-68-01-1917
See also PB-270 642

The objectives of this study were to identify the range of shortterm (three years) 'on the farm' user adjustment problems associated with major pesticide regulatory decisions, as well as to explain user problems and responses to those problems. This report deals with: Crop production factors affecting user adjustment; Institutional arrangements and activities; Comparison of user adjustment responses and problems; Influential forces in the user adjustment response process; and Procedural recommendations for pesticide regulatory actions. It was found that· a period of 3 years appears to be a reasonable definition for describing 'short term' transitional user adjustment problems This study found that during the first growing season affected by a regulatory action, many farmers will attempt to 'buy time' by stockpiling the banned pesticide. For some farmers, such stockpiles may be sufficient to carry them through the second growing season as well. However, in the third growing season affected by a regulatory action, few carry-over supplies of a banned pesticide exist and thus, most, if not all, farmers are forced to make an additional adjustment response

Keywords: *Pesticides, *Regulations, *Adjustment(Psychology), User needs, Pest control, Constraining, DDT, Aldrin, Chloradan, Public law, Dieldrin, Farm crops, Yield, Production, Attitudes.

PB-270 642/2 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
A Study of the Short Term Agricultural User Adjustment Problems Associated with Major Pesticide Regulatory Restrictions Final rept.
CONSAD Research Corp , Pittsburgh, Pa.
A Bernstein, D. Stewart, and R. Lowrey. 30 Nov 76, 233p EPA/540/9-77/019
Contract EPA-68-01-1917
See also PB-270 641

The objectives of this study were to identify the range of shortterm (three years) 'on the farm' user adjustment problems associated with major pesticide regulatory decisions, as well as to explain user problems and responses to those problems This report deals with· Crop production factors affecting user adjustment, Institutional arrangements and activities; Comparison of user adjustment responses and problems; Influential forces in the user adjustment response process; Important concerns for EPA, and Procedural recommendations for pesticide regulatory actions.

Keywords· *Pesticides, *Regulations, *Adjustment(Psychology), User needs, Pest control, Constraining, DDT, Aldrin, Chloradan, Public law, Dieldrin, Farm crops, Yield, Production, Attitudes

PB-270 648/9 PC **A11**/MF **A01**
Colorado State Univ., Fort Collins Inst. of Rural Environmental Health.
Environmental Chemicals: Human and Animal Health (Proceedings) Held at Fort Collins, Colorado on August 7-11, 1972
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs
Aug 72, 236p Rept no. EPA/540/9-72/015
Sponsored in part by Colorado State Univ., Fort Collins. Inst. of Rural Environmental Health.

Partial contents.
- Environmental geochemistry in Missouri,
- Trace elements in water;
- Mercury as an environmental pollutant;
- Molybdenum as an environmental pollutant;
- Lead in soils and plants;
- Heavy metal poisonings in animals,
- Environmental chemicals and carcinogenesis,
- Polychlorinated biphenyls (PCB's) in humans;
- Epidemiology of poisoning by chemicals;
- Monitoring of environmental toxicants;
- Carbon monoxide as a national problem;

Nitrates and water quality;
Teratogenesis and mutagenesis of environmental chemicals.

Keywords: *Meetings, *Chemical compounds, Environments, Interactions, Relationships, Geochemistry, Tables(Data), Trace elements, Toxic diseases, Chlorine aromatic compounds, Exposure, Monitors, Epidemiology, Humans, Animals, Plants(Botany), Soils, Lead(Metal), Mercury, Molybdenum, Missouri, *Environmental health, Polychlorinated biphenyls, Biphenyl/chloro, Carcinogenesis, Heavy metals, *Chemical effluents.

PB-270 666/1 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C.
A Study of Federally Financed Research on Pests, Pesticides and Pest Control
Federal Committee on Pest Control, Washington, D.C.
1968, 28p EPA/540/9-68/001

The Federal Committee on Pest Control was established in 1964 by joint agreement among the Secretaries of Defense, the Interior, Agriculture and Health, Education, and Welfare to coordinate all Federal efforts to control pests and to study the effects of pesticides. Subcommittees were established to give special attention to research pesticide monitoring of the environment, public information, review of Federal pest-control programs, and safety in pesticide marketing and disposal. The study reviews these functions.

Keywords: *Pest control, Research management, Safety, Pesticides, Monitoring, Organizations, Reviews

PB-270 701/6 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C.
Mercury in the Environment. A Compilation of Papers on the Abundance, Distribution, and Testing of Mercury in Rocks, Soils, Waters, Plants, and the Atmosphere
Geological Survey, Washington, D.C.
1970, 73p USGS-Professional Paper-713, EPA/540/9-70/002

This document is a compilation of papers on the abundance, distribution, and testing of mercury in rocks, soils, waters, plants and the atmosphere. The report discusses known facts about mercury -- where, and in what forms and quantities mercury is found; how it behaves in air, water, and earth materials, the impact of man's activities on its distribution; and the effects of the element on our lives. Furthermore, mercury is a strategic metal, and, because the United States has traditionally relied on imports for approximately half of its requirements, there is obvious need for better understanding of the occurrence and distribution of mercury in this country.

Keywords: *Mercury(Metal), *Geochemistry, *Raw materials, *Bibliographies, Rocks, Soils, Atmospheric composition, Environmental impacts, Supply(Economics), Mercury ore deposits, Fossil fuels, Transport properties, Plants(Botany), Ecology, Distribution, Monitoring, Reserves, Pollution, Commodity management, Baseline studies

PB-271 017/6 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C
Office of Toxic Substances.
PCBS Involvement in the Pulp and Paper Industry
Final rept. on Task 4
Versar, Inc., Springfield, Va.
Roderick A. Carr, Robert L Durfee, and Edward G McKay. 25 Feb 77, 110p 474.5A, EPA/560/6-77/005
Contract EPA-68-01-3259
See also PB-252 012.

The sources, distribution, and losses of PCBs in the U S. pulp and paper industry are discussed in detail. The major source of PCBs to the industry is recycled carbonless copy paper manufactured from 1957 to 1971, but the amounts of PCBs from this source diminished rapidly after 1971. A model showing past and projected PCBs content in product and wastewaters from the industry is presented and discussed. Estimated costs (worst-case basis) for wastewater treatment to achieve one ppb PCBs in effluents from the industry are developed; results indicate a 3 to 5 percent product cost increase will result from such treatment

Keywords: *Paper industry, *Environmental impacts, *Chlorine aromatic compounds, Sources, Cost estimates, Water pollution control, Air pollution control, Industrial wastes, Incineration, Carbon, Adsorption, Process charting, Pulping, Combustion products, Recirculation, Cost analysis, Mathematical models, *Biphenyl/chloro, Polychlorinated biphenyls, Path of pollutants.

PB-271 018/4 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C.
Office of Toxic Substrancs.
Chemical Market Input/Output Analysis of Selected Chemical Substances to Assess Sources of Environmental Contamination: Task I. Naphthylamines
Syracuse Research Corp., N.Y. Center for Chemical Hazard Assessment.
William M. Meylan, Philip H. Howard, and Milton Sack. Mar 76, 102p* TR-76-523, EPA/560/6-77-002
Contract EPA-68-01-3224

This report considers the sources of environmental contamination from naphthylamines. Because beta-naphthylamine is a proven human carcinogen and there are other alternatives to its use, it is no longer produced and consumed commercially in the United States. However, alpha-naphthylamine, which is a suspected carcinogen, is still manufactured for use as a chemical intermediate for dyes and herbicides. Thus, this report concentrates on the commercial production and use of alpha-naphthylamine Standards established by the Occupational Safety and Health Administration have controlled the occupational exposure to alpha-naphthylamine and have also had an impact on reducing contamination of the external environment. The OSHA regulations, along with current industry practices, appear to have eliminated the release of alpha-naphthylamine to the external environment. However, firm conclusions on the potential release of alpha-naphthylamine from its uses as a chemical intermediate require effluent monitoring data that is unavailable at this time. Further, it is possible that an alpha-naphthylamine-derived compound could be released to the environment and then degrade to alpha-naphthylamine. At least two possible sources of this type of contamination seem possible.

Keywords: *Chemical industry, *Industrial wastes, *Environmental surveys, Process charting, Herbicides, Dyes, Industrial hygiene, Public health, Pesticides, Cost analysis, Management planning, Sources, Sites, Process charting, Technology, Manufacturing, Carcinogens, Chemical reactions, Synthesis(Chemistry), *Naphthylamine, Environmental chemical substitutes, Occupational Safety and Health Administration

PB-271 880/7 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D C
Office of Toxic Substances
Prioritized Guidelines for Environmental Fate Testing of One Halogenated Hydrocarbon: Chlorobenzene Final technical rept.
Syracuse Research Corp., N.Y Center for Chemical Hazard Assessment
Philip H. Howard. Jan 77, 29p TR-76-591, EPA-560/5-77-001
Contract EPA-68-01-2679

Protocols for environmental fate testing of chemicals that are of interest to the Office of Toxic Substances have been divided into five levels of increasing complexity and cost: (1) review and evaluation of available information, (2) development of any missing physical parameters, (3) screening tests, (4) intermediate tests, and (5) detailed laboratory or field tests. Chlorobenzene is used as an example to determine the types of tests to be run. The level of testing required should be based upon the quantity of the chemical being released to the environment, toxicity (if known), and a cost/benefit analysis

Keywords: *Chlorobenzenes, *Guidelines, *Environmental surveys, Halogen organic compounds, Industrial hygiene, Biodeterioration, Decomposition, Transport properties, Physical properties, Toxicity, Benefit cost analysis, Biochemical oxygen demand, Toxic substances, Bioaccumulation.

PB-271 881/5 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D C
Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites: Chromium Final rept. May 76-Jun 77
Monsanto Research Corp., Dayton, Ohio. Dayton Lab
Arthur D. Snyder, Daryl G. DeAngelis, Edward C. Eimutis, David M. Haile, and Joseph C. Ochsner. Jun 77, 135p MRC-DA-661, EPA/560/6-77/016
Contract EPA-68-01-1980

A sampling and analysis program was conducted to determine concentrations of chromium in the air, water and soil in the environs of industrial sites and sewage treatment plants. Five industrial categories - chrome pigments producers, electroplating plants, ferrochromium plants, leather tanneries, and sodium dichromate/chromic acid producers - were presurveyed to select the final sampling sites. Samples were gathered at two chrome pigment plants, an electroplating plant, a leather tannery and two sewage treatment plants. The protocol for sampling air utilized high-volume samplers in either a downwind array or in a plant perimeter geometry. Composite 24-hour water samples were taken and soil core samples were obtained. The techniques employed for analysis of the environmental samples were intended to differentiate between the two most common chromium valence states (III and VI). This was accomplished for water samples but not for air, soil or sediment samples because acid digestion converted chromium (VI) to chromium (III). All analyses were obtained on a Varian AA-6 atomic absorption spectrometer.

Keywords: *Chromium, *Monitoring, *Chemical analysis, *Environmental surveys, Tanning materials, Water analysis, Industrial wastes, Sampling, Concentrations(Composition), Gas analysis, Pigments, Leather, Chemical industry, Electroplating, Water pollution, Air pollution, Soil analysis, Sewage treatment, Atomic spectroscopy, Absorption, Chromic acid, Ferrochromium, Sodium inorganic compounds, *Air pollution sampling, *Water pollution sampling, *Environmental monitoring, Sodium dichromate

PB-271 907/8 PC **A02**/MF **A01**
Voluntary Environmental Activities of Large Chemical Companies to Assess and Control Industrial Chemicals Final rept.
Environmental Protection Agency, Washington, D C.
Office of Toxic Substances
Sep 76, 20p Rept no. EPA/560/4-76/009

This report is intended to help clarify the extent and character of the activities of companies in the United States with sales of industrial chemicals exceeding $300 million annually to assess and, as necessary, control these chemicals beyond the environmental requirements set forth by Federal, State, and local authorities The report should help establish a baseline of such activities as of early 1976 The impact of Governmental efforts to stimulate additional activities in the future can then be judged against this baseline

Keywords: *Chemical industry, *Environmental surveys, *Assessments, *Pollution control, Industrial wastes, Manufacturing, Soil analysis, Hazardous materials, Toxicity, Regulations, Air pollution, Water pollution, Toxic substances, Solid wastes

PB-271 915/1 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C.
Office of Toxic Substances.
Market Input/Output Studies. Task IV. Polybrominated Biphenyls Final technical rept
Auerbach Associates, Inc., Philadelphia, Pa
M Lynne Neufeld, Marcus Sittenfield, and Kathryn F Wolk. Aug 77, 86p AAI-2378/2379-104-TR-3, EPA/560/6-77/017
Contract EPA-68-01-1996

The recent Michigan incident, in which livestock feed was contaminated by polybrominated biphenyls (PBBs), prompted this investigation This report reviews the technical and commercial history of PBBs and also gives a general overview of the production, consumption and ultimate fate of these compounds A detailed discussion of the manufacturing process and consumption patterns identifies possible points of entry of PBBs into the environment A summary of air emissions, and the technology involved is discussed, and the ultimate disposal of liquid and solid waste material was investigated Finally, a cost/performance analysis of alternative flame retardant is presented

Keywords *Chemical industry, *Environmental sur-

veys, *Bromine organic compounds, Heat resistant plastics, Feeding stuffs, Manufacturing, Process charting, Design criteria, By products, Cargo transportation, Technology, Solid waste disposal, International trade, Sites, Materials handling, Air pollution control, Water pollution control, Reclamation, *Polybrominated biphenyls, Liquid wastes, Environmental chemical substitutes.

PB-273 192/5 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Identification and Analysis of Polychlorinated Biphenyls and Other Related Chemicals in Municipal Sewage Sludge Samples *Final rept. 6 Dec 76-5 Jun 77 on Task 4*
Research Triangle Inst., Research Triangle Park, N.C.
Mitchell D. Erickson, and Edo D Pellizzari Aug 77, 164p EPA/560/6-77/021
Contract EPA-68-01-1978

Methods were developed for the extraction, clean-up and GC/MS analysis of polychlorinated biphenyls (PCBs) and related chemicals in municipal sludge samples. Each of the sludge samples received from nine major United States cities was processed to yield a neutral fraction and two acid fractions which were methylated with dimethylsulfate and diazomethane, respectively Samples were cleaned up by silica gel column chromatography. A total of 35 chlorinated compounds were found in the full scan GC/MS analysis, including polychlorobiphenyls, polychloronaphthalenes, polychloroaniline, polychlorobenzene and DDE. Some chlorinated compounds remain unidentified.

Keywords· *Chemical analysis, *Sludge, Chlorine organic compounds, Samples, Extraction, Gas chromatography, Mass spectroscopy, Laboratory equipment, Sampling, *Polychlorinated biphenyls, *Sewage sludge, Polychlorinated naphthalenes, Polychlorinated aniline, Benzene/chloro, Produces, Sulfate/dimethyl.

PB-273 195/8 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances
Survey and Evaluation of Techniques Used in Testing Chemical Substances for Teratogenic Effects Final rept.
Tracor Jitco, Inc., Rockville, Md.
Oct 77, 102p* EPA/560/5-77/007
Contract EPA-68-01-2204

The survey is intended to summarize and evaluate the methods currently used or potentially useful for testing chemicals for teratogenic effects The survey is evaluative, and based on a literature search and information from consultants, it covers all methods that have been used or have been recommended for use during the past 50 years It also covers some methods which the evaluation suggested might be considered or reconsidered in the future It does not cover every method that has ever been used for teratogenicity testing.

Keywords *Congenital abnormalities, *Bioassay, Chemical compounds, Drugs, Embryology, Tables(Data), Surveys, Evaluation, In vivo analysis, In vitro analysis, Experimental design, Tests, Populations, Surveillance, Economic analysis, Recommendations, Data analysis, Tissue culture, Laboratory animals, Experimental data, Embryos, Animal models, *Teratogens, Teratogenesis, *Teratology, Environmental health, Fetuses, Environmental pollution, Laboratory experiments

PB-273 196/6 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Analysis of a Series of Samples for Polybrominated Biphenyls (PBBs) Final rept 10 Mar-18 Jun 77 on Task 5
Research Triangle Inst., Research Triangle Park, N C
Mitchell D Erickson, Ruth A Zweidinger, and Edo D. Pellizzari Aug 77, 69p EPA/560/6-77/020
Contract EPA-68-01-1978
See also Final rept on Task 4, PB-273 192.

Methods for the analysis of polybrominated biphenyls (PBBs) by gas chromatography/mass spectrometry/computer (GC/MS/COMP) were developed using a 45 cm x 0 2 cm i d. glass column packed with 2% OV-101 coated on Gas-Chrom Q The column was programmed from 150-300C at 20C/min for the chromatography of mono-through pentabromobiphenyl and from 220-300C at 12C/min for hexa- through decabromobiphenyl. Two separate analyses were required to adequately separate the lower isomers and to yield definitive peaks for the higher isomers. A total of 80 samples were analyzed by GC/MS in the Multiple Ion Detection (MID) mode. They contained from undetectable to 860 micrograms/ml of PBBs. The higher isomers accounted for the majority of the PBBs found. Mass spectra obtained during GC/MS analysis of some of the more highly concentrated samples not only confirmed the presence of PBBs, but also detected polybrominated biphenyl ethers and other brominated compounds. Three commercial samples of decabromobiphenyl ether (C12Br10O) were analyzed for impurities by GC/MS using the same conditions as for the higher PBBs. All three samples contained C12Br9ClO in small amounts and one sample contained traces of C12H2Br8O and C12HBr9O.

Keywords: *Chemical analysis, *Environmental surveys, Gas chromatography, Bromine organic compounds, Mass spectrometry, Samples, Ethers, Laboratory equipment, Industrial wastes, *Polybrominated biphenyls, Computer aided analysis.

PB-273 197/4 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Potential Industrial Carcinogens and Mutagens Final rept.
National Center for Toxicological Research, Jefferson, Ark.
Lawrence Fishbein. May 77, 322p* EPA/560/5-77/005

Ninety industrial chemicals, illustrative of 16 major classes and 19 structural sub-categories have been reviewed primarily in terms of their reported carcinogenicity and/or mutagenicity. The compounds were selected based on factors including: their reported carcinogenicity and/or mutagenicity, their chemical structures and relationships to known carcinogens or mutagens, their volume or use characteristics, and suggested or estimated potential populations at risk. Additionally, germane aspects (where known) of their synthesis (primarily in terms of the nature of the possible hazardous trace impurities), use patterns, chemical and biological reactivity and stability, environmental occurrence and metabolic fate have been included for cohesiveness of treatment. It is important to note that in 52 of the above cases, both carcinogenicity and mutagenicity of individual compounds were reported. Thirty-one compounds have been reported to be mutagenic and noncarcinogenic and seven compounds are carcinogenic and nonmutagenic. In a number of cases, there are no reports of a compound having been tested for carcinogenicity or mutagenicity or they are currently on test. In some cases, conflicting carcinogenicity and/or mutagenicity results for the same compound were reported. The largest number of industrial agents that have been reported to be carcinogenic and/or mutagenic are alkylating and acylating agents classified under 12 structural headings.

Keywords· *Assessments, *Carcinogens, *Mutagens, *Industrial hygiene, *Organic compounds, *Industrial wastes, Hazardous materials, Environmental surveys, Microorganisms, Bioassay, Public health, Alkylation, Amines, Azo dyes, Hydroxylamine, Hydrazines, Carbamates, Epoxides, Lactones, Sulfates, Sultones, Aldehydes, Ethers, Nitros compounds, Aromatic compounds, Polymers, Hydrocarbons, Halogen organic compounds, Alkanols, Halides, Esters, Phosphoric acids, Acylation, Furans, Aromatic hydrocarbons, Azides, Anthraquinones, Toxicology, Molecular structures, Utilization, Aziridines, Triazenes, Carcinogenesis, Mutagenesis, Cancer.

PB-273 198/2 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances
Multimedia Levels Cadmium
Battelle Columbus Labs., Ohio.
Sep 77, 156p* EPA/560/6-77/032
Contract EPA-68-01-1983

The report is a review of environmental levels of cadmium based on published reports and other information sources. Cadmium levels are reported for the atmosphere, surface and ground waters, drinking water, sediments, soil, sludge, terrestrial and aquatic biota, and man The behavior of cadmium in the environment is also discussed. Although cadmium is present in measurable quantities in virtually all areas, for the general population oral ingestion in foods can represent the most important source of cadmium intake. Airborne sources appear to constitute a significant portion of cadmium intake for those occupationally exposed or those residing in areas heavily polluted by cadmium-emitting industries. Based on the information in this document, current cadmium releases to the environment appear to be declining. However, the cadmium content in fossil fuels and fertilizers is only partially controllable, and these two sources may set the lower bounds of attainable minimums in cadmium emissions to the environment. Most of the dissipated cadmium eventually becomes bound to soil, sediment, and ocean sinks. Biological accumulations of cadmium are found in most living organisms.

Keywords: *Cadmium, Concentration(Composition), Aquatic biology, Metals, Food, Behavior, Humans, Exposure, Distribution, Excretion, Sediments, Sludge, Plants(Botany), Animals, Chemical properties, Physical properties, Air, Potable water, Environments, Rocks, Soils, Food contamination, Food chains, Tables(Data), *Heavy metals, Environmental health, Bioaccumulation, Cigarettes, *Environment pollution, Environmental transport, Body burdens.

PB-273 201/4 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Multimedia Levels - Mercury
Battelle Columbus Labs., Ohio
Sep 77, 145p* EPA/560/6-77/031
Contract EPA-68-01-1983

This report is a review of environmental levels of mercury based on published reports and other information sources. Mercury levels are reported for the atmosphere, surface and ground waters, drinking water, sediments, soil, terrestrial and aquatic biota, and man. The behavior of mercury in the environment is also discussed. Higher than ambient levels of mercury are found near mercury mines, geothermal steam fields, power plants, incinerators, sewage treatment plants, some industrialized areas, and indoors where mercury is used. The release of mercury from natural sources to air and water is double the man-related losses to these media. The levels of mercury in biota are variable, depending on food habits and environmental conditions. The highest levels occur in animals at the top of the trophic structure. Mercury levels in tissues of humans are elevated in chlor-alkali industry workers, in dentists, in people from areas with natural mercury deposits, and in urban populations as compared with the rural.

Keywords. *Mercury, *Environmental surveys, Concentration(Composition), Water pollution, Air pollution, Surface water, Ground water, Potable water, Industrial wastes, Combustion products, Soil analysis, Sediments, Toxicity, Public health, Foods, Sources, Physical properties, Chemical properties, Permissible dosage, Sewage treatment plants, Path of pollutants.

PB-273 202/2 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances
Chemical Technology and Economics in Environmental Perspectives. Task . Investigation of Alternatives for Selected Aerosol Propellants and Related Applications of Chlorofluorocarbons Final rept.
Midwest Research Inst., Kansas City, Mo.
Thomas W. Lapp, Gary L. Kelso, Larry Breed, Howard Gadberry, and Thomas Milne Oct 77, 93p* EPA/560/1-77/004
Contract EPA-68-01-3201
See also Final rept. on Task 4 dated Feb 77, PB-266 181.

Several aerosol propellant and related applications of fluorocarbons were examined to identify existing and technologically feasible alternatives. Associated cost factors were also considered. Interested parties brought these fluorocarbon applications to the attention of an interagency work group (EPA, FDA, and CPSC) as being possible 'essential uses' of these substances The applications examined under the task were: flying insect insecticides, other pesticides, spray paints, air brushes, mine safety devices, mold release agents, lubricants, battery terminal protection, paper frictionalizing indicator, electronic cleaners, burglar alarm system, portable acoustic warning devices,

pressurized cleaners, aerosol computer tape developer, diamond grit spray, electronic diagnostic chillers, fire alarm system, fire extinguishing agents, and drain openers.

Keywords: *Fluorohydrocarbons, *Propellants, *Aerosols, *Air pollution control, Pesticides, Substitutes, Economic analysis, Freons, Paints, Warning systems, Mines, Molding techniques, Lubricants, Electric batteries, Cleaners, Computers, Electric equipment, Fire extinguishing agents, Feasibility, *Environmental chemical substitutes, Air brushes, Drain openers

PB-273 203/0 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites Trichloroethylene
Battelle Columbus Labs., Ohio.
Aug 77, 75p EPA/560/6-77/024
Contract EPA-68-01-1983

The levels of trichloroethylene (TCE) in various environmental media were determined at four production sites, one user site, and a background site. The ambient air level was determined on-site by direct injection of the ambient air into a gas chromatograph followed by detection and quantification with an electron capture detector. Water, soil, and sediment samples were returned to Battelle for analyses For the analyses of water samples, TCE was sparged from the water collected on a trap material using a commercial liquid sample concentrator. The trapped organic material was then backflushed onto a gas chromatograph column which was connected to an electron capture detector used to quantify the TCE in the original sample. A similar technique was used for the quantification of TCE in soil and sediment. The results from the analyses and detailed descriptions of the sampling locations are given and keyed to site maps. Considerable variation was observed in the maximum downwind levels of TCE at various production plants Concentrations in ambient air ranged from less than 1 ppb to 270 ppb. Concentrations in surface water in the vicinity of production and user plants was even more variable ranging from fractions of a ppb to over 5 ppm. Concentrations in soil and sediment range from the limits of detection to over 100 ppb

Keywords: *Environmental surveys, *Industrial wastes, *Chemical analysis, *Chemical industry, Chlorine organic compounds, Sites, Monitoring, Samples, Gas chromatography, Concentration(Composition), Air pollution, Water pollution, Soil analysis, Sediments, Gas analysis, Water analysis, *Ethylene/trichloro, *Air pollution detection, *Water pollution detection, Electron capture detectors.

PB-273 204/8 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites Methylchloroform
Battelle Columbus Labs , Ohio
Aug 77, 82p EPA/560/6-77/025
Contract EPA-68-01-1983

The levels of methylchloroform (MC) in various environmental media were determined at four production sites, one user site, and a background site The ambient air level was determined on-site by direct injection of the ambient air into a gas chromatograph followed by detection and quantification with an electron capture detector. Water, soil, and sediment samples were returned to Battelle for analyses. For the analyses of water samples, MC was sparged from the water collected on a trap material using a commercial liquid sample concentrator. The trapped organic material was then backflushed onto a gas chromatograph column which was connected to an electron capture detector used to quantify the MC in the original sample. A similar technique was used for the quantification of MC in soil and sediment. The results from the analyses and detailed descriptions of the sampling locations are given and keyed to site maps. Considerable variation was observed in the maximum downwind levels of MC at various production plants Concentrations in ambient air ranged from less than 0.3 ppb to 155 ppb. Concentrations in surface water in vicinity of production and user plants was even more variable ranging from fractions of a ppb to over 16 ppm. Concentrations in soil and sediment range from the limits of detection to over 6.1 ppm.

Keywords *Industrial wastes, *Environmental surveys, *Chemical analysis, *Chemical industry, Monitoring, Air pollution, Water pollution, Soil analysis, Sediments, Organic compounds, Gas chromatography, Concentration(Composition), Water analysis, Gas analysis, Tables(Data), Samples, Sites, Manufacturing, Laboratory equipment, Chlorine organic compounds, *Chloroform/methyl, *Air pollution detection, *Water pollution detection, Electron capture detectors.

PB-273 205/5 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Market Input/Output Studies. Task I. Vinylidene Chloride Final rept.
Auerbach Corp., Philadelphia, Pa.
M. Lynne Neufeld, Marcus Sittenfield, Marcia J. Ploykin, Kathryn F. Wolk, and Robert E. Boyd. Oct 77, 185p* AAI-2378/2379-101-FR-1, EPA/560/6-77/033
Contract EPA-68-01-1996
See also Task 4, PB-271 915.

Recent reports of the possible carcinogenic properties of vinylidene chloride, because of structural similarity to vinyl chloride, prompted this investigation. This report views the chemical and physical properties of vinylidene chloride (VDC) and its important derivitives and polymers. A detailed discussion of the manufacturing process, including sites, new technologies and environmental management is presented. The consumption of VDC in the manufacture of methyl chloroform and alternative manufacturing processes for methyl chloroform which do not involve VDC are discussed. The most important end use of VDC, polymerization, is described in detail. A cost performance analysis of copolymers containing VDC, VDC laminated films, multilayer 'PVDC sandwich' type films and other films not containing VDC such as polyethylene and polyprylene is reported Finally a summary of the chemical losses due to air emissions, liquid effluents and solid wastes is discussed

Keywords: *Chemical industry, *Vinylidene chloride resins, *Marketing, Chemical properties, Physical properties, Polymerization, Manufacturing, Industrial wastes, Process charting, Technology, Water pollution, Air pollution, Environmental surveys, Management planning, Synthesis(Chemistry), Cost analysis, Plant location, Performance evaluation, Laminates, Carcinogens, Trends, Copolymers, Reviews, Chloroform/methyl, Liquid wastes, Solid wastes

PB-273 206/3 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Halogenated Benzenes Final technical rept.
Ebon Research Systems, Washington, D C
Sylvia A. Ware, and William L. West. Jul 77, 297p*
EPA/560/2-77/004
Contract EPA-68-01-4183

This report reviews the potential environmental hazard from use of the halogenated benzenes. Major focus is in the commercially important chlorinated benzenes, though fluorinated, brominated and iodinated benzenes are also discussed as well as mixed halogen compounds. Hexachlorobenzene is not included in this study except where information relates to trends within the group of chlorinated benzenes. Chlorinated benzenes are used as solvents, chemical intermediates, for moth repellency and as space odorizers. Several chlorinated benzenes have been detected in drinking and raw water sources throughout the U.S p-Dichlorobenzene has been found in human blood samples from New Orleans, and with 1, 2, 4, 5-tetrachlorobenzene and hexachlorobenzene in human adipose tissue samples collected in Tokyo, Japan While of comparatively low acute toxicity, chronic or 'subacute' effects are seen at fairly low concentrations These effects include: porphyria, necrosis of liver, kidneys and lungs, and possible blood abnormalities Several of the chlorinated benzenes are known mutagens in plants. Carcinogenic studies completed were of a short duration and must be considered inconclusive until studies are repeated using current methodologies. The extent of metabolism of these compounds depends on the degree of substitution, the position(s) of substitution and the type of halogen

Keywords: *Halogen organic compounds, *Reviews, *Environmental surveys, Soil analysis, Bromine organic compounds, Iodine organic compounds, Chlorine organic compounds, Fluorine organic compounds, Air pollution, Potable water, Concentration(Composition), Cargo transport, Storage, Industrial wastes, Public health, Toxicology, Physical properties, Chemical properties, Marketing, Chemical industry, Chemical analysis, Air pollution, Surface water, Utilization, Regulations, Standards, Manufacturing, Monitoring, Costs, *Benzenes, Liquid wastes, Bioaccumulation.

PB-273 267/5 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Toxicity Studies of Selected Chemicals. Task IV: The Developmental Toxicity of Ethylene Dibromide Inhaled by Rats and Mice During Organogenesis Final rept.
Midwest Research Inst., Kansas City, Mo.
Robert D Short, Jr, Jan L. Minor, Joseph M. Winston, Brett Ferguson, and Timothy Unger. Jun 77, 21p EPA/560/6-77/028
Contract EPA-68-01-3242
See also Report dated Apr 76, PB-256 659.

Ethylene dibromide (EDB) was administered at 20, 38, and 80 ppm by inhalation to pregnant Charles River CD rats and CD-1 mice for 23 hr/day. The exposures started on day 6 of gestation and lasted for a total of 10 days. Observations were made on maternal welfare and fetal development. The results of this study indicate that (1) EDB is more toxic in adult mice than adult rats, (2) adverse effects on maternal welfare, as measured by weight gain, feed consumption, and survival were observed in both mice and rats, (3) although morphological changes were observed in fetuses from dams exposed to EDB, these effects were observed at concentrations that also affected maternal welfare, and (4) EDB was judged to be only a weak teratogen with little primary effect on development.

Keywords *Toxicity, Bromides, Bioassay, Rats, Mice, Laboratory animals, Pregnancy, Exposure, Dosage, Dose rate, Concentration(Composition), Respiration, Congenital abnormalities, Growth, *Toxic substances, *Ethylene dibromide, Ethylene/di-bromo, *Teratogenesis, Fetuses.

PB-273 349/1 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
Monitoring to Detect Previously Unrecognized Pollutants in Surface Waters Final rept.
Illinois Univ at Urbana-Champaign. Inst. for Environmental Studies
B. B Ewing, E S K. Chian, J. C. Cook, C A. Evans, and P. K Hopke. Jul 77, 84p EPA/560/6-77-015
Contract EPA-68-01-3234
See also Appendix, PB-273 350.

Contents
- Introduction--(Background and Objectives, Organization, and Sample Collection and Analysis Schedule);
- Site selection, sample collection, and gross analysis--(Site Selection, Sample Collection, and Gross Analysis);
- Sample preparation--(Stripping Procedures, Liquid-liquid Extraction, and Sorptive Extraction Technique),
- Inorganic analysis--(Spark-source Mass Spectral Analysis, Instrumental Neutron Activation Analysis, and Energy-dispersive X-ray Fluorescence Analysis),
- Organic analysis--(Identification of Organics, Quantitation of Organics, and Summary of the Organic Compounds Found)

Keywords. *Monitoring, *Surface waters, *Industrial wastes, Sites, Sampling, Water analysis, Chemical analysis, Concentration(Composition), Trace elements, Oxidation reduction reactions, Neutron activation analysis, Organic compounds, Inorganic compounds, Gas chromatography, Mass spectrometry, X ray analysis, Fluorescence, pH, Conductivity, *Water pollution detection, Chemical oxygen demand.

PB-273 350/9 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Monitoring to Detect Previously Unrecognized Pollutants in Surface Waters--Appendix: Organic Analysis Data Appendix to Final rept.
Illinois Univ. at Urbana-Champaign. Inst. for Environ-

mental Studies.
B. B. Ewing, E. S. K. Chian, J. C. Cook, C. A. Evans, and P. K. Hopke. Jul 77, 304p EPA/560/6-77/015a
Contract EPA-68-01-3234
See also Final rept, PB-273 349.

Samples of surface waters were collected from 204 sites near heavily industrialized areas across the United States. The samples were analyzed for all contaminants present at concentrations greater than one part per billion. Each water sample was preconcentrated for analysis of organics in three fractions: volatile organics by nitrogen-gas stripping and the less-volatile organics by extraction with chloroform under both basic and acidic conditions. Organic constituents were identified by gas chromatography/mass spectrometry and quantified by gas-chromatographic techniques. Inorganic constituents were determined by spark-source mass spectrometry, energy-dispersive x-ray fluorescence analysis, and instrumental neutron activation analysis. For comparison with previous data from the same sites, the samples were also analyzed for total chemical oxygen demand, turbidity, conductivity, pH, color, oxidation-reduction potential, suspended solids, and volatile suspended solids Results of the inorganic analyses were presented in previous quarterly progress reports. Final results of the organic analyses are presented in this appendix to the final report.

Keywords: *Monitoring, *Surface waters, *Industrial wastes, *Organic compounds, Sites, Sampling, Water analysis, Chemical analysis, Concentration(Composition), Tables(Data), Trace elements, Oxidation reduction reactions, Neutron activation analysis, Gas chromatography, Mass spectrometry, X ray analysis, Fluorescence, pH, Conductivity, *Water pollution detection, Chemical oxygen demand

PB-273 358/2 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites: Sampling and Analysis of Selected Toxic Substances. Task I - Vinylidene Chloride Final task rept. Jun 76-Sep 77
Midwest Research Inst., Kansas City, Mo
John E. Going, and James L. Spigarelli. Oct 77, 150p EPA/560/6-77/026
Contract EPA-68-01-4115
See also Final rept on Task 4 dated Jul 76, PB-256 234.

A sampling and analysis program was conducted to determine the levels of vinylidene chloride in air and water around six industrial sites, in selected municipal drinking waters and in selected polymeric materials. The industrial sites included monomer producers, polymer producers and polymer users. Air was collected at perimeters of the industrial sites as 24-hr composite samples using charcoal adsorption tubes. Grab water samples were collected up- and downstream, at the plant discharge and at the municipal water treatment plants. Air levels ranged from 52 microgram/sq m to nondetectable at the industrial sites; water levels ranged from 550 microgram/liters to nondetectable at the plant sites and from 0.06 microgram/liters to nondetectable in the drinking waters The air and water samples were analyzed by GC and results confirmed by GC/MS Other components in the samples were identified by GC/MS.

Keywords· *Vinylidene chloride, *Industrial wastes, *Chemical industry, *Chemical analysis, Polymers, Water analysis, Gas analysis, Potable water, Monitoring, Gas chromatography, Mass spectroscopy, Concentration(Composition), Manufacturing, Sites, Laboratory equipment, Tables(Data), Air pollution, Water pollution, Soil analysis, Sediments, *Water pollution detection, *Air pollution detection, Monomers.

PB-274 264/1 PC **A25**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
A Study of Industrial Data on Candidate Chemicals for Testing Final rept.
SRI International, Menlo Park, Calif.
Jeffrey Allport, Sharon Casey, Janet Cook, Peter Hall, and C. Tucker Helmes. Aug 77, 592p RESEARCH REQUEST-1, EPA/560/5-77/006
Contract EPA-68-01-4109

This report summarizes the work done under Research Request No 1 and includes three major parts. (1) Data previously collected on an NSF study was supplemented to provide the following information where available on 667 industrial chemicals. (a) U.S. production; (b) estimates of quantities released annually to the environment; (c) major uses; and (d) references on mutagenicity tests. Mutagenicity data on 25 chemicals were evaluated after developing a list of assays and criteria for classifying the results as either positive or negative/inadequate. (2) Tables were prepared which contain economic information on 1791 chemicals belonging to 26 structural classes considered to represent potential industrial carcinogens and mutagens. For those chemicals with annual production greater than one million pounds, market forecasts were prepared which present a brief summary of production, consumption patterns, major uses, possible substitutes, and growth trends. (3) Carcinogenicity data for all chemicals belonging to three classes (epoxides, alkyl halides, and vinyl halides) were used to correlate structural features with carcinogenic activity. Criteria were developed for estimating the potential carcinogenicity of chemicals in each class. These criteria were applied to those chemicals in each class known to be produced commercially or for which there was evidence of significant human exposure. The results of the study were summarized in three separate reports. (Portions of this document are not fully legible)

Keywords: *Chemical industry, *Organic compounds, Hydroxylamines, Carbamates, Manufacturing, Concentration(Composition), Environmental surveys, Carcinogens, Industrial wastes, Utilization, Trends, Sultones, Sulfates, Aziridines, Lactones, Toxicity, Marketing, Economics, Public health, Tables(Data), Mutagens, Epoxides, Azo compounds, Alkanes, Phosphoric acid, Esters, Halogen organic compounds, Ethers, Aldehydes, Peroxy organic compounds, Hydrocarbons, Hydrazines, Nitroso compounds, Amines, Azides, *Chemicals, Triazenes, Furan/nitro

PB-275 077/6 PC **A02**/MF **A01**
Summary of Early Warning Studies of Specific Chemicals During Fy 75 and Fy 76 Final rept.
Environmental Protection Agency, Washington, D C. Office of Toxic Substances
Jul 76, 11p Rept no. EPA/560/8-76/002

This report summarizes the early warning screening activities for specific chemicals which were initiated during FY 75 and FY 76 by the Early Warning Branch, Office of Toxic Substances, EPA. These substances were identified and selected for preliminary in-house study to determine the need for a more in-depth examination of real or potential hazards associated with them.

Keywords: *Chemical compounds, *Environmental surveys, *Public health, Industrial hygiene, *Toxic substances

PB-275 078/4 PC **A99**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Nitroaromatics Final technical rept.
Syracuse Research Corp., N.Y. Center for Chemical Hazard Assessment.
Philip H Howard, Joseph Santodonato, Jitendra Saxena, Judith Malling, and Dorothy Greninger Jun 76, 618p* TR-76-573, EPA/560/2-76/010
Contract EPA-68-01-2999

This report considers the large number of chemicals which contain at least one nitro substituent on an aromatic ring. Approximately 250-300 chemicals are listed as commercial nitroaromatic compounds. However, only about 40 compounds are produced or consumed annually in quantities over 500,000 pounds and perhaps another 50-100 compounds exceed 100,000 pounds. Nitroaromatic compounds are used as pesticides, perfumes, explosives, and chemical intermediates This report focuses upon the non-pesticidal nitroaromatics. Because of the large number of compounds considered in this report, comprehensive information on individual compounds could not be developed However, adequate information is available to provide priorities for further study and research. Production volume, uses, environmental fate, monitoring, and biological effects were considered. In general, nitroaromatic compounds appear to be fairly persistent and exhibit either hematologic or metabolic effects at high levels of exposure Most of the large-volume nitroaromatics have not been screened for carcinogenic, mutagenic, or teratogenic effects.

Keywords: *Nitro compounds, *Aromatic compounds, *Chemical compounds, *Environmental surveys, Nitrobenzenes, Monitoring, Metabolism, Concentration(Composition), Carcinogens, Toxicology, Marketing, Chemical industry, Manufacturing, Photochemistry, Oxidation, Mutagens, Chemical properties, Physical properties, Utilization, Chemical reactions, Trends, Substitutes, Storage, Cargo transport, Byproducts, Accidents, Materials handling, Explosives, Pesticides, Monitoring, Fungi, Yeast, Algae, Regulations, Standards, Biodeterioration, Volatility, Transport, Drugs, Industrial hygiene, Public health, Epidemiology, Birds, Mammals, Microorganisms, Plants(Botany), Bacteria, Path of pollutants, Bioaccumulation, Toluene/dinitro, Benzene/chloro-nitro, Toluene/trinitro, Phenol/nitro.

PB-275 097/4 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Chemical Market Input/Output Analysis of Selected Chemical Substances to Assess Sources of Environmental Contamination: Task II. Biphenyl and Diphenyl Oxide Final rept.
Syracuse Research Corp., N.Y. Center for Chemical Hazard Assessment.
William M Meylan, and Philip H. Howard. Oct 76, 120p* TR-76-599, EPA/560/6-77/003
Contract EPA-68-01-3224
See also report dated Mar 76, PB-271 018.

This report considers the sources of environmental contamination from biphenyl and diphenyl oxide. Biphenyl is manufactured in commercial quantities for use in dye carriers, heat transfer fluids, derivatives such as PCB's and alkylated biphenyls, and fruit fungicides Diphenyl oxide is manufactured in commercial quantities for use in dye carriers, heat transfer fluids, derivatives such as butylchlorodiphenyl oxide, decabromodiphenyl oxide, surfactants, and perfumes and soaps. Thus, this report concentrates on the commercial production and use of biphenyl and diphenyl oxide. Standards established by the Occupational Safety and Health Administration have controlled the occupational exposure to biphenyl and diphenyl oxide; however, large quantities of these chemicals are released to the external environment, particularly to waste treatment facilities which may utilize chlorine disinfection. Laboratory studies indicate that the biphenyl nucleus can undergo chlorination to various chlorobiphenyl isomers during treatment chlorine disinfection.

Keywords: *Chemical industry, *Environmental surveys, *Biphenyl, *Industrial wastes, Manufacturing, Dyes, Surfactants, Soaps, Fungicides, Marketing, Technology, Economics, Process charting, Benzene, Toluene, Byproducts, Phenols, Management planning, Bromine organic compounds, Chlorine organic compounds, Industrial hygiene, Physical properties, *Phenyl ether, Perfumes, Heat transfer fluids, Benzene/chloro, Polychlorinated biphenyl, Polybrominated biphenyl.

PB-275 106/3 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D C Office of Toxic Substances.
Chemical Use Classification System Final rept Jul 76-Oct 77
Auerbach Associates, Inc, Philadelphia, Pa
Wendy L Byer. Oct 77, 184p* EPA/560/9-77/001
Contract EPA-68-01-4117

Under the Toxic Substances Control Act, manufacturers, processors and importers may be required to submit certain data to EPA prior to the commercial production, processing or distribution of a new chemical or of a previously produced chemical intended for a new use. EPA may also collect the same data for existing chemicals in existing uses. This Chemical Use Classification System will allow manufacturers, processors and importers of chemicals to report chemical use data to EPA in a form that will facilitate analysis. This system includes a use classification scheme, an alphabetical index to the classification scheme, instructions describing how to report chemical use, production and exposure information, and a reporting form on which to code the above information

Keywords· *Chemical compounds, *Environmental surveys, *Classifications, Exposure, Concentration(Composition), Manufacturing, Chemical industry, Forms(Paper), Guidelines, *Toxic substances

PB-275 116/2
(Order as PB-275 107, MF **A01**)
Reproducibility of Micro-Mills Procedure for Pesticide Residues in Fat
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Ana Barquet, Carmen Morgade, and Janet Cassady. 1972, 6
Pub. in Epidemiology of DDT, 1972.
Included in the report, Journal Articles on Pesticide Chemical Analysis Group 1, PB-275 107.

The reproducibility of the micromodification of the Mills procedure for detection of six pesticide residues in biopsied adipose tissue was investigated. The magnitude of the pooled standard deviations implies that the measurements should be rounded to the nearest tenth of a ppm for DDT, DDE, and benzene hexachloride, and to the nearest hundredth of a ppm for DDD, dieldrin, and heptachlor epoxide. Although variability among measurements of certain pesticides by a tritium detector chromatograph was found to be significantly greater than among measurements by nickel detector chromatograph, no inferences can be made from this sample of only two chromatographs.

Keywords: *Pesticides, *Chemical analysis, *Fat analysis, Residues, DDT, Insecticides, Dieldrin, Chlorine organic compounds, Herbicides, Oxygen heterocyclic compounds, Reprints, Procedures, DDE insecticide, DDD insecticide, Dichlorodiphenyltrichlorethane, Ethylene/bis(chlorophenyl)-dichloro, Ethane/bis(chlorophenyl)-dichloro, Dimethanonaphthalenes, Benzene/hexachloro, Heptachlor epoxide, Methanoindero-oxirene.

PB-275 367/1 PC **A17**/MF **A01**
National Science Foundation, Washington, D.C.
Initial Report of the TSCA Interagency Testing Committee and Information Dossiers on Substances Designated
TSCA Interagency Testing Committee, Washington, D.C.
Dec 77, 382p* EPA/560/10-78/001
Prepared in cooperation with Clement Associates, Inc, Washington, D.C., Contract NSF-C-ENV-77-15417

Contents.
- Committee establishment and responsibilities;
- Selection of the committee's basic approach;
- Establishment of the initial listing;
- Reduction to the master file;
- Selection of the preliminary list;
- Public comment on the preliminary list;
- Selection of substances for detailed review;
- Consideration for listing and designation;
- Consideration of availability of testing facilities and personnel,
- Substances and categories of substances recommended for testing;
- Reasons for recommending testing of the substances and categories;
- Alkyl epoxides, Alkyl phthalates,
- Chlorinated benzenes, mono- and di-;
- Chlorinated paraffins, 35-64% chlorine;
- Chloromethane, Cresols,
- Hexachloro-1,3-butadiene;
- Nitrobenzene, toluene, xylenes

Keywords: *Hazardous materials, Toxicity, Classifications, Committees, Law(Jurisprudence), Legislation, Recommendations, Chlorobenzenes, Chloromethanes, Toxicology, Metabolism, Cresols, Nitrobenzenes, Toluene, Xylenes, Alkanes, Chlorine organic compounds, Epoxides, Phthalates, Tests, Environmental health, Toxic Substances Control Act, Butadiene/hexachloro, *Toxic substances, Bioaccumulation, Carcinogenesis, Mutagenesis, Teratogenesis

PB-275 494/3
(Order as PB-275 491, MF **A01**)
Information Activities in Support of the EPA Pesticide Program
Environmental Protection Agency, Washington, D C Office of Pesticide Programs
William C. Grosse 5 Nov 75, 5p
Pub in Jnl. of Chemical Information and Computer Sciences, v16 n1 p10-14 1976.
Included in the report, Journal Articles on Information Science, PB-275 491

The Environmental Protection Agency (EPA) is responsible for regulating the supply and use of pesticides The EPA Office of Pesticide Programs (OPP) is involved in (1) supply control via product registration, (2) use control, (3) monitoring and hazard evaluation, and (4) research and economic studies. Major information activities in suppoort of these four activities are reviewed.

Keywords: *Information systems, *Pesticides, Regulations, Control, Libraries, Reprints.

PB-275 923/1
(Order as PB-275 918, MF **A01**)
Detection of Atypical Cholinesterase by an Automated pH Stat Method, Report of a Family with Both Atypical and Silent Gene Alleles
Environmental Protection Agency, Chamblee, Ga Office of Pesticides Programs.
Thomas M. Ashby, Joseph E Suggs, and Danny L. Jue. 8 Apr 70, 4p
Pub. in Clinical Chemistry, v16 n6 p503-506 1970.
Included in the report, Journal Articles on Pesticide Biology, PB-275 918.

Plasma pseudocholinesterase has no known physiological role but is essential for the rapid degradation of succinylcholine, a muscle relaxant used in surgical procedures Depression of effective enzyme concentrations as a result of hepatocellular disease or exposure to anticholinesterase agents will increase the patient's sensitivity to succinylcholine and prolong postoperative apnea. Synthesis of this enzyme is controlled by an autosomal gene with multiple variant alleles; individuals phenotypically homozygotic for one of these variants will have either qualitatively 'atypical' pseudocholinesterase with decreased activity or no enzyme at all, and will thus be more sensitive to succinylcholine. The automated pH stat system described here detects atypical cholinesterase by measuring the degree of inhibition of butyrylcholine hydrolysis by dibucaine

Keywords: *Chemical analysis, *Cholinesterase, Genetics, Enzymes, Tables(Data), Families, Abnormalities, Reprints, Analytical methods.

PB-275 927/2
(Order as PB-275 918, MF **A01**)
Quality Control in the Measurement of Blood Cholinesterase Activities Among Persons Exposed to Pesticides
Environmental Protection Agency, Chamblee, Ga Office of Pesticides Programs.
William F. Serat, and Donald C Mengle. 1973, 4p
Pub. in Bulletin of Environmental Contamination and Toxicology, v9 n1 p24-27, Jan 73.
Included in the report, Journal Articles on Pesticide Biology, PB-275 918

Over the past several years considerable attention has been paid to the health of farm laborers and other personnel exposed to pesticides. Many attempts have been made to use infrequent or periodic blood cholinesterase activity measurements as a means of estimating adverse exposure to anticholinesteratic materials--attempts that, for a variety of reasons often fail to detect any altered status of pesticide workers' health, However, field studies, despite some pitfalls in experimental design, have shown conclusively that farm laborers do suffer depressed levels of cholinesterase activity incurred during the course of their normal employment.

Keywords. *Cholinesterase, *Pesticides, Cholinesterase inhibitors, Enzymes, Esterases, Humans, Quality control, Blood chemical analysis, Tables(Data), Exposure, Measurement, Reprints, Agricultural workers

PB-275 928/0
(Order as PB-275 918, MF **A01**)
A Method for the Determination of 1-Naphthol in Urine
Environmental Protection Agency, Chamblee, Ga Office of Pesticides Programs.
M T. Shafik, H C Sullivan, and H. F. Enos. 1971, 6p
Pub. in Bulletin of Environmental Contamination and Toxicology, v6 n1 p34-39 1971
Included in the report, Journal Articles on Pesticide Biology, PB-275 918.

Humans exposed industrially to the insecticide carbaryl (1-naphthyl N-methylcarbamate) excrete relatively large quantities of 1-naphthol conjugated either as the sulfate or glucuronide. A colorimetric procedure is generally used to quantitatively determine 1-naphthol in human urine. However, this method lacks both the sensitivity and specificity necessary for determining the relatively small amounts of 1-naphthol excreted in the urine of agricultural workers exposed to low levels of carbaryl. The object of this investigation was to develop a rapid, sensitive method for the determination of 1-naphthol in human urine.

Keywords: *Naphthols, *Insecticides, *Pesticides, *Chemical analysis, Humans, Urine, Naphthalene compounds, Phenols, Tables(Data), Experimental data, Methodology, *Urinalysis, Reprints.

PB-275 932/2
(Order as PB-275 918, MF **A01**)
Comparative Stimulation of gamma HCH Metabolism by Pretreatment of Rats with gamma HCH, DDT, and DDT + gamma HCH
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
R W. Chadwick, M. F. Cranmer, and A. J. Peoples. 18 Jun 70, 11p
Pub. in Toxicology and Applied Pharmacology 18, p685-695 1971.
Included in the report, Journal Articles on Pesticide Biology, PB-275 918.

Pretreatment of rats with gamma HCH, DDT, and DDT + gamma HCH accelerates the metabolism of gamma HCH. A single oral dose of 14C gamma HCH was administered to all animals after 2 wk of pretreatment. The treated rats excreted significantly more radioactivity and stored significantly less 14C gamma HCH than the control animals. In addition to significantly larger livers, the treated rats exhibited higher cytochrome P-450 content and greater in vitro enzyme activity than the control animals The self-induction of gamma HCH metabolism, which has not previously been reported, could be of major importance in establishing a steady-state relationship between exposure and storage of such pesticides by mammals. Both quantitative and qualitative differences in gamma HCH metabolism are observed between the treated groups of rats. DDT pretreatment results in a 35% higher excretion of radioactivity than gamma HCH pretreatment.

Keywords: *Pesticides, *DDT, *Insecticides, *Toxicity, Interactions, Laboratory animals, Rats, Metabolism, Experimental data, Chlorine organic compounds, Dosage, Excretion, Labeled substances, Physiological effects, Toxicology, Detoxification, *Cyclohexane/hexachloro, *Toxic substances, Reprints, Synergism

PB-275 968/6
(Order as PB-275 966, MF **A01**)
Information on Health Aspects of Pesticides
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Philip C. Minter, Wayland J. Hayes, Jr, and Gus J. Caras 2 Oct 68, 3
Pub. in Jnl. of Chemical Documentation, v9 n2 p73-75, May 69.
Included in the report, Journal Articles on Health Aspects of Pesticides, PB-275 966.

Contents:
- Description of the present system;
- Investigations related to a pesticides information system,
- Abstract bulletin on the health aspects of pesticides,
- Future plans for pesticides information system.

Keywords: *Information systems, *Pesticides, Information retrieval, Plans, Reprints, *Health information systems, Toxic substances.

PB-275 974/4
(Order as PB-275 966, MF **A01**)
Pesticides and Human Health-A Query
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Louis C. LaMotte, Jr. 1969, 4p
Pub in Bulletin of the Entomological Society of America, v15 n4 p373-376, Dec 69.
Included in the report, Journal Articles on Health Aspects of Pesticides, PB-275 966.

The author consides the relationship of the pesticide chemicals to human health The title suggests that there is some question about the existence of a relationship. Certainly there is no question as to the propi-

tious relationship between pesticides and human health.

Keywords: *Pesticides, *Hazardous materials, Public health, Poisons, Humans, Physiological effects, *Environmental health, Toxic substances, Reprints.

PB-275 983/5

(Order as PB-275 978, MF **A01**)

The Electron-Capture Gas Chromatography of Paradichlorobenzene Metabolites as a Measure of Exposure

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
J. D. McKinney, L. Fishbein, C. E. Fletcher, and W F. Barthel. 1970, 8p
Pub. in Bulletin of Environmental Contamination and Toxicology, v5 n4 p354-361 1970.
Included in the report, Journal Articles on Pesticide Chemical Analysis. Group 3, PB-275 978.

Paradichlorobenzene has been used extensively as a household moth control agent and as a deodorant for many years, and it is considered to be safe and suitable for these purposes. However, cases of poisoning attributed to paradichlorobenzene have been reported. A convenient method for determining exposure to this halobenzene is important in evaluating any hazards involved in its use. The halobenzenes are metabolized mainly by oxidation to phenols, quinols, catechols and related compounds, or by forming mercapturic acids This paper describes a method which successfully employs gas chromatography with electron capture detection for the measurement of PDB and its major metabolites.

Keywords: *Pesticides, *Insect control, *Chemical analysis, Concentration(Composition), Exposure, Laboratory animals, Gas chromatography, Electron capture, Metabolism, Reprints, *Benzene/dichloro, *Electron capture gas chromatography

PB-275 985/0

(Order as PB-275 978, MF **A01**)

Applications of Combined Gas Chromatography-Mass Spectrometry to Pesticide Residue Identifications

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Francis J. Biros. 3 Sep 70, 19p
Pub. in Advances in Chemistry Series, n104 p132-150 1971.
Included in the report, Journal Articles on Pesticide Chemical Analysis. Group 3, PB-275 978.

Several individual and multiresidue analytical methods are available for gas chromatographic-mass spectrometric confirmation and identification of pesticide residues. Specific examples considered in this report include the analysis of intact and derivatized phenolic residues such as pentachlorophenol and 1-naphthyl chloroacetate, organophosphorus insecticide metabolic and hydrolytic products including O,O-diethyl O-methyl phosphorothionate, O,O-diethyl S-methyl phosphorothiolate, and O,O-diethyl O-methyl phosphate, several organochlorine pesticides of the DDT and cyclodiene type, phenoxyalkanoic acid herbicide exposure and methodology studies involving 2,4-D and 2,4,5-T, and polychlorinated biphenyl residues Conventional residue analytical methodology and gas chromatographic column technology are, in general, directly applicable to the analysis of human, animal, and environmental substrates by the combined technique. Evaluation of mass spectral fragmentation pathways provides definite and conclusive confirmation of residue identity as well as characterization of residues and their metabolites of unknown structure.

Keywords: *Pesticides, *Gas chromatography, *Mass spectrometry, *Chemical analysis, Residues, Insecticides, Chlorine organic compounds, Organic phosphates, Phenols, Phosphorus organic compounds, Reprints

PB-275 988/4

(Order as PB-275 978, MF **A01**)

The National Human Monitoring Program for Pesticides

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Anne R. Yobs. 1971, 8p
Pub. in Pesticides Monitoring Jnl , v5 n1 p44-46, 67-71, Jun 71.
Included in the report, Journal Articles on Pesticide Chemical Analysis. Group 3, PB-275 978

The purpose of the human monitoring program is to determine on a national scale levels of pesticide incidence in the general population and to assess changes in these levels. Such incidence reflects prior exposure from all sources and is important in understanding the ecological impact of pesticides pollution and in studying the human health effects of pesticides exposure. Exact measurement of man's total exposure to pesticides requires careful development and implementation of plans, the full cooperation of willing subjects, and adequate laboratory support--conditions which can be attained only in the controlled research situation and are not easily applicable to large groups. Previous human exposure to pesticides may be estimated from measurement of storage levels or excretion of these materials or their metabolites and from measurement of physiologic effects.

Keywords· *Pesticides, *Public health, *Sampling, Exposure, Environmental surveys, Chlorine organic compounds, Monitoring, Concentration(Composition), Reprints.

PB-275 991/8

(Order as PB-275 989, MF **A01**)

Mercury Levels in Soils of the Eastern United States

Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs
G. B. Wiersma, and H. Tai 1974, 3p
Pub. in Pesticides Monitoring Jnl., v7 n3/4 p214-216, Mar 74.
Included in the report, Journal Articles on Pesticide Residues in the Environment. Group 1, PB-275 989

Cropland and noncropland soils were sampled to determine levels of elemental mercury present in the upper three inches of soil Results showed no difference in mercury levels between cropland and noncropland soils. Levels detected compared closely to levels found in similar studies. Actual mean levels of mercury residues in soils of the eastern United States ranged from 0.05 to 0.10 ppm.

Keywords: *Mercury(Metal), *Soils, *Pesticides, Residues, Concentration(Composition), Monitoring, Farm crops, Grassland, Forest land, United States, Reprints, Eastern Region(United States), *Pesticide residues

PB-275 993/4

(Order as PB-275 989, MF **A01**)

Pesticide Residue Levels in Soils and Crops, FY-70--National Soils Monitoring Program (II)

Environmental Protection Agency, Washington, D C Office of Pesticide Programs.
A. B Crockett, G. B. Wiersma, H. Tai, W. G. Mitchell, and Ann E. Carey 1974, 29p
Pub in Pesticides Monitoring Jnl., v8 n2 p69-97, Sep 74.
Included in the report, Journal Articles on Pesticide Residues in the Environment, Group 1, PB-275 989.

This data report is a summary of Fiscal Year 1970 results of the National Soils Monitoring Program. It includes data on pesticide applications, soil residues, and crop residues collected from 1,506 cropland sites in 35 States. Pesticide application data are summarized by all sites and by State. Soil residue data are itemized similarly, but also include data by cropping region Tables generally give the number of sites, number of times a pesticide was applied or detected, percent occurrence, arithmetic mean application rate or residue level, and range of residues detected. Pesticides applied most frequently were atrazine, 2,4-D, captan, and malathion

Keywords: *Farm crops, *Soils, *Pesticides, Residues, Sulfur organic compounds, Monitoring, Residues, Sites, Chlorine organic compounds, States(United States), Nitrogen heterocyclic compounds, Tables(Data), Acetic acid, Chlorine aromatic compounds, Alkene compounds, Chlorine aliphatic compounds, Cycloalkene compounds, Malathion, Succinates, Phosphorus organic compounds, Reprints, *Atrazine, Triazine/chloro-ethylamino-isopropylamino, *D, 2-4 herbicide, Acetic acid/dichlorophenoxy, Succinic acid/(diethyl-ester)-mercapto-(S-ester-with-0-0-dimethyl-phosphorodithioate), *Pesticide residues, Cyclohexene dicarboximide/N-(trichloro methyl)thio, *Captan, *Pesticide residues.

PB-276 313/4

(Order as PB-276 312, MF **A01**)

Polychlorinated Biphenyls in the Surface Waters and Bottom Sediments of the Major Drainage Basins of the United States

Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
D. Steve Dennis. 1974, 12p
Pub. in unidentified Jnl.
Included in the report, Journal Articles on Pesticide Residues in the Environment. Group 2, PB-276 312

Data gathered from monitoring activities indicate the widespread occurrence of PCB's in surface waters and bottom sediments of the major drainage basins of the United States. A preliminary assessment of PCB levels shows median residue levels of the positive detections for the years 1971 to 1974 ranging between 0.1 to 3.0 micrograms/l for unfiltered water samples and from 1.2 to 160.0 micrograms/kg for bottom sediments. The highest levels were found in basins east of the Mississippi and bottom sediments may contain concentrations of PCB's many times higher than those in the overlying water.

Keywords· *Residues, *Biphenyls, *Pesticides, Monitoring, Chlorine organic compounds, Surface waters, Sediments, Concentration(Composition), Hazards, Rivers, Streams, Watersheds, United States, Puerto Rico, *Polychlorinated biphenyls, Biphenyl/chloro, *Pesticide residues

PB-276 323/3

(Order as PB-276 320, MF **A01**)

Arsenic Levels in Urine of Forest Workers Applying Silvicides

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Robert F. Tarrant, and Jack Allard 6 Dec 71, 4p
Pub. in Arch Environmental Health, v24 p277-280, Apr 72.
Included in the report, Journal Articles on Chemical Residues in Man, PB-276 320.

Forest tree thinning workers absorb arsenic from silvicides Much of the chemical appears to be excreted from the body in a short time. There appears to be no evidence of a continuing increase in arsenic levels over a period of more than two months Persons using these materials should be trained to observe all necessary precautions to minimize their exposure

Keywords· *Arsenic, *Herbicides, *Pesticides, *Industrial medicine, Forestry, Personnel, Metabolism, Absorption(Biology), Excretion, Exposure, Reprints, Urinalysis, *Toxic substances, *Agricultural workers, *Occupational safety and health.

PB-276 325/8

(Order as PB-276 320, MF **A01**)

Dursban Premises Applications and Their Effect on the Cholinesterase Levels of Spraymen

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs
D. A. Eliason, M F. Cranmer, D L. von Windeguth, J W. Kilpatrick, and J. E. Suggs. 1969, 5p
Pub in the Mosquito News, v29 n4 p591-595, Dec 69.
Included in the report, Journal Articles on Chemical Residues in Man, PB-276 320.

The conclusion is that Dursban emulsion or suspension formulations are not acceptable for use as a premises larvicide treatment in the control of Ae aegypti under the conditions now present in the United States. It is conceivable that Dursban could be used as a graular formulation, at a much lower dosage as described for a non-residual type of larviciding or at an intermittent or less frequent interval without any effect on cholinesterase levels. The findings also suggest that the use of Dursban in any operation similar to that described previously might produce a depression of cholinesterase levels Therefore, on all such control programs, careful monitoring of the cholinesterase levels of spraymen should be included in the operation.

Keywords: *Pesticides, *Insecticides, *Cholinesterase inhibitors, *Industrial medicine, Phosphorothioates, Spraying, Personnel, Toxicology, Biochemistry, Enzyme inhibitors, Field tests, Reprints, *Toxic substances, *Dursban, *Occupational safety and health

PB-276 434/8 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
The Toxicity of Hexachlorobenzene in a Twelve Month Study in Beagle Dogs Annual rept. 26 Mar 75-30 Mar 76
Mason Research Inst., Worcester, Mass.
E. J. Gralla, and R. W. Fleischman. 25 Aug 76, 321p
MRI-EPA-76-1-41, EPA/560/6-76/024
Contract EPA-68-01-2936

Hexachlorobenzene (HCB) was administered in gelatin capsules to male and female beagles at 1,000, 100, 10 and 1 mg/dog/day for twelve months. Mortality, anorexia and weight loss occurred primarily at the highest but also to a lesser degree at the next lower level. After approximately three months, body weight stabilized or losses were regained. Clinical laboratory changes found immediately before death in severely affected animals which may have been related to malnutrition, included anemia, hypoglycemia and testicular degeneration. A dose related neutrophilia appeared in the two highest dosage groups. The most widespread pathological lesions were confined to the abdomen and included serositis; necrosis, fibrosis and steatitis of the omentum, and lymphoid atrophy at the two highest dose levels. Nodular hyperplasia of gastric lymphoid tissue was found in all treated animals including those at 1 mg/da(6.5-10.0mg/kg). Four severely affected animals at the highest dose level showed a generalized vasculitis and one had amyloidosis. One dog from each of the two highest levels had bile duct hyperplasia and subchronic pericholangitis. Bile and perirenal fat showed a time and dose related accumulation of HCB.

Keywords: *Chlorobenzenes, *Pesticides, *Toxicity, Dogs, Males, Females, Dosage, Dose rate, Ingestion(Biology), Mortality, Hematology, Blood chemical analysis, Pathology, Histology, Abdomen, Lymphatic system, Laboratory animals, Bioassay, Chlorobenzene/hexa, Toxic substances, Urinalysis.

PB-276 480/1 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Uptake, Excretion, and Physiological Effects of Hexachlorobenzene in Growing Lambs Final rept.
California Univ , Davis. Food Protection and Toxicology Center.
Ronald L. Mull, Wray L. Winterlin, and Stuart A. Peoples. 10 Aug 76, 75p EPA/560/6-76/013
Contract EPA-68-01-2254

Growing lambs were exposed to daily doses of hexachlorobenzene (HCB) per os. The daily dose was calculated to provide 0.01, 0.10 or 1.00 ppm of the feed consumed. Exposure was terminated at 90 days and 20 of the 50 lambs were slaughtered. Remaining lambs were monitored for an additional 210 days. At the end of the 90 day exposure, the in vivo metabolism of aminopyrine and the in vitro O and N-demethylation of the liver microsomes were determined. Results of the analyses for HCB in omental fat show that the peak concentration attained was 10.186, 1.024, 0.116 and 0.012 ppm in the 1.00, 0.10, 0.01 ppm and control groups respectively. Following cessation of the exposure, the HCB declined to less than one-half the peak concentration within 100 days. Histological examination of tissues from the slaughtered animals showed no pathological changes attributable to the HCB Marked changes were noted in the microsomal enzymes but changes were not significant in the plasma enzymes.

Keywords: *Chlorobenzenes, *Pesticides, *Toxicity, Ingestion(Biology), Metabolism, Excretion, Absorption(Biology), Food contamination, Sheep, Bioassay, Dosage, Dose rate, Growth, Toxicity, Hematology, Enzymes, Biochemistry, Physiological effects, Pathology, Histology, Tables(Data), *Lindane, Toxic substances, Bioaccumulation, Chlorobenzene/hexa, Pesticide residues, Pharmacokinetics, Environmental health.

PB-276 483/5 PC **A12**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Investigation of Selected Potential Environmental Contaminants: Monohalomethanes Final technical rept.
Syracuse Research Corp , N.Y. Center for Chemical Hazard Assessment.
Leslie N. Davis, John R. Strange, Jane E. Hoecker, Philip H. Howard, and Joseph Santodonato. Jun 77, 263p* TR-77-535, EPA/560/2-77/007
Contract EPA-68-01-4315

The report reviews the potential environmental hazard from the commercial use of the monohalomethanes. Chloro-, bromo-, and iodomethane are produced in commercially significant quantities; fluoromethane is produced in small amounts for use as a laboratory research reagent. The sea is a natural source of all monohalomethanes except fluoromethane. Chloromethane is used mainly for the production of silicones and tetramethyl lead (a gasoline additive). Bromomethane is used principally as a fumigant for soil, enclosed areas, and food products. Iodomethane is used as a laboratory and commercial alkylating agent and in tungsten-halogen lamps; the latter use is shared with chloro- and bromomethane. Information on physical and chemical properties, production methods and quantities, commercial uses and factors affecting environmental contamination, as well as information related to health and biological effects, are reviewed.

Keywords: *Industrial hygiene, *Hazardous materials, *Chloromethanes, *Halogen organic compounds, Industrial atmospheres, Chemical reactions, Exposure, Bromine organic compounds, Iodine organic compounds, Physical properties, Chemical properties, Toxicity, Exposure, Consumption, Production, Monitors, Plants(Botany), Animals, Microorganisms, Toxicology, Contaminants, Tables(Data), Regulations, Standards, Materials handling, Recommendations, Safety engineering, Distribution, Chemical analysis, Environmental effects, *Toxic substances, *Methane/bromo, *Methane/iodo, Phytotoxins, Air pollution effects(Animals), *Occupational safety and health, Air pollution effects(Plants), Air pollution effects(Humans).

PB-276 529/5 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Safety of Chemical Smog Suppressor Final technical rept.
University Coordinator for Environmental Studies, Raleigh, N C.
Douglas L. Warf. Aug 77, 21p EPA/560/5-77/004

The paper describes information needed to evaluate the safety of chemicals proposed as smog suppressors and means for obtaining this information. Los Angeles and other large cities have frequent and severe smog conditions that result from photochemical reactions on atmospheric pollutants. Certain chemicals such as diethylhydroxylamine have been shown in the laboratory to interfere with this photochemical process and should, if released at the optimal time, place, and amount prior to or during smog conditions, significantly reduce or eliminate smog. It has been further argued by those favoring this approach to controlling smog that the cost of chemicals would be less than the cost of fitting automobiles with catalytic converters now used to reduce smog causing pollution. The test protocols and the information obtained from models described in this paper should provide adequate information needed to evaluate the safety of these chemicals for the uses proposed.

Keywords: *Smog, *Toxicity, Suppressors, Chemical compounds, Amines, Air pollution, Photochemical reactions, Models, Safety, Mutations, Methodology, Evaluation, Reproduction(Biology), Toxicity, In vivo analysis, In vitro analysis, Respiration, Skin(Anatomy), Eye(Anatomy), Aquatic biology, Contaminants, Teratogenesis, *Air pollution control, Mutagenesis, Biological effects, Carcinogenesis, Inhalation, *Air pollution effects(Animals), *Air pollution effects(Humans), *Hydroxylamine/diethyl, *Environmental health, *Toxic substances.

PB-276 535/2 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Multimedia Levels - Trichloroethylene
Battelle Columbus Labs., Ohio.
Sep 77, 52p* EPA/560/6-77/029
Contract EPA-68-01-1983
Companion volume to report dated Aug 77, PB-273 203.

This report discusses environmental levels of trichloroethylene (TCE) based on a review of the literature and other information sources. The concentration of TCE in the atmosphere of the U S. ranges from about 1 ppt in remote areas to over 100 in areas near where the substance is manufactured or used. TCE concentrations in sediments range from less than 0.04 ppb to over 100 ppb. Again the high concentrations were found near manufacturing sites, but some of the lowest concentrations were as well. Soil concentrations appear to be no higher near manufacturing sites than in rural areas, though the data are very limited. The concentrations are a few ppb or less. Surface-water concentrations of TCE range from less than 1 ppb (the limit of detection) to several hundred ppb in the vicinity of a manufacturing site. Measured concentrations in U.S. drinking water are less than 1 ppb. The only degradation products of TCE that may exist in the environment in appreciable quantities for any period of time are dichloroacetyl chloride produced by the photodegradation of TCE in the atmosphere and dichloroacetic acid produced by the hydrolysis of dichloroacetyl chloride. There are very few data on the presence of TCE in food raised and sold in the U.S. However, data from the United Kingdom suggest that concentrations of TCE on the order of parts per billion are found in almost all common foodstuffs. There is little evidence to judge whether TCE is accumulating in living systems. Limited data on concentrations in human tissue and in marine organisms show levels on the order of a few parts per billion.

Keywords: *Environmental surveys, *Industrial wastes, *Chemical industry, Chlorine organic compounds, Concentration(Composition), Air pollution, Water pollution, Soil analysis, Aquatic animals, Tissues(Biology), Industrial hygiene, Sediments, Surface waters, Degradation, Exposure, Potable water, Toxicity, Food chains, Sites, Monitoring, Sampling, Humans, *Ethylene/trichloro, *Toxic substances, Bioaccumulation, *Air pollution sampling, *Water pollution sampling.

PB-276 873/7
(Order as PB-276 868, MF **A01**)
Safety Problems Related to Exposure of Workers in Pesticide Formulation Plants
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Homer R. Wolfe. 1972, 8p
Pub. in Industrial Production and Formulation of Pesticides in Developing Countries, v1 p137-144 1972.
Included in the report, Journal Articles on Worker Exposure. Group 1, PB-276 868.

Workers in pesticide formulation plants are often exposed to relatively high levels of pesticide compounds. Since most chemical pesticides have at least some degree of toxidity to man, it is important that all workers, as well as management, be aware of any potential hazard that may accompany exposure to such compounds. Experience has shown that if proper precautionary measures are observed, workers can safely handle even the more toxic compounds. Although pesticides cause illnesses and even deaths each year, many of these cases are a result of carelessness or accident. Proper education as well as close supervision of workers may prevent some accidents and greatly reduce the number of illnesses resulting from carelessness. The main purpose of this chapter is to discuss some of the problems related to exposure of workers in formulation plants, to indicate various ways that unnecessary exposure to pesticides may occur and to point out certain precautions to prevent such exposure.

Keywords: *Pesticides, *Industrial medicine, *Hazardous materials, Industrial hygiene, Accident prevention, Exposure, Education, Industrial plants, Industrial atmospheres, Ventilation, Protective clothing, Hygiene, Measurement, Reprints, *Toxic substances, Solid waste disposal, *Occupational safety and health, *Environmental health.

PB-276 889/3
(Order as PB-276 880, MF **A01**)
Environmental Protection Agency, Washington, D.C Office of Pesticide Programs.
Pesticides in People: Total Mercury Levels in Selected Human Tissues, Idaho-1973-74
Idaho State Dept. of Health and Welfare, Boise.
J. Gabica, W. Benson, and M. Loomis. 1975, 5p
Contract EPA-68-02-0552
Pub. in Pesticides Monitoring Jnl., v9 n2 p59-63, Sep 75.
Included in the report, Journal Articles on Worker Exposure. Group 2, PB-276 880.

Total mercury levels were determined in human tissues taken at autopsy from six hospitals in the three basic geographical areas of Idaho. Of the 242 specimens analyzed, 76 percent contained detectable mercury. Levels were compared with respect to the age, sex, and geographic residence of autopsied individuals. Mean levels detected were 1.04 ppm in kidney tissue, 0.34 ppm in liver, and 0.08 ppm in brain. Mean mercury levels for the three geographical areas were. southeastern Idaho, 0.22 ppm; southwestern Idaho, 0.80 ppm; and northern Idaho, 0.43 ppm. The relatively high means in southwestern Idaho specimens may be related to the preponderance of natural cinnabar deposits in that portion of the state.

Keywords: *Mercury(Metal), *Hazardous materials, Humans, Toxicology, Tables(Data), Tissues(Biology), Histology, Idaho, Concentration(Composition), Age, Sex, Geography, Kidney, Liver, Brain, Residues, Sampling, Procedures, Autopsy, Reprints, *Toxic substances, Organs(Anatomy).

PB-276 891/9

(Order as PB-276 880, MF **A01**)

A Health Survey of Workers in a 2,4-D and 2,4,5-T Plant: With Special Attention to Chloracne, Porphyria Cutanea Tarda, and Psychologic Parameters

Environmental Protection Agency, Chamblee, Ga Office of Pesticides Programs.
Alan P. Poland, and Donald Smith. 27 May 70, 12p
Pub. in Archives of Environmental Health, v22 p316-327, Mar 71.
Included in the report, Journal Articles on Worker Exposure. Group 2, PB-276 880.

A study of 73 male employees in a 2,4,5-T factory was made. Chloracne was found in 13 (18%) workers. Severity of chloracne correlated significantly with the presence of hyperpigmentation, hirsutism, eye irritation, and a high score on the manic scale of the Minnesota Multiphasic Personality Inventory. Chloracne was not, however, correlated significantly with job location within the plant, duration of employment, or coproporphyrin excretion. Although 11 subjects with uroporphyrinuria and at least three with overt porphyria cutanea tarda had been found in a study of the same plant six years ago, no clinical porphyria could be currently documented and only one worker had persistent uroporphyrinuria. Evidence of toxicity in other organ systems was markedly less than that reported in previous studies and could not be shown to differ from normal populations in most instances.

Keywords· *Pesticides, *Herbicides, *Industrial medicine, Gastrointestinal system, Cardiovascular system, Respiratory systems, Males, Toxicity, Neurology, Excretion, Acetic acid, Chlorine organic compounds, Psychological tests, Blood chemical analysis, Tables(Data), Signs and symptoms, Physiological effects, Urine, Porphyrins, Pigments, *D 2-4 herbicide, Reprints, Health surveys, *Occupational safety and health, Acne, *T 2-4-5 herbicide, Coproporphyrins, Hirsutism.

PB-276 988/3 PC **A03**/MF **A01**

California Univ., Los Angeles
Selected Non-Carcinogenic Effects of Industrial Exposure to Inorganic Arsenic Final rept
American Public Health Association, Washington, D.C
Emanuel Landau, Donovan J. Thompson, Robert G Feldman, Guy J. Goble, and Wilfrid J. Dixon. Oct 77, 41
EPA/560/6-77/018
Contract EPA-68-01-2490
Prepared in cooperation with Boston Univ., Mass. School of Medicine, California Univ., Los Angeles, Washington Univ., Seattle. School of Public Health and Community Medicine

In June 1976, a study team representing four Universities and a research institution carried out a study of possible neurological effects of long-term exposure to airborne arsenic trioxide in a Western copper smelter. The study involved comparing active working men heavily exposed to arsenic in the work force with workers not so exposed Its purpose was to determine whether nerve conduction velocity can be utilized as a biological indicator of the subtle health effects of chronic exposure to inorganic arsenic in a community setting The double-blind electrophysiologic and clinical study was based on 111 volunteers recruited from a selected set of smelter workers with at least five years of high urinary arsenic levels (37 men) and five years of low urinary levels (33 men). The control population consisted of members of the same union who worked at an aluminum plant in the same city (13 men) as well as male municipal employees with no industrial exposure (28 men). The conclusions of the study are that: (1) chronic arsenic exposure in an industrial setting affects the peripheral nervous system, and (2) the neurologic parameters used in this study appear to be suitable for use in screening a community population for changes related to arsenical neuropathies.

Keywords. *Arsenic inorganic compounds, *Toxicology, *Industrial medicine, *Neurology, Toxicity, Personnel, Electrophysiology, Clinical medicine, Field tests, Exposure, Nervous system disorders, Industrial atmospheres, Concentration(Composition), Blood chemical analysis, Hematology, Hair, Nails(Anatomy), Smelters, *Occupational safety and health, Environmental health, Copper smelting, Urinalysis, *Toxic substances.

PB-277 003/0

(Order as PB-277 000, MF **A01**)

Pesticides in Your Future

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
William M. Hoffman. 1973, 3p
Pub. in The Golf Superintendent, v41 n2 p26-28, Feb 73
Included in the report, Journal Articles on Pesticide Safety in Society. Group 1, PB-277 000.

Caught in the midst of an ecological controversy, the golf superintendent is rightfully concerned about the pesticides available to him; this article provides an insight into what the pesticide future holds for the superintendent

Keywords: *Pesticides, *Public health, Legislation, Law(Jurisprudence), Safety, Herbicides, Weed control, *Golf courses, Federal Environmental Pesticide Control Act, Federal Insecticide Fungicide and Rodenticide Act, *Environmental health, Reprints, *Toxic substances

PB-277 597/1

(Order as PB-277 586, MF **A01**)

Light Microscopy and Ultrastructure of Liver of Rats Fed Polychlorinated Biphenyls

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Renate D. Kimbrough, Ralph E. Linder, and Thomas B. Gaines 1972, 1p
Pub. in Toxicology and Applied Pharmacology 22(2) p315-316, Jun 72.
Included in the report, Journal Articles on Toxicology. Group 1, PB-277 586.

Polychlorinated biphenyls (PCB) are widely distributed in the environment Two PCB were fed to groups of 10 male and 10 female weanling Sherman strain rats in their diet at levels of 0, 20, 100, and 500 ppm Aroclor 1254 and 0, 20, 100, 500, and 1000 ppm Aroclor 1260 for 8 mo. The livers of all rats exposed to the Aroclors weighed more than those of the controls. This difference was significant for all exposed male rats ($p < 0.025$) and for the females fed 500 ppm of either compound.

Keywords: *Hazardous materials, *Liver, *Toxicology, *Chlorine organic compounds, Diets, Rats, Chlorine organic compounds, Ingestion(Biology), Laboratory animals, Experimental data, Dosage, Bioassay, Sex, Toxicity, Reprints, *Polychlorinated biphenyls, *Toxic substances, Aroclor 1254, Aroclor 1260, Biphenyl/hexachloro, Biphenyl/chloro.

PB-277 598/9

(Order as PB-277 586, MF **A01**)

Evaluation of Normal and Organophosphate and Carbamate Insecticide Inhibited Blood Cholinesterase Activity Utilizing Dimethylbutylacetate as a Substrate

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
M F. Cranmer, and A. J Peoples. 1972, 1p
Pub in Toxicology and Applied Pharmacology 22(2) p285-286, Jun 72
Included in the report, Journal Articles on Toxicology Group 1, PB-277 586.

The availability of an extremely sensitive and precise gas chromatogaphic method for the analysis of human blood cholinesterase led to the attempt to apply this method to common laboratory animals where analysis of limited blood samples is important. The results demonstrate DMBA to be acceptable as a cholinesterase substrate both for the determination of normal and inhibited activities in all species except the mouse, where high levels of nonspecific plasma esterases complicate interpretation.

Keywords: *Carbamates, *Cholinesterase inhibitors, *Pesticides, *Insecticides, *Toxicology, Gas chromatography, Enzymes, Blood chemical analysis, Laboratory animals, Blood plasma, Dosage, Acetates, Pharmacology, *Acetic acid/butyl-dimethyl, Reprints, Toxic substances

PB-277 599/7

(Order as PB-277 586, MF **A01**)

Dermal Phototoxic Reaction from an Insecticide: Clinical and Laboratory Studies

Environmental Protection Agency, Chamblee, Ga Office of Pesticides Programs.
W. C Felsenstein, T. Gaines, and D. C. Staiff 1971, 1p
Pub in Toxicology and Applied Pharmacology 19(2) p416, Jun 71.
Included in the report, Journal Articles on Toxicology Group 1, PB-277 586.

Appropriate analyses revealed no evidence for systemic absorption of Morestan or secondary skin photosensitization via abnormal porphyrin production in exposed individuals. Limited animal studies have produced positive skin reactions in rats. In the laboratory, photoactivity has been demonstrated in nitro with an interesting biological test. Prompt photodecomposition of the compound occurs with unknown reaction product(s) which are under study elsewhere. Evidence was found that under special conditions Morestan can also produce simple irritations and true allergic contact dermatitis.

Keywords. *Insecticides, *Pesticides, *Toxicology, Skin(Anatomy), Carbonates, Toxicity, Sulfur organic compounds, Allergic diseases, Rats, Laboratory animals, Bioassay, Reprints, *Phototoxicity, *Toxic substances, *Morestan.

PB-277 605/2

(Order as PB-277 586, MF **A01**)

The Oral and Dermal Toxicity of Hexachlorophene in Rats

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
T. B. Gaines, and R D. Kimbrough 1971, 1p
Pub. in Toxicology and Applied Pharmacology 19(2) p375/376, Jun 71.
Included in the report, Journal Articles on Toxicology. Group 1, PB-277 586

The toxicity of hexachlorophene, a widely used fungicidal and bactericidal agent, was studied in Sherman strain rats. The acute oral LD50 for hexachlorophene in peanut oil solution was 56 mg kg in female rats and 66 mg kg in males. Adult female rats fed 500 ppm hexachlorophene in the diet for 97 days developed paralysis in the hindquarters. 1 of 10 rats died.

Keywords *Toxicology, *Pesticides, *Bactericides, Rats, Sex, Lethal dosage, Ingestion(Biology), Diets, Central nervous system, Paralysis, Reproduction(Biology), Laboratory animals, Experimental data, Toxicity, Reprints, *Hexachlorophene, *Toxic substances.

PB-277 668/0

(Order as PB-277 662, MF **A01**)

EPA's Registration Requirements for Insect Behavior Controlling Chemicals-Philosophy and Mandates

Environmental Protection Agency, Washington, D C. Office of Pesticide Programs.
William G. Phillips 1976, 10p
Pub in ACS Symposium Series, n23 n.d.
Included in the report, Journal Articles on Miscellaneous Pesticide Studies. Group 1, PB-277 662.

The report discusses the use and principles of pheromones for insect control Proposed regulations for use of the attractant for monitoring pests, and population suppression are also included.

Keywords: *Pest control, *Regulations, *Attractants, Government policies, Licenses, Monitoring, Safety.

PB-278 015/3 PC **A04**/MF **A01**
An Ordering of the NIOSH Suspected Carcinogens List Based on Production and Use Data Final technical rept.
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Charlie Auer. Mar 78, 74p* Rept no. EPA/560/1-78/001
Contract EPA-68-01-4103
Prepared in cooperation with Biospherics, Inc., Rockville, Md., Contract EPA-68-01-4103. See also PB-251 851.

Building on an earlier EPA report entitled 'On Ordering of the NIOSH Suspected Carcinogens List Based Only on Data Contained in the List' (EPA 560/1-76-001), the present document represents the second OTS effort to arrange the substances presented in the NIOSH Suspected Carcinogens Subfile in a meaningful and useful way for EPA purposes. Employing readily available information on the uses and commercial significance of the chemicals listed in the NIOSH Subfile, OTS has further refined the initial ordering into the four tables contained in this report.

Keywords: *Carcinogens, *Directories, Toxicology, Chemical compounds, Malignant neoplasms, Public health, *Toxic substances, Cancer, Occupational safety and health, Environmental health.

PB-278 092/2
(Order as PB-278 081, MF **A01**)
Epidemiology of Poisoning by Chemicals
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Frank S Lisella. 1972, 10p
Pub. in Jnl. of Environmental Health, v34 n6 p603-612, May/Jun 72.
Included in the report, Journal Articles on Toxicology. Group 3, PB-278 081.

The article reviews accidental poisoning episodes; studies conducted to determine the etiology; and provides statistical data on the incidence of poisonings.

Keywords: *Epidemiology, *Toxic diseases, *Pesticides, *Toxicology, Poisons, Toxicity, Statistical data, Public health, Chemical compounds, Accidents, Reprints, *Toxic substances.

PB-278 103/7
(Order as PB-278 102, MF **A01**)
EPA's Registration Requirements for Insect Behavior Controlling Chemicals-Philosophy and Mandates
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
William G. Phillips. 1976, 10p
Included in the report, Journal Articles on Miscellaneous Pesticide Studies. Group 2, PB-278 102.

The report discusses the history and proposed regulations for the use of chemical attractants such as pheromones. When used as survey tools, pheromones are not subject to Environmental Protection Agency control.

Keywords: *Pest control, *Attractants, Government policies, Regulations, Pest control, Animal behavior, Pheromones, Biological control.

PB-278 976/6 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Investigation of the Effects of Food Standards on Pesticide Use Final rept.
California Univ., Albany. Div. of Biological Control.
Martin Brown, Richard Garcia, Cathleen Magowan, Alan Moran, and Michael Moran. Mar 78, 185p* EPA/540/9-78/003
Contract EPA-68-01-2602

Three commodities, fresh market oranges, processing tomatoes and cling peaches were assessed concerning the role of pest related (largely insect) quality standards and their relationship to pesticide usage In each of the commodities cosmetic quality standards appear to have a significant effect on pesticide usage, both in regard to the amount of chemicals used and the utilization of specific pesticides and in regard to the general approach to pest management. In general, extremely strict quality standards seem to mitigate against the adoption of integrated pest management (IPM). Growers are reluctant to adopt such programs because they are forced by processor, marketer and consumer pressures to strive for virtual 'zero' pest levels. This is a major reason why available IPM programs which maintain crop quality and yield while reducing pesticide usage up to 50 percent are hardly used by the growers of the three crops assessed in this study

Keywords: *Pesticides, *Regulations, *Food, Quality control, Standards, Purity, Citrus fruits, Tomatoes, Peaches, Commodities, Damage, Pest control, Decision making, Management, California.

PB-279 719/9
(Order as PB-279 718, MF **A01**)
Review of Recent Evidence of Toxic Effects of Hexachlorophene
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Program
Renate D. Kimbrough. 1973, 4p
Included in the report, Journal Articles on Toxicology. Group 9, PB-279 718.

The published data on the toxicity of hexachlorophene in animals and man are discussed. Studies performed in the author's laboratory including hexachlorophene blood level determinations in animals and man are also reviewed. Hexachlorophene can produce paralysis in rats, rabbits, cats, and pigs and blindness in sheep. Microscopic examination of the brains of rats and monkeys given repeated doses of hexachlorophene shows status spongiosus of the white matter and normal gray matter. Small amounts of hexachlorophene are absorbed through the skin of animals as well as man. Aside from the neurological effects of hexachlorophene, the chemical uncouples oxidative phosphorylation which may cause body temperature elevation.

Keywords: *Toxicology, *Bactericides, Lethal dosage, Pathology, Toxicity, Laboratory animals, Humans, Diet, Ingestion(Biology), Tables(Data), Dosage, Excretion, Reprints, *Hexachlorophene, *Toxic substances.

PB-279 722/3
(Order as PB-279 718, MF **A01**)
The Ultrastructure of the Paraquat Lung Lesion in the Rat
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Renate D. Kimbrough, and Ralph E. Linder. 18 Aug 72, 9p
Included in the report, Journal Articles on Toxicology. Group 9, PB-279 718.

Adult female Sherman strain rats were fed 500 ppm paraquat (1,1-dimethyl-4,4-bipyridylium dichloride) in their diet. Four poisoned as well as three control rats were sacrificed 1, 3, 5, 7 and 11 wk after onset of exposure. Two well-developed paraquat lung lesions were encountered. The alveoli of these lesions contained a very prominent amorphous material which was highly osmiophilic when examined with the electron microscope. It consisted of concentrically arranged whorls which were surrounded by or next to less electrondense lattice-like material. Additional ultrastructural findings in those and other lungs consisted of edematous and vacuolated membranous pneumocytes (type I) as well as endothelial cells. The granular pneumocytes were increased in 3 of 20 lungs of exposed animals.

Keywords: *Herbicides, *Pesticides, *Toxicology, Dosage, Ingestion(Biology), Bioassay, Rats, Diet, Laboratory animals, Experimental data, Lung, Histology, Pathology, Reprints, *Paraquat, Bipyridinium compounds, Acetic acid/mercaptophenyl, *Toxic substances.

PB-279 723/1
(Order as PB-279 718, MF **A01**)
Brief Communication: Pancreatic-Type Tissue in Livers of Rats Fed Polychlorinated Biphenyls
Environmental Protection Agency, Chamblee, Ga Office of Pesticides Programs.
R. D. Kimbrough. 25 Apr 73, 3p
Included in the report, Journal Articles on Toxicology. Group 9, PB-279 718.

Pancreatic-type tissue in lives of Sherman strain rats is described. This lesion has not been reported previously. The pancreatic-type tissue was observed in livers of rats fed polychlorinated biphenyls (Aroclor 1254) for 6 months. The cells of the tissue had the same staining characteristics as salivary gland epithelium. The lesion was present in 15 of 36 livers examined.

Keywords: *Toxicology, *Pesticides, Tissues(Biology), Diet, Ingestion(Biology), Rats, Experimental data, Chlorine organic compounds, Liver, Histology, Pathology, Cells(Biology), Dosage, Histopathology, Reprints, *Aroclor 1254, *Biphenyl/chloro, *Toxic substances

PB-279 725/6
(Order as PB-279 718, MF **A01**)
Toxic Effects of the Herbicide Paraquat
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Renate D. Kimbrough. 1974, 3p
Included in the report, Journal Articles on Toxicology Group 9, PB-279 718.

Dermal exposure to the paraquat concentrate may result in severe skin irritation. Diluted spray solutions may produce slight to moderate irritation. Paraquat is absorbed through the skin. In toxicity studies conducted in the laboratory the authors found that the acute dermal LD50 in rats was 80 mg paraquat/kg body weight in males and 90 mg/kg in females, while the acute oral LD50 in male rats was 100 mg/kg and in females 110 mg/kg2. These findings indicate that there does not seem to be a great difference between the oral and dermal toxicity in rats.

Keywords: *Herbicides, *Pesticides, *Toxicology, Absorption(Biology), Exposure, Ingestion(Biology), Skin(Anatomy), Lethal dosage, Rats, Toxic diseases, Experimental data, Pathology, Histology, Laboratory animals, Standards, Concentration(Composition), Lung, Bioassay, *Toxic substances, Reprints, *Paraquat, Bipyridinum compounds, Acetic acid/mercaptophenyl, Threshold limit values, Maximum permissible exposure level.

PB-279 728/0
(Order as PB-279 718, MF **A01**)
Penetration of the Blood-Brain-Cerebral Spinal Fluid Barrier by DDT
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Glenn Morrison. 1971, 7p
Included in the report, Journal Articles on Toxicology. Group 9, PB-279 718

The central nervous system (CNS) is a unique organ system in that it not only receives a rich vascular supply, but, in addition, cological information about any neurotoxic compound includes ascertaining the absolute and relative anounts of the compound in these three separate, but intimately related, compartments (blood, CSF, brain) at a given time after the administration of an intoxicating dose of the compound The present study was undertaken to obtain this information for the organochlorine compound, p,p'-DDT (2,2-bis(p-chlorophenyl)-1,1,1-trichloroethane).

Keywords: *Insecticides, *DDT, *Toxicology, Blood, Brain, Cerebrospinal fluid, Central nervous system, Chlorine organic compounds, Rats, Dosage, Ingestion(Biology), Laboratory animals, Experimental data, Tables(Data), Physiological effects, Concentration(Composition), Tissues(Biology), Bioassay, Reprints, *Toxic substances, Convulsions

PB-279 729/8
(Order as PB-279 718, MF **A01**)
Morphological Changes in Livers of Rats Fed Polychlorinated Biphenyls, Light Microscopy and Ultrastructure
Environmental Protection Agency, Chamblee, Ga Office of Pesticides Programs.
Renate D. Kimbrough, Ralph E. Linder, and Thomas B Gaines. 28 Apr 72, 12p
Included in the report, Journal Articles on Toxicology Group 9, PB-279 718.

Male and female Sherman strain rats were fed polychlorinated biphenyls Aroclor 1260 and Aroclor 1254 at 0, 20, 100, 500 and 1,000 ppm in their diet Rats received the dietary levels for eight months Light microscopic changes consisted of hypertrophy of the liver cells, inclusions in the cytoplasm, brown pigment in Kupffer cells, lipid accumulation, and, at the higher dietary levels, adenofibrosis Ultrastructural changes of

the livers of exposed animals consisted of an increase in smooth endoplasmic reticulum and atypical mitochondria. Lipid vacuoles were occasionally surrounded by concentric membranes. The epithelial component of adenofibrosis consisted of goblet cells and cells that resembled the epithelium which lines the bile ducts. In general, the effect of Aroclor 1254 on the liver was more pronounced than that of Aroclor 1260.

Keywords: *Pesticides, *Toxicology, Bioassay, Chlorine organic compounds, Dosage, Rats, Experimental data, Laboratory animals, Liver, Diet, Ingestion(Biology), Pathology, Tables(Data), Body weight, Histology, Reprints, *Toxic substances, *Aroclor 1254, *Aroclor 1260, *Biphenyl/chloro.

PB-279 736/3

(Order as PB-279 730, MF **A01**)

A Reciprocal Relationship Between the Induction of delta-Aminolevulinic Acid Synthetase and Drug Metabolism Produced by m-Dichlorobenzene

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Program.
Alan Poland, Joyce Goldstein, Patricia Hickman, and Virlyn W Burse. 26 Jun 70, 11p
Included in the report, Journal Articles on Toxicology. Group 6, PB-279 730.

The daily administration of large doses of m-dichlorobenzene (m-DCB) causes experimental hepatic porphyria in rats by induction of delta-aminolevulinic acid synthetase (ALA synthetase). However, smaller doses of m-DCB produce a biphasic stimulation of both urinary coproporphyrin excreation and liver ALA synthetase. The decline of ALA synthetase and urinary coproporphyrin despite continued daily dosage is associated with an increase in activity of the liver drug-metabolizing systems and decreasing serum m-DCB levels. The most probable explanation for the self-limiting action of m-DCB is stimulation by the drug of its own metabolism.

Keywords: *Drugs, Enzymes, Liver, Dosage, Metabolism, Pharmacology, Chlorine organic compounds, Amino acids, Porphyrins, Nitrogen compounds, Experimental data, Rats, Laboratory animals, Physiological effects, Tables(Data), Reprints, *Benzene/dichloro, *Synthetase/aminolevinate.

PB-279 746/2

(Order as PB-279 739, MF **A01**)

Dermal Absorption of Hexachlorophane in Infants

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
August Curley, Robert E. Hawk, Renate D. Kimbrough, Gerald Nathenson, and Laurence Finberg. 1971, 6p
Included in the report, Journal Articles on Toxicology. Group 8, PB-279 739.

Hexachlorophane is widely used as an antibacterial agent It has been reported that repeated high oral doses of hexachlorophane (25 mg per kg per day) in rats produced paralysis and a pronounced oedema of the white-matter of the central nervous system. To see whether hexachlorophane may be absorbed through the intact infant skin, its concentration in the blood of the umbilical cord of fifty infants and in the blood of the same infants obtained on discharge from hosital was determined by gas chromatography. While in the hospital the infants were washed several times with hexachlorophane solutions to prevent staphylococcal infections The range of hexachlorophane levels in the umbilical cord was 0.003-0.182 p.p.m with a mean of 0.022 p.p.m., and for the blood at the time of discharge from the hospital 0.009-0.646 p.p.m., with a mean of 0.109 p.p.m. It is suggested that infants' skin be rinsed after the use of hexachlorophane.

Keywords: *Bactericides, *Disinfectants, *Toxicology, Toxicity, Skin(Anatomy), Infants, Absorption(Biology), Chlorine organic compounds, Experimental data, Laboratory animals, Rats, Physiological effects, Reprints, *Hexachlorophene, *Phenol/methylene-bis-(trichloro), *Toxic substances.

PB-280 007/6

(Order as PB-280 001, MF **A01**)

The Pesticide Problems of the Agricultural Worker

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Program.
John E. Davies, Janet C. Cassady, and Americo Raffonelli. 1973, 1p
Included in the report, Journal Articles on Toxicology. Group 11, PB-280 001.

The pesticide exposure of the agricultural worker has formed part of the research investigation of the Community Pesticide Studies of Dade County. Health effects have been studied in the areas of acute, occupational and incidental exposure. In contrast to other areas of the United States, acute pesticide poisonings in this work group have resulted more from spray procedures and misuse rather than from crop and leaf residue intoxications. Case studies of these intoxications are presented. With regard to occupational exposure, significant cholinesterase inhibition had been noted in a group of 300 agricultural workers; increased organochlorine residues were observed and levels were as high as pesticide formulators. These biological indices of pesticide exposure were related to SMA-12 data and blood pressures. The interpretation of these and other findings are described in this report.

Keywords: *Pesticides, *Toxic diseases, *Industrial medicine, *Toxicology, Occupational diseases, Personnel, Exposure, Spraying, Florida, *Toxic substances, Reprints, Agricultural workers, Occupational safety and health, Dade County(Florida).

PB-280 016/7

(Order as PB-280 001, MF **A01**)

Review of the Toxicity of Hexachlorophene, Including its Neurotoxicity

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
R. D. Kimbrough. 1973, 6p
Included in the report, Journal Articles on Toxicology. Group 11, PB-280 001.

In addition to the neurotoxic effects, hexachlorophene was found to be a very potent uncoupler of oxidative phosphorylation. This effect was responsible for the body temperature elevation that these authors observed in rats poisoned with hexachlorophene, as well as for the pronounced rigor mortis and rapid onset of rigor mortis when rats that have been given hexachlorophene were sacrificed

Keywords: *Bactericides, *Toxicology, Toxicity, Toxic diseases, Humans, Exposure, Ingestion(Biology), Nervous system, Pathology, Skin(Anatomy), Laboratory animals, Bioassay, Lethal dosage, Dosage, Rats, Body temperature, *Hexachlorophene, Neurotoxicity, Toxic substances, Reprints

PB-280 603/2

(Order as PB-280 602, MF **A01**)

Adenofibrosis in the Rat Liver, With Persistence of Polychlorinated Biphenyls in Adipose Tissue

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Renate D. Kimbrough, Ralph E. Linder, Virlyn W. Burse, and Ralph W. Jenning. 19 Apr 78, 6p
Included in the report, Journal Articles on Toxicology, Group 13, PB-280 602.

Fifty male Sherman strain rats were fed 500 ppm of a polychlorinated biphenyl (PCB) (Aroclor 1254) for six months. Five each were killed zero, one, two, three, four, six, eight, and ten months after exposure to Aroclor had ceased. The livers of these rats were examined by light and electron microscopy. Liver lesions persisted although exposure to PCBs ceased. Ten months after exposure ceased, 1,192 ppm PCBs were still present in the rats' adipose tissue and 22.65 ppm in the rat livers. Aroclor patterns found in the tissues by electron capture gas chromatograhy differed from patterns of dietary Aroclors. Mass spectral analysis of liver and adipose tissue revealed three major Aroclor components with masses of 324, 358, and 392. These contained isotopic clusters indicative of the presence of Cl5, Cl6, and Cl7, respectively.

Keywords. *Pesticides, *Toxicology, Rats, Laboratory animals, Ingestion(Biology), Exposure, Experimental data, Physiological effect, Liver, Tissue(Biology), Diet, Chlorine organic compounds, Dosage, Pathology, Reprints, Adipose tissue, Pesticide residues, Bioaccumulation, Adenofibrosis, *Aroclor 1254, *Biphenyl/chloro, *Toxic substances, *Polychlorinated biphenyls.

PB-280 613/1

(Order as PB-280 602, MF **A01**)

Pesticides in People: Organochlorine Pesticide and Polychlorinated Biphenyl Residues in Biopsied Human Adipose Tissue-Texas 1969-72

Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
James E. Burns. 1974, 5p
Included in the report, Journal Articles on Toxicology, Group 13, PB-280 602.

Organochlorine pesticide residue levels were determined in 221 samples of human adipose tissue from elective surgery in 1969-72 in the lower Rio Grande Valley of Texas. Standard electron capture--gas-liquid chromatographic methods were used. The total DDT level was 23.18 ppm; the DDE level was 17.37, the highest yet reported for a general population. Dieldrin and beta BHC levels were also high: 0.35 and 1.29 ppm, respectively. No decrease in storage levels during the study period was detected. There was no difference due to sex, but Mexican-Americans had significantly higher residues of DDE, p,p't-DDT, and dieldrin than did Anglo-Americans. Polychlorinated biphenyls were detected in 15 samples in 1971 but none were detected in the other 3 years.

Keywords: *Pesticides, *Toxicology, DDT, Humans, Storage, Phosphorus organic compounds, Tissues(Biology), Dieldrin, Sex, Tables(Data), Surgery, Reprints, *Pesticide residues, Bioaccumulation, Adipose tissue, DDE insecticide, Lindane, Mexican Americans, Polychlorinated biphenyls, Benzene/hexachloro, *Toxic substances.

PB-280 614/9

(Order as PB-280 602, MF **A01**)

Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.

Pesticides in People: Total Mercury Levels in Selected Human Tissues, Idaho-1973-74

Idaho State Dept. of Health and Welfare, Boise
J. Gabica, W. Benson, and M. Loomis. 1975, 5p
Contract EPA-68-02-0552
Included in the report, Journal Articles on Toxicology, Group 13, PB-280 602.

Total mercury levels were determined in human tissues taken at autopsy from six hospitals in the three basic geographical areas of Idaho. Of the 242 specimens analyzed, 76 percent contained detectable mercury. Levels were compared with respect to the age, sex, and geographic residence of autopsied individuals. Mean levels detected were 1.04 ppm in kidney tissue, 0.34 ppm in liver, and 0 08 ppm in brain. Mean mercury levels for the three geographical areas were: southeastern Idaho, 0.22 ppm; southwestern Idaho, 0.80 ppm; and northern Idaho, 0.43 ppm. The relatively high means in southwestern Idaho specimens may be related to the preponderance of natural cinnabar deposits in that portion of the State Mercury levels were higher in women than men for all tissues in both the southwestern and northern areas, but the reverse was true in the southeast. Data were compared with findings of other investigators in an attempt to arrive at background levels of total mercury residues in human tissues

Keywords: *Mercury(Metal), *Toxicology, *Pesticides, Idaho, Tissues(Biology), Liver, Kidney, Brain, Humans, Age, Sex, Distribution, Sampling, Tables(Data), Concentration(Composition), Reprints, *Pesticide residues, Bioaccumulation, Heavy metals, *Toxic substances.

PB-280 842/6

(Order as PB-280 830, MF **A01**)

The Toxicity of Amitrole in the Rat

Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
Thomas B. Gaines, Renate D. Kimbrough, and Ralph E. Linder. 23 Oct 72, 12p
Included in the report, Journal Articles on Toxicology. Group 16, PB-280 830.

A single oral dose of 4080 mg kg and a single dermal dose of 2500 mg/kg of aamitrole, the highest doses given, were not lethal to adult rats. Dietary levels of 0, 100, 500, 100 and 25 ppm amitrole were fed to groups of 10 male and 10 or 12 female rats The dietary levels of 1000 and 500 ppm were fed for 107-110 days, the dietary levels of 100 and 25 ppm for 240-247 days to the F0 generation and for 141 days to the F1b genera-

tion. At the dietary levels of 100 and 500 ppm the pups that were born were smaller and had atropic thymuses and spleens indicative of runt disease. Most of them had died within a week after weaning. Reproduction was not affected at the lower dietary levels. Hyperplasia of the thyroid was seen in all rats fed dietary levels of 100 ppm or greater. In the 25 ppm group 4/10 F0 and 4/10 F1b females and 6/10 F1b males, but none of the F0 males developed hyperplasia of the thyroid.

Keywords· *Toxicology, *Pesticides, *Herbicides, Bioassay, Toxicity, Dosage, Rats, Diets, Ingestion(Biology), Laboratory animals, Reproduction(Biology), Thymus gland, Spleen, Hyperplasia, Endocrine diseases, Tables(Data), Body weight, Experimental data, Reprints, *Triazole/amino, *Toxic substances.

PB-280 843/4
(Order as PB-280 830, MF **A01**)
Hepatic Porphyria Induced by 2,3,7,8-Tetrachlorodibenzo-P-Dioxin in the Mouse
Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.
J. A Goldstein, P. Hickman, H. Bergman, and J. G. Vos. Nov 73, 10p
Included in the report, Journal Articles on Toxicology. Group 16, PB-280 830.

Oral administration of 4 weekly doses of 25 micrograms/kg 2,3,7,8-tetrachlorodibenzo-p-dioxin resulted in induction of delta-aminolevulinic acid synthetase and hepatic porphyria in mice There was a 2,000-fold increase in the liver content of 8- and 7-carboxyporphyrins. A single lethal oral dose of 150 micrograms/kg 2,3,7,8-tetrachlorodibenzo-p-dioxin also resulted in a 4,000-fold increase in uroporphyrins in the liver. Doses of tetrachlorofibenzo-p-dioxin which resulted in porphyria also resulted in microscopic evidence of marked liver damage and a moderate increase in the total iron content of the liver. At this time, 2,3,7,8-tetrachlorodibenzo-p-dioxin, a contaminant of a variety of environmenal chemicals, is the most potent porphyrogenic chemical known.

Keywords: *Herbicides, *Porphyria, *Pesticides, *Toxicology, Nitrogen organic compounds, Chlorine organic compounds, Mice, Metabolic diseases, Liver, Dosage, Ingestion(Biology), Bioassay, Lethal dosage, Tables(Data), Laboratory animals, Experimental data, Physiological effects, Contaminants, Pathology, Reprints, *Dioxin/tetrachloro-dibenzo, Synthetases/aminolevulinate, Porphyrin/carboxy, *Toxic substances

PB-281 687/4 PC **A12**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites: Polychloronaphthalenes Final rept. 11 Jun 76-11 Dec 76
Research Triangle Inst., Research Triangle Park, N.C.
M. D. Erickson, R A. Zweidinger, L C. Michael, and E D. Pellizzari. Jun 77, 267p EPA/560/6-77/019
Contract EPA-68-01-1978

This research program was initiated to evaluate possible environmental contamination by polychlorinated naphthalenes (PCNs). The program included sampling and analytical method development and the collection and analysis of field samples. A glass fiber filter and two precleaned polyurethane foam plugs in tandem were used for PCN collection. Recovery of the PCNs from the foam and filter was accomplished by triple extraction with toluene. The concentrated extract was chromatographed on a silica gel column and the final volume reduced to 2 ml in a Kuderna-Danish apparatus Samples were analyzed by gas chromatograph/quadrupole mass spectrometer/computer. The instrument was operated in the multiple ion detection mode which permitted the detection of < 50 pg of a PCN isomer (approximately 0 3 ng/cu m in air). The presence of PCNs was confirmed from full scan mass spectra or by monitoring the chlorine isotope ratio. Air, water, soil, sediment and biota were collected from sites near a PCN manufacturer, and six potential users. PCNs were found at all sites sampled although appreciable quantities were found at only three sites, near the manufacturer and two possible users.

Keywords: *Environmental surveys, *Chemical analysis, *Industrial wastes, Chlorine organic compounds, Monitoring, Soil analysis, Sediments, Field tests, Gas analysis, Water analysis, Samplers, Laboratory equipment, Quality control, *Polychlorinated naphthalenes, *Air pollution detection, *Water pollution detection.

PB-281 713/8 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Toxicity Studies of Selected Chemicals. Task II. The Developmental Toxicity of Vinylidene Chloride Inhaled by Rats and Mice during Gestation Final rept.
Midwest Research Inst , Kansas City, Mo.
Robert D. Short, Jr, Jan L. Minor, Joseph M. Winston, Brett Ferguson, and Timothy Unger Feb 77, 71p EPA/560/6-77-022
Contract EPA-68-01-3242

The purpose of this study was to determine the teratogenic potential of vinylidene chloride inhaled by rats and mice during organogenesis. This report describes the effects of vinylidene chloride (inhaled at various concentrations for different intervals during gestation) on development. Morphological and behavioral parameters were used to monitor development. Vinylidene chloride was judged to be a weak teratogen with little primary effect on reproduction.

Keywords: *Vinylidene chloride resins, *Toxicity, Embryology, Bioassay, Experimental design, Thermoplastic resins, Addition resins, Rats, Mice, Laboratory animals, Tables(Data), Experimental data, Respiration, Concentration(Composition), Morphology, Behavior, Reproduction(Biology), Exposure, Statistical data, Toxicology, *Toxic substances, Teratogenesis, Birth defects

PB-281 725/2 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Survey of the Occurrence of Mercury, Lead, and Cadmium in the Washington, D.C. Area Final rept. May 76-Jul 77
National Bureau of Standards, Washington, D.C.
E. P. Scheide, J. J. Fillibe, and J. K. Taylor. Sep 77, 96p
Rept no. NBSIR-78-1428
Sponsored in part by Environmental Protection Agency, Washington, D C Office of Toxic Substances.

This report describes the development of a plan to comprehensively survey the occurrence of potentially toxic substances in a defined geographical area and its application to the determination of the concentration levels of mercury, lead, and cadmium in various aspects of the environment in the Washington, D.C. area. It describes the basic philosophy of such a survey, the development of a sampling plan, and the identification of analytical methods adequate to obtain the required measurements. Methods of data reduction using the NBS computer are also described. The data are presented in tables and unique computer-generated plots which show the overall concentration profiles and spots of elevated concentration levels. No significantly hazardous conditions were found to exist. The approach followed and the data reduction techniques developed should be useful to surveys of these elements in other areas and also for surveys of ubiquitous hazardous materials in general

Keywords: *Environmental surveys, *Mercury(Metal), *Lead(Metal), *Cadmium, *District of Columbia, Chemical analysis, Sampling, Soil analysis, *Toxic substances, *Air pollution detection, *Water pollution detection, Procedures.

PB-281 879/7 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites, Acrylamide (CH2=CHCONH2) Final rept. Jun-Oct 77
Midwest Research Inst., Kansas City, Mo
John E. Going. Mar 78, 78p EPA/560/6-78/001
Contract EPA-68-01-4115

A sampling and analysis program was conducted to determine the levels of acrylamide in air, water, soil, and sediment around five industrial sites. The industrial sites included monomer producers, polymer producers, and polymer users. Air was collected at the plant perimeters using Chromosorb 101 adsorption tubes. Soil samples were collected at the air sampling stations. Water and sediment samples were taken upstream and downstream and at the plant discharge. No acrylamide was found in any of the air, soil, or sediment samples. Acrylamide was found in only one water sample. The level was 1,500 ppb. The identification of acrylamide was confirmed by GC/MS.

Keywords: *Acrylamide copolymers, *Environmental surveys, *Chemical analysis, Industrial wastes, Polymers, Gas analysis, Soil analysis, Water analysis, Sediments, Gas chromatography, Mass spectroscopy, Monitoring, Concentration(Composition), Sampling.

PB-281 881/3 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Planning and Management.
Microeconomic Impacts of the Proposed 'PCB Ban Regulations' Final task rept.
Versar, Inc., Springfield, Va.
Robert Westin, Louis Fourt, David Berkey, and Bruce Woodcock. 16 May 78, 147p* EPA/560/6-77-035
Contract EPA-68-01-4771

This report summarizes the estimated economic impacts of the PCB Ban Regulations which are being proposed to implement Section 6(e) of the Toxic Substances Control Act.

Keywords: *Regulations, *Economic impact, *Environmental surveys, Regulations, National government, Chlorine organic compounds, Utilization, United States, Methodology, Capacitors, Transformers, Electromagnets, Mining equipment, Hydraulic equipment, Heat transfer, Compressors, Oils, Coolants, Coal mining, Manufacturing, Cost analysis, *Polychlorinated biphenyls, *Toxic substances, Biphenyl/chloro, Environmental chemical substitutes.

PB-281 883/9 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume X. Turf, Ornamentals, Forest Lands
American Inst. of Biological Sciences, Arlington, Va.
Frank S. Morashita, Richard K. Lindquist, and Sidney L. Poe. Jan 78, 89p* EPA/540/10-78/002
Contract EPA-68-01-2457

This report is concerned with test methods and procedures for evaluating the effectiveness of invertebrate chemical control of turf, ornamentals, forest lands and shade trees. Specific techniques and methods are documented in selected references, exhibits and other appropriate sources of information.

Keywords: *Insecticides, *Pesticides, *Turf grasses, *Trees(Plants), *Forestry, *Ornamental plants, Tests, Invertebrates, Performance evaluation, Effectiveness, Insects, Parasites, Vegetation, Plants(Botany).

PB-281 884/7 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.
Analysis of Specialized Pesticide Problems Invertebrate Control Agents - Efficacy Test Methods. Volume IX. Baculoviruses and Entomogenous Bacteria
American Inst. of Biological Sciences, Arlington, Va.
William G. Yendol, Terry L. Couch, James D. Harper, Louis A. Falcon, and W. H. McGauhey. Jan 78, 124p* EPA/540/10-78/001
Contract EPA-68-01-2457

The purpose of this report is to provide guidance for conducting tests to determine the efficacy of entomogenous bacteria and baculoviruses. The methods described herein are not to be considered to be exclusive of other methods. The entomogenous bacteria developed for pest control are the spore-formers. The baculoviruses are the nuclear polyhedrosis and granulosis viruses.

Keywords: *Pesticides, *Pest control, *Bacteria, *Viruses, *Insect control, Invertebrates, Tests, Performance evaluation, Methodology, Farm crops, Fiber crops, Oilseed crops, Vegetable crops, Turf grasses, Sugar crops, Forest trees, Ornamental plants, Effectiveness, Biological control.

PB-281 892/0 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

Multimedia Levels - Methylchloroform
Battelle Columbus Labs., Ohio
Sep 77, 50p* EPA/560/6-77/030
Contract EPA-68-01-1983

This report discusses environmental levels of methylchloroform (MC) based on a review of the literature and other information sources The concentrations of MC in the U.S. atmosphere ranges from about 0.1 micrograms/cu m (20 ppt) in remote areas to over 500 micrograms/cu m (100 ppb) in some areas near where the substance is manufactured or used. The concentration drops off rapidly as one moves away from a source facility. Surface water contamination of MC range from somewhat less than 1 ppb to several hundred ppb in the vicinity of MC manufacturers. The highest measurement reported (3 ppm) was made in a roadside ditch near a producer site. MC has been detected but not quantified in U.S. drinking water except in one case when approximately 10 ppb was reported. Soil and sediment concentrations of MC appear to be no higher near manufacturers and users than in rural areas, though the data are very limited. The levels are on the order of fractions of a ppb. MC is a saturated chlorinated hydrocarbon which is relatively stable in the atmosphere. However, the molecule is susceptible to hydrolysis or dehydrohalogenation and reacts with water relatively rapidly and is thus degraded in soil and water. There are very few data on presence of MC in food raised and sold in the U.S. However, data from the United Kingdom suggest that MC is found on the order of parts per billion in some common foodstuffs. There is little evidence to judge whether MC accumulates in living organisms Limited data on levels in marine organisms show levels on the order of a few parts per billion.

Keywords: *Environmental surveys, Air pollution, Concentration(Composition), Water pollution, Soil analysis, Potable water, Food analysis, Public health, Industrial wastes, Sampling, Photochemical reactions, Industrial hygiene, Animals, *Chloroform/methyl.

PB-281 938/1 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C Office of Toxic Substances.
A Study of Industrial Data on Candidate Chemicals for Testing Final rept.
SRI International, Menlo Park, Calif.
Susanne Urso, and Kirtland E. McCaleb. Apr 78, 43p
RESEARCH REQUEST-2, EPA/560/5-78/001
Contract EPA-68-01-4109

This report describes the work carried out on Research Request No 2 as specified by the Project Officer. Market forecasts were prepared for 12 chemicals specified by the Project Officer and include a discussion of economic information for each chemical: 1,5-bis(chlorendo)cyclooctane, bis(2-chloroethyl) ether, bromoform, 2-chloroethanol, diethyl N,N-bis(2-hydroxyethyl)aminophosphonate, N-1,3-dimethylbutyl-N-phenyl-p-phenylenediamine, 4-methyl-7-diethylamino-coumarin, sodium fluoride, sodium fluorosilicate, stannous chloride, vinyl pyridine, and vinyl pyrrolidone. The information presented includes the following· production and trade statistics; a discussion of current uses, and in some cases, past uses; possible substitute products for the chemical in specific applications, and the current price of those substitutes; trends in production levels (i e , future growth rates); and factors affecting growth in the market for the chemical.

Keywords: *Chemical industry, *Organic compounds, Forecasting, Tables(Data), Marketing, Bromoform, Chlorine organic compounds, Nitrogen organic compounds, Sodium fluorides, Trends, Nitrogen organic compounds, Fireproofing, Fluorine organic compounds, Manufacturing, *Chemicals, Cyclooctane/bis(chlorendo), Ether/bis(chloroethyl), Ethanol/chloro, Phosphonic acid/diethyl-N-N-bis(hydroxyethyl)-amino, Silicate/hexafluoro-(disodium), Coumarin/diethylamino-methyl, Phenylenediamine/N-dimethylbutyl-N-phenyl, Tin chloride, Pyridine/vinyl, Pyrrolidone/vinyl.

PB-281 948/0 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
Chemical Technology and Economics in Environmental Perspectives. Task II. Investigation of Alternatives to Chlorofluorocarbons in Selected Aerosol Products Final rept.
Midwest Research Inst., Kansas City, Mo.
Thomas W Lapp, Howard Gadberry, Gary L. Lelso, Richard O. Welch, and Fritz Hoffmeister. Mar 78, 50p*
EPA/560/1-78/002
Contract EPA-68-01-3896

Several aerosol propellant applications of chlorofluorocarbons were examined to identify existing and technologically feasible alternatives. Associated cost factors were also considered. Interested parties brought these chlorofluorocarbon applications to the attention of an interagency work group (EPA, FDA, and CPSC) as being possible 'essential uses' of these substances. The applications examined under the task were: agents for latent fingerprint development, antispatter compounds for welding, aerosol spray to produce smoke or fog, spray mold release agent for medicine tablets, leather spray polish preservative, high voltage spray insulation, clipper coolants and lubricants, moisture removal spray, engine degreasers, electric shaver cleaners and lubricants, aircraft deodorant spray, products for the airline industry, and contact cleaner/lubricant.

Keywords: *Air pollution, *Propellants, *Aerosols, Substitutes, Economic analysis, Welding, Fog, Sprayers, Drugs, Leather, Polishes, Insulation, Coolants, Lubricants, Cleaners, Stratosphere, Ozone, Smoke, *Environmental chemical substitutes, *Methane/chlorotrifluoro, *Freons, Fingerprints.

PB-283 155/0 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
Rapid Biochemical Technique for Phytotoxicity Modes-of-Action of Herbicides. Part I Final rept. 1 Jul 74-30 Jun 75
Michigan Univ., Ann Arbor. Dept. of Botany.
Hiroshi Ikuma, Charles F. Yocum, and Robert J. Lowry
Apr 78, 226p* EPA/540/9-78/001
Contract EPA-68-01-2482

The study of cellular effects of herbicides, as well as other plant growth-regulating substances, has received increased emphasis in recent years. Generally, three important biochemical inhibitory processes have been shown to be involved in herbicide modes-of-action. These are· (1) mitochondrial respiration, or electron transport, in plant species, (2) protein synthesis controlled by DNA-dependent RNA; (3) photosynthesis. The ultimate goal of the project is to develop a method so as to identify and quantify the simultaneous occurrence of these types of inhibition in plant cells when exposed to herbicides and plant growth regulating pesticides. The method will also identify and quantify plant physiological and morphological changes in affected cells and relate these findings to types of inhibition of biochemical processes This new method could be applicable to the evaluation not only of herbicides but also any other biologically active chemical compounds in plant cells.

Keywords. *Herbicides, *Pesticides, *Plants(Botany), *Toxicity, Biochemistry, Plant chemistry, Plant metabolism, Plant physiology, Mitochondria, Proteins, Biosynthesis, Nucleic acids, Photosynthesis, Respiration, Morphology, Physiological effects, Plant cells, *Phytotoxicity.

PB-284 079/1 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Pesticide Programs.
Rapid Biochemical Technique for Phytotoxicity Modes-of-Action of Herbicides. Part II Final rept. 1 Jul 75-31 Jul 76
Michigan Univ., Ann Arbor. Dept of Botany
Hiroshi Ikuma, Charles F. Yocum, and Robert J. Lowry
Apr 78, 138p EPA/540/9-78/002
Contract EPA-68-01-1907

Contents.
- Development of simultaneous measurements of shoot processes;
- Simultaneous measurements of respiration and ion uptake by the root;
- Development of simultaneous measurements of root and shoot processes,
- Further analysis of phytotoxicity by means of chlorophyll fluorescence--effects of diallate and trifluralin,
- Effects of herbicides on ultrastructure of root tip cells and leaf cells, when given to the root of young soybean plant;
- Examination of organelles in herbicide-treated tissues.

Keywords. *Pesticides, *Herbicides, *Toxicology, *Plants(Botany), Mitochondria, Chlorine organic compounds, Carbamates, Tables(Data), Cells(Biology), Physiological effects, Metabolism, Proteins, Nucleic acids, Biosynthesis, Soybean plants, Tissues(Biology), Photosynthesis, Measurement, Respiration, Chlorophyll, Fluorescence, Chloroplasts, Roots(Botany), *Phytotoxicity, Trifluralin, Carbamic acid/(dichloroallyl-ester)-diisopropylthio.

PB-284 393/6 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, D.C. Human Effects Monitoring Branch
National Study to Determine Levels of Chlorinated Hydrocarbon Insecticides in Human Milk: 1975-1976 and Supplementary Report to the National Human Milk Study: 1975-1976 Final rept
Colorado State Univ., Fort Collins. Epidemiologic Studies Center.
Eldon P Savage. Sep 76, 237p* EPA/540/9-78/005
Contract EPA-68-01-3190

Samples were collected during 1975-76 from 1,436 nursing women in 150 hospitals across the country. Hospitals were selected at random from every region of the U.S. to ensure that the samples would be representative of all U.S. women Pesticide compounds or metabolites detected in mother's milk included dieldrin, heptachlor, heptachlor epoxide, oxychlordane, DDT, BHC, Lindane, and HCB. No Mirex or chlordane were found in any of the samples. The results of this study were supplied to HEW for their review and assessment.

Keywords· *Pesticides, *Milk, Statistical analysis, Dieldrin, Humans, Females, Nursing, Hospitals, United States, Data acquisition, Data processing, Lipids, Quality control, Heptachlor, Insecticides, Chlorine organic compounds, DDT, Lindane, Tables(Data), Sampling, Epidemiology, *Pesticide residues, Women, Metabolites, Mothers, *Toxic substances, Oxychlordane, Benzene/hexachloro, Heptachlor epoxide.

PB-284 786/1 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Epidemiology Studies: Bibliography, Health Effects of Arsenic Final rept.
American Public Health Association, Washington, D.C
Robert J Carton, and F. Irene Williamson May 77, 106p* EPA/560/6-77/014
Contract EPA-68-01-2490

The bibliography was compiled during investigations to identify biological parameters that could be used in the assessment of the health effects of community exposure to arsenic. References were obtained from many sources up to 1977 for the health effects of arsenic and relevant references on the environmental and other affects Under seven major specific headings are listed over 1,000 separate literature citations. The bibliographic citations, not annotated, are arranged in alphabetical order by the name of the senior author and anonymous articles are listed in alphabetical order by the first word in the title. To allow for quick reference, the citations have been itemized into the seven major specific topic headings

Keywords: *Epidemiology, *Arsenic, *Toxicology, *Bibliographies, Pesticides, Herbicides, Assessments, Communities, Exposure, Public health, Manufacturing, Regulations, Malignant neoplasms, Industrial medicine, Animals, Fishes, Foreign countries, Air pollution, Water pollution, Food, *Occupational safety and health, *Toxic substances, *Environmental effects, Analytical methods, Cancer, Carcinogenesis, Teratogenesis, Mutagenesis.

PB-284 945/3 PC **A04**/MF **A01**
Evaluation of Hose-End Sprayers Used for Applying Liquid Pesticides
Environmental Protection Agency, Corvallis, Oreg. Northwest Biological Investigations Station.
H. L Dooley, and A. A. Badier. 1978, 59p* Rept no. EPA/540/9-78/004

Nineteen graden hose-end sprayers used for applying agricultural chemicals were evaluated for delivery rates, spray patterns, and total spray emitted per unit of time Sprayers were evaluated at 137.88, 206.82, and 275.76 KPa (20, 30, and 40 psi) water pressures. Each sprayer type is discussed individually Delivery

rate variation of other sprayer types ranged from no application of pesticide to 105% above the desired rate. Sprayer delivery volumes ranged from 1.86 to 12.66 liters (0.49 to 3.34 U.S. gallons) per minute. Spray patterns are shown for each sprayer type. Hose-end sprayers are easy to use, economical, and in some cases have acceptable accuracy when used as directed. The sprayers tested include: Ortho Spray-ette 4; Ortho Super Six Spray-ette; Ortho Lawn Sprayer; Ortho Lawn and Garden Sprayer; New Hayes Insecticide Sprayer No. 101; Hayes Flower Sprayer No. H-4; Hayes Soil and Turf Sprayer No. H-10; Hayes Fertilizer Sprayer No. 102; Miller's Six Shooter Hose-end Sprayer; Miller's Big 15 Hose-end Sprayer; Burgess Redimix 6 Gallon Hose-end Plant, Shrub, and Tree Sprayer; Burgess 3 in 1 Redimix Hose-end All Purpose Sprayer; Big Andy 20 Gallon Fertilizer Sprayer No. A-21; Big Andy 6 Gallon Insecticide Sprayer No. A-7; Gilmour Air-O-Matic 362 Sprayer; Melnor Deluxe All-Purpose Garden Gun; Vigoro Lawn-Weed-N-Feed Sprayer; and the Burgess Redimix 2 Gallon Hose-end Wettable Powder Sprayer.

Keywords: *Performance evaluation, *Sprayers, *Household goods, *Pesticides, Water pressure, Hoses, Flow rate, Acceptability, Volume, Spraying, Classifications, Spray nozzles, Accuracy, Delivery, Time, Pest control, Performance evaluation, *Hoseend sprayers, *Consumer products.

PB-284 950/3 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
A Study of Industrial Data on Candidate Chemicals for Testing Final rept.
SRI International, Menlo Park, Calif.
C. Tucker Helmes, Barbara Lewin, Kirtland McCaleb, Howard Peters, and Margaret Power. Jun 78, 141p*
RESEARCH REQUEST-3, EPA/560/5-78/002
Contract EPA-68-01-4109

Data were collected for the chemicals in two classes, alkyl phthalates and cresols. The phthalates class included thirty-seven alkyl phthalates believed to be commercially significant at the present time. The cresol class included ortho-cresol, meta-cresol, para-cresol, mixed cresols, and cresylic acid. The following information is provided on the two classes· physical and chemical properties, contaminants; composition of mixtures; production and trade statistics, current (and in some cases, past) uses; names and locations of producers; worker exposure and occupational standards; environmental emissions, mode of entry, transport, and degradation in the environment; and biological effects (including ecological hazards and human health hazards).

Keywords: *Reviews, *Cresoles, *Phthalates, *Toxicology, Organic compounds, Cresylic acid, Physical properties, Chemical properties, Chemical composition, Manufacuring, Utilization, Environmental surveys, Industrial hygiene, Standards, Ecology, Public health, Industrial medicine, Chemical industry, Transport properties, Toxicity, Carcinogens, Mutagens, Standards, *Toxic substances, Biological effects, Occupational safety and health, Maximum permissible exposure level, Threshold limit values, Alkyl phthalates.

PB-285 191/3 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
A Continuous Flow System Using Fish and Amphibian Eggs for Bioassay Determinations on Embryonic Mortality and Teratogenesis Final technical rept.
Kentucky Univ , Lexington.
Wesley J. Birge, and Jeffrey A. Black. Apr 77, 64p
EPA/560/5-77/002
Contract EPA-68-01-4321

A procedure is described for continuous flow bioassays on sensitive developmental stages of fish and other aquatic species. Environmental toxicants may be screened for teratogenic and other embryopathic effects (e.g , mortality, locomotor impairment) on eggs, embryos, and early juvenile stages. Toxicant concentration may be regulated down to 1.0-0.1 ppb for an exposure period extending from fertilization through 4-7 days posthatching. Bioassays may be performed with either natural or synthetic water, and standard physicochemical parameters (e.g., temperature, water hardness, pH) can be manipulated independently to determine effects on toxicity. The procedure is suitable for use with a wide range of fish and amphibian species, including rainbow trout, channel catfish, largemouth bass, leopard frog and others. Concerning the toxic effects of many environmental trace contaminants, embryonic and early juvenile stages constitute the critical sensitive links in the life cycles of many aquatic animal species. Reproductive potential of aquatic animals may be severely restricted or abolished by trace levels of toxicants which are harmless or sublethal to most adult organisms.

Keywords: *Toxicology, *Fishes, *Amphibia, Bioassay, Concentration(Composition), Contaminants, Embryos, Water pollution, Pathology, Mutations, Eggs, Exposure, Physicochemical properties, Mortality, Tables(Data), Experimental data, Survival, Lethal dosage, *Toxic substances, Teratogenesis, *Water pollution effects(Animals), Trace amounts.

PB-285 439/6 PC **A12**/MF **A01**
National Science Foundation, Washington, D.C.
Second Report of the TSCA Interagency Testing Committee to the Administrator, Environmental Protection Agency and Information Dossiers on Substances Designated
TSCA Interagency Testing Committee, Washington, D.C.
Apr 78, 268p EPA/560/10-78/002
Prepared in cooperation with Clement Associates, Inc., Washington, D.C., Contract NSF-C-ENV77-15417.

A central provision of the Toxic Substances Control Act (TSCA, P.L. 94-469) concerns the testing of chemical substances and mixtures which are used in commerce or may represent an unreasonable risk of injury to human health or the environment. The Act provides for continuing advice from certain Federal agencies having common interests in identifying chemical substances or mixtures for testing. Accordingly, the TSCA Interagency Testing Committee, which is composed of representatives from those concerned Federal agencies, regularly provides to the Administrator of the Environmental Protection Agency (EPA) recommendations on chemicals and mixtures to which the Administrator should give priority consideration for the promulgation of testing rules. The substances tested are acrylamide, aryl phosphates, chlorinated naphthalenes, dichloromethane, halogenated alkyl epoxides, polychlorinated terphenyls, pyridine, and 1,1,1-trichloroethane.

Keywords: *Hazardous materials, Toxicity, Classifications, Committees, Law(Jurisprudence), Legislation, Recommendations, Toxicology, Metabolism, Carcinogens, Mutagens, Mutations, Tests, Amides, Chloromethanes, Pyridines, Chlorine organic compounds, Organic phosphates, Environmental health, Toxic Substances Control Act, Public Law 94-469, *Toxic substances, Bioaccumulation, Carcinogenesis, Mutagenesis, Teratogenesis, Acrylamide, Ethane/trichloro, Polychlorinated terphenyls, Naphthalene/perchloro, Terphenyl/perchloro, Aryl phosphates.

PB-285 531/0 PC **A15**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Chemical Market Input/Output Analysis of Selected Chemical Substances to Assess Sources of Environmental Contamination: Task III. Asbestos Final rept
Syracuse Research Corp., N Y. Center for Chemical Hazard Assessment.
William M. Meylan, Philip H. Howard, Sheldon S. Lande, and Arnold Hanchett. Aug 78, 331p* TR-77-515, EPA/560/6-78/005
Contract EPA-68-01-3224

This report considers the sources of asbestos environmental contamination. Marketing information, available monitoring data, and engineering assumptions were used to estimate asbestos emissions. Chrysotile is the more common commercial mineral form of asbestos, although others such as crocidolite, amosite, and anthophyllite are also commercially important. Asbestos is used in thousands of products including friction materials (brakes and clutches), asbestos-cement pipe and sheet, roofing, paper, flooring, insulation, packing and gaskets, textiles, coating and paints, and plastics. The available information would not allow for any quantitative estimates and rarely was an ambient level attributable to a particular source. Exceptions were crushed serpentinite rock containing asbestos that was used to pave roads and driveways, demolition of buildings containing asbestos construction material, and automotive brake linings adjacent to toll plazas where cars brake to a stop. Municipal incineration may also be a potential source of significant asbestos fiber emission to ambient air. Release of asbestos fibers from A/C pipe used for drinking water appears to be minor, except where the water is very aggressive.

Keywords: *Asbestos, *Environmental surveys, *Industrial wastes, Incinerators, Sources, Manufacturing, Marketing, Utilization, Forecasting, Substitutes, Chemical composition, Chemical properties, Technology, Brake linings, Brakes(Motion arresters), Process charting, Cements, Roofing, Physical properties, Plastics, Paints, Coatings, Paper, Flooring, Insulation, Packing materials, Gaskets, Textiles.

PB-285 532/8 PC **A02**/MF **A01**
Assessment of the Hazards of Polybrominated Biphenyls
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Frederick J. Di Carlo, Joseph Seifter, and Vincent J. DeCarlo. Apr 78, 20p* Rept no. EPA/560/6-77/037

During their peak use period, PBBs represented under 1% of the total sales of fire retardant chemicals, and very probably would have escaped intensive study if they had not been mixed accidentally with animal feed preparations. Instead, international attention was drawn to PBBs by the state-supervised killing of over 35,000 cattle which had been contaminated with PBBs. Interestingly, low doses of PBBs exert a broad spectrum of toxicological, pharmacological, and biochemical effects despite low acute toxicity. These effects and the intensive bioaccumulation of PBBs derive from their structure and their consequent resistance of biotransformation and high solubility in fat. In rodents, PBBs are teratogenic, immunosuppressive, and potentially carcinogenic. In bovine, rodent, and avian species, PBBs reduce feed intake and induce mixed function oxidases of liver microsomes. The latter effect may be responsible for steroid level changes which underline hormonal toxicities observed in cows, mink, rats, and chickens. The effects of PBBs on humans are controversial, but data suggestive of immunological, skin, and liver disorders continue to accumulate Concern about the clinical effects of PBB's is heightened by the knowledge that these compounds readily enter the fetus by crossing the placental barrier and can be transferred to newborn children after extensive passage into breast milk.

Keywords· *Toxicology, *Industrial medicine, Assaying, Air pollution, Water pollution, Assessments, Chlorine organic compounds, Hazards, Carcinogens, Humans, Fire resistant coatings, Rats, Bioassay, Lethal dosage, Laboratory animals, Pharmacology, Half life, Exposure, Food chains, Production, Carcinogenesis *Polybrominated biphenyls, Biphenyl/chloro, *Toxic substances, Teratogenesis, Bioaccumulation, Environmental effects, *Occupational safety and health.

PB-285 562/5 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, D C. Office of Toxic Substances.
A Bibliography of Literature Related to Mercury
URS Research Co., San Mateo, Calif.
Dave Garrett, and William Van Horn Feb 75, 44p URS-7444, EPA/560/3-75-001A
Contract EPA-68-01-2930
Study on the Preparation of a Materials Balance and Technology Assessment of Mercury and Mercury Compounds on National and Limited Geographical Bases.

The report is a listing of literature sources pertaining to the environmental aspects of mercury. The literature sources are sorted by author. Over 280 reports are listed. A cross-reference file is also maintained which categorizes each entry as to technical content.

Keywords: *Mercury(Metal), *Bibliographies, *Environmental surveys, Air pollution, Water pollution, Toxicology.

PB-285 881/9 PC **A12**/MF **A01**
Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Acrylonitrile Final rept.
Franklin Inst. Research Labs., Philadelphia, Pa.
Lynne M. Miller, and Jon E Villaume May 78, 251p*

FIRL-80G-C4807-01, FIRL-F-C4807-01, EPA/560/2-78/003
Contract EPA-68-01-3893

The report is a survey and summary of the literature on acrylonitrile. Major aspects of its biological effects, environmental exposure, chemistry, production and use, and regulations are reviewed and assessed. Acrylonitrile is used in a wide variety of plastics, fibers, and elastomers. About 1.5 billion pounds of acrylonitrile are produced annually by the reaction of propylene, air, and ammonia. Low levels of acrylonitrile enter the environment during production, storage, end-product manufacture and end-use, although extensive monitoring data are not available. Recent evidence shows acrylonitrile to be carcinogenic in animals and possibly carcinogenic in humans. It resulted in birth defects when fed to pregnant rats and caused mutations in some type of bacteria. Short-term exposure to humans causes headache, mucus membrane irritation, dizziness, vomiting and incoordination. Several fatalities have resulted from fumigant use Direct skin contact produces blisters resembling second-degree burns. In laboratory mammals, signs of acrylonitrile intoxication include altered breathing, incoordination, weakness, convulsions, and coma.

Keywords: *Acrylonitriles, *Industrial medicine, *Toxicology, *Chemical industry, Toxicity, Nitriles, Reviews, Assessments, Exposure, Production, Standards, States(United States), Foreign countries, Recommendations, Utilization, Regulations, Carcinogens, Malignant neoplasms, Mutations, Congenital abnormalities, Laboratory animals, Experimental data, Physiological effects, Humans, Carcinogenesis, Literature surveys, Biological effects, *Occupational safety and health, *Air pollution effects(Humans), *Air pollution effects(Animals).

PB-286 482-SET PC **E13**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites
Research Triangle Inst., Research Triangle Park, NC.
Jun 78, 761p-in 3v

No abstract available.

PB-286 483/3 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites: Brominated Chemicals. Part II: Appendix Final rept. 19 Jul-16 Dec 77
Research Triangle Inst., Research Triangle Park, NC.
E. D. Pellizzari, R. A. Zweidinger, and M D. Erickson.
Jun 78, 165p EPA/560/6-78/002A
Contract EPA-68-01-1978
Also available in set of 3 reports PC E13, PB-286 482-SET.

Contents. Analytical protocols--(scanning electron microscopy and energy dispersive x-ray analysis; total bromine and chlorine by neutron activation analysis; analysis for ethylene in ambient air; sampling and direct analysis for methyl chloride and methyl bromide in ambient air; sampling and analysis for methyl chloride, methyl bromide, vinyl chloride and vinyl bromide in ambient air; sampling and analysis for chlorinated and brominated hydrocarbons and other chemicals in ambient air; chlorine/bromine sampling and analysis in ambient air; determination of inorganic fluoride in ambient air; acid mist sampling in ambient air; sampling and analysis of volatile halogenated hydrocarbons in soil, sediment, water, vegetation and milk; sampling and analysis of semi-volatile halogenated hydrocarbons in air, soil, sediment, water and biota; ozone measurements); Atmospheric dispersion modeling; Meteorological data; Hourly ozone concentrations in El Dorado, Arkansas.

Keywords· *Environmental surveys, *Chemical analysis, *Bromine organic compounds, *Bromine inorganic compounds, Halogen organic compounds, Neutron activation analysis, Concentration(Composition), Monitoring, Atmospheric diffusion, Industrial wastes, Air pollution, Sites, Ozone, Arkansas, Water pollution, Soil analysis, Sediments, Sampling, Laboratory equipment, Food analysis, Fluorides, Vinyl chloride, Chloromethanes, Ethylene, Electron microscopy, X ray analysis, Chlorine, Bromine, Methane/bromo, El Dorado(Arkansas), Ethylene/bromo.

PB-286 484/1 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites: Brominated Chemicals. Part I Final rept. 19 Jul-16 Dec 77
Research Triangle Inst., Research Triangle Park, NC.
E. D. Pellizzari, R. A. Zweidinger, and M. D. Erickson.
Jun 78, 325p EPA/560/6-78/002
Contract EPA-68-01-1978
Also available in set of 3 reports PC E13, PB-286 482-SET.

Sampling and analysis was designed to determine ambient concentrations of ethylene dibromide and other brominated chemicals near production facilities in El Dorado and Magnolia, AR. A characterization was made of the environmental matrices - air, water, soil, sediment and biota - for the presence and levels of ethylene dibromide, vinyl bromide and other related chemicals surrounding the bromine industry.

Keywords: *Environmental surveys, *Chemical analysis, *Bromine organic compounds, *Bromine inorganic compounds, Sampling, Air pollution, Water pollution, Sediments, Soil analysis, Electron microprobes, Bromides, Fluorides, Chlorides, Halogen inorganic compounds, Halogen organic compounds, Filters, Gas chromatography, Chloromethanes, Quality assurance, Food analysis, Particles, Monitoring, Ozone, Methane/bromo.

PB-286 485/8 PC **A12**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Environmental Monitoring Near Industrial Sites: beta-Chloroethers Final rept. May 76-Jun 78
Monsanto Research Corp., Dayton, OH.
Paul L. Sherman, A. Melvin Kemmer, Leroy Metcalfe, and Harlan D. Toy. Jun 78, 271p MRC-DA-779, EPA/560/6-78/003
Contract EPA-68-01-1980
Also available in set of 3 reports PC E13, PB-286 482-SET.

Sampling, workup and analysis methods were developed for six B-chloroethers in air, water, soil and sediment samples to evaluate possible environmental contamination by this class of compounds. The six ethers were chloroethyl ethyl ether, chloroethyl/vinyl ether, bis-(2-chloroethyl) ether, bis(2-chloroisopropyl) ether, bis(22-chloroethoxy) methane and bis(2-chloroethoxy) ethane. Four types of samples were collected near eight industrial sites which were potential emitters of B-chloroethers. The sites included four plants where propylene oxide is produced via the chlorohydrin route. One plant produced propylene chlorohydrin; one plant produced both ethylene chlorohydrin and propylene chlorohydrin, and had produced various B-chloroethers previously; one plant produced intermediates and surfactants for the textile industry; and one plant produced polysulfide rubbers. Air samples were collected by drawing air through Pyrex tubes packed with Tenax-GC using personnel sampling pumps. Water samples were collected either as grab samples or integrated 24-hour samples with a peristaltic pump. Soil and sediment samples were transported in glass canning jars. Air sampling tubes were desorbed with methanol with a procedure developed at MRC. Water samples were solvent extracted with methylene chloride. Soil and sediment samples were Soxhlet extracted with methylene chloride. The methylene chloride extracts from the water, soil and sediment samples were each concentrated with a Kuderna-Danish evaporator to a volume of 2-3 ml.

Keywords. *Environmental surveys, *Chemical analysis, *Chlorine organic compounds, *Ethers, Industrial wastes, Air pollution, Water pollution, Sediments, Soil analysis, Gas analysis, Water analysis, Solvent extraction, Sampling, Sites, Manufacturing, Chemical industry, Concentration(Composition), Monitoring, Ether/chloroethyl-ethyl, Ether/chloroethyl-vinyl, Ether/bis(chloroethyl), Ether/bis(chloropropyl), Methane/chloroethoxy, Ethane/chloroethoxy.

PB-287 791/8 PC **A99**/MF **A01**
Pesticide Data Submitters. Part I. Listing of Pesticide Data Submitters in Environmental Protection Agency Files by Chemical Interim rept.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
17 Oct 78, 864p*

A computer-generated list of pesticides by chemical code and the Pesticide Companies that have submitted data in support of review by the Office of Pesticide Programs. Included are the complete addresses of the companies. The pesticides are indexed by common English names of the chemicals. The report is of primary interest to pesticide companies wishing to cite other data in support of an EPA action.

Keywords: *Pesticides, *Data sources, Chemical industry, Indexes(Documentation), Chemical compounds, Coding.

PB-288 410/4 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
A Method for the Sampling and Analysis of Polychlorinated Biphenyls (PCBs) in Ambient Air Final rept. Aug 75-Dec 77
Environmental Science and Engineering, Inc., Gainesville, FL.
Charles L. Stratton, Stuart A. Whitlock, and J. Mark Allan. Aug 78, 150 EPA/600/4-78/048
Contract EPA-68-01-2978

A method was developed for the sampling and analysis of polychlorinated biphenyls (PCBs) in air An easily constructed, high-volume sampling system is employed with porous polyurethane foam as the collection medium. The sample is collected at the rate of 0.6 to 1.0 cu m per minute. Laboratory procedures described in this document permit the quantitative analysis of even the most volatile PCB species in an air sample. A perchlorination technique for the quantitative analysis of PCB has been adapted for use. The technique is shown to convert even the most volatile PCB species to decachlorobiphenyl for simple and direct quantitative analysis. Data is presented to show conversion efficiencies of a variety of PCBs to decachlorobiphenyl of 101 + or - 6 percent over the range of 0.103 to 10.0 micrograms. A ruggedness test was conducted which indicates the proposed perchlorination technique can yield reliable interlaboratory results. The perchlorination technique is generally necessary for the analysis of low (i.e., less than 25 ng/cu m airborne levels of PCB. The analytical method is effective for the analysis of airborne PCB levels within at least the range of 1 ng/cu m to 50 micrograms/cu m. (Portions of this document are not fully legible)

Keywords: *Gas analysis, Chlorine organic compounds, Chemical analysis, Sampling, Air pollution, Concentration(Composition), Field tests, Gas chromatography, *Polychlorinated biphenyls, *Air pollution detection, Biphenyl/perchloro, Aroclor 1016, Aroclor 1242, Procedures.

PB-289 126/5 PC **A21**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Investigation of Selected Correlations Between Industrial Activity and Community Disease Final rept. Oct 76-Mar 78
Enviro Control, Inc., Rockville, MD
Willard W. Perry, Robert Goldsmith, Margaret E. Mattson, Mary A. Urbanek, and Carl B Bailey. Aug 78, 498p* Rept no EPA/560/6-78/004
Contract EPA-68-01-4304

The report documents the results of four case studies of correlations between industrial activity and community disease. (1) copper smelting and respiratory/digestive diseases; (2) steel manufacturing and digestive neoplasms; (3) bituminous coal mining and cardiovascular/respiratory diseases; (4) viscose rayon and cardiovascular diseases. The four correlations were found by statistical analyses correlating county-by-county mortality data with industrial data. The case studies consisted of field investigations at specific industrial sites to explore the plausibility of causal relationships between the selected industries and the associated diseases. Overall purpose of the work is to assist in the development of objective and systematic methodology for identifying industrial origins of community disease Results of the case studies provide a basis for assessing the feasibility of finding causal industry-disease associations by correlating county-by-county industry and mortality data.

Keywords: *Industries, *Diseases, *Mortality, *Morbidity, Public health, Statistical analysis, Correlations, Communities, Epidemiology, Recommendations, Methodology, Toxicology, Tables(Data), Counties, Re-

lationships, Water quality, Cardiovascular diseases, Respiratory diseases, Gastrointestinal diseases, Coal mining, Bituminous coal, Iron and steel industry, Steel making, Rayon, Data, Etiology, Chronic diseases, *Environmental health, Copper industry, Environmental effects, Air quality, *Toxic substances.

PB-289 127/3 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Market Input/Output Studies: Task V. Benzene Consumption as a Solvent Final technical rept.
Auerbach Associates, Inc., Philadelphia, PA.
M. Lynne Neufeld, Marcus Sittenfield, Henry Rowland, and Susan Hunsicker. Oct 78, 116p* AAI-2378/2379-105-FR-5, EPA/560/6-77/034
Contract EPA-68-01-1996

This study was conducted to determine the current status of the industrial and consumer consumption of benzene as a solvent, and to identify where possible any impact on its use as a solvent due to the OSHA Emergency Benzene Standard (42 FR 27452, May 27, 1977). The report presents an overview of the technical and commercial history of benzene and a discussion of its marketing and distribution patterns into the small miscellaneous use market. Consumption processes and patterns of benzene use, both before and after the OSHA regulations, are examined in detail. Consideration is given to the use of benzene in formulated products, such as adhesives and paint removers, and to benzene consumption as a solvent and adjunct to manufacturing in processes such as esterification and azeotropic dehydration. Possible alternatives to the use of benzene are explored. Losses of benzene to the environment are analyzed and an estimate of their geographic distribution is given.

Keywords: *Chemical industry, *Benzene, *Market surveys, *Solvents, Standards, Adhesives, Paint removers, Substitutes, Inventories, Demand(Economics), Pharmacology, Management planning, Alcohols, Elastomers, Rubber industry, Ethyl cellulose, Formulations.

PB-289 128/1 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Asphalt and Coal Tar Pitch Final technical rept.
Cincinnati Univ., OH Dept. of Environmental Health.
Ruth P. Trosset, David Warshawsky, Constance Lee Menefee, and Eula Bingham Sep 78, 241p EPA/560/2-77/005
Contract EPA-68-01-4188

This report reviews the literature on the potential environmental hazards and health impacts from production, distribution, and use of asphalt, the essentially uncracked residue from crude oil, and coal tar pitch, the highly cracked residue from fractional distillation of coal tar derived from the coking of coal. Topics include physical and chemical properties; production figures; uses; process descriptions; contamination potential; methods of sampling, monitoring, and analysis; acute and chronic effects on human health, toxicity to animals and plants; suggested handling practices; regulations and standards. Of the 31 million tons of asphalt sold annually in the US, most is used in exposed surfaces: paving (78%), roofing (17%), dam linings and soil stabilizers, etc , (<5%). In contrast, 62% of the 1.2 million tons of pitch produced annually in the US is used in baked carbon and graphite products, 17% as fuel, and only 7% in exposed surfaces. Asphalt and pitch and their emissions and degradation products may contain varying quantities of trace metals and polycyclic aromatic hydrocarbons (PAH), some of which may have toxic effects including photoxicity and cancer of skin and lungs. Potential environmental contamination and health hazards of asphalt and pitch are considered, with recommendations for further research.

Keywords: *Asphalts, *Coal tar, *Environmental surveys, *Reviews, Environmental impacts, Coking, Crude oil, Public health, Physical properties, Chemical properties, Marketing, Utilization, Design criteria, Toxicity, Sampling, Industrial hygiene, Regulations, Trace elements, Metals, Aromatic polycyclic hydrocarbons, Sources.

PB-290 464/7 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
The Ecological Effects of Arsenic Emitted from Nonferrous Smelters Final rept.
Environmental Science and Engineering, Inc., Gainesville, FL.
Francis E. Benenati, Brian H. Winchester, and Timothy P. King. Feb 76, 161p EPA/560/6-77/011
Contract EPA-68-01-3248

This report is an assessment of the ecological effects of arsenic and other associated contaminants emitted from nonferrous smelters on economically important plant and animal species in the human food chain. The objective of this study was to evaluate the latest information available on air, water, and solid waste discharges of arsenic and other heavy metals, along with sulfur oxide emissions from nonferrous smelters and associated ecological effects. To accomplish this objective, the study focused primarily on three areas of concern: (1) the extent of the ecological damage around primary and secondary smelters; (2) the extent that arsenic, by itself or in combination with other chemicals, caused this ecological damage; and (3) how present or projected levels of emissions, including no discharge, affect the levels of damage.

Keywords· *Arsenic, *Ecology, *Pollution, Smelters, Damage assessment, Zinc, Copper, Lead(Metal), Sulfur oxides, Farm crops, Livestock, Toxicity, Solid waste disposal, Water pollution, Evaluation, Air pollution, Losses, Sediments, Dust.

PB-290 617/0 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
An Evaluation of the Organochromium Content of Sewage Sludge Final rept. Oct 77-Jan 79
Monsanto Research Corp., Dayton, OH.
Paul L. Sherman, Joseph J. Brooks, Leroy Metcalfe, and Thomas J. Hoogheem. Jan 79, 43p MRC-DA-831, EPA/560/6-78/010
Contract EPA-68-01-1980

The organochromium content of sewage sludge was evaluated during this study. Sewage sludges containing chromium were obtained. These sludges were analyzed to determine total chromium and then fractionated to obtain four chromium fractions. The fractions represented soluble chromium, cationic chromium which was dilute acid soluble, and alkali soluble and insoluble fractions The two later fractions represent the chromium which is associated with humus and humin respectively. Mixtures of the sludges were analyzed for total and fractionated chromium. These mixtures were then subjected to aerobic and anaerobic digestion for 30 days. After the 30 day period the sludge mixtures were reanalyzed. Good mass balances were obtained for both the distribution of chromium among fractions compared with total chromium analyses and between before and after digestion samples. Data also was collected from the four fractions described earlier (for twenty-two other elements). These data were collected for sludge mixtures both before and after digestion studies. Comparisons were made of the distribution of the various elements.

Keywords: *Sewage sludge, *Chromium organic compounds, *Chemical analysis, Anaerobic processes, Aerobic processes, Distillation, Extraction, Sampling, Design criteria, Laboratory equipment.

PB-290 653/5 PC **A05**/MF **A01**
A Preliminary Analysis of Nitrous Oxide(N2O) Including a Materials Balance
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
C. Richard Cothern. Jan 79, 84p* Rept no. EPA/560/6-79/001

This preliminary analysis of the sources, sinks and effect of nitrous oxide (N2O) in the atmosphere is a snapshot in time of a rapidly moving object. Much has been learned about this gas in recent years but much remains to be determined. The most reasonable residence time for N2O in the atmosphere is in the range of 100-150 years. Since the change in atmospheric concentration of N2O is less than 1% per year, this implies that the release rate is in the range of 10-15 Mt N2O/year. The combination of freshwater, ocean and sediment sources appears to be about 7 Mt N2O/year which means that the most that land/crop/fertilizer systems can contribute is 8 Mt N2O/year. The unknown in this balance is the concentration of land/crop/fertilizer systems. Measurement of such fluxes are needed. It appears that the only sinks for N2O are in the stratosphere. The overall effect of N2O on stratospheric ozone is predicted to be small and could lead to an increase in stratospheric ozone. The contribution of man made nitrous oxide appears to be small at the present time but is expected to grow. The overall problem is an important one on the time scale 20-50 years and is not an immediate crisis.

Keywords: *Nitrogen oxide(N2O), *Air pollution, Stratosphere, Ozone, Fresh water, Sea water, Sediments, Land, Fertilizers, Farm crops, Sources, Atmospheric chemistry, Path of pollutants.

PB-290 690/7 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Chemicals Identified in Human Biological Media, A Pilot Literature Survey
Tracor Jitco, Inc., Rockville, MD.
Randall D. Huffman, and Cynthia Aller. Jan 79, 82p EPA/560/6-79/002
Contract EPA-68-01-4116

For the past three years, the Office of Toxic Substances' Monitoring Division has been involved in investigating the establishment of a data base of chemicals identified in human tissues and body fluids. A preliminary computer search in 1976 revealed that adequate descriptors do not exist for retrieving body-burden information from existing computer files and indicated a manual approach would be necessary. This report contains the results of a pilot manual literature survey accomplished by Tracor-Jitco for the period January 1977 through September 1978. Fifty-one relevant articles containing information on fifty-three different substances were identified in forty-two selected journals. Data extracted from those articles is organized alphabetically by substance in the text of this report.

Keywords· *Contaminants, *Chemical compounds, Body fluids, Humans, Tissues(Biology), Tables(Data), Literature surveys, *Toxic substances.

PB-291 245/9 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Environmental Assessment of Polychlorinated Biphenyls (PCBs) Near New Bedford, MA. Municipal Landfill Research rept. no. 4 (Final)
Environmental Science and Engineering, Inc., Gainesville, FL.
Charles L. Stratton, Karen L. Tuttle, and J. Mark Allan. 26 May 78, 48p EPA/560/6-78/006
Contract EPA-68-01-3248

A survey was conducted to assess the extent of transport of polychlorinated biphenyls (PCBs) from the New Bedford, MA. municipal landfill This landfill has been used for the disposal of PCB waste materials for many years. It is located in a wetland area. There is evidence of transport of PCBs in the shallow ground water to the northwest of the landfill, but the extent of transport is relatively minor, being confined to near surface waters very near the landfill. Drinking waters are unaffected. Aquatic and terrestrial organisms in the vicinity are accumulating some PCB; however, levels of contamination are not excessively high. There is evidence to indicate airborne transport may be a principal mode of movement of PCB from the landfill during the warm months. At one time, in excess of 1.0 migrogram/cu m of PCB was detected in the ambient air over this landfill

Keywords. *Water pollution, *Solid waste disposal, *Earth fills, *Air pollution, *Urban areas, Surveys, Aromatic hydrocarbons, Ground water, Surface waters, Concentration(Composition), Soil analysis, Sediments, Streams, Aquatic animals, Summer, Potable water, Massachusetts, Chlorine aromatic compounds, *Biphenyl/perchloro, *Polychlorinated biphenyls, Bedford(Massachusetts), *Path of pollutants, Aroclor 1242, Aroclor 1016, Aroclor 1254.

PB-291 332/5 PC **A05**/MF **A01**
The Impact of Inorganic Phosphates in the Environment Final rept
Environmental Protection Agency, Washington, DC Office of Toxic Substances

Justine L. Welch. Nov 78, 94p* Rept no. EPA/560/1-78/003

This report reviews the literature concerning the consequences of nutrient enrichment, the significance of phosphorus in eutrophication, critical phosphorus concentrations, the effects of eutrophication on human populations, and the extent of the eutrophication problem in the United States. The evidence contained in this report indicates that (a) excessive nutrient concentrations are associated with undesirable changes (eutrophication) in aquatic plants, depletion of dissolved oxygen, disappearance of cold water fish, and appearance of nuisance algal species, (b) excessive phosphorus is most frequently responsible for these undesirable changes in lakes; (c) lakes and reservoirs respond more severely to excessive phosphorus concentrations than do flowing waters, and do so at lower phosphorus concentrations; (d) phosphorus may at times be the limiting factor in estuaries but is not usually the limiting factor in coastal waters; (e) critical phosphorus levels which lead to eutrophication have not been clearly defined because of the variation in the response of surface waters to phosphorus caused by differences in residence times, (f) eutrophication has adversely affected human populations through increased water treatment costs, decreased property values, changes in the commercial fishery and reduction of the aesthetic and recreational values of affected lakes.

Keywords: *Phosphorus, *Environmental impacts, *Water pollution, *Reviews, Aquatic plants, Dissolved gases, Oxygen, Concentration(Composition), Fishes, Algae, Mortality, Humans, Sewage treatment, Recreation, Esthetics, Cost analysis, Estuaries, Inorganic phosphates, Economic impact, Air pollution effects(Animals), *Eutrophication, Commercial fishing, Sport fishing, Trophic level, Organic loading.

PB-291 458/8 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Analysis of Polychlorinated Byphenyl (PCB) in Human Blood Serum Samples Research request no. 2 (Final) Jan-Oct 77
Environmental Science and Engineering, Inc., Gainesville, FL.
Charles L Stratton, and Paul C. Geiszler. Oct 77, 66p EPA/560/6-78/007
Contract EPA-68-01-3248

A total of 208 human blood serum samples and two mother's milk samples were analyzed for polychlorinated biphenyl (PCB). The samples were supplied to Environmental Science and Engineering, Inc. (ESE) in frozen condition by the Department of Health, Education, and Welfare, Center for Disease Control, Atlanta, Georgia. This report includes the analytical results for these samples and an assessment of the degree of uncertainty involved in the analysis.

Keywords: *Blood serum, *Toxicology, Humans, Chlorine organic compounds, Milk, Quality control, Tables(Data), Mothers, *Polychlorinated biphenyls, Biphenyl/chloro, Analytical methods, *Toxic substances, Aroclor 1242, Aroclor 1254.

PB-291 684/9 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Butadiene and Its Oligomers Final rept.
Franklin Research Center, Philadelphia, PA Science Information Services Organization.
Lynne M. Miller. Dec 78, 195p* FRC-86G/C4807/01, EPA/560/2-78/008
Contract EPA-68-01-3893

The report is a survey and summary of the literature on butadiene and its oligomers. Major aspects of their biological effects, environmental exposure, chemistry, production and use, and regulations are reviewed and assessed. Butadiene is a reactive gas used primarily in the production of rubbers and resins; over 3 billion pounds are produced annually in the U.S Among other reactions, it undergoes self-condensation to form cyclic oligomers, such as 4-vinylcyclohexene, 1,5,9-cyclododecatriene, and 1,5-cyclooctadiene The latter is used primarily as a precursor to nylon; the other oligomers are less important commercially. Vinylcyclohexene, however, is a contaminant in butadiene Limited monitoring data indicate that low levels of butadiene enter the environment during production, end-use, storage and transport, it has been identified as a minor constituent of urban air and gasoline. The high degree of chemical reactivity of butadiene precludes environmental persistence. In humans, exposure to butadiene vapor may result in lethargy and drowsiness, as well as irritation to the eyes and mucous membranes. There have been no reports in the U.S. or Western Europe of long-term effects of butadiene arising from occupational exposure Poorly documented cases of gastrointestinal tract, and circulatory and nervous system disorders have been reported in Russian synthetic rubber workers; butadiene has been implicated as a causitive factor. Butadiene intoxication may cause narcosis in laboratory mammals; few adverse effects have been reported for chronic exposures. Few toxicity data are available for the oligomers.

Keywords: *Butadiene, *Chemical industry, *Toxicology, Manufacturing, Chemistry, Exposure, Industrial hygiene, Monitoring, Chemical reactions, Sources, Degradation, Chemical analysis, Toxicology, Regulations, Standards, Monomers, Cyclohexene/vinyl, Cyclododecatrienes, Cyclooctadienes, Biological effects, *Toxic substances, *Air pollution effects(Humans), Occupational safety and health.

PB-291 685/6 PC **A12**/MF **A01**
Chemical Reporting and Record-Keeping Authorities Under 15 Environmental and Consumer Acts
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Steven L. Wilhelm. 15 Dec 78, 266p* Rept no. EPA/560/3-78/001

This report is an indexed compendium of authorities to gather and disseminate information which occur in the listed acts. It contains a subject index to facilitate searching these acts for specific types of autorities. It also contains an abridged text of the acts, edited for clarity and brevity.

Keywords: *Legislation, *Data acquisition, *Reporting, Chemistry, Records management, Catalogs, Hazardous materials, Requirements, Information retrieval, Environments, Consumers.

PB-291 755/7 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticide Programs.
Development of Registration Criteria for Controlled Release Pesticide Formulations Final rept.
Beroza (Morton) and Associates, Silver Spring, MD
Nathan F. Cardarelli, and Katherine E. Walker. Jan 78, 159p* EPA/540/9-77/016
Contract EPA-68-01-1922

This report provides state-of-the-art information on controlled release (CR) pesticide formulations, their efficacy, and materials used in their manufacture. Formulation ingredients and their function are described. Theories of release rate kinetics of various CR systems studied are discussed. 114 pesticides and other agents used in CR applications, 100 materials used in binding matrixes and wall membranes, and 86 additives are listed with their manufacturers, toxicity, and pertinent literature citations. Speculation on degradation products of polymers and additives is offered in the absence of experimental data on environmental effects. Polymers are divided into 15 categories, their properties defined, and degradation rates estimated to provide their environmental persistence. Modes of degradation of these materials are discussed 20 ASTM test procedures adapted to assessing environmental impact plus other sources of methodology are suggested 17 procedures in the EPA proposed guidelines (Fed. Reg. 6/25/76) for registering pesticides and other procedures are suggested for study regarding development of appropriate tests for assessing decomposition and aging properties of polymers and additives Criteria for EPA registration of controlled release products are recommended including efficacy, safety, and toxicological evaluation along with unknown effects of chronic exposure to non-target organisms and systems.

Keywords. *Pesticides, Reaction kinetics, Manufacturing, Additives, Degradation, Chemical industry, Polymers, Environmental impacts, Manufacturers, Fertilizers, Plant nutrition, Toxicity, Membranes, *Controlled release, Procedures, State of the art.

PB-291 900/9 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Identification of Organic Compounds in Industrial Effluent Discharges
Battelle Columbus Labs., OH.
Donal L. Perry, C. C. Chuang, Gregory A. Jungclaus, and J. Scott Warner. Nov 78, 246p EPA/560/6-78/009
Contract EPA-68-01-4350

Samples of 63 effluent and 22 intake waters were col lected from a wide range of chemical manufacturers i areas across the United States. The samples were analyzed for organic compounds in an effort to identif previously unknown and potentially hazardous organi pollutants. Each water sample was preconcentrate for analysis of organic compounds in four fractions volatile organics by helium-gas stripping and semivola tile organics by extraction with methylene chloride re sulting in separate neutral, acidic and basic fractions All sample analyses involved a GC/MS/COMP systen that used high-resolution glass capillary GC columns Organic constituents were identified using the comput erized Biemann mass spectral matching system to gether with some manual interpretation and quantifie using GC-FID peak area determinations. Over 57 compounds were tentatively identified of which 33 ar priority pollutants. Generally, industrial effluents cor tained few priority pollutants. Most of the component found in the effluents were specific for a particular i dustrial site and did not appear in reoccurring patterns The data suggest that many possible environmentall important compounds would be overlooked if frequer cy of occurrence is the major criterion for determinin environmentally significant compounds. The author recommend that future studies concentrate on basi compound analyses and that the biological activity of compound(s) be established first before exhaustiv screening programs are initiated for environmental po lutants. Mass spectral data bases containing all the o ganic compounds produced by industry should be de veloped.

Keywords. *Water analysis, *Chemical industry, *O ganic compounds, Chemical analysis, Industri wastes, Gas chromatography, Mass spectroscop Water pollution, *Water pollution detection.

PB-291 962/9 PC **A04**/MF **A0**
Environmental Protection Agency, Washington, D Office of Pesticide Programs.
Pesticide Usage Survey of Agricultural, Gover mental, and Industrial Sectors in the Unite States, 1974 Final rept.
Medical Univ. of South Carolina, Charleston. Dept Preventive Medicine
Julian E. Keil, Samuel T Caldwell, and C. Boyd Loadholt. 1 Jun 77, 75p EPA/540/9-78/007
Contract EPA-68-01-1950

The survey utilized gathered data from the agricultur area, utilities, federal, and state governmental age cies, and estimates from leading pest control oper tors. The objectives of the survey were to provide a r liable pattern of use and an inventory of the pesticid disbursed to the environment, to serve econom health, and ecologic purposes. Nine hundred a three million pounds of all type pesticides were repo ed in this survey of the United States for 1974 Almo 94% of this was in agriculture, with 3.5% in gover ment, and 2.5% in industry sectors The greatest u of pesticides occurred in the Southeastern and m southern states Low use areas were in the Northea tern part of the United States.

Keywords: *Pesticides, Surveys, Utilization, Inve tories, Agriculture, National government, Industri States(United States), Classifications, Tables(Data)

PB-291 984/3 PC **A04**/MF **A**
Economic Trends and Outlook of Pesticide Indu try: Need for 'Exclusive Use' Amendments FIFRA Final rept.
Environmental Protection Agency, Washington, D Office of Pesticide Programs.
Robert E. Lee, and Arnold L Aspelin. 15 Feb 78, 65p Rept no EPA/540/9-78/006

This report provides an economic evaluation of pe cide industry trends, outlook and need for exclus use-of-data privileges under the Federal Insecti Fungicide, and Rodenticide Act (FIFRA) Periodica an exclusive-use amendment to FIFRA is propos based on the argument that, without such protecti

companies conducting pesticide research and development do not have the opportunity to recover their expenses and make acceptable profits on their new products. To evaluate this contention, data on pesticide production, sales, profitability, industry entrances and exits, and research and development expenditures were analyzed. These data indicated that the pesticide industry is economically dynamic and growing with growth predicted to continue for the forseeable future. Value of sales has increased fourfold during the past decade (from $0.6 billion in 1966 to $2.4 billion in 1976) and is forecast to continue rising. In comparison to other industries, pesticide production was generally a high profit business. Expenditures on pesticide research and development increased by $107.5 million (from $87.7 million in 1971 to $195.2 million in 1976) in a five-year period. In addition, pesticide firms continue to expand their production capacity and the pesticide industry still attracts firms to the industry. Consequently, it was concluded that the industry does not need special market protection from Congress via exclusive-use-of-data privileges.

Keywords: *Pesticides, *Industries, *Economic analysis, Sales, Profits, Trends, Expenses, Law(Jurisprudence), Proposals, Market surveys, Tables(Data), Pest control, Insecticides, *Pesticide industry, Federal Insecticide Fungicide and Rodenticide Act.

PB-292 419/9 PC **A03**/MF **A01**
Summary Characterizations of Selected Chemicals of Near-Term Interest Final rept.
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Sep 76, 31p Rept no. EPA/560/4-76/008

This report includes summary characterizations of 8 chemicals of near-term concern to EPA. The report summarizes (a) health and ecological effects and environmental behavior, (b) sources, environmental levels and exposed populations, (c) technologic and economic aspects and (d) steps that have been taken and are being taken

Keywords: *Environmental surveys, *Chlorine organic compounds, *Dichlorodifluoromethane, *Vinyl chloride, *Phthalic acids, *Chloroform, *Lead(Metal), Lead inorganic compounds, Lead organic compounds, Esters, Ecology, Public health, Sources, Technology, Water pollution, Air pollution, Toxicology, Exposure, Industrial hygiene, Concentration(Composition), Economics, Solid waste disposal, *Ether/bis(chloromethyl), *Butadiene/hexachloro, *Polychlorinated biphenyls, *Biphenyl/perchloro, *Methane/fluoro-trichloro, Freon 11, Freon 12.

PB-293 376/0 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Chemical Technology and Economics in Environmental Perspective. Task I. Analysis of the Sources of Phosphorus in the Environment Final rept.
Midwest Research Inst., Kansas City, MO.
Charles E Mumma, Fred C Hopkins, Kathryn Bohannon, and Thomas W. Lapp. Mar 79, 224p* EPA/560/2-79/002
Contract EPA-68-01-3896

A qualitative and quantitative assessment of the principal sources of phosphorus release to the environment was performed Natural sources were not extensively evaluated nor were they quantified. Nonpoint sources were identified by land use; discharge data for specific land uses were obtained from the literature. Point sources were estimated on the basis of model flow diagrams and phosphorus material balances; no measured levels were utilized. The total national phosphorus emissions to air and water in 1978 were about 2.9 million metric tons. Of this amount, approximately 87.6% was attributable to nonpoint sources and 12 4% to point sources Major nonpoint contributors are cropland runoff and pasture and rangeland runoff; for the major point sources, municipal sewage treatment was the largest single contributor. From the data developed for the national emissions, a regional assessment was performed for Florida to evaluate the difference in phosphorus sources in regions and for the nation. A cursory analysis was also performed of detergent phosphate controls in Indiana and New York. The analysis addressed surface water geography, location and nature of phosphorus water quality problems, and the impact of detergent phosphate control.

Keywords: *Environmental surveys, *Phosphorus, Sources, Inorganic phosphates, Water pollution, Air pollution, Nutrients, Transport properties, Methodology, Data acquisition, Data analysis, Soils, Trends, Assessments, Detergents, Process charting, Design criteria, Industrial wastes, Combustion products, Nonpoint sources, Point sources, Solid wastes, *Path of pollutants, Eutrophication.

PB-293 378/6 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Third Report of the TSCA Interagency Testing Committee to the Administrator, Environmental Protection Agency
TSCA Interagency Testing Committee, Washington, DC.
Jan 79, 244p

The document has been prepared for the Toxic Substances Control Act (TSCA) Interagency Testing Committee (ITC) by its technical contractor, Clement Associates, Inc. The Committee is charged with making recommendations to the Administrator of the Environmental Protection Agency (EPA) with respect to which chemicals should be tested to determine their hazards to human health or the environment. The dossiers were designed to provide the Committee with sufficient information on the chemicals' physical and chemical properties, exposure characteristics, and biological and environmental effects to support an informed judgment on whether they should be given priority for testing. The substances covered are chlorobenzenes, 1,2-Dichloropropane, glycidol and its derivatives.

Keywords: *Hazardous materials, *Toxicology, *Chlorobenzenes, Physical properties, Chemical properties, Exposure, Physiological effects, Toxicity, Committees, Law(Jurisprudence), Legislation, Recommendations, Tests, Chlorine organic compounds, Biological effects, Environmental effects, *Toxic substances, Bioaccumulation, *Propanol/epoxy-1, Toxic Substances Control Act, Public Law 94-469, *Propane/dichloro.

PB-293 826/4 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Cadmium in Foods: A Review of the World's Literature Final rept.
Oak Ridge National Lab., TN.
John S. Drury, and Anna S. Hammons. Feb 79, 307p
ORNL/EIS-149, EPA/560/2-78/007
Contract W-7405-eng-26

The study tabulated detailed information for most of the original measurements of cadmium in foods published since 1940 and summarizes estimates of dietary intake of cadmium in the United States and foreign countries. Cadmium concentrations are indicated for about 1500 individual foods listed alphabetically and by decreasing concentration within typical food categories. Separate compilations are provided for foods originating in contaminated and uncontaminated areas and for domestic and foreign products. Most foods contained low concentrations of cadmium, generally less than 0.050 mg/kg, wet weight. Concentrations of cadmium were greatest in shellfish, leafy vegetables, potatoes, grain and cereal products, and selected animal organs, particularly kidneys and liver. Based on the tabulated data, the average daily U.S. dietary intake appears to lie within the range 30 to 50 micrograms. This estimate is 42% to 88% of the total tolerable limit of 400 to 500 micrograms per week recommended by the World Health Organization, and leaves little room for intake from other environmental or occupational sources.

Keywords: *Cadmium, *Food contamination, *Toxicology, Metals, Reviews, Diets, Concentration(Composition), Food processing, Statistical data, Estimates, Consumption, *Toxic substances, Analytical methods, Bioaccumulation.

PB-295 641/5 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Environmental Monitoring Benzene
Battelle Columbus Labs., OH.
A. F. Fentiman, M B. Neher, G. W Kinzer, P. R. Sticksel, and R. W. Coutant. Apr 79, 150p* EPA/560/6-79/006
Contract EPA-68-01-3420, EPA-68-01-3858

Procedures were developed for the collection and analysis of benzene in environmental samples. These procedures were employed in air, water, and soil sampling for benzene in the vicinity of five industrial facilities using or producing benzene. In addition, these procedures were employed in air sampling for benzene in the vicinity of two other industrial facilities, in the area around three gasoline service station locations, and at three urban locations in Columbus, Ohio.

Keywords: *Benzene, *Environmental surveys, *Monitoring, Air pollution, Water pollution, Soil analysis, Industrial wastes, Concentration(Composition), Water analysis, Gas analysis, Chemical analyses, Sites, Sorbents, Gas chromatography, Urban areas, Sampling, Traffic, Exhaust emissions, *Air pollution detection, *Air pollution sampling, *Water pollution detection, *Water pollution sampling, Service stations, Procedures.

PB-295 865/0 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Investigations of Selected Environmental Pollutants: 1,2-Dichloroethane Final rept.
Oak Ridge National Lab., TN.
John S. Drury, and Anna S. Hammons. Apr 79, 182p*
ORNL/EIS-148, EPA/560/2-78/006
Contract W-7405-eng-26

This study is a comprehensive, multidisciplinary review of the health and environmental effects of 1,2-dichloroethane. Other pertinent aspects such as production, use, methods of analysis, and regulatory restrictions are also discussed. Approximately 250 references are cited. 1,2-Dichloroethane is manufactured in greater tonnage than any other chlorinated organic compound; in 1977 nearly 5 million metric tons was synthesized in the United States. It is used primarily as a raw material in the production of vinyl chloride monomer and a few other chlorinated organic compounds. The environment is exposed to this chlorinated hydrocarbon primarily through manufacturing losses. Smaller exposures occur through dispersive uses, such as grain fumigations and application of paints and other coatings, and through storage, distribution, and waste disposal operations. Concentrations of 1,2-dichloroethane in environmental air and water distant from point sources are small--on the order of parts per billion or less. Concentrations in the environment near point sources are unknown. 1,2-Dichloroethane is toxic to humans, other vertebrates and invertebrates, plants, and microorganisms. It is an established carcinogen in rats and mice exposed by oral intubation and is a weak mutagen in some bacteria and certain grains.

Keywords: *Chemical industry, *Environmental surveys, *Toxicology, Plants(Botany), Concentration(Composition), Chlorine organic compounds, Manufacturing, Sources, Monitoring, Air pollution, Carcinogens, Exposure, Cargo transportation, Microorganisms, Standards, Water pollution, Bioaccumulation, Toxicity, Chemical analysis, Regulations, *Ethane/dichloro, *Toxic substances, Path of pollutants, *Air pollution effects(Humans), Air pollution effects(Animals), Air pollution effects(Plants), *Water pollution effects(Humans), Water pollution effects(Animals), Water pollution effects(Plants), Environmental health, Carcinogenesis, Mutagenesis, Teratogenesis.

PB-295 928/6 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances
Environmental Monitoring Near Industrial Sites: Acrylonitrile Final rept Aug 77-Dec 78
Midwest Research Inst., Kansas City, MO.
John E Going, Phil Kuykendaho, Sue Long, Joh Onstot, and Ken Thomas. Dec 78, 285p EPA/560/6-79/003
Contract EPA-68-01-4115

A sampling and analysis program was conducted to determine the levels of acrylonitrile in air, water, soil, and sediment around 11 industrial sites. The industrial sites included acrylonitrile and acrylamide producers, acrylic and modacrylic fiber producers, ABS and SAN resin producers, and nitrile elastomer producers. Air was collected at the perimeters of the industrial sites as 24-composites using charcoal adsorption tubes.

Soil samples were collected at the air sampling stations. Grab water samples were collected upstream, downstream, and, if possible, at plant discharges. Air levels ranged from 0.1 to 325 microgram/cu m; water levels ranged from nondetectable to 4,300 microgram/liter. No acrylanitrile was found in the soils or sediments. The sample extracts were analyzed by gas chromatography and confirmed by gas chromatography/mass spectrometry.

Keywords: *Acrylonitriles, *Environmental surveys, *Chemical industry, Monitoring, Air pollution, Water pollution, Soil analysis, Sediments, Industrial wastes, Sites, Mass spectroscopy, Gas chromatography, Acrylamide copolymers, Acrylic fibers, Elastomers, Nitriles, Plastics, ABS resin, Air pollution detection, Water pollution detection, Air pollution sampling, Water pollution sampling, Styrene acrylonitrile polymers.

PB-296 135/7 PC **A10**/MF **A01**
Kraft Pulping - Control of TRS Emissions from Existing Mills
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Mar 79, 212p Rept nos. EPA/540/2-78/003B, OAQPS-1/2-091-B

Guidelines to aid the State in their preparation of plans for the control of emissions of total reduced sulfur (TRS) from existing kraft pulp mills are being published under the authority of section 111(d) of the Clean Air Act. TRS emissions from kraft pulp mills are extremely odorous, and there are numerous instances of poorly controlled mills creating public odor problems. Adoption of these emission guidelines by the States would result in an overall reduction of about 80 percent in nationwide TRS emissions from kraft pulp mills.

Keywords: *Pulp mills, *Air pollution control, Guidelines, Sulfur inorganic compounds, Sulfur organic compounds, Reduction(Chemistry), Odor control, Public health, Environmental impacts, Paper industry, Hydrogen sulfide, *Sulfur compounds, Stationary sources, Dimethyl disulfide, Methyl sulfides, Methyl mercaptan

PB-296 290/0 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
A Survey of Polybrominated Biphenyls (PBBs) Near Sites of Manufacture and Use in Northeastern New Jersey Final rept. May 77-Dec 77
Environmental Science and Engineering, Inc., Gainesville, FL.
Charles L. Stratton, and Stuart A. Whitlock. 15 Feb 79, 56p 75-057-023, EPA/560/13-79/002
Contract EPA-68-01-3248

A field screening survey was conducted to determine if polybrominated biphenyls (PBBs) are present in the environment near three industrial sites where these materials have been manufactured or used in product formulations. The sites surveyed are located in industrial areas of northeastern New Jersey and Staten Island, New York. PBBs were detected at all three sites chosen for this screening survey. The highest levels of PBBs detected were 9.8 microgram/l in waters, 60 ppb in aquatic sediments, 4.6 ppm in soils, 230 ppb in fish tissue, 92 ppm accumulated on marsh vegetation, and 431 ppm in a sludge deposit. Air samples contained traces of hexa-bromobiphenyl. Human hair samples contained up to 310 ppm of PBB in extractable oil There is conclusive evidence of either past or ongoing wastewater-borne discharge of PBBs at all three locations and indirect evidence of airborne discharges of PBBs at two of the locations. The presence of PBBs in human hair oils is an indication of possible human exposure to this class of substances in the areas surveyed.

Keywords· *Environmental surveys, *Industrial wastes, *Chemical industry, Field tests, New York, Manufacturing, Air pollution, Water pollution, Bromine organic compounds, Fire retardants, Concentration(Composition), Sampling, Sites, Extraction, Soils, Hair, Sediments, Tissue(Biology), New Jersey, *Polybrominated biphenyls, *Air pollution sampling, *Water pollution sampling, Staten Island, Biphenyl/bromo.

PB-296 377/5 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Assessment of the Use of Selected Replacement Fluids for PCBS In Electrical Equipment Final rept.
Versar, Inc., Springfield, VA.
Robert A. Westin. 1 Mar 79, 109p 474-5D, EPA/560/6-77/008
Contract EPA-68-01-3259

This report summarizes the required physical and electrical properties of liquids used as dielectric and cooling fluids in transformers, electromagnets, electric motors, and capacitors. Prior to 1977, PCBs were widely used in all of these applications and provided excellent fire safety The use of PCBs was banned by the Toxic Substances Control Act. The new materials that were developed as substitutes for PCBs in these applications are discussed in light of the required properties and the performance trade-offs that resulted from their use.

Keywords. *Environmental impacts, *Chlorine organic compounds, Transformers, Heat transfer, Substitutes, Cost analysis, Maintenance, Electromagnets, Electric motors, Capacitors, Dielectric properties, Phthalic acids, Fire safety, Assessments, Manufacturing, Toxicity, *Environmental chemical substitutes, *Polychlorinated biphenyls, Biphenyl/perchloro, Biphenyl/isopropyl, Ether/butyl-chloro-diphenyl, Xylylethane/phenyl.

PB-296 466/6 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Analysis for Polybrominated Biphenyls (PBBs) in Environmental Samples Research request no. 3 (Final) Apr 78-Apr 79
Environmental Science and Engineering, Inc , Gainesville, FL
Charles L Stratton, John J. Mousa, and Joan T. Bursey. Mar 79, 121p EPA/560/13-79/001
Contract EPA-68-01-3248
Prepared in cooperation with Research Triangle Inst., Research Triangle Park, NC.

Ninety-eight environmental samples consisting of fish, sediment, soils, and vegetation, were analyzed by gas chromatographic/mass spectrometry (GC/MS) techniques for hexa-, hepta-, octa-, nona-, and decabromobiphenyls. The samples were collected by EPA regional office personnel. Hexabromobiphenyl was the most prevalent species detected. This species was detected in 84 percent of the samples over the range of 0.2 to 50,000 ppb Heptabromobiphenyl was detected in 12 percent of the samples and octabromobiphenyl in 2 percent of the samples. Nonabromobiphenyl and decabromobiphenyl were not detected

Keywords. *Environmental surveys, *Sampling, Chemical analysis, Bioassay, Fishes, Sediments, Soil analysis, Vegetation, Gas chromatography, Mass spectroscopy, Bromine organic compounds, Biological extracts, Trace elements, Concentration(Composition), Tables(Data), Mass spectra, *Polybrominated biphenyls, Toxic substances, Biphenyl/bromo

PB-296 544/0 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances.
Survey of the Manufacture, Import, and Uses for Benzidine, Related Substances, and Related Dyes and Pigments Final rept.
JRB Associates, Inc., McLean, VA.
Richard Powell, Marie Murray, Chuan Chen, and Anthony Lee. 23 May 79, 210p 2/800/01/366/01, EPA/560/13-79/005
Contract EPA-68-01-5105

This report presents the results of a survey of published and unpublished sources including industry contacts to obtain production, imports and use data on benzidene and three related compounds, i.e.3,3'-dichlorobenzidene, 3,3'-dimethoxybenzidene, and 3,3'-dimethylbenzidene In addition to these four substances, a search for similar information was conducted for 424 dyes and pigments derived from benzidene and the three related substances.

Keywords: *Dyes, *Pigments, Surveys, Textile processing, Manufacturing, Utilization, International trade, Chemical reactions, Nitrogen organic compounds, Inks, Paper industry, Paints, Plastics, *Benzidenes, *Benzidene/dichloro, *Benzidene/dimethoxy, *Benzidene/dimethyl.

PB-296 559/8 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Polychlorinated Biphenyls 1929-1979 Final rept.
Versar, Inc., Springfield, VA.
Robert A. Westin. 16 May 79, 90p* 474.5F, EPA/560/6-79/004
Contract EPA-68-01-3259

The primary emphasis of this report is a summary of the work that Versar performed in support of the EPA's regulatory activities involving polychlorinated biphenyls over the past four years. The report includes summaries of 24 reports on PCBs that Versar submitted to EPA during this period. Also included are a summary of the uses of PCBs from 1929 through 1979, a review of much of the early literature on the uses and toxicity of PCBs, and a discussion of the various regulatory activities that limited human exposure to PCBs and eventually banned their manufacture, processing, and use.

Keywords: *Chlorine organic compounds, *Environmental surveys, Regulations, Utilizations, Standards, Management planning, Water pollution, Transport properties, Air pollution, Solid waste disposal, Cost analysis, *Polychlorinated biphenyls, Path of pollutants, Biphenyl/perchloro, Toxic substances.

PB-296 903/8 PC **A22**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
The Health and Environmental Impacts of Lead and an Assessment of a Need for Limitations Final rept.
Battelle Columbus Labs., OH.
R. A. Ewing, M. A. Bell, and G. A. Lutz Apr 79, 516p* EPA/560/2-79/001
Contract EPA-68-01-4318

This report reviews the available literature on lead and its compounds concerning physical and chemical properties, industrial technology and alternatives, environmental sources and emissions, environmental distribution, ecological effects, human health effects, and exposures to lead from various media determines the need for additional limitations on lead. More than 30 existing regulations directly or indirectly limiting exposure to lead have been identified. In reviewing the need for further limitations, the report addresses two specific questions: (1) What are the present levels of exposure in various population groups, and (2) Do these exposure levels represent a significant health hazard. An attempt is made to identify the relative contributions to total human exposure attributable to air, drinking water, and dietary intake. Using 11 assessment factors, the report prioritizes 12 exposure source classifications which might merit consideration for possible limitations. The impacts on health, the environment, and the economy of these potential limitations remain to be evaluated.

Keywords *Lead(Metal), *Environmental surveys, *Toxicology, Air pollution, Epidemiology, Lead poisoning, Assessments, Public health, Exposure, Physical properties, Chemical properties, Food, Water pollution, Tissues(Biology), Transport properties, Metal industry, Storage batteries, Fuel additives, Manufacturing, Sources, Blood, Potable water, Concentration(Composition), Toxicity, Absorption, Ecology, Plants(Botany), Fishes, Soil, Technology, Path of pollutants, Environmental health, *Toxic substances, *Water pollution effects(Humans), *Air pollution effects(Humans)

PB-297 753/6 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Chemical Technology and Economics in Environmental Perspective. Task IV - Potential Worker and Consumer Exposure to Nitrilotriacetic Acid (NTA) in Detergents Final rept.
Midwest Research Inst., Kansas City, MO
Alfred F Meiners, Thomas W. Lapp, Charles E. Mumma, Eugene G. Poodrebarac, and Robert P Reisdorf. Jun 79, 49p* EPA/560/11-79/008
Contract EPA-68-01-3896

The current annual production of trisodium nitrilotriacetate in the United States is approximately 70 million pounds. The production of NTA is highly automated and is largely under remote controls; thus, production workers have little potential for exposure. Analysis of air in the workers' breathing zone indicated that the

highest exposure area had an average potential exposure of 8.2 mg NTA/day. NTA was not detected in urine samples of production workers (detection limit, 0.5 mg/liter). The number of detergent production workers that would be directly exposed to airborne detergent dust is estimated to be 2,500; typical exposure during detergent formulation is estimated to be 338 micrograms/NTA/day. Consumer exposure to detergents can result from inhalation of detergent dust, percutaneous absorption from contact with wash water or direct skin contact with the detergent, ingestion of residue on dishes or utensils, and skin contact with residues in clothing. Estimates of the number of consumers potentially exposed (and the extent of exposure) are as follows: automatic clothes washing, 176 million (0.05 to 0.35 micrograms NTA/day); automatic dishwashing, 33 million (0.009 to 0.14 micrograms NTA/day); hand dishwashing, 171 million (8.75 to 17.5 micrograms NTA/day); residue on dinnerware, 40 million (4.9 to 966 micrograms NTA/day); and general cleaning, 176 million (8 75 to 17.5 micrograms NTA/day).

Keywords: *Detergents, *Toxicology, *Industrial medicine, Exposure, Concentration(Composition), Air pollution, Dust, Urine, Skin(Anatomy), Ingestion(Biology), Production, Consumers, Assessments, Prediction, Manufacturing, Humans, Formulations, Nitrogen organic compounds, *Occupational safety and health, Product safety, *Toxic substances, Air sampling, *Acetic acid/nitrilo-tri.

PB-297 801/3 PC **A21**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Study of the Nature of Ozone, Oxides of Nitrogen, and Nonmethane Hydrocarbons in Tulsa, Oklahoma. Volume II. Data Tabulation
Research Triangle Inst., Research Triangle Park, NC
W. C. Eaton, and F. E. Dimmock Apr 79, 479p EPA/540/4-79/008B
Contract EPA-68-02-2808

This volume contains tabulated ambient air quality and meteorological data resulting from surface and airborne measurements made in Tulsa, Oklahoma during July, August and September 1977. Also included are figures which illustrate the monitoring network and aircraft flight tracks followed during the airborne measurements program.

Keywords: *Ozone, *Nitrogen oxides, *Hydrocarbons, *Air pollution, Tables(Data), Aerial surveys, Oklahoma, *Tulsa(Oklahoma), *Air quality.

PB-298 841/8 PC **A99**/MF **A01**
Consumer Product Safety Commission, Washington, DC.
Proceedings of the Workshop on Alternatives for Cadmium Electroplating in Metal Finishing Held at National Bureau of Standards, Gaithersburg, Maryland on October 4-6, 1977
Environmental Protection Agency, Washington, DC Office of Toxic Substances.
Elbert Dage, Edward Dyckman, William Isler, and Fielding Ogburn. Mar 79, 634p Rept no EPA/560/2-79/003
Sponsored in part by Consumer Product Safety Commission, Washington, DC., Department of Commerce, Washington, DC., Department of Defense, Washington, DC., and Department of Health, Education, and Welfare, Washington, DC.

The publication compiles the proceedings of the Workshop on Alternatives for Cadmium Electroplating in Metal Finishing held October 4-6, 1977 which was jointly sponsored by seven Federal agencies. The workshop was prompted by the concerns of government agencies for the potential environmental damage resulting from current cadmium electroplating practices and the high rate of government use of electrodeposited cadmium. The workshop examined techniques and alternatives to minimize the environmental losses of cadmium from electroplating by (a) applying cadmium by mechanisms that reduce the loss of cadmium during plating and (b) developing suitable and cost-effective alternative materials, methods, and coatings. The workshop included presentations on the Federal and industrial concerns for the commercial significance, environmental effects, and health effects of cadmium. Panel discussions reviewed the topics 'Are specifications and standards barriers to change' and 'How essential is electrodeposited cadmium'.

Keywords: *Metal finishing, *Meetings, Electroplating, Substitutes, Plating, Cadmium, Zinc, Tin, Aluminum, Water pollution control, Waste treatment, Protective coatings.

PB-300 846/3 PC **A09**/MF **A01**
National Bureau of Standards, Washington, DC.
An Evaluation Design Concept for Regulatory Reform: The Waiver of Efficacy Data Final rept.
Little (Arthur D.), Inc., Cambridge, MA.
Helen D Ojha, Thomas V. Renda, Joan E Harrison, and Joanne H. Perwak. May 79, 177p NBS/GCR/ETIP-79/71
Contract NBS-7-35829, EPA-68-01-4788

The report presents an evaluation design concept aimed at supporting the Office of Pesticide Programs of the U.S. Environmental Protection Agency in implementing one of its recently adopted regulatory reform efforts--the efficacy data waiver. It documents the policy and administrative settings as well as the evaluation problem associated with the waiver and its implementation. This report also marks the beginning of an experiment evaluation design phase of a larger joint project between EPA and the Experimental Technology Incentives Program of the National Bureau of Standards Center for Field Methods The whole project is aimed at improving pesticide regulation so as to improve the environment for technological innovation. The purpose of this project, as an administrative experiment, has been to develop and evaluate a change in the policy or process of pesticide regulation which could improve the environment for technological innovation. It has proceeded through several stages involving background investigations of pesticide regulations, effects on industry, stakeholders' views, and administrative and regulatory processes. At the present stage, the project is focused on documenting an evaluation design concept which can be used in subsequent phases by OPP to evaluate the efficacy data waiver policy implementation.

Keywords: *Pesticides, *Regulations, *Technology innovation, Government policies, Evaluation, Project management, National government, Effectiveness, Pest control, Legislation, Consumer affairs, Public health, *Environmental Protection Agency, Environment management, Waivers, Registration

PB-301 342/2 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances
Organic Solvent Use Study Final rept.
Radian Corp , Austin, TX
B B. Lee, G. E. Wilkins, and E. M Nichols 1 Oct 79, 245p EPA/560/12-79/002
Contract EPA-68-03-2776

The purpose of this study was to collect informaton about 34 large volume industrial organic solvents and to organize the information in a useful manner. Production, consumption, use, exposure and toxicological data collected were used to categorize and rank the solvents Exposure and inhalation toxicity data were analyzed to provide indicators of solvents posing the greatest risk The study concluded that twelve of the solvents studied may pose a potential risk. Further study of these solvents was recommended. The study also recommended that information regarding dermal absorption of potentially toxic chemicals be found in the literature or generated in the laboratory. Additionally, the study recommended that the Office of Toxic Substances consider a pilot program to assess the utility of future in-depth searches of the open literature. The study also recommended that Threshold Limit Values (TLV's) be established for solvents not already assigned TLV'S Each solvent in the study was grouped according to use and basic chemical structure. Information about each solvent was listed in a series of 39 use category tables and 16 chemical structural category tables. Solvents were ranked according to total annual production and consumption, annual consumption as a solvent, inhalation and ingestion toxicity, and exposure potential

Keywords: *Organic solvents, *Toxicology, Utilization, Manufacturing, Consumption, Toxicity, Exposure, Ranking, Molecular structure, Comparison, Public health, Tables(Data), Inhalation, *Toxic substances, Threshold limit values.

PB-301 366/1 PC **A14**/MF **A01**
EPA Chemical Activities Status Report, First Edition
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Eleanor T. Merrick, Helen Ketcham, Lawrence J. Murphy, Jr, and Kathryn Slike. Apr 79, 319p Rept no. EPA/560/13-79/003

This Report is organized into four sections: (1) Alphabetized Chemical Name Reference Listing (an index of names used for chemicals included in the text); (2) EPA Chemical Activities Report (arranged sequentially by CAS Registry Number); (3) Chemical Name Synonym List (showing all synonyms for chemicals in the text, and arranged by CAS Registry Number); (4) Proposed Hazardous Waste Guidelines and Regulations (incorporating many items not assigned CAS Registry Numbers).

Keywords· *Chemical compound, Water pollution, Air pollution, Solid wastes, Radioactive contaminants, Potable water, Pesticides, *Toxic substances, *Hazardous materials, Listings.

PB-301 368/7 PC **A04**/MF **A01**
Report on the Progress of Regulations to Protect Stratospheric Ozone Annual rept. 1978-79
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Ferial S. Bishop. Aug 79, 57p Rept no. EPA/560/12-79/003

This report reviews the progress made by EPA from March 1978 to August 1979 in regulating ozone depleting substances In March 1978 EPA along with Food and Drug Administration (FDA) issued final rules prohibiting the manufacturing and processing of chlorofluorocarbons (CFCs) for nonessential aerosol propellant uses. EPA continues its investigation of nonaerosol and miscellaneous CFC uses, including use as refrigerants, foam blowing agents, cleaning agents in the electronic and metal industries and as solvents. The EPA study includes several regulatory strategies to reduce CFC emissions, namely, (1) direct regulation, (2) economic incentives and (3) a conservation program. Because CFC emissions in any country may have adverse effects globally, the reduction of CFC emissions is an international concern. EPA is developing programs to investigate other substances or chemicals that may deplete the stratospheric ozone In implementing the Clean Air Act and deciding whether and to what extent further regulation is necessary, EPA is continuing its studies of current developments in ozone processes, of adverse health and environmental consequences of ozone depletion, of technological capability to reduce emissions from major sources, and of the cost of achieving control

Keywords *Air pollution, *Ozone, *Regulations, *Stratosphere, Sources, Aerosols, Chlorine organic compounds, Assessments, State government.

PB-301 384/4 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Atmospheric Reaction Products of Organic Compounds Final rept.
SRI International, Menlo Park, CA.
Dale G. Hendry, and Richard A. Kenley. Jun 79, 90p EPA/560/12-79/001
Contract EPA-68-01-5123

A procedure has been developed to predict the products from reaction of compounds in the atmosphere The procedure is designed to be used in unreasonable-risk evaluations that include assessing new chemials for persistence and exposure in the environment In this procedure, the relative importance of the three dominant reaction pathways--photolysis, reaction with OH radical, and reaction with ozone--are first determined for each compound. Then the products from each pathway that play a major role for that compound are estimated using the techniques outlined in the methods. The methods are applicable to a wide variety of compounds, however, as the structure of the compounds differ from the structures on which the procedures were based, the conclusions become tentative It is belived, however, that this will be a minor fraction of the cases to which it is applied

Keywords *Organic compounds, *Air pollution, Photolysis, Photochemical reactions, Ozone, Reaction kinet-

ics, Chemical bonds, *Atmospheric chemistry, Hydroxy radicals, Path of pollutants.

PB80-101637 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Toxicity of Organic Chemicals to Embryo-Larval Stages of Fish Final rept. Oct 76-Feb 79
Thomas Hunt Morgan School of Biological Sciences, Lexington, MA.
Wesley J. Birge, Jeffrey A. Black, and Donald M. Bruser. Jun 79, 72p EPA/560/11-79/007
Contract EPA-68-01-4321

A continuous flow procedure was developed for evaluating effects of insoluble and volatile organics on embryo-larval stages of fish. Test compounds were selected for different combinations of solubility and volatility and included aniline, atrazine, chlorobenzene, chloroform, 2,4-dichlorophenol, 2,4-dichlorophenoxyacetic acid, dioctyl phthalate, malathion, trisodium nitrilotriacetic acid, phenol, and polychlorinated biphenyl (Capacitor 21). A closed system devoid of standing air space greatly reduced volatility as a test variable. Mechanical homogenization proved highly effective in suspending hydrophobic compounds in influent water. Continuous agitation in the test chamber and regulation of detention time further precluded the need for carrier solvents. Test results indicated good reproducibility of exposure concentrations. The most toxic compounds included Capacitor 21, chlorobenzene, 2,4-dichlorophenol, and phenol Chlorobenzene at 90 micrograms/l produced complete lethality of trout eggs. The three other compounds gave log profit LC50's of 2 to 70 micrograms/l when trout stages were exposed in hard water, and LC1's were 0.3, 1.0, and 1.7 micrograms/l for phenol, Capacitor 21, and 2,4-dichlorophenol. Chloroform also was highly toxic to trout stages and LC1's ranged from 4.9 to 6.2 micrograms/l. When bass and goldfish stages were exposed to chlorobenzene, LC1's ranged from 8 to 33 micrograms/l. Compared to other species, trout developmental stages generally exhibited the greatest sensitivity. The LC1 values determined in embryo-larval tests compared closely with maximum acceptable toxicant concentrations developed in life-cycle studies. Most compounds produced appreciable frequencies of teratic larvae.

Keywords: *Toxicology, *Fishes, Bioassary, Larvae, Organic compounds, Physiological effects, Solubility, Volatility, Exposure, Concentration(Composition), Lethal dosage, Embryos, Solvents, *Toxic substances, *Water pollution effects(Animals), Teratogenesis.

PB80-102262 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Methodology for Estimating Direct Exposure to New Chemical Substances Final rept. Feb 79-Jun 79
IIT Research Inst., Chicago, IL.
David Becker, Edward Fochtman, Allan Gray, and Thomas Jacobius. Jul 79, 140p* IITRI-C6390-C08, EPA/560/13-79/008
Contract EPA-68-02-2617

The Toxic Substances Control Act (TSCA) requires each person who intends to manufacture a new chemical to submit a Premanufacturing Notice to the EPA at least 90 days before manufacture commences. The work reported was directed toward the development of a procedure for the orderly and rapid prediction of direct human exposure which might result from such manufacture. The procedure developed involves the following steps: (1) prediction of unavailable physical and chemical properties from analogs and general chemical knowledge, (2) prediction of production volume based upon company size, current markets and total market volume, (3) prediction of chemical operator exposure and exposures in the vicinity of the plant based upon fugitive emissions and (4) prediction of consumer exposure based upon active use and passive use of the chemical. The procedure will permit rapid screening however further refinements will enhance the usefulness.

Keywords: Methodology, Estimating, Exposure, Predictions, Humans, Physical properties, Chemical properties, Industrial medicine, Consumers, Assessments, Risk, *Toxic substances, Toxic Substances Control Act, Public Law 94-469, *Occupational safety and health.

PB80-109101 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Test Methods for Definition of Effects of Toxic Substances on Behavior and Neuromotor Function Final rept.
Southwest Research Inst., San Antonio, TX
I. Geller, W. C. Stebbins, and M. J. Wayner. 1979, 219p* ISBN-O-916086-02-2, EPA/560/11-79/010
Contract EPA-68-01-4870
Proceedings of the workshop held at San Antonio, Texas, April 1-4, 1979. Prepared in cooperation with Michigan Univ., Ann Arbor, and Syracuse Univ., NY. Library of Congress catalog card no. 79-53843. Supplement to Neurobehavioral Toxicology, Volume 1, Supplement 1, 1979.

Partial Contents:
- Use of discrimination behavior for the evaluation of toxicants;
- Effects of toxicants on visual systems;
- Trialwise tracking method for measuring drug-affected sensory threshold changes in animals;
- Behavioral assessment of risk-taking and psychophysical functions in the baboon;
- Performance and acquisition of serial position sequences by pigeons as measures of behavioral toxicity;
- Effects of solvents on schedule-controlled behavior;
- Some problems in interpreting the behavioral effects of lead and methylmercury;
- Behavioral epidemiology of food additives,
- Quantitative analysis of rat behavior patterns in a residential maze;
- Comparison of neurobehavioral effects induced by various experimental models of ataxia in the rat,
- Morphological studies of toxic distal axonopathy;
- Physiological and neurobehavioral alterations during development in lead exposed rats.

Keywords. *Behavior, *Tests, *Toxicology, *Meetings, Physiological effects, Muscles, Nervous system, Morphology, Assaying, Drugs, Psychological tests, Solvents, Lead(Metal), Visual perception, *Toxic substances, *Neuromotor, Cellular responses, Teratology, Mercury methyl, Somatosensory cortex

PB80-109119 PC **A12**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Ethylene Glycol, Propylene Glycols and Butylene Glycols Final rept.
Franklin Research Center, Philadelphia, PA. Science Information Services Organization.
Lynne M. Miller May 79, 270p* EPA/560/11-79/006
Contract EPA-68-01-3893

This report reviews aspects of production, use, environmental exposure and biological effects of ethylene glycol, two isomers of propylene glycol (1,2- and 1,3-propanediol) and four isomers of butylene glycol (1,3-, 1,4-, 2,3-, and 1,2- butanediol) Annual production of ethylene glycol is about 3.7 billion pounds for use primarily in antifreeze and polyester fiber About 0 5 billion pounds of 1,2-propanediol are produced per year for use in polyester resins, food, pharmaceuticals, and cellophane. Annual domestic demand for 1,4-butanediol is about 0.2 billion pounds for use in the production of tetra-hydrofuran and acetylenic chemicals. The other title glycols are of less importance commercially The major source of environmental contamination by ethylene glycol and 1,2-propanediol is likely from the disposal of spent antifreeze and de-icing fluids However, limited monitoring data make it difficult to adequately assess environmental exposure to the glycols. The glycols are capable of being degraded by a variety of acclimated and unacclimated soil, water, and sewage microorganisms. In humans, ethylene glycol intoxication, usually as a result of accidental ingestion of antifreeze, may result in nausea, hypertension, tachycardia, cardiopulmonary failure, renal impairment, coma and death. 1,2-Propanediol is a GRAS food additive of low toxicity. 1,3-Butanediol has been studied as a source of dietary energy. Few studies are available on 1,2-, 2,3- and 1,4-butanediol or on 1,3-propanediol

Keywords: *Environmental surveys, *Ethylene glycol, *Chemical industry, *Toxicology, Air pollution, Animals, Public health, Oxygen organic compounds, Antifreezes, Antiicing additives, Isomers, Humans, Toxicity, Degradation, Industrial wastes, Sources, Utilization, Chemical properties, Physical properties, Manufacturing, Marketing, Metabolism, Dosage, Water pollution, Regulations, Standards, Exposure, Biological effects, *Propanediol, *Butanediol, *Toxic substances, Path of pollutants, Liquid wastes.

PB80-109168 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Analytical Protocols for Making a Preliminary Assessment of Halogenated Organic Compounds in Man and Environmental Media
Research Triangle Inst., Research Triangle Park, NC
Edo D. Pellizzari, Mitchell D Erickson, and R A. Zweidinger. Jul 79, 319 EPA/560/13-79/010
Contract EPA-68-01-4731

This comprehensive report presents the methods which will be used in Phase II of this program Analytical methods for halogenated hydrocarbons in air, water, soil, breath, blood, urine, and tissue have been validated. A radioimmunoassay procedure for carcinoembryonic antigen (CEA) was validated. The data collection instruments (participant consent form, questionnaire, etc.) are also presented here.

Keywords: *Halogen organic compounds, *Environmental surveys, *Chemical analysis, Air pollution, Water pollution, Soil analysis, Blood analysis, Urine, Tissues(Biology), Bioassay, Public health, Sampling, Laboratory equipment, Assessments, Analytical methods, Protocols, Radioimmunoassay.

PB80-110323 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Structure Reactivity Correlations for Environmental Reactions Final rept 1 Apr-15 Aug 79
SRI International, Menlo Park, CA.
Theodore Mill. Sep 79, 66p EPA/560/11-79/012
Contract EPA-68-01-4109

Many of the key rate constants needed to predict rates of transformation and transport of organic chemicals in water and air can be estimated from structure-reactivity correlations (SRC) with reasonable accuracy These rate constants can be coupled with environmental parameters such as pH or oxidant concentrations to provide estimates of rates of these processes under a variety of environmental conditions SRC needed for zero-level testing are most abundant for hydrolysis, oxidation and sorption, and relatively scarce for photolysis and volatilization Generalized SRC are readily used by non-expert, technically trained personnel whereas application of detailed SRC or linear free energy relationships (LFER) require expert knowledge in mechanistic chemical kinetics. An example is shown of the use of SRC methodology to estimate rate and equilibrium constants for a specific chemical.

Keywords: *Air pollution, *Water pollution, *Reaction kinetics, *Transport properties, Chemical equilibrium, pH, Oxidizers, Hydrolysis, Photochemistry, Sorption, Vaporizing, Soils, Atmospheric motion, Chemical reactions, *Path of pollutants, Atmospheric chemistry, *Structure reactivity correlations, Linear free energy relationships

PB80-111024 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
An Analysis of the EPA Chemical Use Classification System and the OTS Exposure Estimation Methodology Final rept.
SRI International, Menlo Park, CA
Jeffrey Allport, Sharon Casey, Janet Hardy, Buford Holt, and Kirtland McCaleb. Jun 79, 181p EPA/560/13-79/007
Contract EPA-68-01-4109

This report contains separate evaluations of the EPA Chemical Use Classification System and the OTS Exposure Estimation Methodology developed by EPA/OTS and another contractor The Use Classification System describes uses of chemicals in terms of two components, function and application. The results of a three-part study of the systems led to the conclusion that the system provides neither adequate application terms nor satisfactory instructions to assure that the available terms will be used in essentially the same way by the various users The Exposure Estimation Methodology was analyzed by statistical and systems analysis methods and found to be seriously lacking

The overall scores produced by this scoring system are probably not usefully related to exposures which would occur due to a particular chemical use.

Keywords: *Industrial wastes, *Environmental surveys, *Chemical compounds, Assessments, Revisions, Methodology, Exposure, Tables(Data), Evaluation, Utilization, *Chemical Use Classification System.

PB80-111073 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Acute Toxicity Testing Criteria for New Chemical Substances Technical rept. Apr-Jul 79
Enviro Control, Inc., Rockville, MD.
Mary Janet Normandy, and Robert Reynolds. Jul 79, 44p* EPA/560/13-79/009

The report addresses the rationale, considerations, and limitations of acute toxicity testing. General procedures are described for acute tests including lethality studies in oral, dermal, and inhalation toxicity, and irritation studies in dermal and eye toxicity, phototoxicity and skin sensitization. Recommendations are given for the acute toxicity tests which may be used to evaluate the risks associated with the manufacture and processing of chemical substances. Suggested minimum protocols are offered including the choice of test animals, dosage levels, laboratory practices, animal diets, and necropsy requirements. A method is suggested for interpreting the results of these tests and extrapolating to some guidelines for a safety factor in human exposure.

Keywords: *Toxicology, *Chemical compounds, Bioassay, Data collection, Tests, Criteria, Procedures, Lethal dosage, Mortality, Inhalation, Ingestion(Biology), Recommendations, Risk, Laboratory animals, Experimental data, Skin(Anatomy), Eye(Anatomy), Exposure, *Toxic substances.

PB80-112170 PC **A20**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances.
Formulation of a Preliminary Assessment of Halogenated Organic Compounds in Man and Environmental Media Annual rept. Nov 76-Dec 78
Research Triangle Inst., Research Triangle Park, NC.
Edo D Pellizzari, Mitchell D. Erickson, and R. A. Zweidinger. Jul 79, 469p* EPA/560/13-79/006
Contract EPA-68-01-4731

The comprehensive report covers the information which has been gathered on this program during the past year. A model is developed for making a comparative assessment of halogenated organics in man and environmental media. This comprehensive report punctuates the first phase of the program.

Keywords: *Halohydrocarbons, *Toxicology, Environment, Measurement, Occurrence, Biochemistry, Demography, Meteorology, Humans, Air, Water, Food, Tissues(Biology), Cancer, Mutagenesis, Carcinogenesis, *Toxic substances.

PB80-119357 PC **A03**/MF **A01**
Federal Register Citations Pertaining to the Regulation of Asbestos In-house rept.
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Joseph J. Breen, and Elizabeth F. Bryan. Apr 79, 41p* Rept no. EPA/560/6-79/007

Federal regulations governing the production and use of asbestos and asbestos-containing materials continue to focus their attention on the adverse health and environmental effects of asbestos. To obtain an appreciation of the scope of the current regulatory status of asbestos, a compilation was made of Federal Register citations pertaining to the regulation of asbestos by CPSC, DOT, EPA, FDA, MESA, and OSHA. An abstract of each citation was prepared and filed chronologically by statutory authority within the individual agencies The resulting document, as presented here, provides a condensed source of information relating to the development of the various standards presently enforced by the agencies as well as proposals for new or modified regulations.

Keywords. *Asbestos, *Regulations, Production, Federal government, Abstracts, Water pollution, Coal mines, Safety, Metals, Food, Drugs, Cosmetics, Hazardous materials, Transportation, Air pollution, Environmental health, *Toxic substances, Government agencies, Occupational safety and health, Consumer products, Product safety.

PB80-120660 PC **E09**/MF **E01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Effect of Phosphorus Control Options on Lake Water Quality Final rept.
Tetra Tech, Inc., Lafayette, CA.
Marc W. Lorenzen. Sep 79, 280p TETRAT-TC-3930, EPA-560/11-79-011
Contract EPA-68-01-3961

Data collected as part of the National Eutrophication Survey (NES) were used to test the consequences of eight different phosphorus control options. The control options included detergent limitations, municipal treatment plant control, nonpoint source control and combinations of tertiary sewage treatment and nonpoint source control. The results indicated that although site specific studies should be conducted for any given lake, as a general rule detergent phosphorus control would be of marginal value. A combination of municipal control and a sixty percent reduction in nonpoint sources would reduce average lake phosphorus concentration from 0.084 mg/l to 0.029 mg/l. It was found that nonpoint source control was more effective in increasing the number of lakes with less than 0.025 mg/l of total phosphorus than was an equivalent level of point source control.

Keywords: *Phosphorus, *Water pollution control, *Lakes, Detergents, Sewage treatment, Municipalities, Chlorophylls, Concentration(Composition), Reduction, Policies, United States, *Eutrophication, Nonpoint sources, Tertiary treatment.

PB80-123698 PC **E10**/MF **E01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Effect of Phosphorus Control Options on Lake Water Quality Final rept.
Tetra Tech, Inc , Lafayette, CA.
Marc W. Lorenzen. Sep 79, 281p TETRAT-TC-3930, EPA/560/11-79/011
Contract EPA-68-01-3961
Includes fourteen sheets of 20X reduction microfiche.

Data collected as part of the National Eutrophication Survey (NES) were used to test the consequences of eight different phosphorus control options. The control options included detergent limitations, municipal treatment plant control, nonpoint source control and combinations of tertiary sewage treatment and nonpoint source control. The results indicated that although site specific studies should be conducted for any given lake, as a general rule detergent phosphorus control would be of marginal value Eighty percent reductions in municipal treatment plant discharges would reduce average lake phosphorus concentration from 0.084 mg/l to 0.059 mg/l. It was found that nonpoint source control was more effective in increasing the number of lakes with less than 0.025 mg/l of total phosphorus than was an equivalent level of point source control.

Keywords: *Phosphorus, *Water pollution control, *Lakes, Surveys, Reduction, Detergents, Sewage treatment, Effectiveness, Chlorophylls, Concentration(Composition), Graphs(Charts), Turbidity, Mathematical models, Evaluation, Correlation techniques, National Eutrophication Survey, Eutrophication, Nonpoint sources, Tertiary treatment, Organic loading.

PB80-128150 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Sampling and Analysis of Selected Toxic Substances. Task I: Acrylamide Final rept. Sep 78-Sep 79
Midwest Research Inst., Kansas City, MO.
John E Going, and Ken Thomas. Dec 79, 39p EPA-560/13-79-013
Contract EPA-68-01-5017

A sampling and analysis program was conducted to determine the level of residual acrylamide monomer in selected polymers and to determine if the use of those polymers in water treatment leads to measurable levels of acrylamide in the water Methods for the determination of acrylamide in water and in polyacrylamide were validated. Water samples were reduced in volume by evaporation and analyzed by GC using a nitrogen selective thermionic detector. The detection limit was determined to be about 1 microgram/liter. Polyacrylamide samples were extracted with 80% methanol/20% pH 3.75 water for 3 hr. The extracts were analyzed by HPLC with a UV detector set at 200 nm. The monomer limit of detection was about 0.5 microgram/g. One potable water treatment plant was sampled at pre- and post-flocculation points. MRI tap water was analyzed for comparison. No acrylamide above the detection limit was found in any of the samples. Thirty-two polymers were analyzed for residual acrylamide. When not obscured by interferences, the observed acrylamide ranged from 0.5 to 600 microgram/g.

Keywords: *Water treatment, *Acrylamide copolymers, Water pollution control, Sampling, Water analysis, Sites, Flocculation, Potable water, Coagulants, Extraction, Concentration(Composition), *Water pollution detection, *Water pollution sampling.

PB80-129166 PC **A02**/MF **A01**
Environmental Protection Agency, Washinton, DC. Office of Toxic Substances.
Residual Monomers in Acrylic and Modacrylic Fibers and Fabrics Final rept.
Southern Research Inst., Birmingham, AL.
Joe M. Finkel, Ruby H. James, and Herbert C. Miller. Jul 79, 14p SORI-EAS-79-504, EPA-560/11-80-003
Contract EPA-68-01-4746

The report deals with the detection and quantitation of acrylonitrile, vinylidene chloride, and vinyl bromide, which are used as monomers in the production of acrylic and modacrylic fibers. The amounts of monomers evolved from samples of carpets, fibers, and fabrics at 50C and 50% relative humidity were determined by gas chromatography with a flame ionization detector and by direct insertion probe mass spectroscopy. The results of the gas chromatographic studies indicate that detectable amounts of residual acrylonitrile, vinylidene chloride, and vinyl bromide were not released from the carpet, fiber, and fiber samples under the conditions selected for analysis. Direct insertion mass spectrometry indicated that methyl bromide was evolved from all of the fiber samples and from two of the three carpet samples. From the remaining carpet sample, three halogenated compounds--dibromo-dichloroethanol, tetrabromoethanol, and tribromochloroethanol--were identified. Traces of fatty acids were found in all of the samples, and sulfur dioxide was evolved from all of the samples except the fabric sample.

Keywords: *Acrylic resins, *Chemical analysis, *Textile industry, Acrylonitrile, Samples, Vinylidene chloride resins, Fabrics, Gas chromatography, Mass spectroscopy, Adsorption, Desorption, Industrial hygiene, *Monomers, *Indoor air pollution, *Air pollution detection, Flame ionization, Ethylene/bromo.

PB80-137870 PC **A06**/MF **A01**
Directory of Federal Coordinative Groups for Toxic Substances Toxics Integration Information series
Environmental Protection Agency, Washington, DC. Office of Toxic Sustances.
Lawrence J Murphy, and Kathryn A. Slike Aug 79, 122p* Rept no EPA-560/13-79-004

This directory was compiled to provide a ready reference for Office of Toxic Substances (OTS) and the Environmental Protection Agency (EPA) employees about Federal toxic chemical coordinating groups; it should also facilitate further communication between agencies and the groups themselves. Included are committees, task forces, and other groups that perform coordinative functions in conjunction with Federal toxics control and testing agencies. There are Federal, State, non-profit and private sector members on these groups.

Keywords *Toxicology, *Directories, Personnel, Organizations, National government, State government, Research projects, Listings.

PB80-144892 PC **A99**/MF **A01**
Pesticide Data Submitters File Rept. for Jan 70-Dec 79.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.

Apr 80, 891p*

List of pesticide data submitters who wish compensation under 3C1D of the Federal Insecticide, Fungicide and Rodenticide Act. A cumulation from January, 1970 to December, 1979, the document is in two parts. The first is an alphabetical listing by chemical name which refers to the chemical code number, the second part is in chemical code order numerically and provides the data.

Keywords: *Pesticides, *Data sources, Chemical industry, Indexes(Documentation), Chemical compounds, Coding, Listings.

PB80-147499 PC **A03**/MF **A01**
The Toxic Substances Control Act, Public Law 94-469. Reporting for the Chemical Substances Inventory: Instructions for Reporting for the Revised Inventory
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Jun 79, 46p*

The Toxic Substances Control Act's (TSCA) Initial Inventory of Chemical Substances, published on June 1979, includes chemical substances reported to EPA by their manufacturers and importers in accordance with the TSCA inventory reporting regulations During the 210-day reporting period that begins June 1, 1979, processors and users of chemical substances for commercial purposes and importers of chemical substances as part of mixtures or articles for commercial purposes may report substances that were not included on the Initial Inventory for inclusion on a Revised Inventory, which will be published sometime in 1980 This booklet provides reporting instructions for the Revised Inventory.

Keywords: *Toxicology, Reporting, Law(Jurisprudence), Legislation, Inventories, Identifying, Confidentiality, *Toxic Substances Control Act, Public Law 94-469.

PB80-162217 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Arsenic: A Preliminary Materials Balance
Lowenbach and Schlesinger Associates, Inc., McLean, VA.
William A. Lowenbach, and Joyce S. Schlesinger. Mar 79, 65p* EPA-560/6-79-005

Existing data on the natural and anthropogenic sources of arsenic emissions are compiled and presented in a fully annotated tabular format. Arsenic distribution in the environment is graphically displayed in terms of air, land, and water emissions. Fossil fuel consumption for energy production, arsenic production and commercial use, and primary copper smelting are identified as the three major sources of environmental emissions. Data gaps are identified and recommendations for further study outlined

Keywords· *Arsenic, *Environmental surveys, Sources, Air pollution, Water pollution, Tables(Data), Fuel consumption, Fossil fuels, Chemical industry, Smelting, Combustion products, Industrial wastes, Mining, Refining, Iron and steel industry, *Emission factors, Copper smelters, Land pollution.

PB80-167265 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances
Materials Balance for 2,4-Diaminotoluene. Level I - Preliminary Final rept.
JRB Associates, Inc., McLean, VA
Pauline Johnston, Ron Burger, Virginia Hodge, Karen Walker, and Karen Slimak 22 Feb 80, 74p* 2-800-03-379-24, EPA-560/13-79-016
Contract EPA-68-01-5793

The purpose of the Level I materials balance for 2,4-Diaminotoluene is to evaluate the sources of release of 2,4-DAT to the environment. 2,4-Diaminotoluene is produced commercially for use in the manufacture of 2,4-toluene diisocyanate and dyes. 2,4-Toluene diisocyanate (2,4-TDI) production is estimated to account for 99% of 2,4-DAT use. 2,4-Toluene diisocyanate is commercially manufactured for use in the production of urethane products, mainly polyurethane foams. 2,4-Diaminotoluene is produced directly through its manufacture and indirectly through the hydrolysis of 2,4-TDI and polyurethane foams, the metabolism of 2,4-dinitrotoluene, and the degradation of dyes. Small quantities of 2,4-DAT are imported into the U.S directly and as a contaminant in 2,4-DAT-containing dyes. The major sources of release of 2,4-DAT to the environment are 2,4-DAT manufacture and 2,4-TDI hydrolysis. Minor sources of release are TDI production, the use of polyurethane foams, dye production and use, the import of 2,4-DAT and the export of TDI. Releases of 2,4-DAT appear to be greatest in areas of West Virginia and Louisiana. Of the 196,000 kkg of 2,4-DAT estimated to have been produced in 1977, greater than 10,600 kkg (5.4%) is estimated to have been released to the environment during that year.

Keywords: *Material balance, *Environmental surveys, Toluenes, Manufacturing, Urethanes, Polyurethane resins, Sources, Nitrogen organic compounds, Foam, *Toluene/diamino, Isocyanic acid/(methylphenylene-ester).

PB80-173651 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Materials Balance for Chlorobenzenes. Level 1 - Preliminary Final rept.
JRB Associates, Inc., McLean, VA
Pauline Johnston, Virginia Hodge, and Karen Slimak. 31 Dec 79, 103p* 2-800-03-379-11, EPA-560/13-80-001
Contract EPA-68-01-5793

The purpose of the Level I materials balance for chlorobenzenes is to evaluate the sources of release of the various chlorinated benzenes to the environment. The major route of commercial production of chlorinated benzenes is the direct chlorination of benzene with chlorine. Chlorinated benzenes are indirectly produced through the metabolism of pesticides, their production by marsh grass and their production as a byproduct of organic chemical production processes. Chlorinated benzenes are used consumptively in the production of many organic chemicals. These include chloronitrobenzene, diphenyl oxide, DDT, 3,4-dichloroaniline, 2,5-dichlorophenol, pentachloronitrobenzene, rubber intermediates, dyes, pesticides, and aromatic fluorocarbons. In addition, chlorinated benzenes have many nonconsumptive uses, including use as a solvent, pesticide, deodorizer, dielectric fluid, coolant, lubricant, heat transfer medium, and synthetic transformer oil. The major sources of release of chlorinated benzenes to the environment appear to be from their various non-consumptive uses Releases from production and consumptive uses appear to be comparatively minor.

Keywords: *Chlorobenzenes, *Chemical industry, *Environmental surveys, *Material balance, Manufacturing, Pesticides, Sources, Utilization, Benzene/dichloro, Benzene/trichloro, Benzene/tetrachloro, Benzene/pentachloro, Benzene/hexachloro.

PB80-175458 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Sampling and Analysis of Selected Toxic Substances. Task 2: Analysis for Semivolatile Brominated Organics in Fish and Turtles Final rept
Research Triangle Inst., Research Triangle Park, NC
M D. Erickson, K. B. Tomer, J. T Bursey, M A. Moseley, and E D Pellizzari. Feb 80, 72p RTI/1706/02-F, EPA-560/13-80-006
Contract EPA-68-01-5020

Fish and turtle (5 from Arkansas and 3 from Louisiana) caught downstream of the brominated organic chemical industry near El Dorado, AR were extracted, cleaned up, and analyzed by GC/MS for brominated organics using full scan and single ion monitoring electron impact GC/MS and negative ion chemical ionization GC/MS PBBs (C12H4Br6 and C12H3Br7) were identified in one sample and several other brominated compounds were tentatively identified in several samples Due to the high levels of interferences and very low levels of the compounds of interest, further identifications were impossible The compounds were not quantitated, but levels appear to be much less than 1 ppm.

Keywords: *Bromine organic compounds, *Bioassay, *Water analysis, Fishes, Turtles, Gas chromatography, Mass spectroscopy, Monitoring, Samples, Chemical analysis, Sites, *Water pollution effects(Animals), *Water pollution detection, *Water pollution sampling, Polybrominated biphenyls.

PB80-175730 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Materials Balance for Methyl Chloroform. Level II Final rept.
JRB Associates, Inc., McLean, VA.
Timothy McCartin, Le-Tan Phuoc, Terry Shannon, and Kathy Wagner Jan 80, 300p EPA-560/13-80-003
Contract EPA-68-01-5793

A Level II materials balance for methyl chloroform was performed. Using 1978 data, the results of this materials balance included emission factors, the equations required to calculate environmental releases, and multimedia environmental losses for each production process and end use. Assumptions used to calculate the environmental losses were analyzed and an uncertainty was given to each. Recommendations were developed to close data gaps. These recommendations identified monitoring requirements and sites and suggested those end uses for future studies.

Keywords· *Materials balance, *Environmental surveys, Manufacturing, Air pollution, Water pollution, Incinerators, Chlorination, Metal cleaning, Aerosols, Adhesives, Textiles, Cleaners, Paints, Inks, International trade, Ozone, Halogen organic compounds, *Chloroform/methyl, Land pollution, Solid wastes

PB80-176373 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Sampling and Analysis of Selected Toxic Substances. Task 1: Polybrominated Biphenyls in Air and Soil at User Sites Final rept 28 Dec 78-5 Jun 79
Research Triangle Inst., Research Triangle Park, NC.
R. A. Zweidinger, and E. D. Pellizzari. Feb 80, 55p EPA-560/13-80-005
Contract EPA-68-01-5020

Field sampling for air and soil was conducted in the vicinity of two Borg Warner Co. facilities - one in Oxnard, CA and the other near Parkersburg, WV. Polybrominated biphenyls (PBBs) were found in all of the soil samples from Oxnard with the highest levels (36,000 microgram/kg) nearest the facility and the lowest (5 microgram/kg) upwind the greatest distance. No PBBs were found in any of the air samples (<3 ng/cu m). Polybrominated biphenyls were confirmed in seven of the thirteen soil samples from West Virginia (up to 12 microgram/kg) traces detected but not confirmed in three, and no PBBs were detected in the other three. The highest levels were from samples collected in the Ohio River basin especially along the eastern bank No PBBs were confirmed in the air samples (<4 ng/cu m).

Keywords: *Environmental surveys, *Soil analysis, *Gas analysis, Chemical analysis, Sites, Sampling, Concentration(Composition), Bromine organic compounds, Field tests, *Polybrominated biphenyls.

PB80-177132 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Materials Balance 1,2- Dichloroethane. Level I - Preliminary Final rept
JRB Associates, Inc., McLean, VA.
Karen Slimak, Hal Bryson, Kathleen Durrell, Eliot Harrison, and Virginia Hodge. 8 Feb 80, 158p* 2-800-03-379-34, EPA-560/13-80-002
Contract EPA-68-01-5793

The purpose of the Level I materials balance for 1,2 dichloroethane (EDC) is to evaluate the sources of release of EDC to the environment. EDC is produced via direct chlorination and oxychlorination of ethylene. EDC is used consumptively in the production of other chemicals such as vinyl chloride, monomer, perchloroethylene, trichloroethylene, ethyleneamines and vinylidene chloride. EDC is also used in the production of leaded gasoline additives as lead scavenger. Releases of EDC from the production and consumptive uses appear to be the major sources of EDC emissions.

Keywords. *Material balance, *Chloroethanes, *Environmental surveys, Sources, Manufacturing, Production, Chemical industry, Chlorination, Chlorine organic compounds, Air pollution, Water pollution, Design, *Ethane/dichloro, Land pollution

PB80-177314 PC **A06**/MF **A01**
Directory of Federal Coordinating Groups for Toxic Substances, Second Edition Toxics Integration Information series
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Judy Colle, and Kathryn A. Slike. Mar 80, 109p* Rept no. EPA-560/13-80-008

This directory was compiled to provide a ready reference about Federal toxic chemical coordinating groups. Included are committees, task forces, and other groups that perform coordinating functions in conjunction with Federal toxics control and testing agencies.

Keywords: *Toxicology, *Directories, Personnel, Organizations, National government, Pesticides, Asbestos, Hazards, Carcinogens, Research projects, Biphenyl, Cadmium, Listings.

PB80-182660 PC **A12**/MF **A01**
Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Lables. Fourth Edition
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
Charlotte R. Blalock, John A. Shaughnessy, David E. Johnson, and Robert L. Caswell. Dec 79, 256p Rept no. EPA-540/9-77-017

This current edition is a revision and extension of the 3rd edition of December 1975. The main purpose, for reviewers and registrants as before, is the naming of pesticides on label ingredient statements. If both common and chemical names are given an 'Entry' number (accession number), then both are required on the label. Almost all of the listed names are active ingredients; however, some may now be obsolete and others not yet registered.

Keywords: *Pesticides, *Nomenclature, *Chemical compounds, Insecticides, Herbicides, Listings.

PB80-183197 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Epoxides.Final technical rept
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Dennis A. Bogyo, Sheldon S. Lande, William M. Meylan, Philip H. Howard, and Joseph Santodonato. Mar 80, 217p* TR-80-535, EPA-560/11-80-005
Contract EPA-68-01-3920

This report reviews the potential environmental and health hazards associated with the commercial use of selected epoxide compounds. Four commercial compounds are discussed in the report: ethylene oxide - primarily used as a chemical intermediate; propylene oxide - primarily used as a chemical intermediate; butylene oxide-primarily used as a stabilizer for chlorinated solvents; and diepoxybutane - primarily used as a specialty chemical. Data on physical-chemical properties, production methods and quantities, commerical uses and factors affecting environmental contamination, as well as information related to human health and biological effects, are reviewed and evaluated.

Keywords: *Environmental surveys, *Epoxy compounds, Physical properties, Chemical properties, Manufacturing, Public health, Ethylene oxide, Propylene oxide, Utilization, Regulations, Standards, Butylene oxide, Butane/diepoxy, Path of pollutants.

PB80-183288 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Chemicals Identified In Human Biological Media, A Data Base. Volume 1, Part 1. October 1979 Annual rept. no. 1, Sep 78-Sep 79
Oak Ridge National Lab., TN.
M. Virginia Cone, Margaret F Baldauf, Fay M. Martin, and John T. Ensminger. Mar 80, 289p ORNL/EIS-163-VOL-1-PT-1, EPA-560/13-79-011-VOL-1-PT-1
Contract W-7405-eng-26

A comprehensive data base of chemicals identified in human biological media (tissues and body fluids) has been established under the direction of the Environmental Protection Agency's Office of Toxic Substances Survey and Analysis Division. This centralized resource of body-burden information was inspired by the concern of government scientists over continuing reports of toxic chemicals in human tissues and body fluids. Body burden is a reflection of exposures to food, air, and water contaminants, as well as pharmaceuticals. The systematic acquisition of body-burden data will facilitate a more relevant assessment of human exposure to toxic chemicals and xenobiotics than previously possible using environmental contamination levels. Data were obtained primarily from the open literature through manual searches of selected journals Retrospective searching to 1974 is complete and has yielded over 2000 pertinent documents of which approximately 400 have been entered into the data base as of this report. These sources identify over 200 chemicals which have been found in human biological media.

Keywords: *Toxicology, Humans, Tissues(Biology), Body fluids, Residues, Data bases, *Toxic substances, Body burden.

PB80-183296 PC **A99**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances
Chemicals Identified In Human Biological Media, A Data Base. Volume 1, Part 2. October 1979 Annual rept no. 1, Sep 78-Sep 79
Oak Ridge National Lab , TN.
M. Virginia Cone, Margaret F. Baldauf, Fay M Martin, and John T. Ensminger. Mar 80, 815p ORNL/EIS-163-VOL-1-PT-2, EPA-560/13-79-011-VOL-1-PT-2
Contract W-7405-eng-26

Contents:
User's guide;
Abbreviations for analytical methods,
References for data base;
References for physical and chemical data;
Appendix A. Journals searched;
Appendix B. Chemicals in data base,
Appendix C. Cross-referenced chemical lists;
Appendix D. Tissues and body fluids in data base.

Keywords: *Toxicology, Humans, Tissues(Biology), Body fluids, Residues, Data bases, *Toxic substances, Body burden.

PB80-185663 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Materials Balance for Benzene. Level I - Preliminary Final rept.
JRB Associates, Inc , McLean, VA.
Robert L. Hall, Carlos Buitrago, Frank Montecalvo, Tom Yatsko, and Karen Slimak. 9 May 80, 161p* 2-800-03-379-51, EPA-560/13-80-014
Contract EPA-68-01-5793

A Level I materials balance was performed on benzene. Data are reported for benzene production from petroleum by four processes (catalytic reformation, toluene dealkylation, toluene disproportionation, and isolation from pyrolysis gasoline) and for production from coal during coking. Amounts of benzene consumed for the synthesis of nine direct derivatives (ethylbenzene, cumene, cyclohexane, nitrobenzene, maleic anhydride, mono- and dichlorobenzenes, alkylbenzenes, anthraquinone, and biphenyl) and exports are presented. These uses constitute approximately 93 percent of total benzene usage Non-consumptive uses (solvents and inventory changes) are also tabulated. Emissions due to each of the above processes are reported or estimated where possible. In addition, emissions due to indirect production (refinery operation, coke oven operations, oil spills, non-ferrous metals manufacturing, ore mining, wood processing, coal mining, and two phases of the textile industry) are presented Production of benzene as a component of gasoline and emissions due to gasoline use are estimated. Locations of sites with high densities of benzene producers and users are tabulated: the major 'hotspots' are Houston/Galveston, Texas; Corpus Christi, Texas, Beaumont/Port Arthur, Texas; and Puerto Rico. The uncertainty ranges of all numbers used or derived in this report are evaluated and general recommendations are presented. The results of the report are summarized in two figures: the Environmental Flow Diagram for benzene in Appendix A, and the Materials Balance Diagram in the Executive Summary.

Keywords: *Benzene, *Petroleum products, *Coal, *Material balance, Manufcturing, International trade, Synthesis(Chemistry), Consumption, Fuels, Gasoline, Design, Process charting, Catalysis, Toluene, Pyrolysis, Chemical reactions, Utilization, Emission factors.

PB80-185960 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Materials Balance for Chlorophenols. Level I - Preliminary Final rept.
JRB Associates, Inc., McLean, VA.
Robert L. Hall, Phuoc Le, Tien Nguyen, Michael Katz, and Karen Slimak. 4 Feb 80, 123p* 2-800-03-379-14, EPA-560/13-80-004
Contract EPA-68-01-5793

This report presents a Level I materials balance study on 2-chlorophenol, 4-chlorophenol, 2,4-dichlorophenol, 2,4,5-trichlorophenol, 2,3,4,6-tetrachlorophenol and pentachlorophenol. Areas of major interest were production quantities, producers, consumption amounts and emissions to air, land, and water related to the above sources. The estimated production quantities in 1976 of the compounds studied were as follows: 2-chlorophenol, 9000 kkg; 4-chlorophenol, 9800 kkg, 2,4-dichlorophenol, 39,000 kkg; 2,4,5-trichlorophenol, 6300 kkg; 2,3,4,6-tetrachlorophenol, 1,800 kkg; and pentachlorophenol, 22,000 kkg. Waterborne emission was considered to be the main pathway of chlorophenols release to the environment because of the physical characteristics of these chemicals. The estimated quantities of aquatic emissions associated with the chlorophenols studied were as follows: 2-chlorophenol, 430 kkg; 4-chlorophenol, 650 kkg; 2,4-dichlorophenol, 870 kkg; 2,4,5-trichlorophenol, 105 kkg, 2,3,4,6-tetrachlorophenol, 67 - 160 kkg; pentachlorophenol, 840 - 1400 kkg. Throughout this report, estimations and assumptions were made in places where needed information was not available Bases for these estimations were stated and defined. Recommendations for further studies were also made

Keywords *Material balance, *Chemical industry, Manufacturing, Water pollution, Air pollution, Physical properties, Utilization, International trade, Sources, Design, Process charting, *Phenol/chloro, *Phenol/dichloro, *Phenol/trichloro, *Phenol/tetrachloro, *Phenol/pentachloro, Land pollution.

PB80-186422 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Estimated Costs for Preparation and Submission of Reproposed Premanufacture Notice Form
Little (Arthur D.), Inc , Cambridge, MA.
Sep 79, 74p EPA-560/12-79-005
Contract EPA-68-01-4717

The purpose of the study is to estimate the cost to the chemicals industry for preparation and submission of the reproposed Premanufacture Notice (PMN) form. This reproposed form was prepared by the EPA Office of Toxic Substances as part of the implementation of Section 5 of the Toxic Substances Control Act.

Keywords: *Reporting, *Cost estimates, *Chemical industry, Records management, Toxicology, Hazardous materials, Contaminants, Regulations, Manufacturers, Imports, *Toxic Substances Control Act, Environmental protection.

PB80-188394 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Materials Balance for Anilines. Level I - Preliminary Final rept
JRB Associates, Inc , McLean, VA
Robert L. Hall, Ronald Burger, and Karen Slimak. 9 May 80, 150p* EPA-560/13-80-013
Contract EPA-68-01-5793

This report presents a Level I materials balance study of a group of anilines specified in a Task Order from the Office of Toxic Substances, U.S. Environmental Protection Agency The compounds studied were aniline, aniline hydrochloride, aniline hydrobromide, o-, m-, and p-nitroanilines, 16 other nitroanilines, and 15 other chloro- and bromoanilines Areas of major interest were production quantities, producers, consumption quantities, and emissions to air, land, and water related to these processes. The estimated amounts of 1978 production (where available) were as follows aniline, 279,000 kkg; aniline hydrochloride, 4.6 - 100 kkg; o-nitroaniline, 3641 kkg; m-nitroaniline, 0 - 2.3

kkg; p-nitroaniline, 13,000 kkg. Emissions were estimated when direct data were unavailable. The results (in kkg/year) were: aniline, 20 kkg to air, 0.08 - 5.6 kkg to water; p-nitroaniline, 0 13 kkg to air, 117 kkg to water. Throughout the report, estimates and assumptions were made where justified, in lieu of direct data. Types of information required for future studies are noted.

Keywords· *Anilines, *Chemical industry, *Material balance, Chlorine organic compounds, Bromine organic compounds, Nitrogen organic compounds, Air pollution, Water pollution, Forecasting, Physical properties, Manufacturing, Utilization, International trade, Design, Process charting, Aniline/hydrochloro, Aniline/hydrobromo, Aniline/nitro, Land pollution

PB80-194640 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Proceedings of the EPA Workshop on the Environmental Scoring of Chemicals Held at Washington, DC. on August 13-15, 1979 Final rept.
Oak Ridge National Lab., TN.
Robert H. Ross, and Justine Welch. May 80, 48p
ORNL/EIS-158, EPA-560/11-80-010

The environmental scoring of chemicals is viewed by the U.S. Environmental Protection Agency as a tool to assist in the ranking or ordering of the universe of chemicals that are under the jurisdiction of the Toxic Substances Control Act The purpose of scoring is to identify most of the chemicals that have a high probability for requiring review for regulation or testing. This report describes a three-day workshop held in Washington, D.C., August 13-15, 1979, to develop an environmental scoring system Initial discussions centered on the determination of a safety factor (calculated as the concentration at which an effect is observed divided by environmental concentration) that would allow a numerical score to be assigned to a chemical to reflect its potential hazard Further discussion, however, indicated that the environmental concentration of a chemical is usually not available and that the estimation of an environmental concentration is not readily accomplished; therefore, a scoring system was developed that does not require environmental concentrations. This system relates environmental exposure to toxicity by using a multiplier (3x, 2x, or 1x) which is assigned on the basis of the concentration at which an effect is observed. The applicability of the scoring system is demonstrated by scoring selected chemicals.

Keywords· *Meetings, *Scoring, *Chemical compounds, *Environmental surveys, Environments, Concentration(Composition), Environmental Protection Agency, Toxic substances

PB80-194939 PC **A09**/MF **A01**
Support Document Test Data Development Standards: Chronic Health Effects. Toxic Substances Control Act. Section 4
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
May 79, 179p* Rept no EPA-560/11-79-001

The Proposed Chronic Toxicity Test Standards (F.R), written under Section 4(a) and 4(b) of the Toxic Substances Control Act (TSCA), are designed to ensure the development of reliable and adequate test data for assessing the chronic health effects of natural and synthetic chemicals. Moreover, the testing requirements are not to create unnecessary economic barriers to technological innovation in the chemical industry To fulfill these responsibilities, scientists and staff of the Environmental Protection Agency (EPA) have reviewed the literature and discussed the significant scientific and economic issues both in Agency Workgroup meetings and with consultants and reviewers from outside the Agency The results of this effort are reflected in detail in this Support Document and the Preamble to the Chronic Health Effects Standards

Keywords: *Toxicology, Tests, Standards, Confidentiality, Economics, Design, Costs, Toxicity, Environmental health, Toxic substances, *Toxic Substances Control Act, Public Law 94-469

PB80-196876 PC **A99**/MF **A01**
Toxicology Handbook, Mammalian and Aquatic Data. Book 1: Toxicology Data Rept for 1966-77
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
Bernard A. Schneider. Nov 79, 1058p* Rept no. EPA-540/9-79-003

This handbook presents toxicology information which will be valuable to the Agency in researching toxic substances and pesticides, in aiding the rebuttable presumption against registration of pesticides process, in determining the toxicity of RPAR chemicals and their alternatives, in establishing generic standards for registering pesticides, in investigating accidents, and in reregistering pesticides. For the scientific and medical communities and for environmentalists it will serve as a guide on acute toxicity to animals and on potential hazards and pesticides in the environment. It reports: 12 years of data on acute oral LD50 dermal and ocular irritation tests; 9 years of aquatic LC50 tests; 8000 pesticide product analyses including many duplicates; 1000 aquatic test results; and Toxicology tables on 563 active ingredients. The handbook contains four parts and an appendix. Part I lists the toxicology tables; an Explanation of Tables precedes them on pages vii and viii. Part II presents an alphabetical arrangement of chemicals cited in the tables; Part III, a numerical arrangement of chemicals in the tables; and Part IV, a chemical code page index. The appendix describes test methods used to obtain results listed in the toxicology tables of Part I. Supplements of toxicology data from the Beltsville laboratory will be compiled periodically by the editor.

Keywords: *Handbooks, *Toxicology, *Mammals, *Pesticides, Statistical data, Evaluation, Tables(Data), Toxicity, Lethal dosage, Tests, Aquatic biology, Skin(Anatomy), Eye(Anatomy), Concentration(Composition), Chemical compounds, *Toxic substances

PB80-196884 PC **A12**/MF **A01**
Toxicology Handbook, Mammalian and Aquatic Data. Book 2: Chemicals, Index, Test Methods
Rept. for 1966-77
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
Bernard A. Schneider. Nov 79, 251p* Rept no. EPA-540/9-79-003A

Contents·
Alphabetical arrangement of chemicals,
Numerical arrangement of chemicals (S = Synonym, C = Common, T = Trade Name);
Chemical code page index

Keywords: *Handbooks, *Toxicology, *Mammals, *Pesticides, Evaluation, Tables(Data), Toxicity, Lethal dosage, Tests, Aquatic biology, Skin(Anatomy), Eye(Anatomy), Concentration(Composition), Chemical compounds, *Toxic substances.

PB80-197585 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Epichlorohydrin and Epibromohydrin Final technical rept.
Syracuse Research Corp , NY. Center for Chemical Hazard Assessment.
Joseph Santodonato, Sheldon S. Lande, Philip H. Howard, Denise Orzel, and Dennis Bogyo. Mar 80, 157p* TR-80-543, EPA-560/11-80-006
Contract EPA-68-01-3920

This report reviews the potential environmental and health hazards associated with the commercial use of epichlorohydrin and epibromohydrin Epichlorohydrin is used primarily as a chemical intermediate in the production of glycerin and epoxy resins, with small amounts exported or used for elastomers or other products. Epibromohydrin was last produced on a commercial scale in 1975; the only current use of epibromohydrin appears to be as a laboratory research reagent. Information on physical and chemical properties, production methods and quantities, commercial uses and factors affecting environmental contamination, as well as information related to health and biological effects, are reviewed and evaluated

Keywords· *Environmental surveys, *Epichlorohydrin, Elastomers, Manufacturing, Physical properties, Chemical properties, Bromine organic compounds, Chlorine organic compounds, Chemical reactions, Oxidation, Photolysis, Toxicity, Public health, Animals, Regulations, Standards, *Epibromohydrin.

PB80-197957 PC **A09**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Haloalcohols Final technical rept.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sheldon S. Lande, Dennis A. Bogyo, Philip H. Howard, Joseph Santodonato, and William M. Meylan. Mar 80, 177p* TR-80-534, EPA-560/11-80-004
Contract EPA-68-01-3920

This report reviews the potential environmental hazard associated with the commercial use of a large group of chemicals that are used mostly as chemical intermediates - haloalcohols. Ten commercial compounds are covered in the report including the following large commercial products: 2-chloroethanol (ethylene chlorohydrin) -intermediate for ethylene oxide; 2-chloro-1-propanol and 1-chloro-2-propanol (propylene chlorohydrin) -intermediate for propylene oxide; 2,3-dichloro-1-propanol and 1,3-dichloro-2-propanol (alpha- and beta-dichlorohydrin) -intermediate for epichlorohydrin. Information on physical and chemical properties, production methods and quantities, commercial uses and factors affecting environmental contamination, as well as information related to health and biological effects, are reviewed

Keywords: *Halogen organic compounds, *Alcohols, *Environmental surveys, Physical properties, Chemical properties, Molecular structures, Manufacturing, Design, Process charting, Hydrolysis, Oxidation, Free radicals, Photolysis, Animals, Regulations, Standards, Toxicity, Public health, Samples, Trends, Marketing, Substitutes, Storage, Path of pollutants, Ethanol/bromo, Ethanol/chloro, Ethanol/trichloro, Ethanol/trifluoro, Propanol/chloro, Propanol/dibromo, Propanol/dichloro, Propane diol/chloro.

PB80-207376 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances.
Lung Cancer/Mortality in Proximity to a Pesticide Plant Final rept.
American Public Health Association, Washington, DC
Genevieve M. Matanoski, Emanuel Landau, James Tonascia, Christiana Lazar, and Elizabeth A. Elliott.
Mar 80, 80p EPA-560/11-80-013
Contract EPA-68-01-3859
Prepared in cooperation with Johns Hopkins Univ., Baltimore, MD. School of Hygiene and Public Health.

This interim report covers a study of excess mortality from cancer in the population residing near a chemical plant in Baltimore which had produced insecticides for 75 years. Cancer deaths were examined for a five and nine year period surrounding census years to determine not only the absolute mortality but the changing trends. Four index census tracts including the one containing the plant were selected based on the requirement that at least 50 percent of the area lay within a three-quarter mile radius of the plant. Comparison tracts were selected based on matching the index tracts by age, sex, and socio-economic status Employee deaths were subtracted. The lung cancer death rate on an age adjusted basis had been found to be significantly higher in the census tract containing the plant. It had been rising rapidly since the mid-sixties. A study of the validation of hospital records and the pathology of cancer cases indicates that the excess risk of lung cancer represents a real risk in mortality and is not the result of local diagnostic and certification practices. A corollary study of soil arsenic indicated highest levels in the tract with increased lung cancer mortality. The pattern of high soil levels appeared to be related to rail transport of the arsenical material. Further research is required to determine whether other factors may play a role in the excess of lung cancer.

Keywords: *Arsenic, *Pesticides, *Toxicology, Mortality, Pulmonary neoplasms, Exposure, Epidemiology, Maryland, Insecticides, Death, Soil analysis, Lung, Respiratory system, Baltimore(Maryland), Cancer, Death certificates, *Toxic substances.

PB80-208788 PC **A13**/MF **A01**
Chemical Hazard Information Profiles (CHIPs)
Toxics Integration Information series, 1 Aug 76-20 Nov 79.
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Apr 80, 296p Rept no. EPA-560/11-80-011

This collection of 40 Chemical Hazard Information Profile (CHIP) reports was prepared by the Office of Pesticides and Toxic Substances (OPTS) between August 1, 1976, and November 20, 1979. Chemicals are chosen for CHIP preparation on the basis of information indicating potential for adverse health or environmental effects of significant exposure. The CHIP itself is a brief summary of readily available information concerning health and environmental effects and exposure potential of a chemical. Information gathering for a CHIP is generally limited to a search of secondary literature sources and is not intended to be exhaustive; however, in depth searches on specific topics may be done on a case-by-case basis. In general, no attempt is made to evaluate or validate information at this stage of assessment. Preparation of a CHIP is part of the first stage in the OPTS Chemical Risk Assessment Process. The purpose of the CHIP is to enable OPTS to make a tentative decision on an appropriate course of action for the subject chemical and to identify and characterize problems that may require more thorough investigation and evaluation.

Keywords: *Chemical compounds, Exposure, Public health, Toxicity, Environmental surveys, *Chemical hazard information profiles.

PB80-209505 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Failure to Produce Arsenic Neurotoxicity in the Rat. An Experimental Study Final rept.
American Public Health Association, Washington, DC. Herbert H. Schaumburg. May 80, 17p EPA-560/11-80-022
Prepared in cooperation with Albert Einstein Coll. of Medicine, Bronx, NY. Inst. of Neurotoxicology.

Prolonged, low-level exposure to inorganic arsenic can produce peripheral neuropathy in humans, and is a serious industrial health hazard. The clinical expression of arsenic neuropathy is similar to other toxic neuropathies of the dying-back type. No satisfactory animal model of arsenic neuropathy has been devised. Rats underwent weekly intraperitoneal injections with solutions of arsenic trioxide. Strengths of 2mg/kg, 5mg/kg, 10mg/kg and 15mg/kg were used. The 15 mg/kg animals died shortly after receiving the injection. The other animals survived and, after eighteen months, appeared normal. Histopathological study of the peripheral and central nervous systems of these animals was unremarkable. It appears that the rat is not the appropriate species for the study of inorganic arsenic neurotoxicity.

Keywords: *Toxicology, *Arsenic, Rats, Exposure, Humans, Parenteral infusions, Laboratory animals, Concentration(Composition), Nervous systems, *Toxic substances, Histopathology, *Neurotoxins, Animal models.

PB80-211428 PC **A03**/MF **A01**
Amitraz (BAAM): Position Document 4
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div
4 Jun 79, 50p Rept no. EPA/SPRD-80/25

The report is a preliminary risk assessment of Baam. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited informatin is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Nitrogen organic compounds, Insecticides, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Baam, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Methanimidamide/N-(dimethylphenyl)N-((dimethylphenyl)-imino)-N-.

PB80-211436 PC **A05**/MF **A01**
Amitraz (BAAM): Position Document 3
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
6 Jan 79, 84p* Rept no. EPA/SPRD-80/24

The report is a preliminary risk assessment for Baam It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Nitrogen organic compounds, Insecticides, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Baam, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Methanimidamide/N-(dimethylphenyl)N-(((dimethylphenyl)-imino)methyl)-N-.

PB80-212046 PC **A02**/MF **A01**
Amitraz (BAAM): Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
4 Mar 77, 23p* Rept no. EPA/SPRD-80/23

The report is a preliminary risk assessment for Baam. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Nitrogen organic compounds, Insecticides, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Baam, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Methenimidamide/N-(dimethylphenyl)N-((dimethylphenyl)-imino)-N-.

PB80-212665 PC **A07**/MF **A01**
2,4,5-T: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
15 Mar 79, 150p* Rept no. EPA/SPRD-80/76

The report is a preliminary risk assessment for T 2-4-5 herbicides. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Herbicides, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *T 2-4-5 herbicides, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation

PB80-212863 PC **A02**/MF **A01**
Diallate: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
James Stewart. 18 Apr 77, 24p* Rept no. EPA-SPRD-80/26

The report is a preliminary risk assessment for Diallate It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Sulfur organic compounds, Carbamates, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Diallate, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, CAS 2303-16-4, Carbamic acid/(dichloroallyl-ester)-diisopropylthio.

PB80-213432 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Environmental Sources of Trichloroethylene Exposure: Source Contribution Factors Final rept.
MITRE Corp., McLean, VA. METREK Div
Myles E. Morse May 80, 75p* EPA-560/11-80-009
Contract EPA-68-01-5863

This study is intended to assist the Assessment Division, Office of Testing and Evaluation of the U.S. Environmental Protection Agency, in the assessment of human health risks associated with trichloroethylene exposure. The levels and frequency of occurrence of trichloroethylene in the various environmental media (air, food, and drinking water) have been identified. The relative contribution of each of these sources to an individual's total daily trichloroethylene uptake is determined through an exposure/uptake approach. It is anticipated that such an approach in combination with other exposure information can be used in the support of regulatory decision making under the Toxic Substances Control Act (TSCA). Available occurrence data, although limited, indicate a greater persistence of trichloroethylene in ground water than in the atmosphere or surface water. Numerous instances of trichloroethylene occurrence in drinking water (supplied by aquifers) were cited. The suggested no adverse response level was found to be exceeded in all situations considered above the average value scenario. The fetus, children and those consuming ethyl alcohol were subunits of the general population qualitatively identified as hypersensitive to trichloroethylene.

Keywords: *Environmental surveys, Exposures, Air pollution, Water pollution, Food, Potable water, Sources, Concentration(Composition), Public health, Metabolism, *Ethylene/trichloro.

PB80-213465 PC **A03**/MF **A01**
Support Document: Approaches to Exposure Assessment
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jun 80, 28p Rept no. EPA-560/11-80-017

The various activities involving a chemical (manufacturing, processing, use, distribution in commerce, and disposal) and how the activities lead to exposure ae described. Environmental releases from these activities are estimated an integrated with chemical and environment data, sometime through mathematical modelling, to determine whether there is a potential for occupational, consumer, or general population exposure

Keywords: *Toxicology, Assessment, Exposure, Mathematical models, Humans, Physical properties, Chemical properties, Consumers, Disposal, *Environmental health, *Occupational safety and health.

PB80-213846 PC **A08**/MF **A01**
Dimethoate: Position Document 2/3
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
19 Nov 79, 163p* Rept no. EPA/SPRD-80/32

The report is a preliminary risk assessment for dimethoate. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Sulfur organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Dimethoate, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Phosphorodithioic acid/(dimethyl-esler)-(N-methyl-carbamoyl-methyl).

PB80-213853 PC **A10**/MF **A01**
Dibromochloropropane (DBCP): Final Position Document
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
Jeff Kemper, and Mitchell H. Bernstein. 6 Sep 78, 217p Rept no. EPA/SPRD-80/20

The report is a preliminary risk assessment for dibromochloropropane (DBCP). It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk Results of a literature search are provided

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Fungicides, Residues, Ecology, Laboratory animals, Chlorine aliphatic compounds, Bromine alipathic compounds, Toxicity, Exposure, Physiological effects, Regulations, *Propane/chloro-dibromo, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioac-

cumulation.

PB80-213861 PC **A04**/MF **A01**
Lindane: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
17 Jan 77, 58p* Rept no. EPA/SPRD-80/43

The report is a preliminary risk assessment for lindane. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, *Lindane, *Toxic substances, Insecticides, Chlorine aliphatic compounds, Residues, Ecology, Laboratory animals, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Toxicity, Exposure, Physiological effects, Regulations.

PB80-213879 PC **A06**/MF **A01**
Coal Tar, Creosote, and Coal Tar Neutral Oil: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
18 Oct 78, 122p Rept no. EPA/SPRD-80/82

Examination of possible unreasonable risks associated with uses of pesticide and a gathering of all available information to determine whether or not this or any other risk does exist are covered.

Keywords: *Coal tar, *Creosote, *Pesticides, Health, Malignant neoplasms, Risk, Evaluation, *Neutral oil.

PB80-213887 PC **A07**/MF **A01**
Chlorobenzilate: Position Document 3
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
11 Jul 78, 131p* Rept no. EPA/SPRD-80/35

The report is a preliminary risk assessment for chlorobenzilate. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided

Keywords: *Environmental surveys, *Pesticides, *Toxicology, *Insecticides, Chlorine aromatic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Chlorobenzilate, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, *Benzilic acid/dichloro-(ethyl-ester), CAS 510-15-6.

PB80-213895 PC **A06**/MF **A01**
Silvex: Position Document 1/2/3. Preliminary Determination Concerning a Rebuttable Presumption Against Registration of Pesticide Products Containing 2-(2,4,5-Trichlorophenoxy) Propionic Acid (SILVEX)
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div.
9 Jul 79, 114p* Rept no. EPA/SPRD-80/52

The report is a preliminary risk assessment for Silvex. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Herbicides, Chlorine aromatic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Silvex, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Propionic acid/2-(2-4-5-trichlorophenoxy).

PB80-213903 PC **A04**/MF **A01**
Ethylene Oxide: Position Document 1
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div.
14 Oct 77, 73p* Rept no. EPA/SPRD-80/40

The report is a preliminary risk assessment for ethylene oxide. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, *Ethylene oxide, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB80-213911 PC **A05**/MF **A01**
Pronamide: Position Document 2/3
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
15 Jan 79, 88p Rept no. EPA/SPRD-80/68

The report is a preliminary risk assessment for pronamide It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Herbicides, Chlorine aromatic compounds, Residues, Ecology, Laboratory animals, Amides, Toxicity, Exposure, Physiological effects, Regulations, *Kerb SOW, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Benzamide/dichloro-N-(dimethyl-propynyl), CAS 23950-58-5

PB80-213929 PC **A05**/MF **A01**
Chlorobenzilate: Position Document 4
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div.
13 Feb 79, 88p* Rept no. EPA/SPRD-80/36

The report is a preliminary risk assessment for chlorobenzilate. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided

Keywords. *Environmental surveys, *Pesticides, *Toxicology, Insecticides, Chlorine aromatic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Chlorobenzilate, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, *Benzilic adic/dichloro-(ethyl-ester), CAS 510-15-6

PB80-213937 PC **A05**/MF **A01**
Trifluralin (Treflan): Position 1/2/3
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div
22 Aug 79, 83p* Rept no. EPA/SPRD-80/21

The report is a preliminary risk assessment for trifluralin. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Fluorine aliphatic compounds, Herbicides, Amines, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Trifluralin, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Benzene amine/dinitro-N-N-dipropyl-trifluoromethyl.

PB80-215411 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Economic Impact Analysis of Proposed Testing Regulations for Chloromethane and Chlorobenzenes TSCA Economic Analysis Series
Mathtech, Inc., Arlington, VA.
David Mayo, Joanne Collins, and Barrett Riordan Jun 80, 147p 2152-185, EPA-560/11-80-021
Contract EPA-68-01-5864
Support Document for Proposed Health Effects Test Rule, Toxic Substances Control Act, Section 4.

This report presents the methodology that will be used for analyzing the economic impact of this and future test rules. The methodology follows a two-stage approach. All chemicals are subjected to a Level I Analysis This analysis consists of evaluating four market characteristics: demand sensitivity, costs, industry structure, and market expectations. The results of the Level I analysis (along with a consideration of the costs of the required tests) indicate the potential for significant adverse economic impacts. Where the indication is negative, no further economic analysis is required. However, for those chemical substances or groups where the Level I analysis indicates a potential for significant economic impact, a more detailed and comprehensive analysis is conducted. This Level II analysis attempts to predict more accurately whether or not this potential will be realized, and, if so, its magnitude. The Level I analysis for chloromethane indicates that the proposed health effects test rule will not impose any significant economic impact on manufacturers of chloromethane. For the chlorobenzenes group, the results of the Level I analysis indicated that a potential for economic impacts exists; however, the Level II analysis concludes that the economic impacts are expected to be minor.

Keywords: *Chloromethanes, *Chlorobenzenes, *Regulations, *Toxicology, Economic impact, Tests, Economic analysis, Toxic Substances Control Act.

PB80-216732 PC **A03**/MF **A01**
Toxaphene: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
19 Apr 77, 37p* Rept no. EPA-SPRD-80/55

The report is a preliminary risk assessment for Toxaphene. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Terpenes, Insecticides, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Toxaphene, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB80-216740 PC **A03**/MF **A01**
Maleic Hydrazide: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
Bipin Gandhi. 28 Oct 77, 46p* Rept no. EPA/SPRD-80/46

The report is a preliminary risk assessment for Maleic hydrazide. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Reslts of a literature search are provided

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Maleic hydrazide, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Pyridazine diones

PB80-216773 PC **A03**/MF **A01**
Kepone: Position Document 3
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
19 Aug 76, 29p* Rept no EPA/SPRD-80/62

The report is a preliminary risk assessment for Kepone. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords *Environmental surveys, *Pesticides, *Toxicology, Insecticides, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Kepone, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogene-

sis, Bioaccumulation, Cyclobutapentalenone/decachlorooctahydro.

PB80-216781 PC **A03**/MF **A01**
BHC (Benzene hexachloride): Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
4 Oct 76, 45p* Rept no. EPA/SPRD-80/58

The report is a preliminary risk assessment for BHC insecticide. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Insecticides, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Benzene/hexachloro, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB80-216799 PC **A03**/MF **A01**
Pentachloronitrobenzene (PCNB): Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
26 Jul 77, 40p* Rept no. EPA-SPRD-80/49

The report is a preliminary risk assessment for Pentachloronitrobenzene. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Nitrobenzenes, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Benzene/nitro-pentachloro, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB80-216807 PC **A03**/MF **A01**
Strychnine and Strychnine Sulfate: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
Richard D. Schmitt. 1 Dec 76, 28p* Rept no. EPA/SPRD-80/15

The report is a preliminary risk assessment for strychnine and strychnine sulfate. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data Limited information is provided for exposure and extent of risk Results of a literature search are provided.

Keywords. *Environmental surveys, *Pesticides, *Toxicology, Nitrogen organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Strychnine, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, *Strychnine sulfate

PB80-216815 PC **A04**/MF **A01**
EPN (O-Ethyl-O-p-nitrophenyl phenylphosphonothioate): Position Document 1
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div.
4 Sep 79, 70p* Rept no. EPA/SPRD-80/91

The report is a preliminary risk assessment for EPN insecticide. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords· *Environmental surveys, *Pesticides, *Toxicology, Insecticides, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *EPN insecticide, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Phosphonothioic acid/(ethyl-ester)-(nitrophenyl-ester)-phenyl.

PB80-216823 PC **A02**/MF **A01**
Compound 1080 and 1081: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div
1 Dec 76, 25p* Rept no. EPA/SPRD-80/11

The report is a preliminary risk assessment for Sodium Fluoroacetate and Fluoroacetamide. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Fluorine organic compounds, Rodenticides, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Fluoroacetamide, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, *Acetic acid/fluoro.

PB80-216831 PC **A02**/MF **A01**
Fluoroacetamide (Compound 1081): Position Document 2
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div
28 Feb 80, 23p* Rept no. EPA/SPRD-80/12

The report is a preliminary risk assessment for Fluoroacetamide. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data Limited information is provided for exposure and extent of risk. Results of a literature search are provided

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Fluorine organic compounds, Rodenticides, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Fluoroacetamide, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation

PB80-216849 PC **A04**/MF **A01**
Diallate: Position Document 2/3
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div.
Apr 80, 60p* Rept no EPA/SPRD-80/27

The report is a preliminary risk assessment for Diallate It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords. *Environmental surveys, *Pesticides, *Toxicology, Sulfur organic compounds, Carbamates, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Diallate, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, CAS 2303-16-4, Carbamic acid/(dichloroallyl-ester)-diisopropylthio.

PB80-216856 PC **A02**/MF **A01**
Thiophanate-Methyl: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div
Esther Saito. 1 Dec 78, 25p* Rept no EPA/SPRD-80/01

The report is a preliminary risk assessment for Thiophanate. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Fungicides, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, Nitrogen organic compounds, *Thiophanate, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagensis, Oncogenesis, Bioaccumulation, Carbamic acid/(phenylene bis (iminocarbonothioyl))bis-(dimethyl-ester)

PB80-217243 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program Final rept
Research Triangle Inst., Research Triangle Park, NC.
E P. Brantly, Jr, and D E Lentzen. Aug 80, 32p EPA-560/13-80-23
Contract EPA-68-01-5848

EPA has initiated a quality assurance (QA) program for laboratories claiming capability in the polarized light microscope (PLM) analysis of bulk samples for asbestos. Commercial and non-commercial laboratories participating in the program received samples of four fibrous materials· chrysotile, anthophyllite, fiberglass, and mineral wool. Laboratories had difficulty identifying anthophyllite and two false positives were reported for the mineral wool sample. All laboratories properly identified chrysotile. A performance rating based on proper identification of positive (asbestos) and negative (non-asbestos) samples was scored for and reported to the commercial laboratories. Reference reports were sent to all participating laboratories. Continuation of the program with future sample sets is anticipated.

Keywords: *Asbestos, Measurement, School buildings, Quality assurance, Serpentine, Glass fibers, Mineral wool, Laboratory tests, Amphiboles, Anthophyllite.

PB80-220007 CP **T02**
Toxic Substances Control Act Chemical Substances Inventory: Cumulative Supplement, July 1980 Data file
Environmental Protection Agency, Washington, DC.
Chris Harvey, and Fred Connan. Jul 80, mag tape EPA-560/13-80-025, EPA/DF-80/008
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity Call NTIS Computer Products if you have questions.

The TSCA Chemical Substances Inventory Cumulative supplement lists names for more than 11,000 chemical Substances. The two files included in the Supplement are. File 1· TSCA CAS Registry Numbers (a listing of chemical names by CAS Registry No.). File 2. TSCA Synonyms (an alphabetical listing of synonyms).

Keywords: *Data file, *Chemical compounds, *Environmental surveys, Inventories, Magnetic tapes, *Toxic Substance Control Act.

PB80-220221 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Cadmium and Lead Levels in Human Blood and Kidney: A Literature Search
Oak Ridge National Lab., TN
M. Virginia Cone, Margaret F. Baldauf, Fay M. Martin, and John T. Ensminger. Jun 80, 82p* ORNL/EIS-168, EPA-560/13-80-020

A comprehensive data base of chemicals identified in human biological media (tissues and body fluids) has been established under the direction of the Environmental Protection Agency's Office of Toxic Substances Survey and Analysis Division. This centralized resource of body-burden information was inspired by the concern of government scientists over continuing reports of toxic chemicals in human tissues and body fluids Data are obtained primarily from the open literature through manual searches of selected journals. Retrospective searching to 1974 is complete and has yielded over 2000 pertinent documents of which approximately 800 have been entered into the data base as of this report. These sources identify over 500 chemicals which have been found in human biological media. A specific search of the data base for cadmium and lead levels in blood and kidney is presented in this report This report was prepared by the EPA OPTS survey and Analysis Division's Design and Development Branch in support of the World Health Organization's Biological Monitoring Project

Keywords. *Cadmium, *Lead(Metal), *Toxicology, Humans, Blood, Kidney, Reviews, Tissues(Biology), Data bases, Body fluids, *Toxic substances, Body burden

PB80-220296 PC **A08**/MF **A01**
TSCA Chemical Assessment Series. Assessment of Testing Needs: Chlorinated Benzenes. Support Document for Proposed Health Effects Test Rule, Toxic Substances Control Act, Section 4
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Jul 80, 172p* Rept no EPA-560/11-80-014

Since chlorobenzenes are used as chemical intermediates and for other industrial purposes as well as in consumer products, there is very broad potential exposure Thus, there is known or potential exposure of workers involved in chlorobenzene production, processing, and use, and of the general population, both directly from consumer products and indirectly through the environment. For this reason and on the basis of limited toxic effects studies, EPA has proposed that certain chlorobenzenes be tested to assess their potential to cause chronic, reproductive, teratological, and oncogenic effects. Following resolution of methodology issues the Agency has raised, EPA will propose at a later date test rules for neurotoxic and mutagenic effects. Further, the Agency has decided not to propose test rules for acute toxicity and epidemiological studies.

Keywords: *Toxicology, *Chlorobenzenes, Exposure, Chlorohydrocarbons, Chlorine organic compounds, Physiological effects, Assessments, Laboratory animals, Nervous system, Signs and symptoms, Testing, Exposure, *Toxic substances, Toxic Substances Control Act, Public Law 94-469.

PB80-220304 PC **A05**/MF **A01**
TSCA Chemical Assessment Series. Assessment of Testing Needs: Chloromethane. Support Document for Proposed Health Effects Test Rule, Toxic Substances Control Act, Section 4
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jul 80, 88p* Rept no. EPA-560/11-80-015

In 1979 approximately 497 million pounds of chloromethane were produced in the United States solely for domestic consumption. It is used almost exclusively as an intermediate, primarily in the manufacture of silicone and tetramethyllead. Chloromethane exposure has been reported to result in a wide range of systemic toxicity following both acute and chronic exposure. Although effects on the liver, kidney, heart, and hematopoietic system have been demonstrated in both humans and animals, the most sensitive organ seems to be the central nervous system (CNS) Chloromethane has been reported to possess mutagenic activity in bacterial systems that detect gene mutations and to cause chromosomal aberration Evidence of its mutagenic activity, its in vitro and in vivo alkylating capabilities, and its structural relationship to known or suspected oncogens suggest that chloromethane may possess oncogenic potential EPA is also concerned with the danger of both structural malformation and behavioral alterations that may be posed by chloromethane.

Keywords *Chloromethanes, *Toxicology, Exposure, Chlorohydrocarbons, Chlorine organic compounds, Physiological effects, Assessments, Laboratory animals, Nervous system, Signs and symptoms, Testing, Exposure, *Toxic substances, Toxic Substances Control Act, Public Law 94-469

PB80-220312 PC **A03**/MF **A01**
TSCA Chemical Assessment Series. Assessment of Testing Needs: Acrylamide. Support Document for Decision Not to Require Testing for Health Effects, Toxic Substances Control Act, Section 4
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Jul 80, 37p* Rept no EPA-560/11-80-016

It has been found that acrylamide is neurotoxic, producing central-peripheral axonopathies The animal species in which this effect was demonstrated include rats, mice, cats, dogs, baboons, and monkeys. In addition, there are at least 48 published cases of the occupational toxicity and 5 cases of the nonoccupational toxicity of acrylamide to humans, many of whom manifested a measurable degree of neurotoxicity (central-peripheral axonopathy) In humans, the predominant signs of neurotoxicity are related to peripheral nerve involvement and, to a lesser extent, central nervous system involvement. A variety of other signs and symptoms also are generally reported, the most common ones occurring in the skin, hands, and feet. The onset of effects may be reversible, although this is not always the case. Based on laboratory data, EPA has concluded that acrylamide is a potent neurotoxicant at very low levels. This conclusion has been substantiated by a 1-year (oral administration) study in cats indicating a no-effect level of 0.3-1.0 mg/kg/day. EPA does not plan to require the health effects testing recommended by the Interagency Testing Committee. Instead, EPA plans to evaluate acrylamide for possible regulatory controls.

Keywords: *Toxicology, Physiological effects, Recommendations, Assessments, Laboratory animals, Nervous system, Signs and symptoms, Testing, Exposure, *Toxic substances, *Acrylamides, Toxic Substances Control Act, Public Law 94-469, Neurotoxins.

PB80-221195 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Volatile Corrosion Inhibitors and Boiler Water Additives: Potential for Nitrosamine Formation. Task III. Chemical Technology and Economics in Environmental Perspectives Final rept
Midwest Research Inst., Kansas City, MO
Alfred F. Meiners, Howard Gadberry, Bonnie L Carson, Harold P. Owens, and Thomas W Lapp. Jul 80, 99p EPA-560/11-80-023
Contract EPA-68-01-3896

Study investigated volatile corrosion inhibitors (VCIs) and the use of amines as boiler water additives The major VCI's are dicyclohexylammonium nitrite (Dichan), 'nonnitrite' Dichan substitutes, and benzotriazole. The present market is about 310,000 kg/year; over 90% of the use is in the preparation of impregnated paper and other wrapping materials. Dichan can be converted to the corresponding nitrosamine; commercial products can contain up to 1 ppm of the nitrosamine. Nonnitrite subsitutes are less likely to be converted to nitrosamines but can likely be readily nitrosated under environmental conditions Benzotriazole is likely to be environmentally stable and not converted to the corresponding nitrosamine. Population exposure to VCI's is large since it is estimated that over 20 million individual items are wrapped in VCI impregnated paper. Two cases of nitrosamine detection at levels of 100 and 90 ppm in VCI wrapping paper have been reported. A number of amines are employed for treating boiler water. The total market in 1978 was estimated to be 9,000 to 10,300 metric tons. The two most widely used neutralizing amines are cyclohexylamine and morpholine; octadecylamine is the most common film-forming amine. There is no experimental evidence to indicate whether or not nitrosamines are formed in boilers as a result of the addition of these amines

Keywords: *Corrosion inhibitors, *Nitroso compounds, *Toxicology, Feedwater, Additives, Amines, Water pollution, Packaging materials, *Nitrosamines, Toxic substances, Benzotriazoles, Cyclohexylamines

PB80-221609 PC **A99**/MF **A01**
TSCA Chemical Assessment Series. Chemical Screening: Initial Evaluations of Substantial Risk Notices, Section 8(e), January 1, 1977-June 30, 1979. Volume 1
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Mar 80, 606p Rept no. EPA-560/11-80-008

This collection of Status Reports (initial evaluations) was prepared by scientists in the EPA Office of Pesticides and Toxic Substances (OPTS) on submissions received between January 1, 1977 and June 30, 1979 from chemical manufacturers, processors, and distributors under Section 8(e) of the Toxic Substances Control Act (TSCA). The volume is being published for two reasons. First, the collection of status reports in a single volume will make that information more accessible to the public. Second, the volume may, by providing specific examples of submitted information and EPA's evaluation of it, help anyone subject to Section 8(e) to understand better the types of information that should be submitted to the Agency. To date, no information submitted under Section 8(e) has resulted in immediate regulatory action under TSCA or any other act, although some submitted information has triggered further data gathering and evaluation that may lead to proposal of regulations in the future.

Keywords· *Risk, *Chemical compounds, *Environmental surveys, Regulations, Standards, Forecasting, Toxic Substances Control Act

PB80-221682 PC **A04**/MF **A01**
Perspectives on the Top 50 Production Volume Chemicals
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
J. Fitzgerald, D. Viviani, C. Berlin, and D. Sterling. Jul 80, 73p Rept no. EPA-560/13-80-027

Part I examines the Top 50 in light of the Federal regulatory and other 'lists' containing them, with specific emphasis on the TSCA Inventory of Chemicals in Commerce. A comparison of this data base and two others is then made with regard to production volume. Part II contains a general discussion of the chemical 'trees' in which these chemicals are found and the implications of higher energy prices on their manufacture. Part III illustrates the use of the specific regulatory status and other lists summarized in Part I (as well as generally available production and use information) to characterize four members of the Top 50 list.

Keywords. *Information, Chemical compounds, Decision making, Data, Regulations, *Environmental Protection Agency, Lists, Environmental protection.

PB80-222672 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Determination of Pentachlorophenol and Hexachlorobenzene Residues Final rept. Jan-Jul 80
Midwest Research Inst., Kansas City, MO.
Duane B. Lakings, Wilma Subra, and John Going. Jun 80, 99p EPA-560/13-80-030
Contract EPA-68-01-5915
Prepared in cooperation with Gulf South Research Inst., New Orleans, LA.

An evaluation of possible exposure to pentachlorophenol (PCP) by residents in Madison County, Kentucky, who had obtained ammunition crate wood treated with PCP from the Blue Grass Army Depot was conducted. Serum and unconjugated urine levels of PCP were determined in 51 test cases and 47 control individuals and in 7 special cases (residents of log homes treated with PCP). In addition, air, food product, and wood samples collected at the residences were analyzed for PCP residues. The results showed similar PCP levels in the serum and urine of the test cases and control individuals. No PCP was detected in the air collected from these groups' residences; and the levels of PCP exposure from the ammunition crate wood. However, high PCP levels were found in the serum and urine of the special cases, particularly three young children who had PCP serum levels above 1,000 ppb (40 times the control individual average) Air and wood samples from a special case residence also contained PCP. Thus, the special cases were being subjected to PCP exposure and additional studies on log home residences are recommended to define the exposure level and the possible adverse health effects No hexachlorobenzene was found in any samples.

Keywords: *Toxicology, Exposure, Evaluation, Residues, Kentucky, Blood serum, Urine, Wood, Food products, Quality conrol, Blood chemical analysis, Madison County(Kentucky), *Phenol/pentachloro, *Benzene/hexachloro, *Toxic substances, Analytical methods.

PB80-225923 PC **A06**/MF **A01**
Decision and Emergency Order Suspending Registrations for the Forest, Rights-of-Way, and Pasture Uses of 2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T). Notice of Intent to Cancel the Forestry, Rights-of-Way and Pasture Registrations of Pesticide Products Containing 2,4,5-T. Suspension Order for 2,4,5-T
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
28 Feb 79, 113p Rept no. EPA/SPRD-80/103

A suspension order is an agency determination that is necessary to prevent an imminent hazard during the time required to cancel registration or classification proceedins (the Rebuttable Presumption Against Registration process-RPAR). This determination is made under Section 6(B)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). This notification immediately suspends the registration of the chemical under Agency review, prohibiting its use, sale, or distri-

bution during the cancellation or classification change proceedings.

Keywords: *Pesticides, *Forestry, Standards, Licenses, Environmental impacts, Protection, Sales, Distribution(Property), Acetic acides, Chlorine aromatic compounds, T2-4-5 herbicide, Acetic acid/trichlorophenoxy.

PB80-226376 PC **A06**/MF **A01**
Decision and Emergency Order Suspending Registrations for Certain Uses of 2-(2,4,5-Trichlorophenoxy) Propinic Acid (Silvex). Notice of Intent to Cancel Certain Registrations of Pesticide Products Containing Silvex. Suspension Order for Silvex
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
28 Feb 79, 113p Rept no. EPA/SPRD-80/102

This is an agency determination that an emergency exists to health or the environment which prohibits holding a public hearing on a proposal to suspend registration on a chemical under cancellation or classification change reveiw. This order immediately suspends registration of the pesticide, prohibiting its use, sale, or distribution until final regulatory action is taken on the pesticide.

Keywords: *Law(Jurisprudence), *Pesticides, Licenses, Toxicology, Organic compounds, Environmental impacts, Dosage, Reproduction(Biology), Mammals, Federal Insecticide, Fungicide, and Rodenticide Act, *Silvex, Propionic acid/2-(2-4-5 Trichnorophanoxy).

PB80-226384 PC **A02**/MF **A01**
Perthane 3(c)(2)(B) Letter
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div
28 Apr 80, 12p Rept no. EPA/SPRD-80/97

A 3(c)(2)(B) *letter is notification under Section* 3(c)(2)(B) of the Federal Insecticide, Fungicide, and Rodenticide Act that the U S. Environmental Protection Agency had determined that additional data are required to maintain registrations of products containing chemicals under Agency review Companies must generage and submit data to EPA within scheduled timeframes to maintain registration. The notice lists what data are needed, gives schedules for submitting data, and procedures for requesting waivers and extensions of time.

Keywords. *Law(Jurisprudence), *Pesticides, Licenses Toxicology, Organic compounds, Environmental impacts, Dosage, Reproduction(Biology), Mammals, Federal Insecticide, Fungicide, and Rodenticide Act, Perthane.

PB80-226418 PC **A02**/MF **A01**
Isocyanurate 3(c)(2)(B) Letter
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div
26 Mar 80, 20p Rept no. EPA/SPRD-80/100

A 3(c)(2)(B) letter is notification under Section 3(c)(2)(B) of the Federal Insecticide, Fungicide, and Rodenticide Act that the U.S Environmental Protection Agency has determined that additional data are required to maintain registrations of products containing chemicals under Agency review. Companies must generate and submit data to EPA within scheduled timeframes to maintain registration. The notice lists what data are needed, gives schedules for submitting data, and procedures for requesting waivers and extensions of time

Keywords: *Law(Jurisprudence), *Pesticides, Licenses, Toxicology, Organic compounds, Environmental impacts, Dosage, Reproduction(Biology), Mammals, Federal Insecticide, Fungicide, and Rodenticide Act, *Isocyanurate.

PB80-911601 MF **E15**
Pesticide Label File Update
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1980, 42p
Microfiche copy only

The Federal Insecticide, Fungicide, and Rodenticide Act requires that the Labels of all registered pesticides contain certain specific types of information. Incuded in the information of the labels are active ingredient(s) and percentages of same; common name, if any, of active chemical; sites and pests for usage, as well as dosage, safety information; and the product name and manufacturer for that specific product

Keywords· *Pesticides, *Documentation, Manuals, Chemical compounds, Insecticides, Rodenticides, Herbicides, Businesses, Labels, Microflm, Safety, Dosage

PB80-921900 Standing Order
Pesticide Product Information on Microfiche: Set A and B
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs
1980, 2 issues
Microfiche available on Standing Order, Deposit Account *required. North American Continent price* $150 00, all others write for quote.

The report includes pesticide information on product names, manufacturers, active ingredients, tolerances for residues, and site and pest information for particular products and active chemical ingredients. Also it contains Pest/Site Data.

Keywords· *Documentation, *Pesticides, Manuals, Chemical compounds, Businesses, Toxic tolerances, Microfilm, Labels, Information, Consumer products.

PB80-922000 Standing Order
Pesticide Product Information on Microfiche: Set A
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1980, 2 issues
Microfiche available on Standing Order, Deposit Account required. North American Continent price $40.00; all others write for quote. Also available with Set B, as PB80-921900.

The report includes pesticide information on product names, manufacturers, active ingredients, tolerances for residues, and site and pest information for particular products and active chemical ingredients

Keywords· *Documentation, *Pesticides, Manuals, Chemical compounds, Insecticides, Herbicides, Rodenticides, Businesses, Toxic tolerances, Microfilm, Information, Consumer products.

PB80-922100 Standing Order
Pesticide Product Information on Microfiche: Set B (Site/Pest)
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs
1981, 2 issues
Microfiche available on Standing Order, Deposit Account required. North American Continent price $120.00; all others write for quote. Also available with Set A, as PB80-921900.

The report includes pesticide information on product names, manufacturers, active ingredients, tolerances for residues, and site and pest information for particular products and active chemical ingredients Also it contains Pest/Site Data.

Keywords: *Documentation, *Pesticides, Manuals, Chemical compounds, Businesses, Toxic tolerances, Microfilm, Labels, Information, Consumer products.

PB81-102659 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Investigation of Selected Potential Environmental Contaminants: Styrene, Ethylbenzene, and Related Compounds Final rept.
Syracuse Research Corp., NY Center for Chemical Hazard Assessment.
Joseph Santodonato, William M. Meylan, Leslie N Davis, Philip H. Howard, and Denise M. Orzel. May 80, 279p TR-80-569, EPA-560/11-80-018
Contract EPA-68-01-3250

This report reviews the potential environmental hazard from the commercial use of four related compounds· ethylbenzene, styrene, alpha-methylstyrene, and divinylbenzene. Both ethylbenzene and styrene are produced in 6-7 billion pounds per year while the other two compounds are produced in much smaller quantities. Ethylbenzene is used to produce styrene and styrene and the other monomers are used to make polystyrene and other resins, elastomers, and rubbers. Significant non-commercial sources of the compounds are also possible including automobile exhaust, gasoline, and other combustion sources. Ethylbenzene and styrene have both been detected in air and water samples. Information on physical and chemical properties, production methods and quantities, commercial uses and factors affecting environmental contamination and information related to health and biological are reviewed.

Keywords: *Environmental surveys, *Styrene, Air pollution, Water pollution, Toxicity, Exposure, Chemical reactions, Manufacturing, Monitoring, Sampling, Sites, Transport properties, Regulations, Standards, Cargo transportation, *Benzene/ethyl, *Styrene/methyl, *Benzene/divinyl, Path of pollutants.

PB81-102725 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Bibliography of Selected Reports on Electron Microscopy and Its Use in Monitoring Asbestos Final rept. 1 Jan 68-1 Jun 80
Tracor Jitco, Inc., Rockville, MD.
M. Virginia Shreve. Jun 80, 29p TRACOR-JITCO-302-106-28, EPA-560/13-80-019
Contract EPA-68-01-6021
Presented at the Asbestos International Association's (3rd) Colloquium on Dust Measuring Techniques and Strategy Held at Cannes, France on June 10-12, 1980.

A bibliography of selected documents and reports issued by the U.S. Environmental Protection Agency on electron microscopy has been assembled as a quick reference document; several additional reports from other government agencies are also included. This document also includes summaries of electron microscopy studies currently sponsored by the U.S. Environmental Protection Agency. It was prepared for international distribution at the Asbestos International Association's Third Colloquium on Dust Measuring Techniques and Strategy held in Cannes, France, June 10-12, 1980.

Keywords: *Bibliographies, *Asbestos, *Electron microscopy, *Environmental surveys, Monitoring, Water pollution, Air pollution, Chemical analysis.

PB81-103111 PC **A04**/MF **A01**
2,4,5-Trichlorophenol and its Sodium and Potassium Salts: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
28 Feb 79, 70p* Rept no. EPA/SPRD-80/79

The report is a preliminary risk assessment for trichlorophenol. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Chlorine organic compounds, Residues, Ecology, Laboratory animals Toxicity, Exposure, Physiological effects, Regulations, *Phenol/trichloro, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB81-109449 PC **A03**/MF **A01**
Captan: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
22 Jul 80, 44p* Rept no. EPA/SPRD-80/104

The report is a preliminary risk assessment for captan. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Captan, *Toxic substances, Health risks, Pesticide

residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Cyclohexene dicarboximide/N-((trichloromethyl)thio).

PB81-109456 PC **A04**/MF **A01**
Ethylene Dibromide: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
14 Dec 77, 71p* Rept no. EPA/SPRD-80/73

The report is a preliminary risk assessment for ethylene dibromide. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Bromine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Ethane/dibromo, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB81-109464 PC **A04**/MF **A01**
Pentachlorophenol: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
18 Oct 78, 70p* Rept no. EPA/SPRD-80/85

The report is a preliminary risk assessment for pentachlorophenol. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Phenol/pentachloro, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB81-109472 PC **A03**/MF **A01**
Pronamide: Position Document 1
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div.
1 Apr 77, 31p* Rept no. EPA/SPRD-80/67

The report is a preliminary risk assessment for kerb 50W It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords. *Environmental surveys, *Pesticides, *Toxicology, Nitrogen organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Kerb 50W, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Benzamide/N-(dimethyl-propynyl)-dichloro.

PB81-109480 PC **A05**/MF **A01**
Endrin: Position Document 4
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div
3 May 79, 82p* Rept no. EPA/SPRD-80/39

The report is a preliminary risk assessment for endrin It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data Limited information is provided for exposure and extent of risk. Results of a literature search are provided

Keywords: *Environmental surveys, *Pesticides, *Toxicology, *Endrin, Chlorine organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, Dimethanonaphthalenes, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB81-112682 PC **A05**/MF **A01**
Pronamide: Position Document 2/3
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
15 Jan 79, 88p* Rept no. EPA/SPRD-80/68

The report is a preliminary risk assessment for Kerb SOW. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Chlorine organic compounds, Herbicides, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Kerb SOW, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Benzamide/N-(dimethyl-propynyl)-dichloro.

PB81-112690 PC **A03**/MF **A01**
Endrin: Position Document 1
Environmental Protection Agency, Arlington, VA. Special Pesticide Review Div.
12 Jul 76, 28p* Rept no. EPA/SPRD-80/37

The report is a preliminary risk assessment for Endrin. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided.

Keywords: *Environmental surveys, *Pesticides, *Toxicology, *Endrin, Oxygen organic compounds, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation.

PB81-112716 PC **A04**/MF **A01**
Pronamide: Position Document 4
Environmental Protection Agency, Arlington, VA Special Pesticide Review Div.
25 Oct 79, 64p* Rept no. EPA/SPRD-80/69

The report is a preliminary risk assessment for Kerb SOW. It gives a preliminary examination of its use, environmental residues, and health effects including toxicology data. Limited information is provided for exposure and extent of risk. Results of a literature search are provided

Keywords: *Environmental surveys, *Pesticides, *Toxicology, Chlorine organic compounds, Herbicides, Residues, Ecology, Laboratory animals, Toxicity, Exposure, Physiological effects, Regulations, *Kerb, SOW, *Toxic substances, Health risks, Pesticide residues, Path of pollutants, Mutagenesis, Oncogenesis, Bioaccumulation, Benzamide/N-(dimethyl-propynyl)-dichloro.

PB81-117236 PC **A14**/MF **A01**
Federal Activities in Toxic Substances Toxics integration information series
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Judith Colle, Elaine Schosman, and Kathryn Slike. May 80, 323p* Rept no. EPA-560/13-80-015

There are nearly two dozen Federal statutes governing toxic substances as well as a comparable number of Federal agencies responsible for the research, regulatory, and advisory provisions of these various acts. Effective integration of toxic substances activities requires an awareness and comprehension of the many Federal statutes involved as well as an understanding of the organizational structure and relevant activities of the agencies responsible for implementing these statutes. This document is an outgrowth of the efforts on the part of the staff of EPA's Office of Toxics Integration to develop the knowledge and expertise needed to integrate and coordinate Federal toxic substances regulatory activities. The scope of this first edition is limited to 17 offices located within 8 Federal agencies or departments which have a primary role in the control of toxic substances. The information on each office is divided into several sections. The first section describes the organization of the office and highlights those divisions, branches, etc., which are concerned with toxic substances. The second section summarizes the statutory authority for the office and briefly explains those subsections of the statute which pertain to toxics. The third section (for regulatory agencies only) highlights the regulatory development process followed by that agency. The final section briefly describes the various toxics-related programs and activities.

Keywords: *Toxicology, *National government, *Government agencies, *Toxic substances, *Federal government, Consumer Product Safety Commission, Council on Environmental Quality, Department of Agriculture, Department of Health and Human Services, Department of Labor, Department of Transportation, Environmental Protection Agency, *Health programs.

PB81-123804 PC **A09**/MF **A01**
Chloroneb: Pesticide Registration Standards
Environmental Protection Agency, Arlington, VA. Office of Noise Abatement and Control.
Sep 80, 181p Rept no. EPA/SPRD-80/510

A comprehensive statement of the Agency's regulatory position on all pesticide products containing the same active ingredient. The document, which discusses chloroneb, describes the data upon which the regulatory position is based, provides the rationale for the position and states the conditions which must be met to register a product under a standard.

Keywords: *Pesticides, *Standards, Chemistry, Manufacturing, Environmental surveys, Toxicology, Residues, Ecology, Regulations, Chlorine organic compounds, *Chloroneb, Benzene/dichloro-dimethoxy, Path of pollutants.

PB81-123812 PC **A04**/MF **A01**
Fumarin: Pesticide Registration Standard
Environmental Protection Agency, Arlington, VA. Office of Noise Abatement and Control.
Sep 80, 58p Rept no. EPA/SPRD-80/515

A comprehensive statement of the Agency's regulatory position on all pesticide products containing the same active ingredient. The document, which discusses Fumarin, describes the data upon which the regulatory position is based, provides the rationale for the position and states the conditions which must be met to register a product under a standard.

Keywords: *Pesticides, *Standards, Chemistry, Manufacturing, Environmental surveys, Toxicology, Residues, Ecology, Regulations, Coumarins, Organic salts, *Fumarin, Coumarin/acetonylfurfuryl-hydroxy, Path of pollutants.

PB81-123820 PC **A08**/MF **A01**
Metolachlor: Pesticide Registration Standards
Environmental Protection Agency, Arlington, VA. Office of Noise Abatement and Control.
Sep 80, 173p Rept no. EPA/SPRD-80/520

A comprehensive statement of the Agency's regulatory position on all pesticide products containing the same active ingredient. The document, which discusses metolachlor, describes the data upon which the regulatory position is based, provides the rationale for the position and states the conditions which must be met to register a product under a standard.

Keywords: *Pesticides, *Standards, Chemistry, Manufacturing, Environmental surveys, Toxicology, Residues, Ecology, Regulations, Chlorine organic compounds, *Metolachlor, Acetamide/chloro-N-(ethyl-methylphenyl)-N-(methoxy-methylethyl), Path of pollutants.

PB81-141608 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Proceedings of the Workshop on Subchronic Toxicity Testing Held at Denver, Colorado on May 20-24, 1979 Final rept.
Oak Ridge National Lab., TN.
Norbert Page, Daljit Sawhney, and Michael G. Ryon.
Nov 80, 69p ORNL/EIS-189, EPA-560/11-80-028
Contract W-7405-eng-26

This workshop was held at Denver, Colorado, May 20-24, 1979, to assist the Office of Pesticides and Toxic Substances in developing guidelines for subchronic toxicity testing under the Toxic Substances Control Act. The participants were organized into committees to discuss the relationship of protocol design to chemi-

cal class, the experimental design (route of exposure, dose, duration, test species, and age and number of animals), the evaluation of toxic effects (clinical observations, clinical laboratory tests, and pathology), the criteria for data extrapolation from one route of administration to another route, and limitations of acute and subchronic tests. Research recommendations submitted by each committee for their topic areas are presented in the document.

Keywords: *Meetings, *Toxicology, Guidelines, Dosage, Time, Extrapolation, Methodology, Tests, Pathology, Laboratory animals, Physiological effects, Criteria, Evaluation, *Toxic substances, Toxic Substances Control Act, Public Law 94-469.

PB81-141616 PC **A07**/MF **A01**
Support Document, Test Data Development Standards, Physical/Chemical and Persistence Characteristics: Density/Relative Density, Melting Temperatures, Vapor Pressure, Octanol/Water Partition Coefficient, Soil Thin Layer Chromatography. Proposed Rule, Section 4, Toxic Substances Control Act
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
George T. Armstrong, Robert H. Brink, and Asa Leifer. Oct 80, 147p Rept no. EPA-560/11-80-027

This technical Support Document provides the rationale for the development of test standards to develop data on density/relative density, melting temperature, vapor pressure, octanol/water partition coefficient, and soil thin layer chromatography of chemical substances. EPA will use the data on these physical/chemical characteristics to evaluate the manner and extent of environmental transport, fate and places of deposit as an aid in assessing health and environmental effects of chemicals under TSCA. For density/relative testing, an analysis is given of available methods of determining this property of particular classes of materials with different physical characteristics. For melting temperature testing, available methods are analyzed in terms of materials with different physical characteristics. For vapor pressure, two procedures are given, the isoteniscope procedure for pressures of 0.1 to 100 kPa and a gas saturation (transpiration) procedure for pressures of 00001 to the 1,000 Pa The Knudsen effusion procedures are also given. How to determine the numerical values of the octanol/water partition coefficient are given. Soil thin layer chromatography, an experimental method for determining the relative mobility of organic chemicals in soils, is discussed, including scientific aspects of soil leaching, economic aspects of the method, and specific history and the rationale for selection of experimental conditions for this method.

Keywords: *Environmental surveys, Density(Mass/volume), Soil analysis, Transport properties, Temperature, Vapor pressure, Chemical analysis, Separation, Leaching, Thin layer chromatography, Standards, Specific gravity, Melting points, Land pollution, Path of pollutants.

PB81-141624 PC **A05**/MF **A01**
Regulatory Analysis: Proposed Premanufacture Notification and Review Procedures. Proposed Rule, Section 5, Toxic Substances Control Act
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Oct 80, 81p Rept no. EPA-560/12-80-006

Section 5 of the Toxic Substances Control Act (TSCA) requires manufacturers and importers to notify EPA 90 days before they manufacture or import a new chemical substance. New substances are those that are not on the TSCA Chemical Substance Inventory, which was first published on June 1, 1979, and supplemented on July 30, 1980, by a Revised Inventory. EPA proposed regulations to implement section 5 requirements and to establish premanufacture notice and review procedures in the Federal Register of January 10, 1979 (44 FR 2242), October 16, 1979 (44 FR 59764), and August 15, 1980 (45 FR 54642). In this draft Regulatory Analysis, EPA explains the rationale for its proposal. The Regulatory Analysis also discusses the major issues raised by the proposed rules and describes the different alternatives the Agency considered for resolving the issues. The analysis is in part based on the proposed 'Economic Impact Analysis of Proposed Section 5 Notice Requirements,' prepared by ICF Incorporated of Washington, DC

Keywords: *Chemical compounds, *Regulations, *Environmental surveys, Manufacturers, International trade, *Toxic Substances Control Act.

PB81-141632 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Economic Impact Analysis of Proposed Section 5 Notice Requirements. Part I: Analysis of the Impacts on the Chemical Industry of Proposed Section 5 Notice Requirements. Part II: Issue Papers
ICF, Inc., Washington, DC.
Robert Dresser, James Edwards, Joseph Kirk, and Stuart Fribush. Sep 80, 240p* EPA-560/12-80-005
Contract EPA-68-01-5878

This report presents the analysis of the economic impact of TSCA section 5 rules on the chemical industry. The industry will be impacted when it introduces new chemicals. Of the six distinguishable consequences for the chemical industry, the most important are the nonquantifiable uncertainty consequences The more unclear EPA's rationale in making section 5 notice decisions, the greater are the uncertainties. There will likely be a short-run drop in the number of new chemicals introducted into commerce as chemical companies shift their innovation activities into 'safe' chemicals. Current data do not allow a quantitative estimate to be made of the rate of chemical introductions, or the extent of the reduction caused by the section 5 notice requirements; and, even if the data were available, it is doubtful that accurate quantitative predictions could be made. Smaller companies will face greater uncertainties and the direct costs will more often be a factor in company decisions. In the long run, this requlation may cause the chemical industry to be composed of a fewer number of larger competitors better able to absorb the direct costs and regulatory uncertainty associated with the requirement.

Keywords: *Economic impact, *Environmental surveys, *Regulation, *Chemical industry, Economic analysis, International trade, Manufacturers, Product development, Marketing, Reporting, International trade, *Toxic Substances Control Act, Commercialization, Industrial structure.

PB81-141640 PC **A13**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Economic Impact Analysis of Proposed Identification and Notification Rule on Friable Asbestos Containing Materials in Schools. Proposed Rule, Section 6 Toxic Substances Control Act Final rept.
Young (Arthur) and Co., Washington, DC.
Susan Wright, Stephen Schoepke, and Philip Mathias. Sep 80, 294p* EPA-560/12-80-004
Contract EPA-68-01-3930

This study examines the economic impact of the detection and notification of schools which have areas contaminated with friable asbestos-containing materials. The problem is identified by geographic area and by square footage of asbestos-containing materials per school. Unit costs are examined by region for inspection and analysis of samples by X-ray diffraction, electron microscopy, and optical microscopy. The total impacts of Asbestos Schools Rule No 1 are also presented and discussed.

Keywords: *Asbestos, *Hazardous materials, Economic analysis, Exposure, Public health, Air pollution, Environments, Dust, Fibers, Minerals, Tests, Schools, *Economic impact, Environmental health, *Air pollution effects(Humans).

PB81-141657 PC **A06**/MF **A01**
Support Document for Proposed Rule on Friable Asbestos-Containing Materials in School Buildings. Health Effects and Magnitude of Exposure. Proposed Rule, Section 6 Toxic Substances Control Act
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Charles Poole, and Harry Teitelbaum. Oct 80, 123p* Rept no. EPA-560/12-80-003

The Agency has determined that exposure to asbestos in school buildings poses a significant hazard to public health. Expousre to asbestos fibers can lead to serious and irreversible diseases. Friable asbestos-containing materials release ashestos fibers into the ambient environment. A sizeable proportion of schools contain asbestos-containing materials. In certain conditions these materials release fibers in concentrations which pose increased risks of developing the disease.

Keywords. *Asbestos, *Hazardous materials, Exposure, Public health, Air pollution, Environments, Dust, Fibers, Minerals, Tests, Schools, Risk, Assessments, Environmental health, Air pollution control, *Air pollution effects(Humans).

PB81-145732 PC **A07**/MF **A01**
Chemical Screening: Initial Evaluations of Substantial Risk Notices, Section 8(e) July 1, 1979 to January 31, 1980. Volume 2
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jul 80, 134p Rept no. EPA-560/11-80-020

This collection of Status Reports (initial evaluations) was prepared by scientists in the EPA Office of Pesticides and Toxic Substances (OPTS) on submissions received between July 1, 1979 and January 31, 1980 from chemical manufacturers, processors, and distributors under Section 8(e) of the Toxic Substances Control Act (TSCA). The volume is being published for two reasons. First, the collection of status reports in a single volume will make that information more accessible to the public. Second, the volume may, by providing specific examples of submitted information and EPA's evaluation of it, help anyone subject to Section 8(e) to understand better the types of information that should be submitted to the Agency To date, no information submitted under Section 8(e) has resulted in immediate regulatory action under TSCA or any other act, although some submitted information has triggered further data gathering and evaluation that may lead to proposal of regulations in the future

Keywords *Regulations, *Risk, Public health, Environmental surveys, Manufacturing, Law enforcement, *Toxic Substances Control Act.

PB81-145898 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Economic Impact Analysis of Proposed Section 5 Notice Requirements. Appendix: Volume I Support document
ICF, Inc., Washington, DC
Robert Dresser, James Edwards, Joseph Kirk, and Stuart Fribush. Sep 80, 169p* EPA-560/12-80-005A
Contract EPA-68-01-5878

This report presents the analysis of the economic impact of TSCA section 5 rules on the chemical industry. The industry will be impacted when it introduces new chemicals. Of the six distinguishable consequences for the chemical industry, the most important are the nonquantifiable uncertainty consequences The more unclear EPA's rationale in making section 5 notice decision, the greater are the uncertainties. There will likely be a short-run drop in the number of new chemicals introduced into commerce as chemical companies shift their innovation activities into 'safe' chemicals Current data do not allow a quantitative estimate to be made of the rate of chemical introductions, or the extent of the reduction caused by the section 5 notice requirements; and, even if the data were available it is doubtful that accurate quantitative predictions could be made. Smaller companies will face greater uncertainties and the direct costs will more often be a factor in company decisions. In the long run, this regulation may cause the chemical industry to be composed of a fewer number of larger competitors better able to absorb the direct costs and regulatory uncertainty associated with the requirements

Keywords: *Economic impact, *Chemical industry, *Regulations, *Environmental surveys, Cost estimates, Assessments, Feasibility, Economic analysis, Discounted cash flow, Return on investment, Exports, Imports, *Toxic Substances Control Act, Industrial structure.

PB81-145906 PC **A15**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances
Economic Impact Analysis of Proposed Section 5 Notice Requirements. Appendix: Volume II Support document
ICF, Inc., Washington, DC
Robert Dresser, James Edwards, Joseph Kirk, and

Stuart Fribush. Sep 80, 330p* EPA-560/12-80-005B
Contract EPA-68-01-5878

This report presents the analysis of the economic impact of TSCA section 5 rules on the chemical industry. The industry will be impacted when it introduces new chemicals. Of the six distinguishable consequences for the chemical industry, the most important are the monquantifiable uncetainty consequences. The most unclear EPA's rationale in making section 5 notice decisions, the greater are the uncertainties. There will likely be a short-run drop in the number of new chemical intrroduced into commerce as chemical companies shift their innovation activities into 'safe' chemicals. Current data do not allow a quantitative estimate to be made of the rate of chemical introductions, or the extent of the reduction caused by the section 5 notice requirements; and, even if the data were available, it is doubtful that accurate quantitative predictions could be made. Smaller companies will face greater uncertainties and the direct costs will more often be a factor in company decisions. In the long run, this regulation may cause the chemical industry to be composed of a fewer number of larger competitors better able to absorb the direct costs and requlatory uncertainty associated with the requirements.

Keywords: *Economic impact, *Chemical industry, *Regulations, *Environmental surveys, Assessssments, Feasibility, Economic analysis, Production, Commerce, Sales, International trade, Economic factors, Manufacturers, *Toxic Sustances Control Act, Industrial structure

PB81-146698 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Economic Implications of Regulating Nonaerosol Chlorofluorocarbon Emissions: An Executive Briefing Final rept.
RAND Corp., Santa Monica, CA.
Adele Palmer, William E Mooz, Timothy H. Quinn, and Kathleen A. Wolf. Jul 80, 35p R-2575-EPA, EPA-560/12-80-001A
Contract EPA-68-01-3882, EPA-68-01-6111

This report documents a briefing presented to the Environmental Protection Agency on November 29-30, 1970 It summarizes the results of a three year Rand study of the economic implications of alternative policy approaches for controlling emissions of chlorofluorocarbons (CFCs) in the United States

Keywords: *Air pollution control, *Economic impact, *Chlorine organic compounds, *Fluorine organic compounds, Incentives, Demand(Economics), Substitutes, Sources, Foam, Refrigeration, Air conditioning, Cleaning agents, Sterilization, Electronic devices, Regulations, Cost analysis

PB81-146706 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Flexible Urethane Foams and Chlorofluorocarbon Emissions. A Support Document for Economic Implications of Regulating Chlorofluorocarbon Emissions from Nonaerosol Applications Final rept
RAND Corp., Santa Monica, CA
William E. Mooz, and Timothy Quinn. Jun 80, 74p N-1472-EPA, EPA-560/12-80-001C
Contract EPA-68-01-3882, EPA-68-01-6111

This report records the research in the single product area of flexible urethane foams It is used to support the Rand Corporation's original report. PB81-146698, Adele R. Palmer, et al., Economic Implications of Regulating Chlorofluorocarbon Emissions from Nonaerosol Applications. It serves as a detailed exposition of the data and of the methods used to proceed from the historical data to the analysis of policies that might reduce CFC emissions. Flexible urethane foam plants are a significant source of CFC emissions. Each plant represents an extremely large point source of emissions, with hundreds of thousands of pounds of CFC-11 used and emitted annually per facility Either CFC recovery or methylene chloride conversion could substantially reduce CFC releases to the atmosphere. The use of CFC in foam products is very sensitive to the price of CFC-11. The analysis suggests that substantial reductions in use can be induced by moderate price increases.

Keywords: *Chlorine organic compounds, *Urethanes, *Air pollution control, *Fluorine organic compounds, *Economic impact, Foam, Demand(Economics), Utilization, Substitutes, Chloromethanes, Manufacturing, Industrial wastes, Combustion products, Return on investment, Cost analysis, Point sources.

PB81-146714 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Supporting Innovation: A Policy Study Final rept.
Massachusetts Inst. of Tech., Cambridge. Center for Policy Alternatives.
Christopher T. Hill, and Richard A. Andrews. Sep 80, 226p EPA-560/12-80-002
Contract EPA-68-01-5878

After several years of debate the Toxic Substances Control Act (TSCA) was enacted into law in 1976. The purpose of the present project is to design, analyze, and assess alternative policies that might be used to address the problems TSCA might create for innovation, while maintaining the dominant thrust of TSCA to protect health and the environment from unreasonable risk of injury and disease. The ongoing policy discussions and the literature on technological innovation yield many suggestions of such policy options, and a major concern of this research has been to assess and analyze the potential of those options to contribute to the solution of the problem at hand in a cost-effective and responsible manner.

Keywords: *Technology innovation, *Regulations, *Chemical industry, Environmental impacts, Product development, Chemical compounds, Economic impact, Government policies, Financing, Public health, *Toxic Substances Control Act, *Environmental health, Industrial structure.

PB81-146722 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Asbestos Analytical Programs Bulk Sample Analysis: New York City and Maryland
Research Triangle Inst, Research Triangle Park, NC.
A V. Rao, Corette Parker, Deborah Whitehurst, Don Lentzen, and Ty Hartwell. Sep 80, 41p EPA-560/13-80-21
Contract EPA-68-01-5848

This document describes the statistical analyses of bulk sample data taken from school buildings in two locations: New York City and Maryland The bulk samples were analyzed for asbestos by various laboratories and the results given to the Research Triangle Institute for analysis. In particular, Section I of this report describes the analysis of the New York City data which reported the presence or absence of asbestos (Amosite or Chrysotile) in 474 bulk samples taken from various types of building material in New York City schools. Section II describes the analysis of the Maryland data which contains analysis of 37 split-asbestos bulk samples taken from Maryland public schools. The split-samples in Maryland were sent to two or more laboratories which determined presence or absence of asbestos (Amphibole and Chrysotile) as well as actual levels of asbestos found.

Keywords: *Asbestos, *Schools, *Air pollution, Sampling, Maryland, New York, Tables(Data), Concentration(Composition), New York City(New York)

PB81-147001 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Measurement of Asbestos Air Pollution Inside Buildings Sprayed with Asbestos
Midwest Research Inst., Kansas City, MO.
P. Sebastien, M. A Billion-Galland, G. Dufour, and J. Bignon. Aug 80, 75p EPA-560-13-80-026
Contract EPA-68-01-5915

This report is a translation of a document prepared in 1977 for the French Ministry of Health and the French Ministry for the Quality of Life-Environment on the measurement and assessment of airborne asbestos levels in buildings throughout Paris. The methods of air sampling and transmission electron microscopic analysis, as well as a discussion of the results, are presented. Also included are extensive tables and figures summarizing the data collected. The study was completed in 1977, by the Laboratoire d'Etude des Particules Inhalees (Prefecture de Paris) and the Institut de Recherches Universitaires Sur l'Environment (Universite' Paris-Val de Marne). Mr. Patrick Sebestien (Prefecture de Paris) provided this revised update of the study in July 1980.

Keywords: *Asbestos, *Air pollution, Sampling, Buildings, Concentration(Composition), Translations, *Foreign technology, *Indoor air pollution, Paris(France).

PB81-147035 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Dietary Consumption Distributions of Selected Food Groups for the U.S. Population Final rept.
Purdue Research Foundation, Lafayette, IN. Div. of Sponsored Programs.
K. J. Yost, and L. J. Miles. 20 Feb 80, 74p EPA-560/11-80-012
Contract EPA-68-01-4709

Food consumption habits of U.S. population are analyzed and a determination is made of the extent to which fruits and vegetables are homegrown versus commercially produced. Population distributions are given for the consumption of six food groups by both persons who consume meat and do not consume meat. The six food groups are grains and cereals, potatoes, leafy vegetables, legume vegetables, root vegetables, and garden fruits. Both entire U.S. population and 15 to 20-year-old male subpopulation are studied. The six food groups comprise 441 g/person/day of the average U.S. diet, and 564 g/person/day for the 15-20 year old male. Dietary consumption data are reported for percentage of households having home gardens and for consumption which is home-grown. Data are reported for urban, rural nonfarm, rural farm, and all households. Roughly 44 percent of U.S. households have gardens; 50 percent of these have garden areas greater than 750 square feet. Home gardens constitute approximately 6 million acres, approximately equivalent to the acreage used for commercial fruit and vegetable production. Annual value of homegrown produce is estimated at $14 billion.

Keywords· *Food consumption, Diets, Human nutrition, Males, Surveys, United States, Fruits, Vegetables

PB81-147373 PC **A03**/MF **A01**
State Administrative Models for Toxic Substances Management. Toxics Integration Policy Series
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Barbara Faust, and Murray Newton. Jul 80, 29p Rept no. EPA-560/13-80-018

This paper describes examples of State administrative responses to toxic substances problems. It is an initial effort in a continuing exploration of Federal-State cooperation for toxic substances control. The authors hope the products of this new focus will provide useful information to States about State problems and programs. Through continued information exchange and legislative policy analysis, the Program Integration Division (PID) plans to assist States to develop their own toxic substances strategies. These strategies when implemented in cooperation with EPA's Regional Offices enhance the probability of successful, nationwide toxic substances management

Keywords: *Toxicology, Programs, Models, Management, State government, Responses, National government, *Toxic substances.

PB81-152902 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
PCB Residue Levels in Human Adipose Tissue; a Statistical Evaluation by Racial Grouping Final rept
Research Triangle Inst., Research Triangle Park, NC.
Robert M. Lucas, Mitchell D. Erickson, Phil V. Piserchia, and Stephen R. Williams. Nov 80, 102p EPA-560/13-79-015
Contract EPA-68-01-5848

The proportion (or percent) of persons with greater than 3 ppm PCB and the proportion with detectable PCB residue are investigated with an emphasis on comparing differences between racial groups. The chemical analysis technique used to quantify the residue amounts is studied. The technique of using only

one isomer (out of many) to quantitate aggregate PCB may result in bias that affect statistical significance levels of the racial differences. Hence, the apparent racial differences could not be confirmed nor denied.

Keywords: *Pesticides, *Toxicology, Regression analysis, Insecticides, Chlorine organic compounds, Humans, Demography, Concentration(Composition), Design, Chemical analysis, *Polychlorinated biphenyls, *Pesticide residues, Monitoring, *Toxic substances, Race.

PB81-155251 PC **A99**/MF **A01**
Soil Biology as Related to Land Use Practices: Proceedings of the International Soil Zoology Colloquium (7th) of the International Society of Soil Science (ISSS) Held at Syracuse, New York on July 29-August 3, 1979 Daniel L /Dindal
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
1980, 898p Rept no. EPA-560/13-80-038
Prepared in cooperation with State Univ of New York at Syracuse. Coll. of Environmental Science and Forestry.

Partial contents:
- Influence of pesticides on soil organisms;
- Human waste disposal and soil organisms,
- Anthrophilic relationships of soil organisms;
- Relationships of soil organisms to agronomic practices and animal wastes;
- Influence of mining site modification and rehabilitation of soil organisms;
- Effects of silvicultural practices on soil organisms;
- Human impact on tropical soil ecology;
- Basic soil ecology:
- Nutrient cycling, microorganism-faunal relationships, feeding and reproductive strategies.

Keywords: *Microorganisms, *Invertebrates, *Soils, *Meetings, Insecticides, Toxicity, Humus, Cultivation, Waste disposal, Herbicides, Mites, Arthropoda, Soil compacting, Nematoda, Mining, Grassland, Forestry, Forest fires, Ecology, Reproduction(Biology), Earthworms, Deserts, Arctic regions, Tropical regions

PB81-156168 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Economic Analysis of Reporting Forms, Proposed Rule Section 8(a) of TSCA (Toxic Substances Control Act) for Commercial and Industrial Uses of Asbestos Support document
Young (Arthur) and Co., Washington, DC.
Susan Wright, Katherine Douglass, and Philip Mathias. Dec 80, 40p EPA-560/4-81-001
Contract EPA-68-01-3930

The study presents the estimated cost to the various segments of the asbestos industry of the proposed TSCA section 8(a) rule reporting commercial and industrial use of asbestos The economic impacts of the proposed rule are examined for the primary processing segment of the industry. Gross profits of firms by size are examined and the percent impact of the proposed rule determined. For primary processors in the size range of 11 to 30 employees, the economic impact is seen to be roughly 0.1% of gross profits. Impacts are greater for firms of less than 10 employees but these are not required to report under the proposed rule

Keywords. *Reporting, *Utilization, *Asbestos, Economic impact, Cost estimates, Regulations, Industrial plants, Commercial buildings, Government policies, *Toxic Substances Control Act, Environment protection.

PB81-157638 PC **A14**/MF **A01**
Federal Activities in Toxic Substances Toxics Integration Information series
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Judith Colle, Elaine Schosman, and Kathryn Slike. May 80, 319p Rept no. EPA-560/13-80-015

Contents:
- Consumer Product Safety Commission (CPSC);
- Council on Environmental Quality (CEQ);
- Department of Agriculture (DOA);
- Department of Health and Human Services (DHHS);
- Department of Labor (DOL),
- Department of Transportation (DOT),
- Environmental Protection Agency (EPA);
- National Toxicology Program (NTP).

Keywords: *Toxicology, National government, *Federal government, *Toxic substances, Consumer Product Safety Commission, Council on Environmental Quality, Department of Agriculture, Department of Health and Human Services, Department of Labor, Department of Transportation, Environmental Protection Agency, National Toxicology Program

PB81-157851 PC **A08**/MF **A01**
Ethylene Dibromide: Position Document 2/3
Environmental Protection Agency, Arlington, VA. Office of Noise Abatement and Control.
1980, 158p Rept no. EPA/SPRD-81/74

This document determines what regulatory actions EPA should take under FIFRA to change the current use patterns of pesticides containing EDB Included are discussions about the risks and benefits of the pesticidal uses of EDB, and explanations about the rationale for the Agency's proposed final decision. This document is written in five chapters Chapter I is this introductory section. Chapter II summarizes and evaluates the comments received on the RPAR, evaluates the potential health risks of EDB, and briefly describes the laboratory evidence of toxicity, available exposure data, available epidemiology data and the Agency's revised risk assessment. Chapter III summarizes the use-by-use economic benefits of EDB and the assumptions and limits of these estimates. Chapter IV describes possible regulatory options for the reduction of risks. Chapter V evaluates the risks and benefits and adverse impacts of each possible action for each of the nine general categories of the registered uses of EDB, and selects the regulatory action the Agency is proposing for each use.

Keywords: *Pesticides, *Toxicology, *Benefit cost analysis, Insecticides, Exposure, Humans, Reproduction(Biology), Risk, Epidemiology, Assessments, *Ethylene/dibromo, Health risks, Benefits, Environmental health, Mutagenesis, Oncogenesis, *Toxic substances.

PB81-158412 PC **A21**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Chemicals Indentified in Human Biological Media: A Data Base. Volume II, Part 1. October 1980
Annual rept. no 2, Sep 79-Sep 80
Oak Ridge National Lab., TN.
M Virginia Cone, Margaret F. Baldauf, Fay M. Martin, and John T Ensminger Jan 81, 495 ORNL/EIS-163/V2-P1, EPA-560/13-80-036A
Contract W-7405-eng-26

A comprehensive data base of chemicals identified in human biological media (tissues and body fluids) has been established under the direction of the Environmental Protection Agency's Office of Pesticides and Toxic Substances Exposure Evaluation (formally Survey and Analysis) Division. This centralized resource of body-burden information was inspired by the concern of government scientists over continuing reports of toxic chemicals in human tissues and body fluids. Body burden is a reflection of exposures to food, air, and water contaminants, as well as pharmaceuticals. The systematic acquisition of body-burden data will facilitate a more relevant assessment of human exposure to toxic chemicals and xenobiotics than was previously possible using environmental contamination levels. Data were obtained primarily from the open literature through manual searches of selected journals Retrospective searching to 1974 is complete and has yielded over 3000 pertinent documents of which approximately 1000 have been entered into the data base as of this report. These sources identify over 500 chemicals which have been found in human biological media.

Keywords: *Toxicology, Humans, Tissues(Biology), Body fluids, Residues, Data bases, *Toxic substances, Body burden.

PB81-159675 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Health Assessment of Occupational Exposure to Polybrominated Biphenyl (PBB) and Polybrominated Biphenyloxide (PBBO) Final rept.
American Public Health Association, Washington, DC
Anita K. Bahn, Ora Bialik, Jacqueline Oler, Lorne Houten, and Emanuel Landau. Oct 80, 72p EPA-560/6-80-001
Contract EPA-68-01-3859
Prepared in cooperation with Pennsylvania Univ., Philadelphia. School of Medicine.

In August, 1978, a comprehensive medical evaluation was conducted on 42 out of 96 workers from a plant that manufactured decabromobiphenyl and decabromobiphenyl oxide and on 96 control workers from neighborhood industry not involving PBB use. The exposed workers were employed in a plant which manufactured only brominated products, where 96 regular employees had been employed since January 1973. PBB serum level were significantly higher among the exposed group than among the non-exposed group. An unexpectedly high prevalence of primary hypothyroidism was found among the PBB workers. Their sural sensory and peroneal motor velocities were significantly reduced when contrasted with controls. However, no significant dermatological, neurological or other adverse health effects were clinically demonstrated.

Keywords: *Toxicology, Bromine organic compounds, Industrial medicine, Assessments, Chlorine organic compounds, Epidemiology, Hypothyroidism, Exposure, *Polybrominated biphenyloxide, *Polybrominated biphenyls, *Biphenyl/chloro, Occupational safety and health, *Toxic substances.

PB81-159915 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Handbook for Obtaining Chemical Use and Related Economic Information Final rept. Sep 79-Dec 80
Romar Consultants, Inc., Philadelphia, PA. Technical Information Div.
Marcus Sittenfield. Dec 80, 163p* EPA-560/2-80-001
Contract EPA-68-01-5926

The handbook describes methods of finding chemical use and economic information in reference, on-line, and industry sources, and evaluates many current sources which contain information such as physical/chemical properties, chemical functions and applications, and production/consumption quantities. Sections 1-3 describe steps that can be followed to learn basic information about the uses of a chemical and the economics of those uses, either by chemical or by use. Appendix A evaluates over 100 sources in a standard format that displays the type of information in the source, the means of access to the information, organization of the information, and limitations or difficulties in utilizing the sources. Appendices B- provide lists of sources for different kinds of information and lists of different kinds of sources.

Keywords: *Chemical compounds, *Economics, *Utilization, *Handbooks, Manufacturing, Sources, Physical properties, Chemical properties, Industrial plants, Toxic Substances Control Act, Listings.

PB81-159923 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Mirex Residue Levels in Human Adipose Tissue: A Statistical Evaluation Final rept.
Research Triangle Inst., Research Triangle Park, NC.
Carol Leininger, Donna Lucas Watts, Charles Sparacino, and Stephen Williams. Nov 80, 117p TRI/1864/17-00F, EPA-560/13-80-024
Contract EPA-68-01-5848

Mirex is an insecticide which has a specific geographic region of application in the United States. The Mirex Special Study was undertaken in 1975 by the National Human Monitoring Program in an attempt to obtain information about the prevalence and levels of Mirex in human adipose tissues in areas of Mirex application. A sample of human adipose tissue specimens was selected from Mirex treated areas in eight southern States. Detectable levels of Mirex were found in 141 of 624 human adipose tissue specimens in the sample. The data were analyzed with respect to three demographic variables (race, age, and sex) and two geographic variables (Census Division and State). Geographic divisions appear to be the most salient factors in levels of concentration of Mirex in the sample studied

Keywords: *Pesticides, *Toxicology, Insecticides, Humans, Demography, Age, Sex, Geography,

Concentration(Composition), Tissues(Biology), Chlorine organic compounds, Chemical analysis, Adipose tissue, Mirex, *Pesticide residues, Race, Monitoring, *Toxic substances.

PB81-161176 PC **A99**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Chemicals Identified In Human Biological Media, A Data Base, Second Annual Report, October 1980. Volume II, Part 2
Oak Ridge National Lab., TN.
M. Virginia Cone, Margaret F. Baldauf, Fay M. Martin, and John T. Ensminger. Jan 81, 685p ORNL/EIS-163-VOL-2-PT-2, EPA-560/13-80-036B
Contract W-7405-eng-26

A comprehensive data base of chemicals identified in human biological media (tissues and body fluids) has been established under the direction of the Environmental Protection Agency's Office of Pesticides and Toxic Substances Exposure Evaluation (formally Survey and Analysis) Division. This centralized resource of body-burden information was inspired by the concern of government scientists over continuing reports of toxic chemicals in human tissues and body fluids. Body burden is a reflection of exposures to food, air, and water contaminants, as well as pharmaceuticals. The systematic acquisition of body-burden data will facilitate a more relevant assessment of human exposure to toxic chemicals and xenobiotics than was previously possible using environmental contamination levels. Data were obtained primarily from the open literature through manual searches of selected journals. Retrospective searching to 1974 is complete and has yielded over 3000 pertinent documents of which approximately 1000 have been entered into the data base as of this report. These sources identify over 500 chemicals which have been found in human biological media.

Keywords: *Toxicology, Humans, Tissues(Biology), Body fluids, Residues, Data bases, *Toxic substances, Body burden.

PB81-162984 PC **A02**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Screening for the Early Detection of Disease in Individuals Exposed to Vinyl Chloride Final rept.
American Public Health Association, Washington, DC
Carlos H. Tamburro, Charles Kupchella, Kenneth Taylor, Emanuel Landau, and Hildegarde Maricq. Jan 81, 18p EPA-560/6-81-002
Contract EPA-68-01-3859
Prepared in cooperation with Louisville Univ, KY., South Carolina Univ., Charleston, and Yale Univ, New Haven, CT.

A prospective collaborative study was conducted to compare the effectiveness of four clinical techniques in the detection of liver damage due to vinyl chloride monomer exposure. A chemically exposed and medically monitored worker population was identified by histopathological and biochemical documentation. Three techniques were non-invasive: (a) grey scale ultrasonography of the liver, (b) microvasular skin capillary assessment, and (c) urinary analysis of glycosaminoglycan excretion. The fourth technique was the standard 99mTc sulfur colloid radionucleotide liver spleen scan The screening studies were performed on a randomly selected single cohort of chemical workers. All four techniques were analyzed for their sensitivity and specificity as compared to results of the liver biopsy and biochemical blood test classification Although all four screening techniques had a sensitivity and specificity sum greater than one, none were significantly better than could be explained by chance or the use of the biased coin Reclassification of the population into those with more severe biochemical abnormalities improved the sensitivity of all screening tests, but only the sensitivity and specificity sum for the GAG test statistically significant at the 0.05 level There was no significant correlation between any pair of screening test. None of the four screening tests agreed with the biopsy results better than might be obtained by biased coin or chance. These screening studies as presently constituted, do not provide sufficient sensitivity and specificity to warrant their use in community screening for subclinical asymptomatic hepatic injury due to chemical exposure.

Keywords: *Vinyl chloride, *Toxicology, Industrial hygiene, Chlorine organic compounds, Exposure, Liver, Clinical chemistry, *Health screening, *Toxic substances, Disease detection, *Air pollution effects(Humans), Histopathology.

PB81-165789 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Spontaneous Abortion and Exposure during Pregnancy to the Herbicide 2,4,5-T Final rept.
American Public Health Association, Washington, DC.
Maureen Hatch, and Jennie Kline. Feb 81, 62p EPA-560/6-81-006
Contract EPA-68-01-3859
Prepared in cooperation with Columbia Univ, New York.

The purpose of this study is to identify locations in the United States where community exposure to the phenoxy herbicide 2, 4, 5 can be examined in relation to the risk of spontaneous abortion and other adverse pregnancy outcomes. Prior ecologic studies evaluating the reproductive consequences of exposure to 2, 4, 5-T have produced equivocal results. In this report, the authors consider what research strategies and what populations may be used to generate evidence that can be more readily interpreted. Issues relating to the nature of the exposure (e.g seasonal use, unknown dose level and fate in the environment) and to ascertainment of spontaneous abortions (e g., memory bias, variability in medical service use) are discussed. Two candidate study areas are investigated. Research approaches suitable to each site are set out and assessed for their potential to provide a powerful, valid test of the relationship of 2, 4, 5-T use to spontaneous abortion.

Keywords: *Herbicides, *Pesticides, *Toxicology, Pacific Northwest Region(United States), Pregnancy, Chlorine organic compounds, United States, Exposure, Risk, Abortion, Reproduction(Biology), Epidemiology, Communities, Arkansas, Questionnaires, *T 2-4-5 herbicide, *Toxic substances, Acetic acid/trichlorophenoxy, Health risks, Environmental health.

PB81-172413 PC **A08**/MF **A01**
Dimethoate: Position Document 4
Environmental Protection Agency, Arlington, VA. Office of Noise Abatement and Control.
1980, 156p Rept no. EPA/SPRD-81/33

Agency Regulatory Decision on Registration of Pesticide: Also contains comments from USDA and Scientific Advisory Panel and EPA's response to these concerns on economic, agricultural, environmental and health impact of the regulatory decision

Keywords: *Pesticides, Regulations, Risk, Exposure, Toxicity, Diets, Insecticides, Reproduction(Biology), Fetus, Industrial atmospheres, Requirements, Benefits, *Dimethoate, Oncogenesis, Mutagenesis, Health risks, Teratogenesis, Neurotoxins.

PB81-176414 PC **A10**/MF **A01**
Chemical Activities Status Report. Second Edition. Volume I
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Dec 80, 223p Rept no. EPA-560/13-80-040A

The Chemical Activity Status Report (EPACASR) is designed to provide a guide to Agency activities relating to chemical substances It is easily accessed by chemical via Chemical Abstract Services (CAS) Registry Number. The activities listed in this second edition, EPACASR-2, are not limited to chemical regulatory activities Developed with the assistance of a number of Agency programs, the report includes such entries as technical assistance information, preregulatory assessments, chemical and biological testing and monitoring programs, and labeling requirements-both completed and ongoing. This publication is the fifth monograph in the Toxics Integration Information Series and supersedes EPACASR-First Edition. EPACASR-2 is current to July 1980 and, unlike EPACASR-First Edition, includes the chemical-oriented activities of the Office of Research and Development.

Keywords: *Chemical compounds, *Hazardous materials, Water pollution, Air pollution, Radioactive contaminants, Potable water, Pesticides, *Toxic substances, Solid wastes, Listings.

PB81-176422 PC **A99**/MF **A01**
Chemical Activities Status Report. Second Edition. Volume II
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Dec 80, 620p Rept no. EPA-560/13-80-040B

In brief, this report is organized into three sections. (1) Alphabetized Chemical Name Reference Listing (an index of names used for chemicals included in the text). (2) Chemical Name Synonym List (showing all synonyms for chemicals in the text, and arranged by CAS Registry Number). (3) EPA Chemical Activities Report (arranged sequentially by CAS Registry Number) Sections 1 and 3 are in Volume I, Section 2 is in Volume II.

Keywords. *Chemical compounds, *Hazardous materials, Water pollution, Air pollution, Radioactive contaminants, Potable water, Pesticides, *Toxic substances, Solid wastes, Listings

PB81-176778 PC **A99**/MF **A01**
Consumer Product Safety Commission, Washington, DC.
Proceedings of the National Workshop on Substitutes for Asbestos Held at Arlington, VA., on July 14-16, 1980
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Arlene Levin. Nov 80, 675p* Rept no. EPA-560/3-80-001
Sponsored in part by Consumer Product Safety Commission, Washington, DC, and Interagency Regulatory Liaison Group, Washington, DC.

The purpose of the National Workshop on Substitutes for Asbestos was to obtain more information on the technical and economic feasibility and possible health problems of substitutes for asbestos, for use in considering regulation of asbestos Some of the topics discussed include: Non-asbestos friction materials, Discussion on friction products; Gaskets and packings; Asbestos in plastics, Discussion on plastics and flooring; Single-ply roofing as a substitute for asbestos roofing felt; Mill applied coatings for underground pipelines; Discussion on pipeline wrap; Discussion on textiles; Asbestos substitutes in roof coatings, sealants, and cements, Substitutes for asbestos-cement sheet; Inhalation, deposition, and clearance of particles; Man-made vitreous fibers and health; Discussion on the translocation and fate of sized man-made mineral fibers; Exposures to mineral wool; Toxicology, aspects ceramic fibers and Aramid fibers, Discussion on wollastonite; Health considerations in the perlite industry; Cross-sectional epidemiologic and industrial hygiene survey of talc workers; and Occupational exposures in the manufacture and application of polyurethane and urea formaldehyde insulation systems.

Keywords. *Asbestos, *Meetings, *Synthetic fibers, *Glass fibers, *Carbon fibers, *Ceramic fibers, *Fibers, *Industrial hygiene, Substitutes, Polyimide resins, Epidemiology, Polyethlene fibers, Polyacrylonitride, Polyamide resins, Silica minerals, Talc, Polyurethane resins, Economic analysis, Exposure, Toxicology, Corncobs, Perlite, *Occupational safety and health, Environmental health

PB81-177370 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Magnetic Lung Measurements in Relation to Occupational Exposure in Asbestos Miners and Millers of Quebec Final rept.
American Public Health Association, Washington, DC
David Cohen, and Thomas Crowther Jan 81, 50p EPA-560/6-81-005
Contract EPA-68-01-3859
Prepared in cooperation with Massachusetts Inst of Technology, Cambridge, MA

Fe3O4 particles (magnetic) are often attached to asbestos fibers (non-magnetic) in the primary asbestos industries; therefore, a measurement of Fe3O4 could help determine the amount of asbestos in the lungs of workers in these industries As a first assessment of this method of determining retained dust, magnetic measurements were made of the amount of Fe3O4 in the lungs of 115 miners and millers of chrysotile asbestos The performance of these measurements at an industrial site was found to be feasible and practical A relatively large amount of Fe3O4 was seen in

the lungs of those with welding experience, which masked the Fe3O4 contributed by asbestos, therefore this group was considered separately. For the remainder (non-welders), the amount of Fe3O4 was plotted against a total dust exposure index which was available for each individual. The correlation between these quantities was not high, but was statistically significant at the 0.01 level. For the non-smokers within that group, the correlation was higher and the amount of Fe3O4 was relatively greater. These results suggest that the magnetic measurement of a chrysotile miner and miller reflects, at least to some extent, the amount of asbestos in his lung; the scatter could be due to individual differences in deposition and clearance, to which this measurement should be sensitive. These results are also consistent with the possibility that less dust is deposited or retained in smokers than in non-smokers

Keywords. *Industrial medicine, *Iron oxides, *Asbestos, Air pollution, Exposure, Lung, Measurement, Dust, Canada, *Foreign technology, *Occupational safety and health, Miners, Millers, *Air pollution effects(Humans), Cigarette smoking, Quebec(Canada).

PB81-177412 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Materials Balance for Benzene: Level II Final rept.
JRB Associates, Inc , McLean, VA.
Robert L. Hall, Ronald Burger, and Frank Montecalvo.
May 80, 242p EPA-560/13-80-009
Contract EPA-68-01-5793

A Level II materials balance was performed on benzene. Data are reported for benzene production from petroleum by four processes (catalytic reformation, toluene dealkylation, toluene disproportionation, and isolation from pyrolysis gasoline) for production from coal during coking Amounts of benzene consumed for the synthesis of eight direct derivatives (ethylbenzene, cumene, cyclohexane, nitrobenzene, maleic anhydride, mono- and dichlorobenzene, alkylbenzenes, and biphenyl) and exports are presented. These uses constitute approximately 99 percent of total benzene usage. Nonconsumptive uses (solvents and pesticide component) are also tabulated Releases due to each of the above processes are reported or estimated where possible using published and unpublished data. In addition, releases due to indirect production (refinery operation, coke oven operations, oil spills, non-ferrous metals manufacturing, ore mining, wood processing, coal mining, and two phases of the textile industry) are presented. Production of benzene as a component of gasoline and releases due to all phases of gasoline use are estimated. Locations of sites with high levels of benzene releases due to production and use are tabulated. the major 'hotspots' are Baton Rouge, Louisiana, Houston/Galveston, Texas; Midland, Michigan, and Puerto Rico. The uncertainty ranges of all numbers used or derived in this report are evaluated when possible and tabulated. Data gaps are evaluated and general recommendations are presented. The results of the report are summarized in two figures: the Environmental Flow Diagram for benzene in Appendix A, and the Materials Balance Flow Diagram in the Executive Summary.

Keywords *Benzene, *Material balance, Petroleum, Coking, Gas wells, Manufacturing, Refineries, Sources, Sites, Toluene, Design criteria, Synthesis(Chemistry), Gasoline, Pyrolysis, Catalysis, Dealkylation, Disproportionation, Consumption, Environmental surveys, Solid wastes, Air pollution, Fugitive emissions

PB81-181570 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs
National Household Pesticide Usage Study, 1976-1977 Final rept.
Colorado State Univ , Fort Collins
Nov 79, 138p* EPA-540/9-80-002

Pesticides are widely used throughout the United States in the home environment and such usage may result in several environmental and human problems. Since household members may fail to read and fully understand the label instructions, misuse and overuse of the often potentially toxic compounds may precede contamination of small sectors of the surrounding ecosystem and accidental poisoning of man and animals. In the United States, only limited information has been available regarding the quantities of pesticides applied by householders relative to other sources of use. To date, the most extensive survey of pesticide usage was completed in 1974 and focused on only 25 selected compounds. This report presents the results of a national household pesticide usage study.

Keywords: *Pesticides, Utilization, Questionnaires, Surveys, Insecticides, Interviews, Statistical data, Storage, United States, Herbicides, Fungicides, Maps, *Households, Environmental health, *Toxic substances, Fumigants

PB81-182040 PC **A16**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
National Study of Hospitalized Pesticide Poisonings, 1974-1976 Final rept
Colorado State Univ , Fort Collins.
Apr 80, 356p EPA-540/9-80-001
Contract EPA-68-01-4663

The objective of the National Study of Hospital Admitted Pesticide Poisonings was to determine nationwide incidence rates for hospitalized acute pesticide poisoning cases among those persons admitted to general care hospitals during the years 1974 to 1976, and to compare the incidence rates obtained with those obtained in the National Study of Hospitalized Pesticide Poisonings covering the interval 1971-1973.

Keywords: *Pesticides, *Toxic diseases, Morbidity, Mortality, Children, Exposure, Statistical data, Hospitals, Occurrence, Patients, Age groups, *Toxic substances, *Poisonings, *Health statistics, Environmental health.

PB81-185563 PC **A14**/MF **A01**
Department of Energy, Washington, DC.
Methods for Ecological Toxicology. A Critical Review of Laboratory Multispecies Tests Final rept.
Oak Ridge National Lab., TN.
A. S Hammons. Feb 81, 317p* ORNL-5708, EPA-560/11-80-026
Sponsored in part by Department of Energy, Washington, DC.

This document provides a review and evaluation of laboratory methods for measuring the effects of chemicals on aquatic and terrestrial population interaction and ecosystem properties The use of mathematical models in ecotoxicological assessment is also addressed. More than 450 references are cited and a bibliography of 700 references is included Laboratory tests are evaluated for their potential for standardization for use in the ecological hazard and risk assessment processes under the Toxic Substances Control Act. The criteria used for these evaluations include whether or not the tests are rapid, reproducible, relatively inexpensive, unequivocal, sensitive, socially and economically relevant, predictive, generalizable, and well-developed

Keywords· *Toxicology, *Ecology, Methodology, Reviews, Evaluation, Measurement, Mathematical models, Assessment, Tests, Hazards, Ecosystems, Toxic Substances Control Act, *Toxic substances

PB81-187650 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances
Comparison of Static-Replacement and Flow-Through Bioassays Using Duckweed, 'Lemna gibba' G-3 Final rept
Breedlove Associates, Inc., Gainesville, FL
John A Davis. Jan 81, 106p EPA-560/6-81-003
Contract EPA-68-01-5776

Static-replacement and flow-through tests were conducted using CuSO4 5H2O, 2,4,6-trichlorophenol, and o-cresol to determine if they gave similar LC50's and EC50's for duckweed, Lemna gibba G-3. Static-replacement tests also were conducted using ethylene glycol and di(2-ethylhexyl) phthalate Mortality, reproduction, dry weight, and root length were used to measure effect levels of the toxicants LC50's and EC50's were calculated using quadratic regression with log transformation of the independent variable (concentration) and with several different transformations for the dependent variables. ANOVA's were used to test for differences between the two types of tests, tests within types, and replicates within tests A procedure also was provided for estimating the number of tests and replicates necessary to obtain confidence limits within a given percentage of the mean. Mortality and reproduction produced the best results. The highest variation occurred among tests, regardless of type, and the smallest variation was generally within tests (i.e. among replicates). Therefore, the best allocation of resources would be to replicate static-replacement tests in time, using four replicates per test

Keywords: *Toxicology, Bioassay, Comparison, Mortality, Reproduction(Biology), Data processing, Cost analysis, Cresols, Chlorine organic compounds, Ethylene glycol, Duckweed, Lemna gibba, *Toxic substances, *Water pollution effects(Animals), Copper sulfate, TCP 2-4-6 herbicide, Phenol/trichloro, Phthalic acid/bis(ethylhexyl-ester).

PB81-207383 PC **A06**/MF **A01**
Pesticide Registration Standard - 2,3-dichloro - 1,4-naphthoquinone (Dichlone) Final rept.
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jan 81, 125p Rept no. EPA-540/RS-81-001

This document presents the registration standard for Dichlone and summarizes the requirements for registering or re-registering a pesticide containing that active ingredient. Requirements for submitting scientific data, evaluating hazards associated with the chemical, and meeting requirements for registration are covered. The document also contains a bibliography citing all the studies reviewed by EPA in arriving at the positions and conclusions stated in the standard

Keywords. *Pesticides, *Standards, Chlorine organic compounds, Manufacturing, Marking, Chemical properties, *Dichlone, Naphthoquinone/dichloro.

PB81-207722 PC **A07**/MF **A01**
Pesticide Registration Standard - Deet Final rept.
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Dec 80, 137p Rept no. EPA-540/RS-81-004

This document presents the registration standard for Deet and summarizes the requirements for registering or re-registering a pesticide containing that active ingredient. Requirements for submitting scientific data and evaluating hazards associated with the chemical are covered. The document also contains a bibliography citing all the studies reviewed by EPA in arriving at the positions and conclusions stated in the standard.

Keywords. *Pesticides, *Standards, Exposure, Toxicology, Marking, Nitrogen organic compounds, Reviews, *Deet, Path of pollutants, Toluamide/N-N-diethyl.

PB81-224289 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Toxic Substances.
Materials Balance for Dyes and Pigments from Benzidine and Three Benzidine Derivatives Final rept.
Midwest Research Inst., Kansas City, MO
Thomas W. Lapp, Thomas L. Ferguson, Howard Gadberry, Fritz Hoffmeister, and Fred Hopkins May 81, 223p EPA/560/2-81/001
Contract EPA-68-01-3896

The processes for and losses resulting from the manufacture of dyes and pigments are presented. Consumption profiles and estimated losses are summarized for bisazobiphenyl (BAB) dyes in the textile, leather, and paper industries and for pigments in the rubber, plastics, printing ink, textile printing, and coatings industries. During dye production, losses occur in by-products, process venting, process losses, product filtration, and transfer and handling of solid dyes For 1978, about 80% of the total BAB dye used in the textile, paper, and leather industries was incorporated into the final product and 20% was lost to solid waste or wastewater. Losses in wastewater were about 50% greater than in solid waste. During pigment production, losses result from soluble by-products and handling and transfer losses In 1978, estimated total losses due to handling and transfer of pigments during production were 190,000 to 558,000 lb. The printing ink industry consumed the majority of the total pigment production. In 1978, about 75% of the total pigment used in the five industries was incorporated into the final

product and 25% was lost to wastewater or solid waste. Essentially all of the pigment loss was as solid waste with very small quantities in wastewater.

Keywords: *Material balance, *Dyes, *Pigments, Textile industry, Paper industry, Sampling, Plastic, Paints, Rubbers, Manufacturing, Leather, Tanning materials, Printing, *Benzidine, *Solid waste disposal.

PB81-225823 PC **A12**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Asbestos in Schools Final rept. May 79-Mar 81
Battelle Columbus Labs., OH.
Janice L. Patton, Carl W. Melton, Eric W. Schmidt, Julius S. Ogden, and Curtis Bridges. 31 Mar 81, 264p
Rept no EPA-560/5-81-02
Contract EPA-68-01-3858

Four approaches to assessing the potential for asbestos exposure in schools were evaluated: (1) a proposed exposure-ranking system or algorithm, (2) bulk sampling and analysis of the asbestos-containing materials, (3) a measurement of stimulated fiber release, and (4) air sampling. The scoring consistency was evaluated for the factors in the algorithm, friability and activity was scored with the least consistency, and exposure and the presence of air-moving systems with the most consistency. Scoring consistency improved with rater training. The variability in the determination of asbestos content was found to be associated with the laboratory analysis more so than with the sampling process. False negatives were found to occur, even at asbestos levels greater than 10 percent. The potential for release of fibers by physical disturbance of the asbestos-containing material was demonstrated with the use of a vibrator in contact with ceilings in schools; the releasability was found to increase with asbestos content and friability. Only a limited effort was devoted to air sampling, it was done for short periods (1 hour), and the analyses were done by phase microscopy (which detects only the fibers longer than 5 microns with an aspect ratio greater than 3:1). The airborne fiber levels were less than 0 07 fibers/cc in all cases but one.

Keywords: *Asbestos, *School buildings, Exposures, Sampling, Tables(Data), Air pollution, Algorithms, Concentration(Composition), *Indoor air pollution.

PB81-225849 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Asbestos-Containing Materials in School Buildings: Bulk Sample Analysis Quality Assurance Program Final rept
Midwest Research Inst., Kansas City, MO
E. P. Brantly, Jr. Mar 81, 34p 4901-A26, EPA-560/5-81-001
Contract EPA-68-01-5915
Prepared in cooperation with Research Triangle Inst., Research Triangle Park, NC

The second round of the Environmental Protection Agency (EPA) voluntary quality assurance (QA) program for commercial laboratories claiming capability in the polarized light microscope analysis of bulk samples for asbestos was conducted in August and September, 1980. Seventy-six laboratories each received bulk samples of two asbestiform minerals and two nonasbestos materials: amosite, crocidolite, cellulose, and wollastonite. A performance rating based on correct classification of positive (asbestos) and negative (nonasbestos) samples was scored for and reported to participating laboratories. Among the inaccurate results reported were 3 false negatives (crocidolite) and 32 false positives (3 cellulose, 29 wollastonite) QA program results are made available to the laboratories, the EPA, and the public. Continuation of the QA program with future sample sets is anticipated

Keywords: *Asbestos, *School buildings, Sampling, Quality assurance, Performance evaluation, Cellulose, Tables(Data), Air pollution, *Indoor air pollution, Amosite, Crocidolite, Wollastonite

PB81-231029 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Acquisition and Chemical Analysis of Mother's Milk for Selected Toxic Substances Final rept. 23 Jan 78-18 Apr 80
Research Triangle Inst., Research Triangle Park, NC.
Mitchell D. Erickson, Benjamin S. H. III Harris, Edo D. Pellizzari, Kenneth B. Tomer, and Richard D. Waddell.
Dec 80, 164p EPA/560/13-80/029
Contract EPA-68-01-3849

Samples of mother's milk were collected from Bayonne, NJ; Jersey City, NJ; Pittsburgh, PA; Baton Rouge, LA; and Charleston, WV, and analyzed for volatile (purgeables) and semivolatile (extractable) organics using glass capillary gas chromatography/mass spectrometry/computer. In the volatile fraction, 26 halogenated hydrocarbons, 17 aldehydes, 20 ketones, 11 alcohols, 2 acids, 3 ethers, 1 epoxide, 14 furans, 26 other oxygenated compounds, 4 sulfur-containing compounds, 7 nitrogen-containing compounds, 13 alkanes, 12 alkenes, 7 alkynes, 11 cyclic hydrocarbons, and 15 aromatics were found, including major peaks for hexanal, limonene, dichlorobenzene, and some esters. The levels of dichlorobenzene appeared to be significantly higher in the samples from Jersey City and Bayonne than in samples from other sites. Jersey City samples also appeared to have significantly higher levels of tetrachloroethylene. Charleston and Jersey City samples appeared to have significantly higher levels of chloroform; however, chloroform was observed in the blanks at about 20% of that in the samples. Due to the small sample size and lack of control over the solicitation of sample donors, the data cannot be used to extrapolate to the general population. Fewer semivolatile compounds of interest were found. Polychlorinated naphthalenes, polybrominated biphenyls, chlorinated phenols, and other compounds were specifically sought and not detected (limit of detection about 20-100 ng/mL milk). Polychlorinated biphenyls (PCBs) and DDE were found.

Keywords: *Chemical analysis, *Milk, *Environmental surveys, *Toxicology, Humans, Gas chromatography, Mass spectroscopy, Sampling, Chlorine organic compounds, Concentration(Composition), *Toxic substances, *Volatile organic compounds, *Mothers milk, *Toxic substances, Benzene/dichloro, Polychlorinated biphenyls, Polychlorinated naphthalenes, Polybrominated biphenyls, DDE insecticide.

PB81-232076 PC **A06**/MF **A01**
TSCA Chemicals in Commerce Inventory: Regional and State Perspectives Toxics Integration Information series 1980
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Daryl L. Kaufman, Bob Janney, Donn Viviani, Jean Bollinger, and Denny Daniels. Aug 81, 106p Rept no. EPA-560/TIIS-81-005

Using the CICIS Inventory it was possible to determine which chemical substances were produced exclusively in each of the 10 EPA regions. Slightly less than 50% of the inventory is region-specific. Confidential Inventory runs do not affect this finding. A regulatory status of the top 440 high production volume chemicals (a production volume range of 10-50 million lbs/yr was selected as a cut-off point) was completed and it appeared that only 95 specific chemical substances were undergoing any sort of assessment, regulation development, or were already regulated. Document will provide the regions guidance in their priority setting

Keywords. *Chemical compounds, *Inventories, Regulations, State government, Regional analysis

PB81-232811 PC **A03**/MF **A01**
Metabolism Summaries of Selected Halogenated Organic Compounds in Human and Environmental Media, A Literature Survey: First Update Final rept.
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Syed M. Naqvi, and Marion C. Blois. Dec 80, 44p Rept no. EPA-560/13-79-018

This is the first update to an earlier EPA report entitled 'Metabolism Summaries of Selected Halogenated Organic Compounds in Human and Environmental Media, A Literature Survey' (EPA-560/6-79-008) This update provides additional information on fifteen halocarbons covered in the original report as well as information on four new halocarbons. As did the earlier literature summary, this update deals with the uptake, retention, distribution and elimination patterns, identification of metabolites, and metabolic pathways of the halocarbons.

Keywords: *Metabolism, *Halohydrocarbons, Distribution, Identifying, Physiology, Literature surveys, Metabolites, Bioaccumulation.

PB81-232969 PC **A04**/MF **A01**
Toxic Substances Control Act Grants to States
Toxics Integration Information series
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Robert E. Janney. Jun 81, 71p Rept no. EPA-560/TIIS-81-003

The report describes State projects funded under section 28 of the Toxic Substances Control Act. Section 28 allows Federal assistance to States wishing to develop toxic substances investigation and control programs. Approximately $4.5 million was awarded, over a three-year period, to nine States -- Illinois, Maryland, Michigan, New Jersey, New York, North Carolina, Ohio, Puerto Rico and Wisconsin.

Keywords: *Grants, *Toxicology, States(United States), Legislation, Illinois, Maryland, Michigan, New Jersey, New York, North Carolina, Ohio, Puerto Rico, Wisconsin, *Toxic Substances Control Act, Public Law 94-469, Funds.

PB81-233033 PC **A17**/MF **A01**
Environmental Protection Agency, Washington, DC.
Mitigation of Worker Exposure to Ethylene Oxide
MITRE Corp., McLean, VA. METREK Div.
Renee Goldgraben, and Neal Zank. Mar 81, 387p
MTR-80W333, EPA/540/9-81-00
Contract EPA-68-01-5944

Gaseous ethylene oxide (ETO) is widely used to sterilize and fumigate a wide variety of goods which may be otherwise damaged by alternative treatment techniques. Workers engaged in ETO sterilization/fumigation procedures may be commonly exposed to ETO. Such exposure may be associated with adverse health consequences. This report describes the equipment and treatment procedures in use at selected sites and identifies and categorizes situations leading to worker exposure to ETO. Existing engineering, workplace design, and work practice measures to control worker exposure are identified and categorized. The extent to which these measures have been implemented is also presented. In addition, this report briefly describes techniques and equipment available for ambient ETO monitoring and identifies their advantages and limitations.

Keywords: *Ethylene oxide, *Industrial medicine, Exposure, Equipment, Indoor atmospheres, Air pollution, Procedures, *Occupational safety and health, Air pollution effects(Humans), Monitoring.

PB81-234049 PC **A10**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Measurement of Benzene Body-Burden for Populations Potentially Exposed to Benzene in the Environment Final rept. 7 Dec 77-10 Jun 80
Research Triangle Inst., Research Triangle Park, NC.
Ruth A. Zweidinger, Stephen D. Cooper, Benjamin S. H III Harris, Tyler D. Hartwell, and Ralph E. Folsom, Jr.
Aug 80, 206p EPA-560/13-80-028
Contract EPA-68-01-3849

A pilot study was performed to assess the measurement of benzene body-burden for populations potentially environmentally exposed to benzene. Probability sampling was used to select the participants in the two study geographical sites, Harris County, TX and St. Louis, MO plus parts of Wood River, Roxana, South Roxana and Hartford, IL. Benzene levels were measured for the air and water environmental exposure for each participant and the benzene body-burden was measured through breath levels and, in a subsample, blood levels. A pretest of occupationally exposed and non-exposed individuals was used to test analytical methodology and the concept of breath as an indicator of body-burden. The blood benzene levels expected and observed required analytical methods capable of measuring - 1 micrograms/L or below. This methodology did not exist and had to be developed for the pretest and pilot study. Benzene levels for smokers and non-smokers were compared in the pretest. The range of air benzene levels found in the Harris County study (49 participants) was 2 to 45 micrograms/cu m with a weighted means of 16.1 micrograms/cu m; breath levels ranged from 0 to 14 micrograms/cu m with a weighted mean of 2.9 micrograms/cu m. In the St. Louis (68 participants) study the range of air benzene levels was 3 to 125 micrograms/cu m with a weighted mean of 26.8 micrograms/cu m; breath

levels ranged from 1 to 26 micrograms/cu m with a weighted mean of 8.5 micrograms/cu m.

Keywords: *Benzene, *Toxicology, Blood chemical analysis, Aromatic hydrocarbons, Sampling, Assessments, Air pollution, Water pollution, Measurement, Texas, Missouri, Smoking, Exposure, *Air pollution effects(Humans), *Toxic substances.

PB81-234098 PC **A05**/MF **A01**
Pesticide Registration Standard: 2-Ethyl-1,3-Hexanediol
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jun 81, 80p Rept no. EPA-540/RS-81-005

This document contains information regarding reregistration of pesticide products containing 2-Ethyl-1,3-Hexanediol (6-12), including how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords: *Standards, Pesticides, Regulations, Oxygen organic compounds, Ecology, Residues, Toxicology, *Hexane diol/ethyl, Path of pollutants.

PB81-241481 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Chemical Selection Methods: An Annotated Bibliography Toxics integration information series (Final)
Tracor JITCO, Inc., Rockville, MD.
Judy Hoffman, John N. Gevertz, Elaine Bild, and Douglas W. Sellers. Nov 80, 33p* EPA-560/TIIS-80-001
Contract EPA-68-01-6021

Regulatory agencies charged with control of toxic chemicals have examined and are examining various methods to select chemicals of concern from the universe of chemical substances. Chemical selection refers to such activities as priority setting, ranking, indexing, and sorting. These efforts have included the development of various systematic selection methods such as scoring systems. This annotated bibliography is intended to provide interested individuals with a variety of methods for chemical selection.

Keywords: *Chemical compounds, *Bibliographies, Pesticides, Water pollution, Air pollution, Radioactive contaminants, Abstracts, *Toxic substances, Toxic Integration Information Series, Listings, Solid wastes.

PB81-242406 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
State Integrated Toxics Management: Fact and Challenge Toxic Integration Policy series.
National Governor's Association, Washington, DC.
Jul 81, 324p EPA-560/TIPS-81-001
Grant EPA-R-807966-01-0

Integration (EPA/OTI) is interested in substantially strengthening federal-state cooperative mechanisms for the control and management of toxic substances. Designing a framework for federal-state cooperation and coordination depends heavily upon states' perspectives on their needs and potential roles. In cooperation with EPA/OTI the National Governors' Association's Center for Policy Research undertook a three month review of state perspectives on overall hazardous materials management, focusing on toxic substances, to support the development of this federal-state cooperative strategy. NGA stresses the wide range of state accomplishments in this area. The report divides states into three groups along a set of qualities indicating their organization for toxics management and the sophistication of their approach. Different relationships with the Federal government, and different requirements for support, are indicated for each group. In general, the sophisticated states need program flexibility, those moderately involved need technical assistance, and the least advanced need information about the seriousness of the problem and workable models of improved systems.

Keywords: *Hazardous materials, Toxicology, State government, National government, Cooperation, Coordination, Management, Legislation, Projects, *Toxic substances, *Intergovernmental relationships, Programs.

PB81-243503 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Identifying Potential Asbestos Exposures in Schools: The Montgomery County Experience
Research Triangle Inst., Research Triangle Park, NC.
Terry L. Wright, and Everett E. Logue. Sep 80, 61p
EPA/560/13-80-039
Contract EPA-68-01-5848

This report summarizes the experience of the Montgomery County Combined General Health District in their asbestos-in-schools control program. A survey of all schools within the District's jurisdiction was completed. Bulk samples of friable materials were collected and analyzed for their asbestos content, and asbestos exposure scores were obtained for those areas where asbestos was present. Recommendations for appropriate abatement procedures were made based upon exposure scores, and the values of score components.

Keywords: *Asbestos, *Environment surveys, Ohio, Exposure, Schools, Public health, Air pollution, Inspection, Sampling, Assessments, *Montgomery County(Ohio), *Air pollution control, *Toxic substances, Air sampling.

PB81-243586 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Asbestos-Containing Materials in School Buildings: Guidance for Asbestos Analytical Programs
Research Triangle Inst., Research Triangle Park, NC.
D. Lucas, T. Hartwell, and A. V. Rao. Dec 80, 106 EPA-560/13-80-017A
Contract EPA-68-01-5848

This document is one in a series prepared in support of the EPA Asbestos-In-Schools Program It was developed to provide guidance to local school officials and their staffs in determining the presence or absence of asbestos in school buildings. Data and information generated during the EPA Technical Assistance Program have been used to design a rigorous sampling and analysis scheme for bulk materials. Implementation of the enclosed sampling protocol will reliably document the presence or absence of asbestos in the bulk materials and provide an interval estimate of the asbestos content.

Keywords: *School buildings, *Asbestos, Sampling, Materials tests, X ray diffraction, Quantitative analysis, Quality assurance, Air pollution

PB81-249229 PC **A15**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of Trichloroethylene: A Comprehensive Bibliography of Published Literature Final rept. 1930-81
Tracor JITCO, Inc., Rockville, MD.
Jul 81, 344p* EPA-560/7-81-016
Contract EPA-68-01-5836

This document is a bibliography of published citations on health and environmental aspects of Trichloroethylene (Chemical Abstracts Service Registry Number 79-01-6) for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included.

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Literature surveys, *Environmental health, CAS 79-01-6, *Ethylene/trichloro.

PB81-249351 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of 1,1,2-Trichloroethane: A Comprehensive Bibliography of Published Literature Final rept. 1930-81.
Tracor JITCO, Inc., Rockville, MD
Jul 81, 52p* EPA-560/7-81-015
Contract EPA-68-06-5836

This document is a bibliography of published citations on health and environmental aspects of 1,1,2 Trichloroethane (Chemical Abstracts Service Registry Number 79-00-5) for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included.

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, Chlorine organic compounds, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Literature surveys, *Environmental health, *Ethane/trichloro, *Tricloroethanes, CAS 79-00-5.

PB81-249450 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Cost Analysis Methodology and Protocol Estimates: OECD Minimum Pre-Market Data Test Protocols
Enviro Control, Inc., Rockville, MD.
Janis C. Kurtz, and Allan Cohen. Jan 81, 48p EPA-560/4-81-002
Contract EPA-68-01-5864

The purpose of the study is to estimate the cost of the protocols for the Organization for Economic Cooperation and Development (OECD) Minimum Premarket Data (MPD). OECD is an international organization of 24 member nations whose membership includes the major chemical producers of the non-communist world. The MPD is designed for premarket assessment of the new chemicals in the OECD member nations. The base set of premarketing data which EPA is recommending is identical to the MPD developed by the OECD. The protocols were costed by first breaking them down into the various cost components and then costing each component separately.

Keywords: *Chemical tests, Chemical industry, Cost estimates, Labor estimates, Chemical compounds, Chemical properties, Toxicity, Manpower, *Protocols.

PB81-249625 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of Acrylonitrile: A Comprehensive Bibliography of Published Literature 1930-1981 Final rept.
Tracor JITCO, Inc., Rockville, MD.
Jul 81, 118p* EPA-560/7-81-007
Contract EPA-68-06-5836

This document is a bibliography of published citations on health and environmental aspects of Acrylonitrile (Chemical Abstracts Service Registry Number 107-13-1) for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included.

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, *Acrylonitriles, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Nitriles, Literature surveys, *Environmental health, CAS 107-13-1.

PB81-249633 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of Adipate Esters: A Comprehensive Bibliography of Published Literature 1930-1981 Final rept
Tracor JITCO, Inc., Rockville, MD.
Jul 81, 44p* EPA-560/7-81-008
Contract EPA-68-06-5836

This document is a bibliography of published citations on health and environmental aspects of selected Adipic acid esters (Di-(2-ethylhexyl); Di-n-octyl; Di-2-butoxyethyl; Diisodecyl; Diisooctyl; N-hexyl-n-decyl; Di-(2-butoxyethyl)ethyl; N-octyl-n-decyl; Dimethyl; Dinonyl; C7-C9 linear; Dicapryl; Diisopropyl; Ditridecyl; Chemical Abstracts Service Registry Numbers 103-23-1; 123-79-5; 141-18-4; 27178-16-1; 1330-86-5; 22707-35-3; 141-173; 110-29-2; 627-93-0; 151-32-6; 68515-75-3; 108-63-4, 6938-94-9; 16958-92-2 respectively)

for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included.

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, *Adipates, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Esters, Literature surveys, *Environmental health, CAS 103-23-1, CAS 123-79-5, CAS 141-18-4, CAS 27178-16-1, CAS 1330-86-5, CAS 16958-92-2, CAS 22707-35-3, CAS 141-17-13, CAS 110-29-2, CAS 627-93-0, CAS 151-32-6, CAS 68515-75-3, CAS 108-63-4, CAS 6938-94-9.

PB81-249641 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of alpha-Chlorotoluene: A Comprehensive Bibliography of Published Literature 1930-1981 Final rept.
Tracor JITCO, Inc., Rockville, MD.
Jul 81, 45p* EPA-560/7-81-009
Contract EPA-68-06-5836

This document is a bibliography of published citations on health and environmental aspects of alpha Chlorotoluene (Chemical Abstracts Service Registry Number 100-44-7) for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included.

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, *Benzyl chloride, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Literature surveys, *Environmental health, CAS 100-44-7, Toluene/chloro.

PB81-249658 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of Bromoethylene: A Comprehensive Bibliography of Published Literature 1930-1981 Final rept.
Tracor JITCO, Inc., Rockville, MD.
Jul 81, 34p* EPA-560/7-81-010
Contract EPA-68-06-5836

This document is a bibliography of published citations on health and environmental aspects of Bromoethylene (Chemical Abstracts Service Registry Number 593-60-2) for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on-line, the search strategies are also included.

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Bromine organic compounds, *Ethylene/bromo, Literature surveys, *Environmental health, CAS 596-60-2.

PB81-249666 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of Cyclohexylamine: A Comprehensive Bibliography of Published Literature 1930-1981 Final rept.
Tracor JITCO, Inc., Rockville, MD.
Jul 81, 64p* EPA-560/7-81-012
Contract EPA-68-06-5836

This document is a bibliography of published citations on health and environmental aspects of Cyclohexylamine (Chemical Abstracts Service Registry Number 108-91-8) and its simple nitrite, sulfate, and hydrochloride salts (Chemical Abstracts Service Registry Numbers 24407-06-5; 27817-50-1 and 4998-76-9 respectively) for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included.

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Nitrogen organic compounds, *Cyclohexylamine, Literature surveys, *Environmental health, CAS 108-91-8, CAS 24407-06-5, CAS 27817-50-1, CAS 4998-76-9.

PB81-249674 PC **A03**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of Hexachloroethane: A Comprehensive Bibliography of Published Literature 1930-1981 Final rept
Tracor JITCO, Inc., Rockville, MD
Jul 81, 49p* EPA-560/7-81-013
Contract EPA-68-06-5836

This document is a bibliography of published citations on health and environmental aspects of Hexachloroethane (Chemical Abstracts Service Registry Number 67-72-1) for the period 1930 to May 1981 The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on-line, the search strategies are also included

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Chlorine organic compounds, *Ethane/hexachloro, Literature surveys, *Environmental health, CAS 67-72-1

PB81-249682 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of Tetrachloroethylene: A Comprehensive Bibliography of Published Literature 1930-1981 Final rept.
Tracor JITCO, Inc., Rockville, MD.
Jul 81, 155p* EPA-560/7-81-014
Contract EPA-68-06-5836

This document is a bibliography of published citations on health and environmental aspects of Tetrachloroethylene (Chemical Abstracts Service Registry Number 127-17-4) for the period of 1930-1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included.

Keywords: *Bibliographies, *Toxicology, *Hazardous materials, *Tetrachloroethylene, Public health, Environments, Epidemiology, Physiological effects, Pollution, Safety, Control, Regulations, Literature surveys, *Environmental health, CAS 127-17-4.

PB81-911600 Subscription
Pesticide Product Information on Microfiche: Compact Label File
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1981, 1 issue and 2 updates
Microfiche available on subscription, North American Continent price $250.00/year; all others write for quote.

The study includes photographs of updated and new pesticide labels plus updated index to entire compact label file.

Keywords: *Pesticides, *Documentation, Microfilm, Labels, Information, Indexes(Documentation), Photographs, Consumer products, Updating.

PB81-921900 Standing Order
Pesticide Product Information on Microfiche: Sets A and B
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1981, 2 issues
Microfiche available on Standing Order, Deposit Account required. North American Continent price $150.00/year; all others write for quote.

Set A contains product manager assignments, pesticide companies listed numerically and alphabetically, chemical cross reference file alphabetically and numerically, tolerance file by chemical and commodity, inverted chemical/registration number, pesticide label data, 24c applications by state, chemical/site/pest/24c permit number and chemical index. Set B contains the site/pest/chemical/registration number and the chemical/site/pest/registration fiche sets with indices.

Keywords. *Documentation, *Pesticides, Manuals, Chemical compounds, Businesses, Toxic tolerances, Microfilm, Labels, Information, Sites, Herbicides, Fungicides, Consumer products.

PB81-922000 Standing Order
Pesticide Product Information on Microfiche: Set A
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1981, 2 issues
Microfiche available on Standing Order, Deposit Account required. North American Continent price $40.00/year; all others write for quote. Also available with Set B, as PB81-921900.

Set A contains product manager assignments, pesticide companies listed numerically and alphabetically, chemical cross reference file alphabetically and numerically, tolerance file by chemical and commodity, inverted chemical/registration number, pesticide label data, 24c applications by state, chemical/site/pest/24c permit number and chemical index.

Keywords: *Documentation, *Pesticides, Manuals, Chemical compounds, Insecticides, Herbicides, Rodenticides, Businesses, Toxic tolerances, Microfilm, Labels, Information, Licenses, Consumer products.

PB81-922100 Standing Order
Pesticide Product Information on Microfiche: Set B
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1981, 2 issues
Microfiche available on Standing Order, Deposit Account required North American Continent price $120 00/year; all others write for quote. Also available with Set A, as PB81-921900.

Set B contains the site/pest/chemical/registration number and the chemical/site/pest/registration fiche sets with indices which permit qualifiers and three levels of site specificity for each discipline related subset (herbicides, fungicides, etc.).

Keywords· *Documentation, *Pesticides, Manuals, Chemical compounds, Businesses, Toxic tolerances, Microfilm, Labels, Information, Pests, Licenses, Sites, Herbicides, Fungicides, Consumer products.

PB82-108531 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
The Relevance of Multiple Criteria Decision Making to Priorities for Chemical Regulations: An Annotated Bibliography Final rept.
Tracor JITCO, Inc., Rockville, MD.
Steve Wilhelm, and Patricia Foreman. Aug 81, 66p*
EPA-560/7-81-005
Contract EPA-68-01-6021

The bibliography contains one hundred and thirteen references and original abstracts on multiple criteria decision making and multi-attribute utility theory. It is a selection of representative articles and reviews rather than an exhaustive review of the literature. This report was prepared in cooperation with the Office of Toxics Integration within the Office of Toxic Substances.

Keywords: *Decision making, *Bibliographies, Attitudes, Ranking, Criteria, Multi attribute utility functions.

PB82-110115 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Environmental and Health Aspects of Chloroform: A Comprehensive Bibliography of Published Literature, 1930-1981 Final rept.
Tracor JITCO, Inc., Rockville, MD.
Jun 81, 311p EPA-560/7-81-011
Contract EPA-68-01-5836

This document is a bibliography of published citations

on health and environmental aspects of Chloroform (Chemical Abstacts Service Registry Number 67-66-3) for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included.

Keywords: *Bibliographies, *Chloroform, *Toxicology, Public health, Chlorohydrocarbons, Chlorine organic compounds, Epidemiology, Physiological effects, Safety, Control, Regulations, *Environmental health, CAS 67-66-3, Literature surveys, *Toxic substances.

PB82-110123 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Environmental and Health Aspects of Acrylamide: A Comprehensive Bibliography of Published Literature, 1950-1981 Final rept.
Tracor JITCO, Inc., Rockville, MD.
Jun 81, 83p EPA-560/7-81-006
Contract EPA-68-01-5836

This document is a bibliography of published citations on health and environmental aspects of Acrylamide (Chemical Abstacts Service Registry Number 79-06-1) for the period 1930 to May 1981. The citations have been selected from a thorough literature search, and broadly classified as having primarily environmental or biological emphasis. The sources used in the search are identified, and for the portion performed on line, the search strategies are also included

Keywords: *Bibliographies, *Toxicology, Public health, Amides, Epidemiology, Physiological effects, Safety, Control, Regulations, *Environmental health, CAS 79-06-1, Literature surveys, *Acrylamide, *Toxic substances.

PB82-112293 PC **A04**/MF **A01**
TSCA (Toxic Substances Control Act) Status Report for Existing Chemicals Toxics Integration Information series
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Doreen Sterling, Susan Bloodworth, Patricia Grim, and Alicemary Leach. Jul 81, 67p* Rept no. EPA-560/TIIS-81-004

The TSCA Status Report (TSR) for Existing Chemicals provides current information on the regulatory/assessment status of chemicals of interest to the Office of Toxic Substances under the Toxic Substances Control Act (TSCA).

Keywords: Assessments, Regulations, Tables(Data), Chemical compounds, Environmental surveys, *Toxic substances, Toxic substances Control Act

PB82-114976 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Assessing the Feasibility of Epidemiologic Research on DEHP Exposure among Renal Dialysis Patients Final rept
JRB Associates, Inc., McLean, VA
Ira Marks, Leslie Euinton, George Shreiner, Dorothy Wellington, and Pauline Wagner Jul 81, 97p EPA-560/6-81-009
Contract EPA-68-01-6280
Prepared in cooperation with Georgetown Univ., Washington, DC. School of Medicine.

Dialysis patients receive DEHP exposure from two sources, blood stored in PVC blood bags and tubing used in dialysis treatment The Environmental Protection Agency (EPA) conducted a preliminary investigation into the suitability of using this group for an epidemiologic study because of their documented exposure to DEHP. As part of this assessment, the Health and Human Services (DHHS), End Stage Renal Disease Medical Information System (ESRD MIS) data base was evaluated to determine its usability in the conduct of such a study The end stage renal disease (ESRD) patient population was found not to constitute a viable population for an epidemiologic investigation to determine the health effects of DEHP exposure. The bases for this conclusion were the complexities of end stage renal disease and the multiple factors involved in the treatment of the disease. In addition, the ESRD MIS data base was found to lack the completeness, consistency, and accuracy necessary to perform meaningful analyses other than demographic analysis

Keywords: *Phthalates, *Toxicology, *Plasticizers, Dialysis, Feasibility studies, Assessments, Epidemiology, Exposure, Patients, Research, Pathology, Information systems, *Phthalatic acid/bis(ethylhexyl-ester), Hemodialysis, Medical research, End stage renal disease, *Medical information systems.

PB82-119447 PC **A11**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
The Potential Atmospheric Impact of Chemicals Released to the Environment: Proceedings of Four Workshops
National Oceanic and Atmospheric Administration, Silver Spring, MD. Air Resources Labs.
John M. Miller. Jan 81, 240p* EPA-560/5-80-001

Four workshops are reported: toxic substances in atmospheric deposition, screening chemicals for inadvertent modification of the stratosphere, the impact of chemicals on the radiative transfer imbalance, and the impact of anthropogenic chemicals on precipitation processes. These workshops were convened as part of an effort to assess the impact of toxic chemicals on the abiotic environment (specifically, the atmosphere), to assess the feasibility of screening chemicals for these impacts, and whenever possible to develop a screening logic. Report contains an extensive literature survey and bibliography.

Keywords: *Chemical compounds, *Air pollution, *Meetings, Stratosphere, Feasibility, Revision, Trace elements, Metals, Concentration(Composition), Assessments, Organic compounds, Deposition, Particles, Clouds, Precipitation(Meteorology), Nucleation, *Toxic substances.

PB82-131145 PC **A06**/MF **A01**
Pesticide Registration Standard: Naphthaleneacetic Acid its, Salts, Ester, and Acetamide
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jul 81, 110p Rept no. EPA-540/RS-81-006

This document contains information regarding reregistration of pesticide products containing Naphthaleneacetic Acid (NAA), including how to register under the registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords: *Pesticides, *Standards, Regulations, Toxicology, Residues, Ecology, *Naphthalene acetic acid, Path of pollutants.

PB82-131293 PC **A07**/MF **A01**
Pesticide Registration Standard: Isopropalin
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Aug 81, 148p Rept no. EPA-540/RS-81-009

This document contains information regarding reregistration of pesticide products containing Isopropalin, including how to register under the registration standard, regulatory position and rationale, and summaries of data requirements and data gaps Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords: *Pesticides, *Standards, Nitrogen organic compounds, Regulations, Chemistry, Residues, Ecology, Toxicology, Cumidine/dinitro-N-N-dipropyl, Path of pollutants

PB82-131731 PC **A08**/MF **A01**
Pesticide Registration Standard
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Aug 81, 159p Rept no. EPA-540/RS-81-005
Errata sheet inserted

This document contains information regarding reregistration of pesticide products containing Phosalone, including how to register under the registration standard, regulatory position and rationale, and summaries of data requirements and data gaps Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in standard.

Keywords: *Pesticides, *Standards, Chlorine organic compounds, Toxicology, Regulations, Ecology, Chemistry, *Zolone, Phosphorodithioic acid/(diethyl-ester)-((chloro-oxobenzoxazolinyl-)methyl), Path of pollutants.

PB82-132994 PC **A06**/MF **A01**
Pesticide Registration Standard: Carboxin
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Aug 81, 120p Rept no. EPA-540/RS-81-007

This document contains information regarding reregistration of pesticide products containing Carboxin, including how to register under the registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords· *Pesticides, *Standards, Regulations, Nitrogen organic compounds, Toxicology, Residues, Ecology, Chemistry, *Vitavax, Oxathiin carboxanilide/dihydro-methyl, Path of pollutants.

PB82-133562 PC **A06**/MF **A01**
Coumaphos (O,O-diethyl O-(3-chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl) phosphorothioate: Pesticide Registration Standard
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
30 Jun 81, 115p* Rept no. EPA-540/RS-81-013

This document contains information regarding reregistration of pesticide products containing O,O-diethyl O-(3-chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl) phosphorothioate (Coumaphos), including how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords· *Pesticides, *Standards, Chlorine organic compounds, Regulations, Toxicology, Residues, Ecology, Chemistry, *Co-Ral, Phosphorothioic acid/chloromethyl-oxo-benzopyranyl-(diethyl-ester), Path of pollutants.

PB82-133570 PC **A06**/MF **A01**
Ammonium Sulfamate: Pesticide Registration Standard
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Apr 81, 115p* Rept no. EPA-540/RS-81/012

This document contains information regarding reregistration of pesticide products containing Ammonium Sulfamate, including how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also, included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords: *Pesticides, *Standards, Regulations, Manufacturing, Chemistry, Toxicology, Residues, Ecology, Industrial hygiene, *Ammate, Ammonium sulfamate, Path of pollutants.

PB82-133638 PC **A08**/MF **A01**
Dialifor (O, O-diethyl S-(2-chloro-1-phthalimidoethyl) phosphorodithioate): Pesticide Registration Standard
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Aug 81, 175p Rept no. EPA-540/RS-81-014

This document contains information regarding reregistration of pesticide products containing O,O-diethyl S-(2-chloro-1-phthalimidoethyl) phosphorodithioate (Dialifor), including how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all stud-

ies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords: *Pesticides, *Standards, Regulations, Manufacturing, Chemistry, Toxicology, Residues, Ecology, Phosphorus organic compounds, *Torak, Phosphorodithioic acid/(diethyl-ester)-(Chloro-phthalimido-ethyl), Path of pollutants.

PB82-133646 PC **A05**/MF **A01**
Sulprofos (O-Ethyl O-(4-(methylthio)phenyl) S-propyl phosphorodithioate): Pesticide Registration Standard
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Aug 81, 95p Rept no. EPA-540/RS-81-008

This document contains information regarding reregistration of pesticide products containing Sulphofos (Bolstar), including how to register under the registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords· *Pesticides, *Standards, Regulations, Sulfur organic compounds, Chemistry, Toxicology, Residues, Ecology, *Sulphofos, Phosphorodithioic acid/(ethyl-ester)-((methylthio)-phenyl)-propyl, Path of pollutants.

PB82-134347 PC **A09**/MF **A01**
Pesticide Registration Standard: Chloramben (3 amino 2,5-dichlorobenzoic acid)
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Jul 81, 180p* Rept no. EPA-540/RS-81-015

This document contains information regarding reregistration of pesticide products containing 3 amino 2,5-dichlorobenzoic acid (Chloramben), including how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

Keywords. *Pesticides, *Standards, Regulations, Ecology, Chemistry, Residues, Manufacturing, Toxicology, Chlorine organic compounds, *Amiben, Benzoic acid/amino-chloro, Path of pollutants.

PB82-136102 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Chemical Technology and Economics in Environmental Perspective. Task VI - A Survey of Plasticizers: Epoxies, Linear Polyesters, and Trimellitates Final rept.
Midwest Research Inst., Kansas City, MO.
Thomas W. Lapp, Charles E. Mumma, and Joseph Chaszar. Nov 81, 74p* 4441-T(6), EPA-560/2-81-006
Contract EPA-68-01-3896

Study investigated the published literature for selected areas in three classes of plasticizers. epoxies, linear polyesters, and trimellitates. Areas of interest included physical and chemical properties, production and use, health and environmental effects, and plasticizer interchangeability. Current production methods, sites, and annual volumes are presented for each class. Little information is available in the published literature on health effects No occupational standards exist for any of the three classes. Unpublished health data are available for selected tests from manufacturers for specific materials. Environmental effects were limited to static fish toxicity studies for two trimellitates and studies of fungal and bacterial growth with epoxies and linear polyesters. Both classes of plasticizers are very susceptible to fungal and bacterial attack.

Keywords. *Plasticizers, *Environmental surveys, Manufacturing, Physical properties, Chemical properties, Utilization, Public health, Epoxy resins, Sites, Polyester resins, Fishes, Toxicity, Chemical industry, Heat resistant plastics, Industrial hygiene, Surveys, Methodology, Degradation, Polyvinyl chloride, Trimellitates.

PB82-140773 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Chemical Testing Industry Profile of Toxicological Testing Final rept.
Development Planning and Research Associates, Inc., Manhattan, KS.
Samuel G. Unger, Daniel W. Francke, Stuart L. Fribush, Geneva S. Hammaker, and Frank D. Lerman
Oct 81, 172p* EPA-560/4-81-003
Contract EPA-68-01-6064, EPA-68-01-6287
Prepared in cooperation with ICF, Inc., Washington, DC.

The study assists the EPA in evaluating the foreseeable availability of the facilities and personnel needed to perform the toxicological testing required under the Toxic Substances Control Act. The study profiles the toxicological testing industry which is estimated to contain 285 commercial toxicology laboratories with average employment of 57 per laboratory and average laboratory space, 28,000 sq. ft. Annual revenues for the industry are estimated at $650 million or $2.3 million per laboratory and market competition is high with no individual firm or small group of firms controlling key resources. The current supply of testing resources is adequate with industry utilization at about 80 to 85 percent. Capital and professional manpower are key resources. Demand for testing and testing resources should be strong and arises from regulatory sources including TSCA, FIFRA and FFDCA and non-regulatory sources. Finally, a conceptual supply/demand model shows it is possible to simulate and assess the potential economic impacts of regulatory changes as well as changes in prices, availability of resources and industry structure, but data and resource requirements to implement such a model would be substantial.

Keywords: *Toxicology, *Test facilities, *Chemical industry, Tests, Availability, Resources, Laboratories, Personnel, Evaluation, In vitro analysis, Bioassay, Economic analysis, *Toxic Substances Control Act, Public Law 94-469, Test personnel.

PB82-141797 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Octanol/Water Partition Coefficients and Aqueous Solubilities of Organic Compounds
National Bureau of Standards, Washington, DC.
Stanley P Wasik, Yadu B. Tewari, Michele M. Miller, and Daniel E. Matire. Dec 81, 68p* Rept no NBSIR-81-2406

A generator column method for measuring the octanol/water partition coefficient, K(o/w) and the aqueous solubility, C sup w sub s, is described. When water is pumped through a generator column packed with solid support coated with an organic stationary phase, an aqueous solution is generated that is in equilibrium with the stationary phase. The solute concentration in the eluted aqueous phase was measured either by high pressure liquid chromatography or by solvent extraction followed by gas chromatographic analysis. Aqueous solubilities and octanol/water partition coefficients of organic solutes, falling into 7 general chemical classes, have been systematically determined using the modified generator column method. From thermodynamics an equation is derived relating K(o/w) to the volume-fraction-based solute activity coefficient in water gamma sup w sub s, the latter being determinable from C sup w sub s. For each class of compounds, excellent linear correlations are found between log K(o/w) and log gamma sup w sub s with slopes close to the theoretical value of unity.

Keywords: *Solubility, *Organic compounds, *Water, Gas chromatography, *Partition coefficients, *Octanols, High pressure liquid chromatography, Numerical solution

PB82-156423 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Economic Implications of Regulating Chlorofluorocarbon Emissions from Nonaerosol Applications Final rept.
RAND Corp., Santa Monica, CA.
Adele R. Palmer, William E. Mooz, Timothy H. Quinn, and Kathleen A. Wolf. Oct 80, 308p R-2524-EPA, EPA-560/12-80-001
Contract EPA-68-01-3882, EPA-68-01-6111
Sponsored in part by Consumer Product Safety Commission, Washington, DC., and Food and Drug Administration, Washington, DC.

The study examines and compares the outcomes of two alternate methods for controlling nonaerosol emissions of chlorofluorocarbons (CFCs). Conventional regulatory methods such as technology standards are compared with innovative methods of regulation such as use taxes or production quotas distributed through the use of marketable permits. The economic costs of each system are calculated and compared, along with a discussion of the policy issues which must be addressed when choosing one form of regulation over another.

Keywords: *Air pollution control, *Economic impact, *Chlorine organic compounds, *Fluorine organic compounds, *Regulations, Substitutes, Standards, Comparison, Technology, Urethanes, Foam, Solvents, Refrigerators, Freezers, Air conditioners, *Air pollution abatement, *Freons.

PB82-156431 PC **A06**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Regulating Chlorofluorocarbon Emissions: Effects on Chemical Production Final rept
RAND Corp., Santa Monica, CA.
Kathleen A. Wolf. Oct 80, 115p N-1483-EPA, EPA-560/12-80-001B
Contract EPA-68-01-3882, EPA-68-01-6111

This report focuses on the manufacture of chlorofluorocarbons and the precursor chemicals. It is a support document for the Rand Corporation study: Adele R. Palmer, et. al., Economic Implications of Regulating Nonaerosol Chlorofluorocarbon Emissions, R-2524-EPA.

Keywords: *Air pollution, *Chemical industry, *Regulations, *Fluorine organic compounds, *Chlorine organic compounds, Manufacturing, Ozone, Aerosols, Forecasting, Chemical reactions, *Freons.

PB82-172271 PC **A05**/MF **A01**
10,10'-Oxybisphenoxarsine (OBPA): Pesticide Registration Standard
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances
Oct 81, 87p Rept no EPA-540/RS-82-003

This document contains information regarding reregistration of pesticide products containing the above chemical including how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the Standard

Keywords: *Pesticides, *Standards, Toxicology, Residues, Ecology, *Oxybisphenoxarsine, Path of pollutants.

PB82-172289 PC **A03**/MF **A01**
Oxyfluorfen (Goal 2E): Position Document No 4
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances
Jan 82, 40p Rept no. EPA-540/9-82-002

This document details the final determination regarding the Rebuttable Presumption Against Registration (RPAR) of products containing the above chemical The responses by the EPA to comments on the preliminary determination by the Scientific Advisory Panel and the United States Department of Agriculture are contained in the document. A bibliography of citations used in this final determination is also provided.

Keywords: *Pesticides, *Standards, Chlorine organic compounds, Exposure, Public health, Toxicity, *Oxyfluorfen, Ethylene/chloro, Rebuttable presumption against registration.

PB82-172297 PC **A06**/MF **A01**
N-(2,6-Dimethylphenyl)-N-(Methoxyacetyl) Alanine Methyl Ester (Metalaxyl): Pesticide Registration Standard
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Denise Keehner, Rose Allison, Henry Jacoby, and Jane Talarico. Jun 81, 105p Rept no. EPA-540/RS-82-

005

This document contains information regarding reregistration of pesticide products containing the above chemical including how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the Standard.

Keywords: *Pesticides, *Standards, Nitrogen organic compounds, Toxicology, Residues, Ecology, *Metalaxyl, Alanine/N-(dimethylphenyl)-N-(methoxyacetyl)-(methyl-ester), Path of pollutants.

PB82-177585 PC **A03**/MF **A01**
Pesticide Registration Standard: 3-(Methylsulfonyl-O-(Methylamino)) Carbonyl Oxime-2-Butanone (Butoxicarboxime)
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Dec 81, 49p Rept no. EPA-540/RS-82-004

This document contains information regarding reregistration of pesticide products containing the above chemical including how to register under a registration standard, regulatory position and rationale, and summarizes of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the Standard

Keywords: *Pesticides, *Standards, Sulfur organic compounds, Regulations, Manufacturing, Chemistry, Toxicology, Residues, Ecology, *Butoxicarboxim, Butanone/(methylsulfonyl)-((methylamino)carbonyl)oxime, Path of pollutants

PB82-177759 PC **A03**/MF **A01**
Contractor Requirements for the Control and Security of TSCA (Toxic Substances Control Act) Confidential Business Information
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Oct 81, 50p EPA-560/1-82-002

These procedures prescribe minimum standards and establish responsibility and accountability for the control and security of documents and computer systems that contain confidential business information (CBI) received under the Toxic Substances Control Act (TSCA) and furnished to a contractor to perform work under an EPA contract.

Keywords· *Contractors, *Data processing security, Businesses, Information, Documents, Contract administration, Contracted services, *Computer information security, *Confidentiality, Privacy, Toxic Substances Control Act

PB82-177767 PC **A04**/MF **A01**
TSCA (Toxic Substances Control Act) Confidential Business Information Security Manual
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Oct 81, 55p EPA-560/1-82-001

These procedures prescribe minimum standards and establish responsibility and accountability for the control of documents and computer systems that contain confidential business information (CBI) received by EPA under the Toxic Substances Control Act (TSCA).

Keywords: *Contractors, *Data processing security, Businesses, Information, Documents, Contract administration, Contracted services, *Computer information security, *Confidentiality, Privacy, Toxic Substances Control Act.

PB82-178500 PC **A14**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Support Document/Voluntary Environmental Impact Statement for Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Ban Regulation: Economic Impact Analysis Final rept
Versar, Inc., Springfield, VA
Robert Westin, and Bruce Woodcock. 30 Mar 79, 315p
EPA/560/3-82-001
Contract EPA-68-01-4771

This report summarizes the estimated economic impacts of PCB Ban Regulations which implement the requirements of Sections 6(e)(2) and 6(e)(3) of the Toxic Substances Control Act.

Keywords: *Environmental impact statements-final, Regulations, Chlorine organic compounds, Economic impact, Manufacturing, Sources, Exposure, *Polychlorinated biphenyls, Toxic substances control act.

PB82-180738 PC **A20**/MF **A01**
Pesticide Registration Standard: S-Methyl N-(Methylcarbamoyl)Oxy-Thioacetimidate (Methomyl)
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Oct 81, 475p Rept no. EPA-540/RS-81-001

This document contains information regarding reregistration of pesticide products containing the above chemical including how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the Standard

Keywords: *Pesticides, *Standards, Nitrogen organic compounds, Regulations, Manufacturing, Chemistry, Toxicology, Residues, Ecology, *Methomyl, Thioacetimidic acid/methyl-N-((methylcarbamoyl)-oxy), Path of pollutants.

PB82-185133 PC **A07**/MF **A01**
Oxyfluorfen (Goal 2E(Trade Name)) Position Document Number 1-2-3. Pesticide Rebuttable Presumption Against Registration
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Mar 82, 138p Rept no EPA-540/9-82-001
Errata sheet inserted.

This document details the Rebuttable Presumption Against Registration (RPAR) regarding products containing the above chemical. The bases for EPA's concern are contained in this document. It also contains a bibliography of citations used in this preliminary determination.

Keywords: *Pesticides, Standards, Regulations, Chlorine organic compounds, Exposure, Risk, Farm crops, *Oxyfluorfen, Ethylene/chloro

PB82-189978 PC **A19**/MF **A01**
Environmental Protection Agency, Washington, DC, Office of Pesticide Programs
Evaluation of the Private Applicator Pesticide Training and Certification Program: A Five State Study Final rept.
Abt Associates, Inc., Cambridge, MA.
Laura R. Studen, and Jonathan D. Hodgdon 1981, 448p
Contract EQ9AC014

In 1972, the federal pesticide program was significantly revised through the enactment of amendments to the Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (FIFRA). Under FIFRA, as amended in 1975 and 1978, there exists a complementary regulatory program to the pesticide registration procedure, i.e , a system of federal and state certification for commercial and private applicators 'restricted use pesticides' Essential features of this certification procedure, for both private and commercial applicators, include designation of a state administrative agency to establish applicator certification standards and for the Cooperative Extension Service to cooperatively design instructional manuals in a broad range of areas, including pest identification, pesticide selection and application, dissemination of pest management techniques, and discussion of environmental, legal, and safety issues. This study is focused exclusively on the private pesticide applicator training and certification programs in five states: Iowa, Nebraska, Pennsylvania, New York, and Georgia.

Keywords: *Specialized training, *Pesticides, Behavior, Surveys, Instructional materials, Characteristics, Licensing, Evaluation.

PB82-194036 PC **A03**/MF **A01**
The Progress of Regulations to Protect Stratospheric Ozone: Report to Congress Rept. for Aug 79-Dec 81
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Feb 82, 32p Rept no. EPA/560/1-82-003

As mandated by Section 155 of the Clean Air Act Amendments of 1977, EPA has submitted to Congress in February 1982, a report on the progress of regulation to protect stratospheric ozone covering the period from August 1979 to December 1981. The report reviews activities related to the production of stratospheric ozone from potential depletion due to emissions of chlorofluorocarbons (CFCs) and other ozone-depleting substances. Although the 1978 EPA & FDA regulations prohibited the manufacturing and processing of CFCs for non-essential aerosol uses, anticipated market growth in some non-aerosol uses may eventually offset the reductions achieved by the aerosol rule. In addition to CFCs, other potential ozone depleting substances are being investigated by EPA and other agencies. At the international level Japan and the European Economic Community have limited CFC-11 and CFC-12 production capacity to present levels while several nations are assessing the feasibility of reducing emissions from other uses. EPA and other Federal agencies will continue to monitor and support research to improve our understanding of atmospheric, health & environmental science of ozone depletion, technological capabilities and costs for limiting CFC emissions. Any decision regarding EPA action would be based on an evaluation of all these factors

Keywords: *Ozone, *Air pollution, *Regulations, Stratosphere, Aerosols, Monitoring, Forecasting, Chlorine organic compounds, Fluorine organic compounds, *Freons, Clean air act amendments of 1977.

PB82-195330 PC **A03**/MF **A01**
Toxic Substances Control Act (TSCA): Report to Congress for Fiscal Year 1981
Environmental Protection Agency, Washington, DC. Office of Toxic Substances
Jan 82, 34p Rept no. EPA/560/1-82-001

The fourth annual report to Congress summarizes progress made during FY 1981 by the Environmental Protection Agency (EPA) in implementing the Toxic Substances Control Act (Public Law 94-469, 94th Congress). The Agency's basic approach in implementing TSCA has been to use the Act's various provisions to stimulate better and more timely industry assessments of chemical risks. This approach should lead to more rapid and cost-effective achievement of the Agency's main statutory goals than would a chemical-by-chemical regulatory approach

Keywords. National government, Implementation, Legislation, Risks, Assessments, *Toxic Substances Control Act, Public Law 94-469, *Environmental Protection Agency.

PB82-195777 PC **A07**/MF **A01**
Pesticide Registration Standard: Magnesium Phosphide
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Feb 82, 149p* Rept no. EPA-540/RS-82-006

This document contains information regarding reregistration of pesticide products containing the above chemical including how to register under a registration standard, regulatory position and rationale, and summarizes of data requirements and data gaps Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the Standard

Keywords. *Pesticides, *Standards, Chemistry, Toxicology, Residues, Ecology, Regulations, *Magnesium phosphide, Path of pollutants.

PB82-203290 MF **E04**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances
Toxic Substances Control Act (TSCA) Chemical Substance Inventory: Cumulative Supplement II to the Initial Inventory
Chemical Abstracts Service, Columbus, OH.
May 82, 957p EPA-560/7-82-001

Contract EPA-68-01-4684
Paper copy available from Supt. of Docs.

This is the second Cumulative Supplement to EPA's 'Toxic Substance Control Act Chemical Substance Inventory: Initial Inventory' which was published in May 1979. This Cumulative Supplement II supersedes both the Supplement I published in October 1979 and the first Cumulative Supplement of July 1980. The Initial Inventory and the Cumulative Supplement II now constitute the Revised Inventory representing a total of over 58,000 chemical substances, including 1,800 generic names generated for chemicals whose identities have been claimed as confidential The Cumulative Supplement II lists over 13,000 chemical substances, including over 1,400 generic names for substances with confidential identities and 168 'new' substances for which premanufacturing notification review has been completed and that have actually been introduced in the U.S. market.

Keywords: *Chemical compounds, *Environmental surveys, Inventories, *Toxic Substance Control Act, Listings.

PB82-224320 PC **A08**/MF **A01**
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances
Dermatotoxicity: Selected Issues in Testing for Dermal Toxicity, Including Irritation, Sensitization, Phototoxicity, and Systemic Toxicity Technical rept (Final)
Tracor JITCO, Inc., Rockville, MD.
S. Chaube, K J. Falahee, C. S. Rose, H. E Seifried, and T. J. Taylor Jan 82, 171p EPA-560/11-82-002
Contract EPA-68-01-6176

Four categories of Dermatotoxicity testing are examined· Dermal Irritation Sensitization, Systemic Toxicity, and Phototoxicity. The rabbit is most widely used for irritation; the guinea pig is also acceptable, as its sensitivity is comparable Factors affecting dermal irritation include the degree of occlusion, use of abrasion, the application site, and duration of exposure and observation. This review suggests a tier-like strategy utilizing pH limits and preliminary screening in the hairless mouse may be useful in evaluating irritation potential.

Keywords. *Dermatology, *Skin diseases, *Toxicology, Sensitizing, Absorption, Mice, Rabbits, Guinea pigs, Laboratory animals, Lethal dosage, Photosensitivity, Contact dermatitis, Allergic skin diseases, Standards, Toxic tolerances, Phototoxicity

PB82-224999 PC **A07**/MF **A01**
Environmental Protection Agency, Washington, DC.
Allocating Chlorofluorocarbon Permits: Who Gains, Who Loses, and What Is the Cost
RAND Corp., Santa Monica, CA.
Adele R Palmer, and Timothy H Quinn 31 Jul 81, 132p EPA-560/4-82-001
Contract EPA-68-01-6236

Chlorofluorocarbons are suspected of contributing to the depletion of stratospheric ozone. The U S. EPA sought information on a number of different regulatory options, including the implementation of a marketable permit system in conjunction with a production cap on the manufacture of chlorofluorocarbons at 1980 levels This report analyzes the implications of various permit distribution systems It discusses who gains and who loses and what transfers of wealth may occur when permits are allocated or auctioned to manufacturers, first-line purchases, and final users and consumers The report discusses problems that may arise under the various distribution methods Each method has its strengths and weaknesses

Keywords *Air pollution, *Chlorine organic compounds, *Fluorine organic compounds, *Stratosphere, *Licenses, Ozone, Manufacturing, Consumers, Economics, Mathematical models.

PB82-225343 PC **A04**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Asbestos-Containing Materials in School Buildings: Guidance for Asbestos Analytical Programs. Statistical Background Document
Research Triangle Inst , Research Triangle Park, NC
D Lucas, A V Rao, and T. Hartwell Dec 80, 51p EPA-560/13-80-017B
Contract EPA-68-01-5848

This report presents detailed sampling procedures and laboratory quality assurance measures for bulk samples collected in school buildings. Statistical support for these procedures is given.

Keywords: *Asbestos, *Construction materials, *Schools, Sampling, Quality assurance, Air pollution, Sites, Concentration(Composition), *Air pollution sampling, *Indoor air pollution, Numerical solution

PB82-225376 PC **A04**/MF **A01**
TSCA Chemical Assessment Series Preliminary Risk Assessment, Phase 1: Benzidine, Its Congeners and Their Derivative Dyes and Pigments
Final rept.
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Theordore C. Jones. 10 Oct 79, 63p Rept no EPA-560/11-80-019

This report assesses the risk to health and the environment presented by benzidine and three of its congeners (o-tolidine, dianisidine, and dichlorobenzidine) and by dyes and pigments derived from these compounds. Benzidine, o-tolidine, dianisidine and dichlorobenzidine are used almost entirely in the production of dyes and pigments used to color textiles, paper, leather, rubber, plastic products, printing inks, paints and lacquers. Several potential risks have been identified through a preliminary analysis of the exposure and hazards associated with these compounds. These include: (1) the oncogenic risk to workers exposed to imported benzidine-based dyes that contain high concentrations of free benzidine; (2) a similar risk to workers using domestically produced benzidine-based dyes (because there are no occupational exposure standards for either benzidine or its derivative dyes); (3) the risk to the general population that may result from exposure to benzidine-based dyes in such products as textiles and home dyes, and (4) risks of toxicity to aquatic life that may result from release of dichlorobenzidine into the environment.

Keywords. Dyes, Pigments, Exposure, Textile industry, Paper industry, Leather, Elastomers, Plastic industry, Paints, Industrial hygiene, Public health, Assessments, Toxicity, Manufacturing, Chlorine organic compounds, *Benzidine, *Toxic substances, Tolidine, Benzidine/dichloro, Dianisidine

PB82-225657 PC **A10**/MF **A01**
Environmenal Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Chemical Information Resources Handbook
Toxics Integration Information series (Final)
Koba Associates, Inc., Washington, DC.
Brian Karnovsky, John King, Pam Thielmann, Kevin Gleason, and Mitch Baer. Jan 80, 208p EPA-560/TIIS-81-001
Contract EPA-68-01-5961

This handbook describes several of the more important chemical information resources available and accessible through government and private organizations The handbook provides a framework for searching and retrieving information on chemical toxicology, environmental effects, spill responses, disposal methods, ambient air and water concentrations, control technologies, and existing regulations. This is a part of the Toxics Integration and Information series

Keywords. *Information systems, *Hazardous materials, *Chemical compounds, *Handbooks, Toxicology, Regulations, *Toxic substances.

PB82-225764 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Eye Irritation Testing: An Assessment of Methods and Guidelines for Testing Materials for Eye Irritancy Technical rept. (Final)
Tracor JITCO, Inc., Rockville, MD.
K J Falahee, C. S. Rose, S. S. Olin, and H. E Seifried. Dec 81, 96p EPA/560/11-82-001
Contract EPA-68-01-6176

The ocular safety of materials is determined primarily by observing the irritation produced by test agents instilled directly into the rabbit eye The object of this study was to review the scientific basis for published guidelines, particularly those recently developed by the Organization for Economic Cooperation and Development (OECD) and the Interagency Regulatory Liaison Group (IRLG). These guidelines are essentially the same and recommend instillation of 0.1 ml material into the rabbit eye with observation for at least 72 hr.

Keywords: *Eye injuries, *Toxicology, Assessments, Rabbits, Bioassay, Laboratory animals, In vivo analysis, In vitro analysis, Tests, Guidelines, Methodology, Irritants, Toxic substances, Draize method, Tier testing.

PB82-225954 PC **A03**/MF **A01**
TSCA Status Report for Existing Chemicals - Volume 2, Issue 1
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Doreen Sterling, Susan Bloodworth, Patricia Grim, and Patricia Morris. Jan 81, 44p Rept no EPA-560/TIIS-81-001

The TSCA Status Report is a bimonthly publication prepared jointly by the Office of Toxics Integration and the Office of Toxic Substances. The report is divided into two sections. Section One lists all the existing chemicals of interest to OPTS (TSCA) and indicates the regulatory/assessment status of each. The chemicals are arranged alphabetically by CAS number (where available) and displayed on a two dimensional array. Chemicals without CAS preferred names are sorted separately from those chemicals with a CAS preferred name. Section Two contains the same information indexed by regulatory/assessment status, i.e., within each OPTS program. For example, the CHIPS listing is followed by the chemicals presently being considered under that effort

Keywords: *Chemical compounds, Regulations, Assessments, Tables(Data), *Toxic substances.

PB82-225962 PC **A04**/MF **A01**
Asbestos-Containing Materials in School Buildings: A Guidance Document. Part 1
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
16 Mar 79, 73p Rept no. EPA-560/1-82-002

Recently there has been an increasing awareness of the significance of environmental factors in causing illness. The fibrous minerals known as asbestos, used in many different kinds of products and applications, have entered the environment in both occupational and nonoccupational settings. The Environmental Protection Agency (EPA) is concerned with the disease-causing potential of intermittent, low-level exposures that can occur in some school buildings from certain asbestos-containing materials. EPA has established a guidance program to inform States and local school officials of the possible health hazards associated with asbestos. EPA's guidance package contains two parts This manual, which is Part 1 of the package, is written for school officials. Part 1 outlines steps that schools can take to conduct an asbestos control program.

Keywords *Asbestos, *Construction materials, *Schools, Exposure, Sampling, Regulations, Public health, Industrial hygiene, Smoking, Air pollution, *Indoor air pollution, Environmental health.

PB82-226697 PC **A05**/MF **A01**
Environmental Protection Agency, Washington, DC
Economic Impact Assessment of a Chlorofluorocarbon Production Cap
RAND Corp., Santa Monica, CA
Adele R. Palmer, and Timothy H Quinn Feb 81, 93p EPA-560/4-82-002
Contract EPA-68-01-6236

Chlorofluorocarbons are suspected of contributing to the depletion of stratospheric ozone The U.S EPA sought information on a number of different regulatory options, including the implementation of a marketable permit system in conjunction with a production cap on the manufacture of chlorofluorocarbons at 1980 levels This report develops six scenarios of the economic implications of a 1980 level production cap on chlorofluorocarbons. The six scenarios represent different assumptions regarding consumer and user response to rising chlorofluorocarbon prices

Keywords· *Fluorine organic compounds, *Chlorine organic compounds, *Air pollution, *Economic impact, Stratosphere, Ozone, Manufacturing, Scenarios,

*Freons

PB82-229105 PC **A05**/MF **A01**
Perspectives on State-EPA Grant Activities
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Helen Ketcham, and Len Koch Sep 80, 99p Rept no. EPA-560/13-80-037

This book contains synopses of the FY 1980 SEA's (State/EPA Agreements) (available as of 5/15/80), and Round I and II TSCA agreements by Region and State. Also highlighted are some State concerns and trends More specific information on the SEA process can be found in the Handbook for FY 1981 State/EPA Agreements, or through the Regional SEA Coordinators. As a brief bit of background on SEA's, Appendix 1 includes The Administrator's Guidance on FY '81 SEA's from the EPA Operating Year Guidance. TSCA Section 28 information is available through the Regional Coordinators, or through this office Appendix 2 reproduces the Federal Register invitations for Section 28 cooperative agreements (both Rounds I and II). The compendium will provide useful information to States about each others' activities, encourage program cooperation, and further inter-agency and intergovernmental information exchange about toxic substances management.

Keywords: *Environmental surveys, State government, Management planning, *Toxic substances.

PB82-229956 PC **A99**/MF **A01**
Wood Preservative Pesticides Creosote, Pentachlorophenol and the Inorganic Arsenicals (Wood Uses) Position Document 2/3
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
Mar 82, 906p Rept no EPA-540/9-82-004
Errata sheet inserted

This document details the final determination regarding the Rebuttable Presumption Against Registration (RPAR) of products containing the above chemical. The responses by EPA to comments on the preliminary determination by the Scientific Advisory Panel and the United States Department of Agriculture are contained in the document A bibliography of citations used in this final determination is also provided.

Keywords· *Wood preservatives, *Pesticides, *Creosote, *Arsenic inorganic compounds, Chemistry, Exposure, Public health, Risk, Regulations, Revisions, Chlorine organic compounds, Economic analysis, *Phenol/pentachloro.

PB82-232984 PC **E16**
Text Guidelines: Health Effects Annual rept
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Aug 82, 432p* Rept no. EPA-560/6-82-001
Also available in set of 3 reports PC$125.00, PB82-232976

These documents constitute a set of 39 health effects test guidelines (and, in some cases, support documents) that may be cited as methodologies to be used in chemical specific test rules promulgated under Section 4(a) of the Toxic Substances Control Act (TSCA). These guidelines cover testing for general toxicity, specific organ/tissue toxicity, mutagenicity, neurotoxicity and special studies. The guidelines will be published in loose leaf form and updates will be made available as changes are dictated by experience and/or advances in the state-of-the-art

Keywords *Toxicology, *Guidelines, *Chemical tests, Bioassay, Exposure, Mutations, Chromosomes, Deoxyribonucleic acid, Tests, Assessments, Evaluation, Toxic Substances Control Act, Public Law 94-469, Mutagenesis, Neurotoxicity, State of the art

PB82-232992 PC **A99**
Test Guidelines: Environmental Effects Annual rept
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Aug 82, 972p* Rept no. EPA-560/6-82-002
Also available in set of 3 reports PC$125 00, PB82-232976

These documents constitute a set of 21 environmental effects test guidelines (and, in some cases, support documents) that may be cited as methodologies to be used in chemical specific test rules promulgated under Section 4(a) of the Toxic Substances Control Act (TSCA). These guidelines cover testing for invertebrate toxicity, aquatic vertebrate toxicity, avian toxicity, phytotoxicity, and bioconcentration. The guidelines will be published in loose leaf form and updates will be made available as changes are dictated by experience and/or advances in the state-of-the-art.

Keywords: *Toxicology, *Guidelines, *Chemical compounds, Invertebrates, Aquatic animals, Birds, Plants(Botany), Concentration(Composition), Risk, Tests, Assessments, Evaluation, Bioassay, Phytotoxicity, Bioaccumulation, Toxic Substances Control Act, Public Law 94-469, Health risks, *Environmental effects, State of the art.

PB82-233008 PC **E16**
Test Guidelines: Chemical Fate Annual rept.
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances
Aug 82, 425p* Rept no. EPA-560/6-82-003
Also available in set of 3 reports PC$125.00, PB82-232976.

These documents constitute a set of 21 chemical fate test guidelines (and, in some cases, support documents) that may be cited as methodologies to be used in chemical specific test rules promulgated under Section 4(a) of the Toxic Substances Control Act (TSCA). These guidelines cover testing for physical and chemical properties, transport processes and transformation processes. The guidelines will be published in loose leaf form and updates will be made available as changes are dictated by experience and/or advances in the state-of-the-art.

Keywords. *Toxicology, *Guidelines, *Chemical tests, Physical properties, Chemical properties, Transformations, Biodeterioration, Transport properties, Chemical compounds, Decomposition, Reaction kinetics, Hydrolysis, Photolysis, Toxic Substances Control Act, Public Law 94-469, Biodegradation, Path of the pollutant, State of the art.

PB82-240300 PC **A03**/MF **A01**
Rebuttable Presumption against Registration: Decision Document on Maleic Hydrazide
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances.
Jun 82, 40p Rept no EPA-540/9-82-010

This document details the final determination regarding the Rebuttable Presumption Against Registration (RPAR) of products containing the above chemical. The responses by EPA to comments on the preliminary determination by the Scientific Advisory Panel and the U.S. Department of Agriculture are contained in this document A bibliography of citations used in this final determination is also provided.

Keywords· *Pesticides, *Environmental surveys, Regulations, Toxicity, Mutagens, *Rebuttable presumption against registration, *Maleic hydrazide, Pyridazine diones

PB82-243999 PC **A05**/MF **A01**
Hexachlorohexahydromethano-2,4,3-benzodioxathiepin 3-oxide (Endosulfan): Pesticide Registration Standard
Environmental Protection Agency, Washington, DC Office of Pesticides and Toxic Substances
Linda Garczynski. Mar 82, 96p Rept no EPA-540/RS-82-008

This document contains information regarding reregistration of pesticide products containing the above chemical including how to register under a registration standard, regulatory position and rationale, and summarizes of data requirements and data gaps Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the Standard.

Keywords: *Pesticides, *Standards, Regulations, Chlorine organic compounds, Toxicology, Ecology, Chemistry, *Endosulfan, Path of pollutants.

PB82-249103 PC **A20**/MF **A01**
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
The Application of Decision Analysis to Toxic Substances: Proposed Methodology and Two Case Studies Final rept. 1980-81
Decision Focus, Inc., Palo Alto, CA.
Gregory L. Campbell, David Cohan, and D. Warner North. Dec 81, 465p EPA-560/4-82-003
Contract EPA-68-01-6054

The research report investigates the use of decision analysis as an aid to decisions on toxic substances regulation. Part I of this report includes a literature survey on decision analysis and related methods for quantitative analysis and an exposition of the proposed methodology. Parts II and III illustrate the decision analysis approach on two chemicals, perchloroethylene (PCE) and di-ethylhexyl phthalate (DEHP). The PCE case study illustrates how uncertainties in the potential chronic health effects of a chemical may be quantitatively described in a way that makes use of bioassay data and scientific judgment on the extrapolation of the dose response relationship from animals to humans The PCE analysis includes a comparison of control options to workers, service users, and the general public, showing the potential impact on health for each group and comparing expected health benefits to control costs. The value of better information to resolve health effect uncertainties is computed and compared to the cost of large-scale animal tests. The DEHP analysis illustrates an economic analysis of regulatory costs based on interproduct substitution among DEHP and competing plasticizers.

Keywords: *Decision making, *Regulations, *Environmental surveys, Reviews, Public health, Exposure, Laboratory animals, Economic analysis, Risk, Methodology, Dry cleaning, Humans, *Toxic Substance Control Act, Ethylene/perchloro, Phthalic acid/bis(ethyl/hexyl-ester), Risk analysis.

DE81027081 PC **A09**/MF **A01**
Department of Energy, Washington, DC.
Ecotoxicological Test Systems Proceedings of a Series of Workshops
Oak Ridge National Lab., TN.
A. S. Hammons. Jun 81, 191p Rept nos ORNL-5709, EPA-560/6-81-004
Contract W-7405-ENG-26

A series of six workshops was conducted by the Environmental Sciences Division, Oak Ridge National Laboratory, to identify laboratory methods and data evaluation techniques for predicting the environmental effects of chemical substances. Methods were evaluated for their potential for standardization and for use in the ecological hazard and risk assessment processes under the Toxic Substances Control Act. The workshops addressed assessment and policy requirements of multispecies toxicology test procedures, mathematical models useful in hazard and risk assessments, and methods for measuring effects of chemicals on terrestrial and aquatic population interactions and ecosystem properties The workshops were primarily used as a mechanism to gather information about research in progress. This information was part of the data base used to prepare a critical review of laboratory methods for ecological toxicology. (ERA citation 06·029357)

Keywords: *Toxic materials, Aquatic ecosystems, Environmental impacts, Mathematical models, Meetings, Microorganisms, Monitoring, Plants, Population dynamics, Radionuclide migration, Risk assessment, Terrestrial ecosystems, ERDA/560300, ERDA/510301, ERDA/510200, ERDA/520200.

NTISUB/C/116 Subscription
Pesticide Label File
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
1979, 1 issue and 2 updates
Microfiche available on subscription, North American Continent price $245 00; all others write for quote

The Federal Insecticide, Fungicide, and Rodenticide Act requires that the Labels of all registered pesticides contain certain specific types of information Included in the information on the labels are active ingredient(s) and percentages of same; common name, if any, of active chemical; sites and pests for usage, as well as dosage; safety information, and the product name and manufacturer for that specific product In an effort to make this valuable product information available to the public, the Registration Division of the Office of Pesti-

cide Programs has photographed each label and is making these photographs available, on microfiche, through the National Technical Information Service. The initial label set contains about 2,000 fiche, which hold approximately 30,000 labels.

Keywords: *Pesticides, *Documentation, Manuals, Chemical compounds, Insecticides, Herbicides, Rodenticides, Businesses, Toxic tolerances, Microfilm, Data storage devices, Labels, Information, Consumer products.

NTISUB/C/219 Standing Order
Pesticide Product Information on Microfiche: Set A and B
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
1977, 5 editions
Microfiche available on Standing Order, Deposit Account required. North American Continent price $125.00; all others write for quote.

This manual was designed to provide the basic information and guidance needed to use the microfiche set of pesticide product label data. The information includes product names, manufacturers, active ingredients, tolerance for residues, and site and pest information for particular products and active chemical ingredients.

Keywords. *Pesticides, *Documentation, Manuals, Chemical compounds, Insecticides, Herbicides, Rodenticides, Businesses, Toxic tolerances, Microfilm, Data storage devices, Labels, Information, Consumer products.

NTISUB/C/220 Standing Order
Pesticide Product Information on Microfiche: Set A Quarterly repts
Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
1977, 4 editions
Microfiche available on Standing Order, Deposit Account required. North American Continent price $110.00; all others write for quote. Also available with Set B, as NTISUB/C/219.

Information on pesticides has been collected by the U.S. Environmental Protection Agency, Office of Pesticides Programs in its registration process. This information has been sorted into 14 subsets of Microfiche. The information includes product names, manufacturers, active ingredients, tolerances for residues, and site and pest information for particular products and active chemical ingredients

Keywords· *Pesticides, *Documentation, Chemical compounds, Insecticides, Herbicides, Rodenticides, Businesses, Toxic tolerances, Microfilm, Data storage devices, Information, Consumer products.

ORNL/EIS-149 PC **A14**/MF **A01**
Department of Energy.
Cadmium in Foods: A Review of the World's Literature
Oak Ridge National Lab., TN.
J S Drury, and A. S. Hammons. Feb 79, 307p* Rept no. EPA-560/2-78-007
Contract W-7405-ENG-26

This document tabulates detailed information obtained from 151 references for most of the original measurements of cadmium in foods published since 1940 and summarizes estimates of dietary intake of cadmium in the United States and foreign countries. Cadmium concentrations are indicated for about 1500 individual foods listed alphabetically and by decreasing concentration within typical food categories. Separate compilations are provided for foods originating in contaminated and uncontaminated areas for domestic and foreign products. Most foods contained low concentrations of cadmium, generally less than 0.050 mg/kg, wet weight Concentrations of cadmium were greatest in shellfish, leafy vegetables, potatoes, grain and cereal products, and selected animal organs, particularly kidneys and liver. The use of cadmium-containing phosphate fertilizers increased the concentration of cadmium in some, but not all, plant foods. Diets chosen exclusively from foods produced near point sources, or from highly contaminated soils, put users at great risk of exceeding recommended intake levels. No clear pattern of concentration differences could be discerned in foods produced in areas distant from point sources. Although annual increases of cadmium in successive crops of certain plant foods were documented, no temporal trend of increasing cadmium concentrations in food is apparent in the tabulated data, nor is there a perceptible increase in the cadmium content of foods due to canning or other food-processing operations. Estimates of dietary intake of cadmium vary widely. Based on the tabulated data, the average daily U.S. dietary intake appears to lie within the range 30 to 50 mu g. (ERA citation 04:041766)

Keywords: *Cadmium, *Crops, *Fertilizers, *Food, *Tobacco products, *Bibliographies, Contamination, Diet, Ecological concentration, Health hazards, Information, Tables, ERDA/560306, Reviews, Estimates, Foreign countries, Concentration(Composition), *Toxic substances.

ORNL/EIS-151 PC **A18**/MF **A01**
Environmental Protection Agency, Washington, DC.
Scientific Rationale for the Selection of Toxicity Testing Methods: Human Health Assessment
Oak Ridge National Lab , TN.
R. H. Ross, M. G. Ryon, M. W Daugherty, J. S. Drury, and J. T. Ensminger. Dec 80, 423p EPA-560/1-80-001
Contract W-7405-ENG-26

This document is the first of a two-part literature analysis of parameters associated with the various toxicity testing methods (test animal selection, pathology requirements, etc.) Acute, subchronic, chronic, and carcinogenic testing methods are covered; a discussion of some basic experimental considerations is also included. This report was prepared for the purpose of assisting and supporting the US Environmental Protecton Agency in its efforts to develop guidelines for more efficient and economical testing procedures. (ERA citation 06:006648)

Keywords: *Carcinogens, *Pollution, Acute exposure, Bioassay, Chronic exposure, Comparative evaluations, Diet, Laboratory animals, Man, Mutagen screening, Pathology, Reviews, Testing, Toxic materials, Toxicity, ERDA/560306.

ORNL/EIS-158 PC **A03**/MF **A01**
Health Effects Research Lab., Research Triangle Park, NC.
Proceedings of the EPA Workshop on the Environmental Scoring of Chemicals
Oak Ridge National Lab., TN.
R. H. Ross, and J. Welch. May 80, 41p Rept no EPA-560/11-80-010
Contract W-7405-ENG-26

The environmental scoring of chemicals is viewed by the US Environmental Protection Agency as a tool to assist in the ranking or ordering of the universe of chemicals that are under the jurisdiction of the Toxic Substances Control Act. The purpose of scoring is to identify most of the chemicals that have a high probability for requiring review for regulation or testing. This report describes a three-day workshop held in Washington, DC, August 13 to 15, 1979, to develop an environmental scoring system. Initial discussions centered on the determination of a safety factor (calculated as the concentration at which an effect is observed divided by environmental concentration) that would allow a numerical score to be assigned to a chemical to reflect its potential hazard Further discussion, however, indicated that the environmental concentration of a chemical is usually not available and that the estimation of an environmental concentration is not readily accomplished; therefore, a scoring system was developed that does not require environmental concentrations. This system relates environmental exposure to toxicity by using a multiplier (3x, 2x, or 1x) which is assigned on the basis of the concentration xt which an effect is observed. The applicability of the scoring system is demonstrated by scoring selected chemicals. (ERA citation 05·027989)

Keywords. *Hazardous materials, Comparative evaluations, Ecological concentration, Limiting values, Safety standards, Tables, Toxicity, Us epa, Usa, Variations, ERDA/570000.

ORNL/EIS-163/V2-P1 PC **A21**/MF **A01**
Department of Energy, Washington, DC.
Chemicals Identified in Human Biological Media, a Data Base. Second Annual Report, October 1980
Oak Ridge National Lab., TN.
M. V. Cone, M F. Baldauf, F. M. Martin, and J T Ensminger. Jan 81, 494p Rept no. EPA-560/13-80-036A
Contract W-7405-ENG-26

A comprehensive data base of chemicals identified in human biological media (tissues and body fluids) has been established. Data were obtained primarily from the open literature through manual searches (retrospective to 1974) of the journals listed in Appendix A. The data base now contains information on over 500 different substances. Chemicals are listed by Chemical Abstracts Service (CAS) registry numbers and preferred names in Appendix B. For the user's convenience, cross-referenced chemical lists of CAS names are provided in Appendix C. The human tissues and body fluids found to be contaminated by these chemicals are listed in Appendix D. The data base is published annually in two parts. Part 1 contains introductory materials, references, appendices, indices, and a chemical directory. Information in Part 1 is cumulative, thus allowing the user access to information in the previous edition of Part 2. Data from more than one-third of the over 3000 body-burden documents collected to date have been entered in the data base as of October 1980. The emphasis on inputting recent literature and significant research documents has resulted in a chronological mix of articles from 1974 to the present in the first two publications of the data base. (ERA citation 06·009750)

Keywords. *Body fluids, *Elements, *Inorganic compounds, *Organic compounds, *Tissues, Biological accumulation, Body burden, Chemical composition, Contamination, Data base management, Data compilation, Directories, Inventories, ERDA/560306, ERDA/990300.

ORNL/EIS-189 PC **A04**/MF **A01**
Oak Ridge National Lab., TN.
Proceedings of the Workshop on Subchronic Toxicity Testing
Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
N. Page, D. Sawhney, and M. G. Ryon. Nov 80, 70p
Rept no EPA-560/11-80-028
Contract W-7405-ENG-26

Subchronic toxicity procedures are designed to determine the adverse effects that may occur with repeated exposure over a part of the average life span of an experiment animal. The workshop objectives included critically examining the subchronic study as it might be applied to general chemical testing programs and evaluating the effect of variations in study parameters on assessment potential, identifying the deficiencies in the existing scientific knowledge and recommending research to strengthen the testing program, and identifying the related scientific issues to be resolved in future workshops or experimental programs. (ERA citation 06.008276)

Keywords: *Toxins, Chronic exposure, Experiment planning, Laboratory animals, Meetings, Recommendations, Research programs, Testing, Toxicity, ERDA/560305

ORNL-5708 PC **A14**/MF **A01**
Department of Energy, Washington, DC.
Methods for Ecological Toxicology: A Critical Review of Laboratory Multispecies Tests. Environmental Sciences Division Publication No. 1710
Oak Ridge National Lab., TN.
A. S Hammons Feb 81, 320p Rept no. EPA-560/11-80-026
Contract W-7405-ENG-26

An evaluation is presented of selected laboratory methods for measuring ecological effects, and tests considered most suitable for research and development are recommended for use in predicting the effects of chemical substances on interspecific interactions and ecosystem properties. The role of mathematical models in chemical hazard assessment is also discussed About 450 references are cited A bibliography of more than 700 references is provided. The Office of Toxic Substances, U.S. Environmental Protection Agency (EPA) is responsible for implementing the Toxic Substances Control Act (TSCA) TSCA, promulgated in 1976, is comprehensive legislation designed to broadly protect human health and the environment from unreasonable risks resulting from the manufacture, processing, distribution, use, and disposal of a chemical substance. Under TSCA, EPA is re

sponsible for identifying and prescribing test standards to be used in developing the data necessary to predict the risks associated with chemical releases into the environment. To aid EPA in this endeavor, laboratory methods for measuring the effects of chemical substances on aquatic and terrestrial interspecific interactions and ecosystem processes were reviewed and evaluated for their potential for standardization for use in environmental hazard and risk assessment processes. The criteria used for these evaluations include whether or not the tests are:rapid, reproducible, relatively inexpensive, unequivocal, sensitive, socially relevant, predictive, generalizable, and well-developed. (ERA citation 06:014870)

Keywords. *Toxic materials, Algae, Animals, Aquatic ecosystems, Aquatic organisms, Bibliographies, Chemical analysis, Data compilation, Environmental impacts, Fishes, Mathematical models, Metabolism, Monitoring, Plants, Recommendations, Research programs, Screening, Terrestrial ecosystems, Toxicity, Zooplankton, ERDA/560300, ERDA/520200, ERDA/510200.

CONTRACT/GRANT NUMBER INDEX

Entries in this index list reports produced as a result of research done under specific contract or grant numbers Entries are sequenced by contract or grant number, coporate author, and NTIS order number

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EPA-68-01-2910
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Energy Resources Co , Inc , Cambridge, Mass
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EPA-68-01-2926
Versar, Inc , Springfield, Va
PB-253 980/7 76-18 PC **A11**/MF **A01**
Versar, Inc , Springfield, Va General Technologies Div
PB-241 641/0 75-15 PC **A10**/MF **A01**

EPA-68-01-2928
Research Triangle Inst , Research Triangle Park N C Center for Technology Applications
PB-251 406/5 76-12 PC **A20**/MF **A01**
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Research Triangle Inst, Research Triangle Park, N.C Center for Technology Operation.
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Research Triangle Inst, Research Triangle Park, N.C. Center for Technology Operations
PB-246 947/6 76-03 PC **A25**/MF **A01**

EPA-68-01-2930
URS Research Co, San Mateo, Calif
PB-285 562/5 78-25 PC **A03**/MF **A01**

EPA-68-01-2931
National Research Council, Washington, D C Committee on Toxicology
PB-254 388/2 76-19 PC **A03**/MF **A01**

URS Research Co., San Mateo, Calif
PB-247 000/3 76-04 PC **A19**/MF **A01**

EPA-68-01-2933
Mitre Corp, McLean, Va.
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Estimating Limiting Risk Levels from Orally Ingested DDT and Dieldrin Using an Up-Dated Version of the Mantel-Bryan Procedure
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Pesticides in People· Total Mercury Levels in Selected Human Tissues, Idaho-1973-74
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Monitoring to Detect Previously Unrecognized Pollutants in Surface Waters
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PB-250 075/9 76-10 PC **A22**/MF **A01**

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Developing Incentives for Pest Control Methods Proceedings of a Conference Held in Gaithersburg, Maryland on October 26-27, 1976
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LOWENBACH AND SCHLESINGER ASSOCIATES, INC., MCLEAN, VA.

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(EPA-560/6-79-005)
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MASON RESEARCH INST., WORCESTER, MASS.

MRI-EPA-76-1-41
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Supporting Innovation: A Policy Study
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MATHTECH, INC., ARLINGTON, VA.

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PB80-215411 80-25 PC **A07**/MF **A01**

MCCRONE (WALTER C.) ASSOCIATES, INC., CHICAGO, ILL.

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PB-283 155/0 78-21 PC **A11**/MF **A01**

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PB82-136102 82-06 PC **A04**/MF **A01**

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MTR-80W333
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(EPA-560/4-82-002)
PB82-226697 82-21 PC **A05**/MF **A01**

RESEARCH TRIANGLE INST., RESEARCH TRIANGLE PARK, N.C.
Identification and Analysis of Polychlorinated Biphenyls and Other Related Chemicals in Municipal Sewage Sludge Samples
(EPA/560/6-77/021)
PB-273 192/5 78-01 PC **A08**/MF **A01**
Analysis of a Series of Samples for Polybrominated Biphenyls (PBBs)
(EPA/560/6-77/020)
PB-273 196/6 78-01 PC **A04**/MF **A01**
Environmental Monitoring Near Industrial Sites Polychloronaphthalenes
(EPA/560/6-77/019)
PB-281 687/4 78-18 PC **A12**/MF **A01**

RESEARCH TRIANGLE INST., RESEARCH TRIANGLE PARK, N.C. CENTER FOR TECHNOLOGY APPLICATIONS.
Environmental Aspects of Chemical Use in Printing Operations Held at King of Prussia, Pa on September 22-24, 1975
(EPA/560/1-75-005)
PB-251 406/5 76-12 PC **A20**/MF **A01**
National Conference on Polychlorinated Biphenyls (November 19-21, 1975, Chicago, Illinois)
(EPA/560/6-75-004)
PB-253 248/9 76-16 PC **A20**/MF **A01**

RESEARCH TRIANGLE INST., RESEARCH TRIANGLE PARK, N.C. CENTER FOR TECHNOLOGY OPERATION.
Proceedings of Conference on Environmental Aspects of Chemical Use in Rubber Processing Operations Held in Akron, Ohio, on March 12-14, 1975

(EPA/560/1-75/002)
PB-244 172/3 75-22 PC **A19**/MF **A01**

RESEARCH TRIANGLE INST., RESEARCH TRIANGLE PARK, N.C. CENTER FOR TECHNOLOGY OPERATIONS.

Conference Proceedings on Environmental Aspects of Chemical Use in Well-Drilling Operations Held at Houston, Texas on 21-23 May 1975
(EPA/560/1-75/004)
PB-246 947/6 76-03 PC **A25**/MF **A01**

RESEARCH TRIANGLE INST., RESEARCH TRIANGLE PARK, NC.

RTI/1706/02-F
Sampling and Analysis of Selected Toxic Substances. Task 2: Analysis for Semivolatile Brominated Organics in Fish and Turtles
(EPA-560/13-80-006)
PB80-175458 80-16 PC **A04**/MF **A01**

TRI/1864/17-00F
Mirex Residue Levels in Human Adipose Tissue A Statistical Evaluation
(EPA-560/13-80-024)
PB81-159923 81-13 PC **A06**/MF **A01**

Analytical Protocols for Making a Preliminary Assessment of Halogenated Organic Compounds in Man and Environmental Media
(EPA/560/13-79/010)
PB80-109168 80-05 PC **A14**/MF **A01**

Formulation of a Preliminary Assessment of Halogenated Organic Compounds in Man and Environmental Media
(EPA/560/13-79/006)
PB80-112170 80-03 PC **A20**/MF **A01**

Sampling and Analysis of Selected Toxic Substances. Task 1: Polybrominated Biphenyls in Air and Soil at User Sites
(EPA-560/13-80-005)
PB80-176373 80-16 PC **A04**/MF **A01**

Asbestos-Containing Materials in School Buildings Bulk Sample Analysis Quality Assurance Program
(EPA-560/13-80-23)
PB80-217243 80-25 PC **A03**/MF **A01**

Asbestos Analytical Programs Bulk Sample Analysis: New York City and Maryland
(EPA-560/13-80-21)
PB81-146722 81-10 PC **A03**/MF **A01**

PCB Residue Levels in Human Adipose Tissue, a Statistical Evaluation by Racial Grouping
(EPA-560/13-79-015)
PB81-152902 81-13 PC **A06**/MF **A01**

Acquisition and Chemical Analysis of Mother's Milk for Selected Toxic Substances
(EPA/560/13-80/029)
PB81-231029 81-24 PC **A08**/MF **A01**

Measurement of Benzene Body-Burden for Populations Potentially Exposed to Benzene in the Environment
(EPA-560/13-80-028)
PB81-234049 81-24 PC **A10**/MF **A01**

Identifying Potential Asbestos Exposures in Schools: The Montgomery County Experience
(EPA/560/13-80-039)
PB81-243503 81-25 PC **A04**/MF **A01**

Asbestos-Containing Materials in School Buildings Guidance for Asbestos Analytical Programs
(EPA-560/13-80-017A)
PB81-243586 81-26 PC **A06**/MF **A01**

Asbestos-Containing Materials in School Buildings: Guidance for Asbestos Analytical Programs Statistical Background Document
(EPA-560/13-80-017B)
PB82-225343 82-21 PC **A04**/MF **A01**

Environmental Monitoring Near Industrial Sites
PB-286 482-SET - PC **E13**

Environmental Monitoring Near Industrial Sites Brominated Chemicals. Part II: Appendix
(EPA/560/6-78/002A)
PB-286 483/3 79-02 PC **A08**/MF **A01**

Environmental Monitoring Near Industrial Sites: Brominated Chemicals Part I
(EPA/560/6-78/002)
PB-286 484/1 79-02 PC **A14**/MF **A01**

Study of the Nature of Ozone, Oxides of Nitrogen, and Nonmethane Hydrocarbons in Tulsa, Oklahoma. Volume II. Data Tabulation
(EPA/540/4-79/008B)
PB-297 801/3 79-21 PC **A21**/MF **A01**

ROMAR CONSULTANTS, INC., PHILADELPHIA, PA. TECHNICAL INFORMATION DIV.

Handbook for Obtaining Chemical Use and Related Economic Information
(EPA-560/2-80-001)
PB81-159915 81-12 PC **A08**/MF **A01**

RVR CONSULTANTS, SHAWNEE MISSION, KAN.

Evaluation of Pest Management Programs for Cotton, Peanuts and Tobacco in the United States
(EPA/540/9-75/031)
PB-251 662/3 76-12 PC **A06**/MF **A01**

RYCKMAN, EDGERLEY, TOMLINSON AND ASSOCIATES, INC., ST. LOUIS, MO.

Laboratory Test Methods to Assess the Effects of Chemicals on Terrestrial Animal Species
(EPA/560/5-75-004)
PB-241 505/7 75-14 PC **A21**/MF **A01**

SECRETARY'S COMMISSION ON PESTICIDES AND THEIR RELATIONSHIP TO ENVIRONMENTAL HEALTH, WASHINGTON, D.C.

Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health. Parts I and II
(EPA/540/9-69/001(HEW))
PB-251 630/0 76-12 PC **A99**/MF **A01**

SOUTHERN RESEARCH INST., BIRMINGHAM, AL.

SORI-EAS-79-504
Residual Monomers in Acrylic and Modacrylic Fibers and Fabrics
(EPA-560/11-80-003)
PB80-129166 80-10 PC **A02**/MF **A01**

SOUTHWEST RESEARCH INST., SAN ANTONIO, TEX.

Sensory Chemical Pesticide Warning System. Experimental, Summary and Recommendations
(EPA/540/9-75/029)
PB-258 253/4 76-26 PC **A05**/MF **A01**

SOUTHWEST RESEARCH INST., SAN ANTONIO, TX.

ISBN-O-916086-02-2
Test Methods for Definition of Effects of Toxic Substances on Behavior and Neuromotor Function
(EPA/560/11-79/010)
PB80-109101 80-02 PC **A10**/MF **A01**

SRI INTERNATIONAL, MENLO PARK, CA.

Structure Reactivity Correlations for Environmental Reactions
(EPA/560/11-79/012)
PB80-110323 80-05 PC **A04**/MF **A01**

An Analysis of the EPA Chemical Use Classification System and the OTS Exposure Estimation Methodology
(EPA/560/13-79/007)
PB80-111024 80-05 PC **A09**/MF **A01**

Atmospheric Reaction Products of Organic Compounds
(EPA/560/12-79/001)
PB-301 384/4 79-26 PC **A05**/MF **A01**

SRI INTERNATIONAL, MENLO PARK, CALIF.

RESEARCH REQUEST-1
A Study of Industrial Data on Candidate Chemicals for Testing
(EPA/560/5-77/006)
PB-274 264/1 78-03 PC **A25**/MF **A01**

RESEARCH REQUEST-2
A Study of Industrial Data on Candidate Chemicals for Testing
(EPA/560/5-78/001)
PB-281 938/1 78-19 PC **A03**/MF **A01**

RESEARCH REQUEST-3
A Study of Industrial Data on Candidate Chemicals for Testing
(EPA/560/5-78/002)
PB-284 950/3 78-25 PC **A07**/MF **A01**

STANFORD RESEARCH INST., MENLO PARK, CALIF.

Review of the Environmental Fate of Selected Chemicals
(EPA/560/5-75-001)
PB-238 908/8 75-08 PC **A03**/MF **A01**

The Environmental Fate of Selected Polynuclear Aromatic Hydrocarbons
(EPA/560/5-75/009)
PB-250 948/7 76-11 PC **A07**/MF **A01**

Informal Working Papers for the Report: Alternative Futures for Environmental Policy Planning. 1975-2000
(EPA/540/9-76/008)
PB-251 699/5 76-13 PC **A16**/MF **A01**

Review of the Environmental Fate of Selected Chemicals
(EPA/560/5-77/003)
PB-267 121/2 77-17 PC **A07**/MF **A01**

STANFORD RESEARCH INST., MENLO PARK, CALIF. CENTER FOR THE STUDY OF SOCIAL POLICY.

Alternative Futures for Environmental Policy Planning, 1975-2000
(EPA/540/9-75/027)
PB-248 796/5 76-08 PC **A13**/MF **A01**

SYRACUSE RESEARCH CORP., N.Y. CENTER FOR CHEMICAL HAZARD ASSESSMENT.

TR-76-500
Investigation of Selected Potential Environmental Contaminants: Ketonic Solvents
(EPA/560/2-76/003)
PB-252 970/9 76-16 PC **A15**/MF **A01**

TR-76-502
Investigation of Selected Potential Environmental Contaminants. Mercaptobenzothiazoles
(EPA/560/2-76-006)
PB-256 662/8 76-23 PC **A08**/MF **A01**

TR-76-507
Investigation of Selected Potential Environmental Contaminants Acrylamides
(EPA/560/2-76/008)
PB-257 704/7 76-26 PC **A08**/MF **A01**

TR-76-513
Investigation of Selected Potential Environmental Contaminants: Haloalkyl Phosphates
(EPA/560/2-76-007)
PB-257 910/0 76-25 PC **A10**/MF **A01**

TR-76-523
Chemical Market Input/Output Analysis of Selected Chemical Substances to Assess Sources of Environmental Contamination: Task I. Naphthylamines
(EPA/560/6-77-002)
PB-271 018/4 77-23 PC **A06**/MF **A01**

TR-76-573
Investigation of Selected Potential Environmental Contaminants. Nitroaromatics
(EPA/560/2-76/010)
PB-275 078/4 78-05 PC **A99**/MF **A01**

TR-76-585
Investigation of Selected Potential Environmental Contaminants: Benzotriazoles
(EPA/560/2-77/001)
PB-266 366/4 77-15 PC **A09**/MF **A01**

TR-76-591
Prioritized Guidelines for Environmental Fate Testing of One Halogenated Hydrocarbon Chlorobenzene
(EPA-560/5-77-001)
PB-271 880/7 77-24 PC **A03**/MF **A01**

TR-76-599
Chemical Market Input/Output Analysis of Selected Chemical Substances to Assess Sources of Environmental Contamination: Task II Biphenyl and Diphenyl Oxide
(EPA/560/6-77/003)
PB-275 097/4 78-05 PC **A06**/MF **A01**

TR-77-515
Chemical Market Input/Output Analysis of Selected Chemical Substances to Assess Sources of Environmental Contamination Task III. Asbestos
(EPA/560/6-78/005)
PB-285 531/0 78-26 PC **A15**/MF **A01**

TR-77-535
Investigation of Selected Potential Environmental Contaminants. Monohalomethanes
(EPA/560/2-77/007)
PB-276 483/5 78-09 PC **A12**/MF **A01**

SYRACUSE RESEARCH CORP., NY. CENTER FOR CHEMICAL HAZARD ASSESSMENT.

TR-80-534
Investigation of Selected Potential Environmental Contaminants: Haloalcohols
(EPA-560/11-80-004)
PB80-197957 80-19 PC **A09**/MF **A01**

TR-80-535
Investigation of Selected Potential Environmental Contaminants: Epoxides
(EPA-560/11-80-005)
PB80-183197 80-18 PC **A10**/MF **A01**

TR-80-543
Investigation of Selected Potential Environmental Contaminants: Epichlorohydrin and Epibromohydrin
(EPA-560/11-80-006)
PB80-197585 80-20 PC **A08**/MF **A01**

TR-80-569
Investigation of Selected Potential Environmental Contaminants: Styrene, Ethylbenzene, and Related Compounds
(EPA-560/11-80-018)
PB81-102659 81-01 PC **A13**/MF **A01**

SYRACUSE UNIV., RESEARCH CORP., N.Y.

Preliminary Environmental Hazard Assessment of Chlorinated Naphthalenes, Silicones, Fluorocarbons, Benzenepolycarboxylates, and Chlorophenols
(EPA/560/2-74-001)
PB-238 074/9 75-04 PC **A13**/MF **A01**

SYRACUSE UNIV., RESEARCH CORP., N.Y. LIFE SCIENCES DIV.

SURC-TR-74-572.1
Environmental Hazard Assessment of One and Two Carbon Fluorocarbons
(EPA/560/2-75/003)
PB-246 419/6 76-02 PC **A12**/MF **A01**

SURC-TR-74-572 2
Assessment of Liquid Siloxanes (Silicones)
(EPA/560/2-75/004)
PB-247 778/4 76-06 PC **A06**/MF **A01**

SURC-TR-74-577
Review and Evaluation of Available Techniques for Determining Persistence and Routes of Degradation of Chemical Substances in the Environment
(EPA/560/5-75/006)
PB-243 825/7 75-21 PC **A24**/MF **A01**

SURC-TR-74-591
Benzene Environmental Sources of Contamination, Ambient Levels, and Fate
(EPA/560/5-75/005)
PB-244 139/2 75-22 PC **A04**/MF **A01**

SURC-TR-75-561
Investigation of Selected Potential Environmental Contaminants. Haloethers
(EPA/560/2-75/006)
PB-246 356/0 76-02 PC **A09**/MF **A01**

SURC-TR-75-622
Investigation of Selected Potential Environmental Contaminants: Chlorinated Paraffins
(EPA/560-2-75-007)
PB-248 634/8 76 06 PC **A06**/MF **A01**

TETRA TECH, INC., LAFAYETTE, CA.

TETRAT-TC-3930
Effect of Phosphorus Control Options on Lake Water Quality
(EPA-560/11-79-011)
PB80-120660 80-06 PC **E09**/MF **E01**

TETRAT-TC-3930
Effect of Phosphorus Control Options on Lake Water Quality
(EPA/560/11-79/011)
PB80-123698 80-07 PC **E10**/MF **E01**

THOMAS HUNT MORGAN SCHOOL OF BIOLOGICAL SCIENCES, LEXINGTON, KY.

Sensitivity of Vertebrate Embryos to Boron Compounds
(EPA/560/1-76/008)
PB-267 085/9 77-16 PC **A05**/MF **A01**

THOMAS HUNT MORGAN SCHOOL OF BIOLOGICAL SCIENCES, LEXINGTON, MA.

Toxicity of Organic Chemicals to Embryo-Larval Stages of Fish
(EPA/560/11-79/007)
PB80-101637 80-01 PC **A04**/MF **A01**

TRACOR JITCO, INC., ROCKVILLE, MD.

TRACOR-JITCO-302-106-28
Bibliography of Selected Reports on Electron Microscopy and Its Use in Monitoring Asbestos
(EPA-560/13-80-019)
PB81-102725 81-01 PC **A03**/MF **A01**

Chemical Selection Methods An Annotated Bibliography
(EPA-560/TIIS-80-001)
PB81-241481 81-24 PC **A03**/MF **A01**

Environmental and Health Aspects of Trichloroethylene A Comprehensive Bibliography of Published Literature
(EPA-560/7-81-016)
PB81-249229 81-26 PC **A15**/MF **A01**

Environmental and Health Aspects of 1,1,2-Trichloroethane: A Comprehensive Bibliography of Published Literature
(EPA-560/7-81-015)
PB81-249351 81-26 PC **A04**/MF **A01**

Environmental and Health Aspects of Acrylonitrile. A Comprehensive Bibliography of Published Literature 1930-1981
(EPA-560/7-81-007)
PB81-249625 81-26 PC **A06**/MF **A01**

Environmental and Health Aspects of Adipate Esters A Comprehensive Bibliography of Published Literature 1930-1981
(EPA-560/7-81-008)
PB81-249633 81-26 PC **A03**/MF **A01**

Environmental and Health Aspects of alpha-Chlorotoluene A Comprehensive Bibliography of Published Literature 1930-1981
(EPA-560/7-81-009)
PB81-249641 81-26 PC **A03**/MF **A01**

Environmental and Health Aspects of Bromoethylene A Comprehensive Bibliography of Published Literature 1930-1981
(EPA-560/7-81-010)
PB81-249658 81-26 PC **A03**/MF **A01**

Environmental and Health Aspects of Cyclohexylamine A Comprehensive Bibliography of Published Literature 1930-1981
(EPA-560/7-81-012)
PB81-249666 81-26 PC **A04**/MF **A01**

Environmental and Health Aspects of Hexachloroethane A Comprehensive Bibliography of Published Literature 1930-1981
(EPA-560/7-81-013)
PB81-249674 81-26 PC **A03**/MF **A01**

Environmental and Health Aspects of Tetrachloroethylene: A Comprehensive Bibliography of Published Literature 1930-1981
(EPA-560/7-81-014)
PB81-249682 81-26 PC **A08**/MF **A01**

The Relevance of Multiple Criteria Decision Making to Priorities for Chemical Regulations An Annotated Bibliography
(EPA-560/7-81-005)
PB82-108531 82-02 PC **A04**/MF **A01**

Environmental and Health Aspects of Chloroform A Comprehensive Bibliography of Published Literature, 1930-1981
(EPA-560/7-81-011)
PB82-110115 82-03 PC **A14**/MF **A01**

Environmental and Health Aspects of Acrylamide A Comprehensive Bibliography of Published Literature, 1950-1981
(EPA-560/7-81-006)
PB82-110123 82-03 PC **A05**/MF **A01**

Dermatotoxicity Selected Issues in Testing for Dermal Toxicity, Including Irritation, Sensitization, Phototoxicity, and Systemic Toxicity
(EPA-560/11-82-002)
PB82-224320 82-21 PC **A08**/MF **A01**

Eye Irritation Testing An Assessment of Methods and Guidelines for Testing Materials for Eye Irritancy
(EPA/560/11-82-001)
PB82-225764 82-21 PC **A05**/MF **A01**

Chemicals Which Have Been Tested for Neurotoxic Effects
(EPA/560/1-76/005)
PB-254 246/2 76-17 PC **A99**/MF **A01**

Health and Environmental Impacts. Task 1 Vinylidene Chloride
(EPA/560/6-76/023)
PB-258 855/6 77-01 PC **A04**/MF **A01**

Survey and Evaluation of Techniques Used in Testing Chemical Substances for Teratogenic Effects
(EPA/560/5-77/007)
PB-273 195/8 78-02 PC **A06**/MF **A01**

Chemicals Identified in Human Biological Media, A Pilot Literature Survey
(EPA/560/6-79/002)
PB-290 690/7 79-11 PC **A05**/MF **A01**

TSCA INTERAGENCY TESTING COMMITTEE, WASHINGTON, D.C.

Initial Report of the TSCA Interagency Testing Committee and Information Dossiers on Substances Designated
(EPA/560/10-78/001)
PB-275 367/1 78-06 PC **A17**/MF **A01**

Second Report of the TSCA Interagency Testing Committee to the Administrator, Environmental Protection Agency and Information Dossiers on Substances Designated
(EPA/560/10-78/002)
PB-285 439/6 78-25 PC **A12**/MF **A01**

TSCA INTERAGENCY TESTING COMMITTEE, WASHINGTON, DC.

Third Report of the TSCA Interagency Testing Committee to the Administrator, Environmental Protection Agency
PB-293 378/6 79-14 PC **A11**/MF **A01**

UNIVERSITY COORDINATOR FOR ENVIRONMENTAL STUDIES, RALEIGH, N.C.

Safety of Chemical Smog Suppressor
(EPA/560/5-77/004)
PB-276 529/5 78-09 PC **A02**/MF **A01**

URS RESEARCH CO., SAN MATEO, CALIF.

URS-7444
A Bibliography of Literature Related to Mercury
(EPA/560/3-75-001A)
PB-285 562/5 78-25 PC **A03**/MF **A01**

Materials Balance and Technology Assessment of Mercury and Its Compounds on National and Regional Bases
(EPA/560/3-75/007)
PB-247 000/3 76-04 PC **A19**/MF **A01**

UTAH STATE UNIV., LOGAN. INTERNATIONAL FEEDSTUFFS INST.

Guide for Estimating Toxic Residues in Animal Feeds or Diets
(EPA-540/9-75-019)
PB-243 748/1 75-21 PC **A17**/MF **A01**

VERSAR, INC., SPRINGFIELD, VA.

454-1
Technical and Microeconomic Analysis of Cadmium and Its Compounds
(EPA/560/3-75-005)
PB-244 625/0 75-23 PC **A10**/MF **A01**

454-2
Technical and Microeconomic Analysis of Arsenic and Its Compounds
(EPA/560/6-76/016)
PB-253 980/7 76-18 PC **A11**/MF **A01**

474.1
PCBs in the United States Industrial Use and Environmental Distribution
(EPA/560/6-76/005)
PB-252 012/0 76-14 PC **A21**/MF **A01**

474 1
PCBs in the United States Industrial Use and Environmental Distribution
(EPA/560/6-76/005)
PB-252 402/3 76-15 PC **A21**/MF **A01**

474-3
Development of a Study Plan for Definition of PCBS Usage, Wastes, and Potential Substitution in the Investment Casting Industry Task III
(EPA/560/6-76/007)
PB-251 842/1 76-12 PC **A03**/MF **A01**

474 5A
PCBS Involvement in the Pulp and Paper Industry
(EPA/560/6-77/005)
PB-271 017/6 77-23 PC **A06**/MF **A01**

474-5B
Assessment of the Environmental and Economic Impacts of the Ban on Imports of PCBs
(EPA/560/6-77/007)
PB-270 225/6 77-22 PC **A08**/MF **A01**

474-5D
Assessment of the Use of Selected Replacement Fluids for PCBS In Electrical Equipment
(EPA/560/6-77/008)
PB-296 377/5 79-19 PC **A06**/MF **A01**

474 5F
Polychlorinated Biphenyls 1929-1979
(EPA/560/6-79/004)
PB-296 559/8 79-19 PC **A05**/MF **A01**

474-5G
A First Order Mass Balance Model for the Sources, Distribution and Fate of PCBs in the Environment
(EPA/460/6-77/006)
PB-270 220/7 77-22 PC **A09**/MF **A01**

474-7
Microeconomic Impacts of the Proposed Marking and Disposal Regulations for PCBs
(EPA/560/6-77/013)
PB-267 833/2 77-18 PC **A09**/MF **A01**

Support Document/Voluntary Environmental Impact Statement for Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Ban Regulation Economic Impact Analysis
(EPA/560/3-82-001)
PB82-178500 82-13 PC **A14**/MF **A01**

Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds Volume I - Boron
(EPA/560/2-75/005a)
PB-245 984/0 76-02 PC **A06**/MF **A01**

Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds. Volume II - Indium
(EPA/560/2-75/005b)
PB-245 985/7 76-02 PC **A03**/MF **A01**

Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds Volume III - Nickel
(EPA/560/2-75/005c)
PB-245 986/5 76-02 PC **A05**/MF **A01**

Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds Volume IV - Selenium
(EPA/560/2-75/005d)
PB-245 987/3 76-02 PC **A06**/MF **A01**

Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds Volume V - Tin
(EPA/560/2-75/005e)
PB-245 988/1 76-02 PC **A06**/MF **A01**

Preliminary Investigation of Effects on the Environment of Boron, Indium Nickel, Selenium, Tin, Vanadium and Their Compounds Volume VI - Vanadium
(EPA/560/2-75/005f)
PB-245 989/9 76-02 PC **A05**/MF **A01**

Assessment of Wastewater Management, Treatment Technology, and Associated Costs for Abatement of PCBs Concentrations in Industrial Effluents Task II
(EPA/560/6-76/006)
PB-251 433/9 76-12 PC **A13**/MF **A01**

Assessment of Wastewater Management, Treatment Technology, and Associated Costs for Abatement of PCBs Concentrations in Industrial Effluents
(EPA/560/6-76/006)
PB-255 396/4 76-19 PC **A13**/MF **A01**

Microeconomic Impacts of the Proposed 'PCB Ban Regulations'
(EPA/560/6-77-035)
PB-281 881/3 78-18 PC **A07**/MF **A01**

VERSAR, INC., SPRINGFIELD, VA. GENERAL TECHNOLOGIES DIV.

Identification of Organic Compounds in Effluents from Industrial Sources
(EPA/560/3-75-002)
PB-241 641/0 75-15 PC **A10**/MF **A01**

WASHINGTON STATE UNIV., PULLMAN.

Apply Pesticides Correctly A Guide for Commercial Applicators Right-Of-Way Pest Control
(EPA/540/8-76/029)
PB-261 002/0 77-06 PC **A02**/MF **A01**

WOODARD RESEARCH CORP., HERNDON, VA.

Industry Survey of Test Methods of Potential Health Hazard
(EPA/560/5-75-002)
PB-239 840/2 75-11 PC **A05**/MF **A01**

Draft Survey and Evaluation of 'In vitro' Toxicity Test Methods
(EPA/560/5-75/007)
PB-257 574/4 76-25 PC **A06**/MF **A01**

YOUNG (ARTHUR) AND CO., WASHINGTON, DC.

Economic Impact Analysis of Proposed Identification and Notification Rule on Friable Asbestos Containing Materials in Schools Proposed Rule, Section 6 Toxic Substances Control Act
(EPA-560/12-80-004)
PB81-141640 81-10 PC **A13**/MF **A01**

Economic Analysis of Reporting Forms, Proposed Rule Section 8(a) of TSCA (Toxic Substances Control Act) for Commercial and Industrial Uses of Asbestos
(EPA-560/4-81-001)
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Soil Biology as Related to Land Use Practices. Proceedings of the International Soil Zoology Colloquium (7th) of the International Society of Soil Science (ISSS) Held at Syracuse, New York on July 29-August 3, 1979
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Environmental Hazard Assessment Report. Higher Benzenepolycarboxylates
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Report of the DDT Advisory Committee, September 1971
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Current Awareness Service for Toxic Substances (CATS) Cumulative Report Number 2 Part I
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Current Awareness Service for Toxic Substances (CATS) Cumulative Report Number 2 Part II
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Toxic Substances Control Act (TSCA). PL-94-469 Candidate List of Chemical Substances Volume I Substance Name Section (Part 1) Volume II Substance Name Section (Part 2) Volume III. Formula Section CAS Number Section Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials (UVCB) Section
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