Review of Literature on Herbicides, Including Phenoxy Herbicides and Associated Dioxins; Annotated Bibliography of Recent Literature on Health Effects, Volume IV

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Volume IV
Annotated Bibliography of Recent Literature on Health Effects

Department of Medicine and Surgery
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Introduction

This volume is a bibliography of published and unpublished literature relevant to the human health effects of 2,4-D, 2,4,5-T, PCDD, cacodylic acid, and picloram that has become available since mid-1981. The citations are arranged alphabetically by author. Each citation is followed by a series of three-letter codes. These codes describe the information contained in the paper beginning with the health effect(s) or type of study and followed by the route of administration/exposure, the chemical, the species, and the type of report. Thus the coding MET TER INJ ORL DIO MUS ABS indicates that the article is an abstract (ABS) of a study of the metabolism (MET) and teratogenic effects (TER) that result from the parenteral (INJ) and oral (ORL) administration of a chlorinated dibenzo-p-dioxin (DIO) to mice (MUS). An alphabetical key for these codes is given in the table on the next page.

After the line of codes following each citation is a line that indicates those pages of the critical review (Volume 1) in which that document is discussed. Because most secondary sources, i.e., review articles, news reports, and commentaries, are not cited in the critical review, short narrative statements describing the contents of these documents are included in this bibliography.
KEY TO BIBLIOGRAPHIC CODES

ABS—abstract
ACN—chloracne
ACU—acute toxic effects
ADD—species other than those assigned specific codes
BRD—avian species
CAC—cacodylic acid
CAR—cancer
CEL—mammalian cells in culture
CHR—chronic toxic effects
COM—commentary
CVT—cardiovascular effects
CYT—cytotoxicity
24D—2,4-dichlorophenoxy acetic acid and its esters
DEM—dermal exposure
DIO—chlorinated dibenzo-p-dioxins including TCDD
DOG—dog
ENV—environmental exposure
ENZ—enzyme induction or inhibition
EPI—epidemiologic investigation
FSE—fish
GEN—genotoxicity including mutagenesis
GPG—guinea pig
HAM—hamster
HEM—hematological effects
HEP—hepatic effects other than ENZ
HUM—human
IMM—effects on the immune system
IMP—impurities in phenoxy herbicides other than PCDD, e.g., chlorinated dibenzofurans
INJ—exposure via injection
INL—inhalation exposure
IVT—in-vitro study
LET—lethality
MEC—mechanism of toxic action
MET—absorption, distribution, metabolism, storage, and excretion
MIC—microbial test system
MIS—study objective not otherwise classified
MKY—nonhuman primate
MUS—mouse
NEU—neurobehavioral effects
OCC—occupational exposure
OOG—target organ not otherwise specified
ORL—oral exposure
ORN—phenoxy herbicide formulations including agent orange
OTE—other route of exposure, e.g., egg painting
OTH—toxic effect not otherwise specified
PCT—porphyria cutanea tarda
KEY TO BIBLIOGRAPHIC CODES (continued)

PIC—picloram
PLA—plant species
RAB—rabbit
RAT—rat
REN—renal effects
REP—reproductive effects
REV—review article
SCR—subchronic toxic effects
SKN—skin effects other than chloracne
25T—2,4,5-trichlorophenoxyacetic acid and its esters
TER—teratogenic effects
UNS—unspecified route or means of exposure

25T HUM COM

This is a news report of a call by the International Federation of Chemical, Energy, and General Workers Union for a ban on 2,4,5-T.


EPI REP OCC DIO HUM COM

This is a comment on the study by Townsend et al. (1982).


REP TER DIO REV

This is a brief review of teratogenicity and reproductive toxicity of TCDD as of 1981.

Anonymous. 1981d. Herbicide is real risk to birds and people. New Scientist 89:405

ACU NEU INJ 25T BRD COM

This is a news article describing the report of Sanderson and Rogers (1981).


25T HUM COM

This is a news report giving the status of the 2,4,5-T registration proceedings at EPA.


ACN IMM NEU REP ENV DIO HUM REV

This is an editorial marking the fifth anniversary of the Seveso accident and summarizing the health effects information available at the time.

CAR OCC DIO HUM REV

This is a news report describing the study by Cook (1981) that was reported in Lancet.


NEU TER OTE 25T BRD COM

This is a news report and comment on the study of Sanderson and Rogers (1981) (see JRB 1981).


CAR DIO ORN HUM COM REV

This is an editorial summarizing and commenting on available evidence linking exposure to phenoxy herbicides and chlorinated phenols with soft-tissue sarcomas.


24D DIO 25T HUM COM REV

This is an editorial briefly reviewing human data on health effects of phenoxy herbicides and citing the AMA Council on Scientific Affairs (1981) report.


ACN CAR IMM DIO IMP HUM REV

This news report summarizes the presentations at the 1982 Symposium on Chlorinated Dioxins and Dibenzofurans in the Total Environment.


CAR GEN OCC ENV DIO IMP HUM REV

This news report describes the 1983 Symposium on Chlorinated Dioxins and Dibenzofurans in the Total Environment and the controversy regarding the potential carcinogenic activity of these compounds.

CAR CVT EPI TER DIO HUM

This is a study of mortality patterns and birth defects in the Seveso area before and after the accident at the ICMESA plant. The results of the birth defects study are described more fully by Bruzzi et al. 1981. The mortality study provided no noteworthy results.


CAR DIO HUM COM

This is a brief editorial indicating that data on human health effects of PCDD are incomplete but on the basis of animal evidence PCDD should be treated with the utmost respect.


MET DEM INL 24D GPG HUM ABS

This is a brief abstract indicating that the urinary excretion of 2,4-D metabolites in guinea pigs was proportional to the dermal dose, but that in humans spraying 2,4-D there was no correlation between urinary excretion and amounts of 2,4-D deposited on filter pads on the arms and clothing. No experimental details or results were given.


GEN IVT DIO CEL RAT

See Page IV-65.

MET 25T REV

This is a one-paragraph review of evidence that 2,4,5-T is excreted via a saturable organic acid secretory pathway in the kidneys (1 reference).


MET INJ DIO MUS

See Pages V-15 and V-37.


EPI GEN REP ENV ORN HUM

See Page IV-148.


ENZ MEC INJ DIO RAT

See Page IV-91.


TER OCC ENV DIO 25T HUM REV

This is a detailed review and commentary about the interpretation of data on the ability of chemicals to cause cancer and birth defects in humans. It discusses 2,4,5-T and PCDD (31 references).


This is a cross-sectional look at EPA's regulatory activities related to 2,4,5-T and PCDD including a review of EPA risk assessments.


This is the original German language version of the paper published in English in J. Toxicol. Environ. Health (1981).


This is an abstract of the study published in full in Toxicology by Nau and Bass (1981).
This is a review of studies of the accumulation and storage of DDT and hexachlorobiphenyl in adipose tissue in rats and guinea pigs with a brief mention of the applicability to PCDD and PCDF (12 references).


CAR OCC DIO ORN HUM

See Pages IV-9 and IV-19.


ENV DIO ORN HUM COM REV

This is a review of the history of the regulation of phenoxy herbicides and PCDD in Australia (no references).


ACN HEP NEU DIO ORN HUM MKY REV

See Page IV-227.

This is a review of phenoxy herbicide toxicity with particular emphasis on neurologic and psychiatric manifestations (30 references).


GEN OCC DIO HUM

See Page IV-44.


EPI NEU OCC ENV ORN 25T HUM COM REV

This is a brief summary of two Australian reports that exposure to phenoxy herbicides caused brain damage in humans. No details or references are given.

HEP MEC INJ DIO RAT

This is a study of biochemical changes induced in the plasma membrane of liver cells in rats given a single injection of a high dose of TCDD. It has little relevance to human health.


GEN TER ENV ORN HUM

See Page IV-142.


GEN INJ IVT DIO MIC MUS

See Pages IV-62 and IV-63.


ENZ GEN IVT ORL DIO IMP MIC MUS

See Pages IV-62 and IV-63.


ACN CAR EPI HEM HEP NEU PCT REP ENV DIO HUM

See Pages III-7 and IV-219.

This is an excellent review summarizing the current status of all epidemiology studies being conducted in the Seveso region (no references).

GEN REP TER ENV DIO HUM

See Pages IV-134 and IV-135.


EPI REP TER ENV DIO HUM

See Pages IV-134, IV-135, and IV-136.

This is essentially the same study as that described in Bruzzi (1983b) above.


MET ORL CAC HUM

See Page VII-10.

Buslovich, Y.S., Koldobskaya, F.D., Davydenko, L.I., and Krysanova, A.I. 1982. [Role of mixed function oxidases in the detoxication of some herbicides--chloro derivatives of phenoxy acids.] Gig. Sanit. 10:76-77 (Russian)

MET IVT 24D RAT

This Russian language article describes a study of the metabolism of 2,4-D by rat liver microsomes and was judged to be of too little importance to translate.


ENZ HEP MEC OTH PCT REN SCR ORL DIO RAT

CHR ENZ HEP MET ORL DIO RAT


ACN EPI HEP OTH DIO HUM


ACN EPI ENV DIO HUM


EPI GEN REP ENV ORN HUM COM REV

This is a report by a delegate summarizing the proceedings of the International Symposium on Herbicides and Defoliants in War held in Ho Chi Minh City in January 1983.


MEC MET DIO COM REV

This is a short summary of presented papers and a description of research needs from a Workshop on Chlorinated Dioxins and Related Compounds held in Rome, Italy in 1980.

**MEC IVT DIO RAT**

See Pages IV-102, IV-104, and IV-124.

This paper describes the isolation and characterization of the TCDD receptor from rat liver. All of the data in this paper are included in Carlstedt-Duke et al. (1982).


See Pages IV-102 and IV-104.

**MEC INJ IVT DIO RAT**


**REP ENV DIO HUM**

See Page IV-137.


**GEN IVT 25T MIC ABS**

See Page IV-55.


**TER ORL CAC 25T MUS**

See Pages IV-156 and VII-5.

CVT TER OTE DIO BRD

See Pages IV-172 and IV-173.


CVT TER OTE DIO BRD

See Page IV-172.


DIO REV

This is primarily a review of sources, analysis, and environmental disposition of PCDD and PCDF. It contains a short section on the structure-activity relationships in the toxicity of PCDD and PCDF (31 references).


MEC INJ DIO IMP MUS

See Page IV-198.

This is an abstract describing the study which is published in full as Clark, et al. (1981b).


IMM MEC INJ IVT DIO IMP MUS
See Pages IV-198 and IV-201.


IMM MEC INJ DIO MUS

See Page IV-199.


HEP ENV DIO MUS

See Page IV-255.


CAR EPI OCC ENV ORN HUM REV

This is a critical review of all the available evidence linking exposure to phenoxy herbicides with cancer in humans (31 references).


CAR ENZ HEP MEC DIO REV

This is a secondary reference discussing the relationship between hypolipidemic drugs and cancer. The author concludes that animal models for cancer are inappropriate for this class of compounds including TCDD.


Unable to locate.


ACN CAR EPI OCC DIO HUM COM
This is a letter commenting on Honchar and Halperin (1981) (see JRB 1981) discussing four cases of soft-tissue sarcoma among workers at Dow or Monsanto plants where 2,4,5-T or TCP was produced.


This is an in-depth review and critique of evidence linking exposure to phenoxy herbicides and chlorinated phenols with soft-tissue sarcoma. It is particularly critical of epidemiologic studies conducted in Sweden by Hardell and co-workers (13 references).


This is a review of animal and epidemiology data linking exposure to TCDD to cancer. It describes the basis for the FDA action level for TCDD in Great Lakes fish (12 references).


This is a thorough and critical review of the medical evidence relevant to the toxicity and long-term health
effects of Agent Orange and its associated contaminant, TCDD (191 references).


24D DIO ORN 25T COM REV

This is an executive summary of the AMA Council on Scientific Affairs (1981) report.


CVT TER ORL 25T MUS

See Pages IV-156 and IV-157.

Courtney, K.D., and Ebron, M.T. 1981b. 2,4,5-T effects on cardiac and serum lactic dehydrogenase (LDH) and creatine kinase (CK) isozymes. II. Neonatal enzyme activities and isozyme profiles. Arch. Environ. Contam. Toxicol. 10:583-595

CVT TER ORL 25T MUS

See Pages IV-156 and IV-158.

Crampton, M.A., and Rodgers, L.J. 1983. Low doses of 2,4,5-trichlorophenoxyacetic acid are behaviorally teratogenic to rats. Experientia 39:891-892

NEU REP ORL 25T RAT

In this study a single oral dose of 2,4,5-T containing 0.03 ppm TCDD was administered to pregnant female rats on day 8 of gestation. At a dose of 6 mg/kg, the performance of offspring in an open field ambulation test was significantly depressed when compared to offspring of vehicle-treated controls.


CAR OCC ORN HUM COM

This is a letter commenting on and criticizing the report of Johnson et al. (1981) in Lancet.

ACN SKN DIO HUM REV

See Pages IV-205 and IV-206.

This is a detailed review concentrating on chloracne as a result of exposure to TCDD but also discussing its relationship to systemic poisoning in humans and in animal models (53 references).


ACN EPI OCC ENV DIO HUM REV

This is a review of a number of halogenated hydrocarbons including PCDD and PCDF that cause chloracne with a discussion of other cutaneous effects (41 references).


ACN DIO REV

See Page IV-206.

This is a review and discussion of animal and human data on chloracne including a discussion of the use of chloracne as an indicator of toxic exposure to PCDD (32 references).


DIO HUM REV

This is a summary of the conclusions of the Human Observations Panel at the International Symposium on Human and Environmental Risks of Chlorinated Dioxins and Related Compounds held in Arlington, Virginia, in October, 1981.


This is a news report summarizing status of health effects research which resulted from the Seveso accident.


This is a detailed description of the Seveso accident and the methods used to define precisely the location and extent of contamination and to identify an exposed population for health effect studies.


This is a review of health effects, legislation, veterans' complaints, and government sponsored studies of Agent Orange (15 references).


This is an editorial giving a brief outline of the protocol for the Air Force health study of Operation Ranch Hand personnel.

Del Corno, G., Favaretti, C., Caramaschi, F., Giambelluca, S.E., Montesarchio, E., Bonetti, F., and Volpato, C. 1982. Distribution of chloracne cases in the Seveso area following contamination by TCDD. L'Igiene Moderna 77:635-658


Didier, R. 1982. [Study of the toxicity and some pathophysiological effects of 2,4,5-trichlorophenoxyacetic acid, an organochlorine herbicide, in the adult domestic quail (Coturnix coturnix japonica).] C.R. Soc. Biol. (Paris) 176:542-549 (French)

This is a study of the acute oral toxicity of 2,4,5-T in Japanese Quail. It is of little relevance to human health.
Didier, R. 1983. [Hepatotoxicity of 2,4,5-trichlorophenoxyacetic acid—Ultrastructural and biochemical study in the quail embryo.] C.R. Soc. Biol. (Paris) 177:304-312. (French) (Summary in English)

See Pages IV-162 and IV-163.


See Pages IV-114 and IV-125.


This is a review of the Seveso accident emphasizing the authors' viewpoint that it was not a major accident and that significant exposure to PCDD has not been demonstrated (37 references).


This is a comprehensive review of health effects data with particular emphasis on Seveso, Hardell and co-workers studies, and other epidemiologic studies of soft-tissue sarcoma and birth defects (55 references).

Dow Chemical Company. 1983b. Toxicology profile of Tordon herbicides: Toxicology of picloram. (Unpublished data) (9 pages)
This is a toxicology profile of picloram prepared by the manufacturer summarizing the results of a large number of animal studies and a few human studies. It contains few details on experimental design, methods, and results.


Duffard, R., Mori de Moro, G., and De Duffard, A.M.E. 1982. Hatching and lipid composition of chicks brain from eggs treated with 2,4-dichlorophenoxyacetic butyl ester. Toxicology 24:305-311

Dwyer, J.H. 1982. Summary of proceedings of a conference on herbicide exposure and reproductive epidemiology in Viet Nam. Department of Medical Genetics, Mount Sinai School of Medicine, April 10. Mimeo. (36 pages)


This is a letter containing two case reports of coronary artery ectasia in men alleged to have had heavy exposure to 2,4,5-T while spraying. There is no documentation of occupational history, familial history, or exposure.


Filler, R. 1981. Onset of embryonic capability to activate proteratogens by mixed function oxidase (MFO) system during the preimplantation period. Teratology 23:34A-35A (Abstract)


This was a study of the cytotoxicity and genetic toxicity of 2,4-D, 2,4,5-T and MCPA to the roots of onion plants. All 3 compounds were toxic, reduced the mitotic index, and caused chromosomal damage. These effects are not considered to be relevant to human health.


Fox, J.L. 1983. Dioxins' health effects remain puzzling. Science 221:1161-1162

This is a news report reviewing recent studies on the carcinogenic and mutagenic activity of TCDD and highlighting the difficulty of interpreting the results of these studies (no references).

Despite its title, this paper, presented at an International Workshop in Washington, D.C., in 1980, describes the Seveso accident and the methods used to determine the extent of contamination. It also reviews the metabolism and toxicology of TCDD with emphasis on its hepatotoxic, porphyriogenic, and immunotoxic properties.


This study is essentially a study of TCDD exposure among a group of workers who cleaned up after the Seveso accident. The authors measured a series of clinical parameters and on the basis of no alterations in these parameters concluded that the protective equipment prevented exposure.


REP TER ORL DIO RAB

See IV-170.

Giavini, E., Prati, M., and Vismara, C. 1982b. Effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin administered to pregnant rats during the preimplantation period. Environ. Res. 29:185-189

REP TER ORL DIO RAT

See Page IV-168.


REP TER ORL DIO RAT

See Page IV-169.


REP PCT REP TER ENV DIO BRD

The authors studied the hatchability of eggs and the health of chicks from Herring Gull colonies on Lake Ontario and Lake Erie. They concluded that these birds were exposed to an agent in their food that caused embryotoxicity, subcutaneous edema, and hepatic porphyria. Retrospective chemical analysis of eggs revealed TCDD, DDE, PCBs, mirex, hexachlorobenzene, and other contaminants. No conclusions could be reached about the specific causative agent.


REP ORL 25T RAT ABS


This is a brief abstract of a study of the ability of a number of pesticides to induce sex-linked recessive lethal mutations in Drosophila melanogaster. 2,4-D was negative.

This is an editorial describing the forthcoming Air Force study of Operation Ranch Hand personnel and the predicted effect on veterans compensation claims.

This is a news report describing recent studies and reports on PCDD toxicity and relating those reports to concerns about health effects in Vietnam veterans.

This is a letter to the editor revealing that a large quantity of 2,4,5-T imported into Australia was fire-damaged and contained high levels (19 ppm) of TCDD. The authors indicate that civilian exposure to this herbicide could confound epidemiologic studies of Vietnam veterans.

This is a review of the human and veterinary toxicology of phenoxy herbicides and PCDD impurities which includes a risk/benefit analysis and concludes that phenoxy herbicides should not be banned (9 references).


This is a somewhat superficial review of the health effects of PCDD and 2,4,5-T discussing mortality, reproductive effects, and morbidity (23 references).


See Pages IV-110 and IV-124.


This is an English-language version of a study published earlier in Lakartidningen (1977) and discussed in the JRB (1981) report.


See Page IV-5.

CAR EPI OCC ENV DIO ORN HUM REV

This is a review of Scandinavian epidemiological studies linking occupational exposure to phenoxy herbicides and chlorinated phenols with various types of cancer (48 references).


CAR DIO ORN HUM COM REV

See Page IV-5.

This is a letter responding to the letter of Cook (1981) in Lancet. The author addresses Cook's assertion that smoking is a differentiating factor in soft-tissue sarcoma cases.


CAR OCC DIO ORN HUM REV

This is a secondary reference which reviews the seven cases of soft-tissue sarcoma reported among U.S. workers occupationally exposed to phenoxy herbicides and PCDD.


CAR EPI DIO ORN HUM

This is a letter to Lancet commenting on the Lancet editorial (1981) discussing the relationship of various types of cancer to exposure to phenoxy herbicides and chlorinated phenols.

CAR EPI OCC DIO ORN HUM

This is an English language version of the report by the same authors published in Lakartidningen (1980) and discussed in the JRB (1981) report.


CAR EPI OCC DIO ORN HUM

See Page IV-6.


ENZ MEC TER INJ DIO MUS

See Pages IV-112, IV-167, and IV-168.


REP TER ENV ORN 25T HUM

See Page IV-185.


ENV DIO ORN HUM REV

This is a summary of the proceedings of the Workshop on the Impact of Chlorinated Dioxins and Related Compounds in the Environment held in Rome in October, 1980.


HEP IMM OTH OCC DIO HUM COM REV

See Page IV-194.

This is a news report/editorial commenting on the apparent reluctance of Coalite and Chemical Products, Ltd. to sponsor or cooperate in follow-up studies of 90 workers who displayed signs and symptoms of TCDD toxicity when working at the plant 10 years earlier.

This is a very brief note calling attention to recent publications by Honchar and Halperin (1981) and by Hardell and co-workers pointing out potential relationship between exposure to phenoxy herbicides and PCDD and soft-tissue sarcoma.


This book reviews the toxicology and history of exposure to PCDD, 2,4,5-T, and other related chlorinated hydrocarbons. It contains extensive discussions of the politics and sociology connected with these issues as well.


This is a review of 24 industrial accidents or manufacturing situations in which there was exposure to PCDD. The author assesses the evidence for long-term sequelae (31 references).


This is a letter to the editor reviewing and commenting upon recent evidence linking soft-tissue sarcomas with exposure to phenoxy herbicides and/or chlorinated phenols.


Helder, T. 1982. Effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) on early life stages of two fresh-water fish species. In Hutzinger, O., Frei, R.W., Merian, E.,

TER OTE DIO FSH

See Page IV-174.


ACU ORL DIO HAM

See Page IV-243.


CAR REP OCC ENV DIO ORN HUM REV

This is an extensive literature review of evidence for cancer and birth defects resulting from exposure to phenoxy herbicides with particular emphasis on defining a quantitative basis for a safe level of exposure (84 references).


GEN REP IVT ORL 25T HAM MIC RAT

See Pages IV-51, IV-52, IV-57, and IV-158.


MEC NEU INJ 24D RAT

See Page IV-235.


MEC NEU INJ 24D RAT ABS
This is an abstract of the paper published later as Hervonen et al. (1982).


PCT OCC ENV DIO ORN HUM REV

See Page IV-215.

This is a review describing the condition known as porphyria cutanea tarda, identifying its causes and contributing factors, and discussing evidence that it is caused by TCDD (30 references).


CAR EPI OCC ENV DIO ORN HUM REV

This is a summary and critical review of the epidemiologic evidence linking soft-tissue sarcoma with exposure to phenoxy herbicides and PCDD (47 references).


MET ENV DIO ORN HUM ABS

See Page V-9 and V-36.


TER OTE 25T BRD

See Page IV-162.


EPI ORN HUM COM

This is a news report describing a contract of the VA with UCLA to devise an epidemiology protocol to study
the effects of Agent Orange exposure on ground troops in Vietnam.


This is a news report indicating that the initial protocol for a cohort study of Vietnam ground troops was criticized by reviewers.


This review summarizes earlier studies on the reproductive effects of arsenic compounds.


This is an abstract of the study published as Hood et al. (1982b) in the Bull. Environ. Contam. Toxicol.


This is a brief review of the health effects of phenoxy herbicides and PCDD and a description of VA programs designed to acquaint physicians with appropriate procedures to follow when examining Vietnam veterans who may have been exposed to Agent Orange (no references).


in cultured human epithelial cells by 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD): Evidence for TCDD receptor.


ENZ MEC IVT DIO CELL

See Pages IV-99 and IV-123.

Hunter, H.C., Rathus, E., Oxenham, B., Kelly, J., and Donohue, J. 1981. 2,4-D, 2,4,5-T and human health. A report by an Interdepartmental Committee appointed by Queensland Cabinet (38 pages)

CAR EPI GEN HEP MET REP OCC ENV 24D 25T HUM REV

This is a report prepared by an Australian government committee justifying conclusions that the use of 2,4-D and 2,4,5-T should be continued in Queensland. It reviews health effects and exposure information (82 references).


ENZ EPI ENV DIO HUM

See Pages IV-78 and IV-118.


CAR ORL CAC MUS

See Page VII-1.


CAC REV

This is a review of toxicology data on arsenic and its compounds (including cacodylic acid) with emphasis on potential carcinogenic activity in humans and animals.

CAR EPI 24D DIO ORN 25T HUM REV

This is a series of conclusions regarding the potential carcinogenic activity of 2,4-D, 2,4,5-T, and TCDD.

International Steering Committee For The Study Of The Health Effects Of The Seveso Accident, 1982. Conclusions and Recommendations of the Fifth Meeting, January 9-12, 1982, Milano, Italy (21 pages) (Draft)

CAR EPI HEP NEU REP ENV DIO HUM REV

This report represents the conclusions reached by a panel of health experts reviewing the available evidence of the health consequences of the Seveso accident (no references).


NEU IVT 24D RAT

See Page IV-232.


MET ORL DIO ADD

See Pages V-17 and V-37.


MEC IVT DIO RAT

See Page IV-100.


CAR OCC ORN HUM
See Pages IV-20 and IV-21.


ACN HEP MEC OOG DEM INJ DIO MUS

See Page IV-219.


ACN HEP IMM MEC PCT DEM INJ DIO MUS

See Pages IV-84, IV-96, and IV-219.


GEN IVT CAC CEL

See Pages VII-3 and VII-4.


CAR EPI OCC ORN HUM

This is a protocol for a study currently being conducted by the Veterans Administration.


MEC MET CYT IVT 25T MIC

See Page IV-98.

Kasza, L. 1980. Review of liver slides from the National Cancer Institute picloram experiment (letter—May 1, 1980).

This is a review of studies on absorption and reproductive toxicity of phenoxy herbicides in humans with emphasis on exposure through agricultural use (21 references).


The authors studied the mutagenic effects of 2,4-D in hull-less barley. Under the conditions of their assay, 2,4-D caused mutations. The significance of this finding for human health is not clear.


This is a review of the absorption, distribution, and metabolism of halogenated hydrocarbons in humans. It contains a short paragraph stating that there are no studies relating TCDD body burdens to exposure (43 references).


HEP PCT OOG REV

This is a review with emphasis on the histopathology of pathological lesions in experimental animals treated with TCDD and related compounds (22 references).


EPI DIO HUM REV

This is a general discussion of how to use epidemiology studies to assess the health effects of chemicals. It contains no specific data on TCDD (22 references).

Kirkhart, B. 1980. Micronucleus test on cacodylic acid. SRI Project No. LSU 7558-19, Contract No. 68-02-2947 (8 pages)

GEN INJ CAC MUS

See Pages VII-2 and VII-4.


HEP MEC INJ 24D RAT

See Page IV-242.


ENZ MEC DIO REV
See Pages III-3 and III-4.

This is a thorough review of data on the relationship of the TCDD receptor to toxicity and the control of this receptor by the Ah gene locus. The authors include an extensive discussion of theoretical mechanisms of toxicity (29 references).


ACN ENZ MEC MET SKN DEM DIO MUS

See Pages IV-84, IV-93, and IV-212.


ACN CAR GEN IMM MEC MET REP DIO REV

This is an extensive review of the toxicology of TCDD with special emphasis on animal experiments and interspecies comparisons of effects and potency (69 references).


ENZ HEP MEC INJ DIO RAB

See Pages IV-84 and IV-92.


CAR DIO HUM COM

This is essentially a theoretical discussion of possible mechanisms of chemical carcinogenesis with TCDD used as an example. This paper contains no experimental information.


EPI NEU ENV ORN HUM
Korte, C., and Jalal, S.M. 1982. 2,4-D induced clastogenicity and elevated rates of sister chromatid exchanges in cultured human lymphocytes. J. Hered. 73:224-226


This is essentially the same study as that described in Kurl et al. (1982a) and discussed in Section IV.C.

MET DIO REV

This short review article summarizes studies on the metabolic, toxic, and enzyme-inducing effects of TCDD.


GEN REP TER ORL 24D DIO ORN 25T MUS

This study was included in the JRB (1981) report as an NTP report No. NTP-80-44 and cited as Lamb, J.C., Moore, J.A., and Marks, T.A. 1980.


GEN REP CYT INJ ORL 24D DIO ORN 25T MUS

See Pages IV-49 and IV-51.


HEP SCR ORL 24D DIO 25T MUS

See Page IV-241.


CAR DIO HUM REV

This is a discussion of assumptions and methods of quantitative risk assessment that mentions TCDD in passing.
719-720

GEN REP TER OCC ORDN HUM COM

See Page IV-146.

This letter to the editor gives an account of the author's
experience with birth defects among children of men who
served in Vietnam. This report is essentially anecdotal.

of aerial applicators to 2,4-D. Arkansas Farm Res. 30:7

MET DEM DIO HUM

See Page V-5.

Lavy, T.L., Walstad, J.D., Flynn, R.R., and Mattice, J.D.
1982. (2,4-Dichlorophenoxy)acetic acid exposure received
by aerial application crews during forest spray operations.
J. Agric. Food Chem. 30:375-381

MET DEM 24D HUM

See Page V-5.

of benzo(a)pyrene in rat prostate glands following 2,3,7,8-
tetrachlorodibenzo-p-dioxin exposure. Carcinogenesis
2:823-831

ENZ HEP MEC OOG ORL DIO RAT

See Pages IV-84, IV-89, IV-90, IV-117 and IV-123.

Legraverend, C., Hannah, R.R., Eisen, H.J., Owens, I.S., Nebert, D.W.,
and Hankinson, O. 1982. Regulatory gene product of the
Ah locus. J. Biol. Chem. 257:6402-6407

MEC IVT DIO CEL

See Pages IV-106 and IV-124.

Leng, M.L. 1982. Jumping chickens: Relevance to hazard in
humans. Science 215:1421-1422 (Commentary)

ACU NEU INJ 25T BRD COM

This is a letter to the editor criticizing the paper published

MET DEM ORL OCC 25T HUM REV

This is a review of studies of the absorption, distribution and excretion of 2,4,5-T (29 references).

Lesca, P. 1981. Influence of the rate of 7,12-dimethylbenz(a)-anthracene metabolic activation, in vivo, on its binding to epidermal DNA and skin carcinogenesis. Carcinogenesis 2:199-204

ENZ MEC SKN DEM DIO MUS

See Pages IV-84, IV-115, and IV-125.


MET INJ CAC HAM MUS

See Page VII-11.

Linnainmaa, K. 1983a. Genotoxicity of phenoxy acid herbicides 2,4-D and MCPA. Helsinki. Dissertation (65 pages)

GEN MEC IVT ORL ENV 24D HAM HUM RAT REV

This is a doctoral dissertation that contains the data published in Linnainmaa (1983b, c, d) and in Vainio et al. (1982, 1983).


GEN 24D REV

Linnainmaa, K. 1983c. Sister chromatid exchanges among workers occupationally exposed to phenoxy acid herbicides 2,4-D and MCPA. Teratog. Carcinog. Mutagen. 3:269-280

GEN OCC 24D ORN HUM
See Pages IV-48, IV-49 and IV-50.

Linnainmaa, K. 1983d. Induction of sister chromatid exchanges by the peroxisome proliferators 2,4-D, MCPA, and clofibrate in vivo and in vitro. Carcinogenesis (Accepted for publication)

GEN IVT ORL 24D CEL HAM RAT

See Pages IV-52, IV-53, and IV-60.


Unable to locate.


MIS ENV DIO HUM REV

This is a historical review of PCDD issues focusing on sources of human exposure and environmental levels (no references).


CAR DIO HUM REV

This is a detailed quantitative cancer risk assessment which contains a review of health effects information (34 references).


GEN INJ IVT ORL DIO CEL HUM MUS RAT

See Pages IV-54, IV-55, and IV-65.

MEC INJ IVT DIO RAT
See Pages IV-105, IV-110, and IV-124.


IMM ORL DIO MUS RAT
See Pages IV-193, IV-198, and IV-201.


CAR EPI HUM
See Page IV-24.


ENZ INJ DIO RAT
See Page IV-87.


ACU LET MET INJ ORL DIO MUS
See Pages V-15, V-36, and IV-245.


PCT DIO REV
This is a review of chemically induced porphyria in humans. It does not contain specific information on TCDD, but it does discuss possible mechanisms at length.

EPI TER ENV DIO HUM

This report summarizes studies on birth defects in Seveso and then describes plans for a birth-defects registry to provide long-term follow-up.


ACU MEC INJ IVT DIO HUM RAT

This report describes in vitro and in vivo studies in rats that indicate that blood lipid levels may influence the acute toxicity of TCDD.


MEC INJ IVT DIO MUS RAT

See Pages IV-107, IV-124, and IV-125.


GEN REP TER OCC DIO 25T HUM

See Pages IV-143 and IV-144.


MET DIO IMP REV

This is a review of tissue distribution, metabolism, and excretion of TCDD and TCDF as shown by animal experiments (36 references).

CAR CVT ENZ EPI HEP IMM REP OCC DIO HUM

See Pages IV-44, IV-80, IV-118, IV-138, IV-139, and IV-192.


This is a brief letter replying by May to criticisms of his 1982 paper.


ACN CAR CVT EPI OCC DIO HUM

See Pages IV-16 and IV-211.


NEU SCR INJ 24D RAT

See Page IV-232.


REP ORL PIC RAT

See Page VI-1.


MEC DIO REV

This review describes the evidence regarding the structural specificity of the TCDD receptor (29 references).


GEN REP TER ORL DIO MKY REV

See Page IV-171.


ACN CAR GEN HEP IMM PCT REP DIO COM REV

This is a short summary of animal toxicology information and research needs prepared by the animal toxicology panel at the International Workshop on Chlorinated Dioxins and Related Compounds held in Rome, Italy in October, 1980.


SCR ORL IMP MKY

See Page IV-257.


SCR ORL IMP MKY

See Page IV-257.

This is essentially the same paper as McNulty et al. (1981) in Food Cosmet. Toxicol.


ENZ MET ORL DIO MKY COM

See Pages V-18, V-37, IV-84, and IV-87.

CAR EPI ENV DIO HUM

See Page IV-23.


CAR EPI ORN HUM

See Page IV-10.

Mohammad, F.K., and St. Omer, V.E.V. 1983. Subtle neurotoxicity of prenatal exposure of rats to a 1:1 mixture of 2,4-dichlorophenoxyacetate (2,4-D) and 2,4,5-trichlorophenoxyacetate (2,4,5-T) on postnatal behavioral and neurochemical development. 13th Annual Meeting, Society for Neuroscience, November 6-11, 1983, Boston, Massachusetts. (Abstract)

NEU TER ORL ORN RAT ABS

See Page IV-151.


GEN IVT 24D MIC

See Page IV-58.


GEN IVT CAC PLA

See Pages VII-2 and VII-4.

This is a summary of human toxicology and research needs prepared by the human toxicology panel at the International Workshop on Chlorinated Dioxins and Related Compounds held in Rome, Italy in October, 1980.


In this study, the authors measured the binding of various organic chemicals, including 2,4-D to cultured human embryonic lung cells. 2,4-D did not exhibit specific protein binding. The significance of this finding is unknown.


ENZ MET ORL DIO RAT

See Pages IV-84 and IV-91.


ENZ INJ IVT DIO CEL HUM MUS ABS

See Pages IV-84, IV-85, IV-99 and IV-123.


ENZ INJ DIO RAT

See Page IV-86.


MET 24D HUM

See Pages V-7 and V-35.


CAR ORL PIC MUS RAT

See Pages VI-2 and VI-3.


This is a very thorough review of sources, persistence, toxicology, and exposure of PCDD for the purpose of establishing environmental criteria in Canada. This review emphasizes carcinogenicity, reproductive effects, and teratogenicity (371 references).


Nau, H., and Bass, R. 1981. Transfer of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) to the mouse embryo and fetus. Toxicology 20:299-308


This review article summarizes information on enzyme induction by PCBs and PBBs and briefly discusses the metabolism of TCDD.

Neal, R.A. 1982b. Introductory remarks to the panel on 2,4,5-T/dioxin. Am. Statistician 36:284

A very brief review of issues and an introduction to papers presented in a symposium on 2,4,5-T and PCDD.


See Pages V-26, V-33, V-34, V-37, and V-38.


This is an in-depth review of the pharmacokinetics and metabolism of TCDD in animals (57 references).

This is a review of genetic factors in determining susceptibility to toxic effects which contains an extensive discussion of TCDD (29 references).


See Pages V-2, V-3, and V-35.


See Page IV-242.


This is a review of reproductive toxicity data with emphasis on the problems involved in establishing a no-observed-effect level for quantitative risk assessment (36 references).


This is a news report describing the results of a study of birth defects and stillbirth in 40,000 families in North Vietnam. Comparison of families where the husbands fought in South Vietnam with families where the husband stayed in the North revealed a 3.5 relative risk for abnormalities or stillbirth. No methods or results are given.


See Pages IV-117 and IV-125.

MEC DIO REV

This is a review and discussion of the relationship between the TCDD receptor and the expression of toxic manifestations which concludes that information is still incomplete.


MET DIO REV

This is a review of in vivo and in vitro studies of TCDD metabolism indicating that rate of metabolism is not necessarily related to toxic potency (47 references).


CAR EPI OCC ORN HUM

See Page IV-9.


DIO 25T HUM REV

A brief discussion of the derivation of no-observed-effect levels (NOELs) for 2,4,5-T and TCDD and the use of these NOELs and safety factors to arrive at "safe" levels for human exposure (2 references).


ACN MEC ENV DIO HUM


ACN EPI HEP NEU PCT REP OCC DIO 25T HUM

See Pages IV-14, IV-210, IV-215, and IV-230.


SKN OCC DIO 25T HUM REV

A very general review of potential sources of dermatitis and other skin problems among farmers in England containing one sentence on the relationship between 2,4,5-T, PCDD, and chloracne (1 reference).


MET CAC REV

This is a review of arsenic metabolism in cows, dogs, and humans (11 references).


HEP MBC ORL DIO RAT REV

See Page IV-249.


NEU IVT DIO RAT

See Page IV-235.

PCT ENV ORN HUM ABS

See Page IV-215.

Podolak, M. 1981a. [Dose dependence of the effects caused by acute intoxication with 2,4-D. I. Biogenic amines.] Bromat. Chem. Toksykol. 14:17-22 (Polish) (Summary in English)

ACU NEU INJ 24D RAT

See Page IV-231.

Podolak, M. 1981b. [Dose-dependence of the effects caused by acute intoxication with 2,4-D. II. Oxidative phosphorylation.] Bromat. Chem. Toksykol. 14:169-175 (Polish) (Summary in English)

ACU NEU INJ 24D RAT

See Page IV-231.


MEC INJ IVT: DIO RAT

See Page IV-104.


ACU CAR MET REP SCR DIO REV

This is a review of the animal toxicology of PCDD concentrating on differences among the various isomers and this mode of action (77 references).


**HEP MEC INJ 25T RAT**

The authors investigated the effect of daily subcutaneous injections of 2,4,5-T on days 17-21 of gestation on phospholipid catabolism in mitochondria and microsomes of fetal rat liver. 2,4,5-T increased the rate of catabolism. The human health significance of this finding is not clear.


**ACU MIS INJ DIO RAT**

The authors studied the effect of single intraperitoneal doses of TCDD on the activity of ornithine decarboxylase in rat livers. TCDD (5μg/kg) pretreatment inhibited the induction of ornithine decarboxylase activity caused by partial hepatectomy. The significance of this finding for human health is not clear.


**ACU MEC MIS INJ DIO RAT**

See Page IV-252.


**ENZ MEC IVT 24D 25T RAT**

See Page IV-239.


**GEN IVT 24D CEL MIC RAT**

ACN ENV DIO HUM

This is a paper of academic interest only, documenting ultrastructural differences between the skin lesions of chloracne and those of other forms of acne.


ACN ACU ENZ DEM DIO MUS

See Pages IV-84 and IV-212.


MET ORL DIO RAT

See Pages V-23, V-37, and V-38.


EPI MET DIO IMP HUM REV

See Page V-11.

This is an extensive discussion of various compounds that are contaminated with PCDD and PCDF and the extent of contamination. It also reviews occupational epidemiology (61 references).


ACN CAR HEP IMM MET OCC ENV DIO HUM COM REV

Despite its title, this is a thorough review of the toxicology of TCDD with emphasis on occupational exposure, and containing sections on environmental occurrence, clean-up and disposal (288 references).


ACN CAR DIO HUM REV

This is an extensive review of the toxicology of compounds that cause chloracne with emphasis on the occupational health aspects of PCDD. This review contains many summary tables (88 references).


ACN EPI MET REP ENV DIO IMP HUM REV

This review concentrates on the human health effects of exposure to PCDD, PCDF, and other halogenated hydrocarbons as determined by studies of humans accidentally exposed via contamination of the food supply (24 references).


ENV DIO HUM REV

This relatively brief review concentrates on the difficulty of assessing human exposure to PCDD and relating that exposure to health effects (20 references).


CAR ORL PIC MUS RAT
See Pages VI-2 and VI-3.


GEN IVT CAC PLA ABS

See Page VII-2.


CAR EPI OCC ORN HUM

See Page IV-11.


CAR EPI OCC ORN HUM

See Page IV-12.

Riviere, J.L., and Bach, J. 1981. [Effect of pesticides and pollutants on metabolism: Effect of herbicides, 2,4-D and paraquat, on the cytochrome P 450 system of mice and Japanese quail.] Phytiatr. Phytopharm. 30:183-190 (French)

ENZ IVT ORL 24D BRD MUS

See Pages IV-82 and IV-117.


NEU REP 24D 25T RAT REV

This is an extensive review of animal experiments that, according to the author, establishes the neurotoxicity and behavioral teratology of 2,4-D and 2,4,5-T.

This is a quantitative risk assessment using the no-observed-effect level for adverse reproductive effects in rats and monkeys, and applying a safety factor. The author discusses carcinogenicity evidence and why it was not used to estimate risk.


Rogers, P. 1983b. 2,4,5-T and cancer: The evidence. Health Environ. 1:14-16

MET DIO HUM ABS

See Pages V-10, V-36, and V-37.


ENZ MEC DIO REV

This is a brief review of TCDD toxicity concentrating on enzyme induction, the evidence for a cytosolic TCDD receptor, and possible mechanisms of action (63 references).


MEC MET DIO REV

This is a brief summary of the conclusions and recommendations of the Panel on Biochemistry and Metabolism at the International Symposium on Chlorinated Dioxins and Related Compounds held in Arlington, Virginia, in October, 1981.


MEC MET DIO REV

This is a brief review of information on the metabolism of PCDD and related chlorinated aromatic compounds with emphasis on structure-activity relationships (50 references).

Sandhu, S.S. 1983. Experimental protocols and tables of data pertaining to 2,4-D acid toxicity assays (letter). USEPA, Health Effects Research Laboratory, Research Triangle Park, North Carolina 27711 (10 pages) (Personal communication)

GEN IVT 24D MIC

See Pages IV-56 and IV-57.

EPI GEN OCC ENV DIO ORN 25T HUM REV

A method is proposed for assessing genetic risks to humans. The data available for 2,4,5-T and TCDD were reviewed and judged to be inadequate for assessing the potential for heritable genetic damage. The review does not appear to be exhaustive.


CAR EPI REP ENV DIO HUM

This brief report describes the rationale and plans for future epidemiologic studies of populations exposed to PCDD at Seveso.


CAR ENV ORN HUM

See Page IV-28.


MET IVT DIO CEL RAT

See Page V-34 and V-38.

Sbrana, I., Rusciano, D., Lascialfari, D., Lari, T., and Loprieno, N. 1981. Cytogenetic and genotoxic studies on rabbits, cattle, mice, rats, and human cells accidentally or experimentally exposed to the dioxin TCDD. Mutat. Res. 85:278 (Abstract)

GEN REP IVT ENV DIO MUS RAT RAB ABS

This brief abstract describes studies designed to detect cytogenetic damage in animals at Seveso and experiments to determine the ability of TCDD to induce chromosome
abnormalities in bone marrow cells in rats and mice. No results or conclusions are included.


GEN OCC DIO HUM

See Pages IV-46 and IV-47.


MIS ORL DIO RAT

See Page IV-246.


CAR NEU REP ENV ORN HUM COM REV

This is a voluminous summary and analysis of testimony taken at 10 public hearings held in 1981 and 1982 on the potential health effects of herbicide exposure in Australian Vietnam veterans. The committee concluded that no adverse effects could be attributed to herbicide exposure.

Senczuk, W., and Pogorzelska, H. 1981. [Chemical structure and toxicodynamic properties of phenoxyacarboxylic acid derivatives. III. The course of absorption into the blood and the measurement of the urinary excretion of phenoxyacetic and phenoxypropionic acid derivatives.] Rocz Panstw Zakl Hig. 32:419-426 (Polish)

Unable to locate.


EPI MET REP INV DIO ORN HUM REV
This is a fairly standard description of the history of the Veterans Administration's involvement in ascertaining the health effects of Agent Orange and its PCDD contaminants. It includes a description of ongoing studies.


EPI ENV ORN HUM ABS

This is a very brief description of the design and purpose of the Air Force epidemiology study of Operation Ranch Hand personnel.


EPI ENV ORN HUM REV

This is a similar presentation to that given in Shepard (1983a).


ENZ MEC REP ORL DIO RAT

See Page IV-84.


MET SCR ORL CAC RAT

This is essentially the same study as that described in Siewicki and Sydlowski 1981.


MET ORL CAC RAT

This paper compares the relative retention in rats of arsenic from witch flounder and from cacodylic acid.
Its purpose is to show that arsenic in seafood is poorly absorbed and rapidly excreted.


ENV DIO HUM REV
See Pages III-6 and III-7.

This is a detailed review of the Seveso accident concentrating on the use of TCDD levels in soil and animal tissues as a means of assessing human exposure (24 references).


ACU ORL DIO GPG
See Page IV-243.


GEN CAC REV
The author critically reviews the experimental evidence that arsenic compounds are mutagenic and concludes that the evidence for mutagenicity is weak and flawed (25 references).


GEN IVT CAC MIC ABS
See Pages VII-1 and VII-2.


GEN INT 25T MIC
See Pages IV-56 and IV-57.


EPI NEU OCC ORN HUM

See Page IV-224.


EPI IMM ENV DIO HUM

See Page IV-194.


CAR MEC DIO IMP REV

This is an annotated bibliography of scientific literature from 1975-1981 relevant to the carcinogenic activity of PCDD and PCDF including epidemiology, animal studies, and mechanistic studies (111 references).


ACU PCT ORL DIO MUS

See Pages IV-219 and IV-246.


CAR EPI OCC ORN HUM REV

See Page IV-8.
This is a general discussion of the difficulty in determining dose-response curves from epidemiology studies. The author compares his own studies on phenoxy herbicides with those of Hardell et al. (11 references).


GEN REP TER OCC DIO 25T HUM

See Pages IV-143 and IV-144.


CAR EPI OCC ORN HUM

See Page IV-7.


GEN REP TER OCC DIO 25T HUM

See Pages IV-143 and IV-144.


CAR EPI ORN; HUM

See Page IV-7.


REP TER ORL 25T RAT

See Pages IV-159 and IV-176.

REP TER ORL 25T RAT

See Pages IV-159 and IV-176.


DIO REV

This is a summary of the conclusions and recommendations of the Panel on Animal Toxicology at the International Symposium on Chlorinated Dioxins and Related Compounds held in Arlington, Virginia, in October, 1981.


NEU SCR INJ 24D RAT

See Page IV-232.


IMM INJ ORL DIO MUS

This is an earlier version of the results described by Vecchi et al. (1983a, b) which are discussed in Section IV.E. of the report.


NEU SCR ORL 24D RAT

See Page IV-234.


EPI NEU ENV ORN HUM COM

This is a review in which the author goes through a set of calculations based on assumptions to show that it was not possible for Vietnam veterans to have been exposed to levels of TCDD that would cause symptoms of toxicity (35 references).


This is a news report about PCDD contamination in Times Beach, Missouri, with a brief summary of possible human health effects (no references).


The authors review their own work and that of other authors concentrating on the role of iron in the mechanism of toxicity of TCDD.


This study indicates that single oral doses of TCDD enhance the swelling that results from injection of carrageenan or dextran into the footpad of rats. The significance of this finding for human health is unclear.


ACN CAR EPI NEU OCC DIO HUM

See Pages IV-16 and IV-36.


GEN REP TER ENV 25T HUM

See Page IV-143.


EPI REP ENV ORN HUM REV

This letter to the editor describes the history of 2,4,5-T production and use in Hungary and states that the incidence of congenital anomalies, stillbirths, and spontaneous abortions decreased during the time when production and use of this herbicide increased.

Thompson, D.J., Emerson, J.L., Strebing, R.J., Gerbig, C.G., and Robinson, V.B. 1972. Teratology and postnatal studies on 4-amino-3,5,6-trichloro-picolinic acid (picloram) in the rat. Food Cosmet. Toxicol. 10:797-803

TER ORL PIC RAT

See Page VI-1.


MEC REN ORL DIO RAT

See Page IV-247.

This is the introductory chapter to Dr. Thunberg's doctoral dissertation and consists of a review of the literature supporting the hypothesis that TCDD exerts its toxic effect by depleting Vitamin A.


ENZ HEP MEC REN ORL DIO DOG GPG

See Page IV-96.


ENZ HEP MEC ORL DIO RAT

See Page IV-95.

Thunberg, T., Ahlborg, U.G., and Wahlstrom, B. 1983a. Comparison between the effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin and six other compounds on the vitamin A storage, the UDP-glucuronosyltransferase and the aryl hydrocarbon hydroxylase activity in the rat liver. Arch. Toxicol. (In press)

ENZ HEP MEC ORL DIO RAT

See Page IV-95.


ENZ HEP MEC REN ORL DIO RAT

See Page IV-94.


CAR REP TER 24D DIO 25T HUM REV

This is a brief review of the toxicity and regulatory status of the phenoxy herbicides and their PCDD contaminants (27 references).

ENZ MEC REP ORL DIO RAT

See Page IV-248.


CAR EPI GEN HEP IMM NEU REP ENV, DIO HUM

See Pages III-7 and IV-195.

This is an excellent and thorough review of all studies of the Seveso accident through 1981 including a general discussion of the overall limitations of epidemiologic studies of the exposed population (35 references).


EPI GEN REP OCC DIO 25T HUM

See Page IV-140.


EPI REP TER ENV DIO HUM REV

This is a discussion of the Seveso accident that includes a review of epidemiologic and animal studies of the reproductive effects of TCDD.


REP TER DIO 25T MKY MUS RAT REV

See Pages IV-132, IV-134, and IV-136.

MEG INJ IVT DIO MUS

See Pages IV-108, IV-110, IV-124, and IV-125.


ACU ORL DIO GFG

See Page IV-245.


TER ORL 24D RAT

See Page IV-152, IV-153, IV-154, and IV-176.


CAR EPI OCC ORN HUM

See Page IV-25.


ACU CAR GEN TER CAC REV

See Pages VII-4 and VII-8.

U.S. Environmental Protection Agency (USEPA). 1981b. Risk assessment on (2,4,5-trichlorophenoxy) acetic acid (2,4,5-T), (2,4,5-trichlorophenoxy) propionic acid, and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). US NTIS PB Rep. PB81-234825, EPA-600/6-81-003 (267 pages)

CAR DIO 25T REV
This is a quantitative carcinogenic risk assessment of 2,4,5-T and TCDD performed by the Cancer Assessment Group of the USEPA in 1981.

U.S. Environmental Protection Agency (USEPA). 1982a. 2,4-D: Tolerances and exemptions from tolerances for pesticide chemicals in or on raw agricultural commodities. Fed. Reg. 47:620-621

24D

This Federal Register document lists pesticide tolerances for 2,4-D but contains no data or background on the basis for these tolerances.


CAR PIC COM

This is a three-page memo summarizing EPA's position in 1982 supporting the registration of picloram.


PIC COM

This is a Federal Register publication listing pesticide tolerances for picloram but containing no data or background on the basis for these tolerances.


PIC REV

See Page VI-3.

U.S. Environmental Protection Agency (USEPA). 1983b. Tolerances for pesticide chemicals in or on raw agricultural commodities: 2,4-D. Fed. Reg. 48:2322-2323

24D

This is a new Federal Register notice listing additional pesticide tolerances for 2,4-D. It contains no data or background information.
This report critically reviews the Veterans Administration's Agent Orange Registry program.


This transcript and those that follow are the transcripts of discussions and presentations at meetings of the Veterans Administration Advisory Committee on Health-Related Effects.
of Herbicides. At this meeting a wide variety of topics and studies of the health effects of phenoxy herbicides were discussed.


IMM DIO REV

This is a review describing methodologies for assessing the effects of chemicals on the immune system including a brief (one paragraph) discussion of TCDD.


ACN ENZ MEC DEM DIO ADD MUS
See Pages IV-84 and IV-211.

Wagner, A., and Zett, L. 1981. [The influence of several membrane stabilizing drugs on the induced and hereditary myotonia: A methodic way to test the effectiveness of drugs on myotonia.] Z.EEG-EMG 12:174-182 (German) (Author's translation)

NEU IVT 24D ADD RAT

This study was designed to develop a model in which to test membrane stabilizing drugs. 2,4-D was used as a device to induce myotonia.


GEN CAC 24D 25T REV

See Pages IV-55, IV-56, and IV-57.


ACU MET ORL DIO GPG

This report describes a study of the acute oral toxicity of TCDD metabolites in guinea pigs. The metabolites were less acutely toxic than TCDD. This report is of little significance to human health.


MET ORL DIO DOG RAT

See Pages V-29 and V-37.


CAR PIC MUS RAT REV
This review summarizes the NCI carcinogenesis bioassays of pesticides, including picloram.


ACU HEP MET NEU REN ORL 24D HUM

See Pages V-8, V-9, and V-36.


EPI REP ENV ORN HUM COM REV

This is a summary of the proceedings of the International Symposium with brief reviews of studies of adverse reproductive effects among Vietnamese who were exposed to chemical defoliants.

Wigle, D.T., and Mao, Y. 1981. Investigation of potential health effects due to defoliant spraying at Camp Gagetown, New Brunswick. Report prepared by the Non-Communicable Disease Division, Laboratory Centre for Disease Control, Health Protection Branch, Health and Welfare Canada (June)

CAR EPI LET REP ENV ORN PIC HUM

See Page IV-142.


CAR EPI OCC HUM

See Page IV-12.


TER INJ CAC HAM

See Page VII-7 and VII-11.


TER INJ ORL CAC HAM REV
This is a review of the reproductive toxicity of inorganic and organic arsenicals with emphasis on the possible mechanism of action (71 references).


ENZ MEC ORL DIO MUS

See Pages IV-116 and IV-125.


ACN EPI ENV DIO HUM

See Page III-6.

This is primarily an analytical chemical study in which the authors conclude that PCDDs are present in zone R at Seveso at higher levels than TCDD and that TCDD contamination at Seveso is low compared to Missouri and Eglin Air Force Base.


ENV DIO HUM REV

This is a news report detailing difficulties in assessing human exposure to TCDD and other PCDD.


HEP MEC INJ ORL DIO RAT

In this study rats were given single oral doses of TCDD. At several time points thereafter, primary cultures of hepatocytes prepared from these rats. TCDD pretreatment depressed ouabain uptake, hormonally induced uptake of α-aminoisobutyric acid, and tyrosine aminotransferase activity in these cultured hepatocytes. The human health significance of these findings is not clear.


This is an undocumented discussion of the history of Agent Orange and the toxicology of phenoxy herbicides and their PCDD contaminants (no references).


This is a description of VA and other federally sponsored studies designed to elucidate the health effects of Agent Orange and related substances.


This is the same information as that included in Thalken and Young (1983).

Young, J.D., Ramsey, J.C., and Braun, W.H. 1981b. Pharmacokinetics of 2,4,5-T PGBE ester applied dermally to rats. J. Toxicol. Environ. Health 8:401-408

MET DEM 25T RAT

See Pages V-12 and V-35.


This is a review of phenoxy herbicide toxicology with emphasis on the relevance of studies to the possible health
effects of Agent Orange to men who served in Vietnam (44 references).


EPI DIO ORN HUM REV ABS

This is a brief description of epidemiologic research projects currently being sponsored by the Federal government that may reveal useful health effects information on Agent Orange and related compounds.


CAR EPI OCC DIO HUM

See Pages IV-18 and IV-21.


CAR ENZ REP OCC DIO HUM COM

This is a critical commentary on the publication by May (1982) indicating that the study is potentially misinterpreted due to inadequate follow-up and improper statistical analysis.


CAR MET REP DIO IMP ORN HUM COM

This is a news report describing the response of veterans' groups to a study of TCDD levels in adipose tissue.