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ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE ADMINISTRATOR

In Re

2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)

FIFRA Docket No. 295, et. al.

PROCEDURAL ORDER

By separate notice, the commencement of the hearings herein is scheduled for May 14, 1974. The purpose of this order is to establish procedural requirements which were not discussed at the prehearing conference of March 26, 1974, but as to which a further prehearing conference is unnecessary and would serve only to delay the proceedings.

The forthcoming hearings are for the purpose, initially, of the presentation by Respondent (EPA) of its evidence followed by that of intervenors in support of cancellation. It will be the requirement that written testimony of witnesses be exchanged with other parties two weeks prior to their appearance on the witness stand. Accordingly, on or before May 1, 1974, Respondent shall distribute sufficient written testimony and exhibits to allow the hearings to proceed on an uninterrupted basis, distributing additional written testimony from time to time in order to provide the two-week interval prior to the appearance of the particular witness, and without necessity for a lapse. In addition, two copies of such testimony and exhibits shall be supplied to the Hearing Clerk and one to the Presiding Judge.

ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE ADMINISTRATOR

In re 2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)	FIFRA Docket No. 295, et al. ORDER DENYING RESPONDENT'S MOTION FOR CONTINUANCE

By Motion filed March 21, 1974, counsel for Respondent (EPA) seeks a delay in the commencement of these hearings until October 1, 1974. This request is denied herein, and by separate notice May 14, 1974, is being established for the beginning of the hearings.

Procedural matter: Prior to discussing the basis of this action, it is necessary to comment on certain procedural aspects.

Regardless of style or form, the letter communication discussed is essentially a Motion and, hence, is governed by Section 164.60 of the EPA Rules of Practice. Under that Rule, other parties are entitled to ten days within which to file Responses. If requested, the filing of replies may further extend the time required. Notwithstanding the obviously emergent nature of the Motion, due to the scheduled prehearing conference on March 26, 1974, it was served by mail, even on counsel located in Washington, D.C. Accordingly, when the conference convened, a number of counsel were taken by surprise and were required to state positions without benefit of consultation with their clients; nor were they afforded the customary ten days to respond. In like but unrelated vein, Environmental Defense Fund, Inc. filed a Motion dated March 22, 1974, seeking an enlargement of the issues herein, which was sent to the

Hearing Clerk, the Presiding Judge, [1/] and apparently all others, by mail, and hence, was not filed until March 26, 1974, the day of the conference. Because of this, it was read into the record of the conference, but no action could be taken thereon as the parties had not had opportunity to study the matter.

Under Section 164.60, where interlocutory motions are filed, the Presiding Judge must await the responses and replies, if any, prior to action thereon, unless no party has objected thereto, which subsumes the parties at least have notice.

It is understandable that a matter will arise from time-to-time requiring special treatment but it is imperative in such instances that the party raising it accepts a concomitant duty to insure that all other parties have the maximum notice possible under the particular circumstances and not merely the minimum provided by the Rules.

It will be expected in the future, therefore, that any party seeking interlocutory action of any kind which might modify procedures, schedules, or other course of the proceeding will observe the following practices:

(a) Unless there is reasonable expectation that all parties have ample time to benefit from the time intervals established by the Rules, the Motion should be hand-served on all parties with counsel located in Washington, D.C., and including the Hearing Clerk and the Administrative Law Judge, and all out-of-town counsel should be notified by telephone or telegram, at the same time. If all counsel have assented to the proposal, it should, of course, be noted in the documents.

1/ While counsel stated he always attempts to "hand-serve" the Judge", that received was by mail, postmarked March 22, 1974. In any event, the Presiding Judge is not entitled to better service than that accorded the parties.

(b) If expedited service (i.e., by hand delivery) is made on any party (or the Hearing Clerk or Administrative Law Judge), the same manner of service should be utilized as to all other parties with Washington,D.C., counsel, with telephone or telegram notification to out-of-town counsel as above. And if a last minute request is made, such as the recent request for a postponement of the date for filing Responses to the ~~EPA~~ EDF * request for enlargement of issues, all counsel must be notified by telephone.

No order with respect to this matter is being issued, but if problems should recur, the matter will be considered further.

The Motion: Respondent's Motion is predicated on two factors: (1) A central issue herein is the effect on human health of tetra-dioxin (TCDD), the contaminant of 2,4,5-T; refined instrument sensitivity has recently been developed capable of measuring TCDD in parts per trillion (ppt). A new monitoring study,the planning of which commenced in August 1973, will be in progress by May 1, 1974, utilizing the refined instruments, but even if adhering to schedule, will not be completed until approximately October 1, 1974; and (2) The results of an intubation study on rats now in progress will not be available until late July 1974, after which a ppt residue monitoring is contemplated.

EPA stresses the importance of these studies, which it is financing, and points out that failure to include those studies in this record would leave a vital area unexplored. The concensus of the parties appears to support this contention and none has objected to the ultimate introduction of the studies.

* Judge Denniston Correction to Order, dated April 11, 1974.

The essential question, on which there is not agreement, is whether the foregoing justifies deferring the start of the hearings for six months until October 1. Counsel for EPA indicates some of the 22 witnesses he has initially listed are directly involved in the monitoring studies mentioned above while others would doubtless wish to incorporate the new study results in their testimony and would thus be required to appear twice if the hearings proceed now. Counsel for Environmental Defense Fund, Consumers Union, and Harrison Wellford, objects to a lengthy delay and suggests that other parties proceed first with the introduction of evidence, notwithstanding Section 164.80(a) of the Rules which requires the Respondent (EPA) to go forward with an affirmative case. At the same time, EDF's counsel has filed a motion, noted elsewhere, which would also delay the proceeding, apparently based on prior knowledge of the EPA motion, denied other parties

Dow Chemical Company, while conceding that witnesses should not be required to appear twice, objects to delaying the start of the hearings after April 23, 1974. It suggests rather than the hearing be called on that date for EPA and EDF to proceed as far as possible and then adjourn to await the EPA study results. This was coupled with the suggestion that the Presiding Judge assume "supervision" of those studies, and call frequent meetings of the parties to discuss their progress.

The user groups, and the Department of Agriculture, oppose the continuance and none indicates a willingness to proceed out of normal order as suggested by EDF. Agriculture, for example, while acquiescing in the new studies, suggests they do not represent the entire case and

hence may not be dispositive of the issue, and that there is now available more scientific knowledge concerning 2,4,5-T than any other herbicide, and that the hearing should go forward on the now available evidence. The Association of American Railroads (AAR) and American Farm Bureau Federation object to the postponement. National Forest Products Association supports either the EPA or Dow proposals and objects to proceedings with the case until the human risk and toxicology issues are first addressed.

In apparent response to the Presiding Judge's ill-disguised reluctance to grant the requested postponement, Respondent (EPA) by supplementary letter filed March 27, 1974, repeats its objections to proceeding with its human and environmental risk evidence at this time and points out that if directed to proceed, time would be required to prepare the testimony. It points out, however, that its testimony on the benefits portion of the case, originally intended to be presented last, could be prepared and presented, along with human and environmental risk testimony not involving residue monitoring, as early as August, if so directed.

The original proceedings (on 2,4,5-T case on rice) having been instituted in 1971, and the present docket in July 1973, delay should occur only under extreme emergency. The importance of the new monitoring studies cannot be demeaned but the listed witnesses now run to over 100; Respondent alone lists 30. The sheer mechanics of assembling the testimony of so many witnesses will require months of hearing and the interval until October 1, would best be spent in furthering that process to the maximum possible. Accordingly, the requested continuance has not been justified.

As Respondent indicates no testimony has as yet been prepared, and in view of the requirement to be imposed that testimony be reduced to writing and exchanged two weeks prior to the hearing, some extension of the hearing date is obviously required.

It has been indicated that some of the scientists involved may attend an international conference in Finland in July and to assist the parties in planning and scheduling witnesses, as well as the vacations of participants, notice is given that no hearing sessions will be held herein during July 1974.

Accordingly, Respondent's motion of March 21, 1974, is DENIED, and as provided in a separate notice, hearings will commence herein on May 14, 1974.

Frederick W. Denniston

Frederick W. Denniston
Administrative Law Judge

April 10, 1974

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE ADMINISTRATOR

IN RE:	)	FIFRA CONSOLIDATED DOCKET
	)	No. 295
2, 4, 5-T	)	

RESPONDENT'S INITIAL LIST OF WITNESSES

Pursuant to the Order dated February 20, 1974, Respondent submits the following list of witnesses, narrative summaries of their anticipated testimony and exhibits which they propose to offer.

G. G. Allan, Ph.D
Associate Professor
Wood Science
College Forest Resources
University of Washington

Dr. Allan will testify on his research concerning the control of deciduous brush in the presence of conifers. Topics to be covered are: reforestation techniques currently in practice; species of brush causing problems in reforestation projects; effectiveness of herbicides utilized for brush control; and the use of combinations of bark/lignin and herbicides to control brush for extended periods.

Exhibits to be offered
Allan, G. G., Chopra, C. S. Neogi, A. N. and Williams, R. M., Int. Pest Contr. 13:10(1971).

Allan, G. G., Chopra, C. S. and Russell, R. M., Int. Pest Contr. 14(2):15(1972).

H. R. Caffey, Ph.D.
Associate Director
Experiment Station
Louisiana State University

Dr. Caffey willtestify on the cultural and production practices followed in the rice growing areas of Louisiana. Topics to be covered will be the following: Louisiana herbicide recommendations for rice; production practices followed; specific weeds causing problems; efficacy of the recommended herbicides on the problem weeds; and special recommendations in certain growing areas.

Exhibit to be offered
Louisiana 1974 Herbicide
Recommendations for Rice

T. G. Carpenter, Ph.D.
Research Scientist
Department of Agricultural Engineering
Texas Tech University
Lubbock, Texas

Dr. Carpenter will testify on his studies concerning the use of shredding as a method of control for noxious rangeland species. Topics to be covered include: effects of shredding on both mesquite and grass populations; regrowth of shredded mesquite; timing of the shredding operation for satisfactory results; mechanical requirements for shredding; and secondary effects of shredding rangeland.

Exhibit to be offered

Carpenter, T. G. and Ulich, W. L., "Criteria for and Analysis of Brush Shredder Design," Proc. Southern Weed Sci. Soc. 25:324-331(1972).

Diane Courtney, Ph.D.
Chief, Toxic Effects Branch
Primate and Pesticide
Effects Laboratory
National Environmental Research Center
Research Triangle Park,
North Carolina 27709

Dr. Courtney will present a brief historical recapitulation of the teratology studies with 2,4,5-T including the interrelated teratology studies with TCDD. New data including the various esters of 2,4,5-T and a teratology of pharacodynamic study in pregnant mice will be given as they are developed into a presentable form. Dr. Courtney will be accompanied by a statistician who can offer statistical information concerning these experiments.

Mr. Alan B. Crockett
Assistant Branch Chief
Ecological Monitoring Branch
Technical Service Division
Office of Pesticides Program
Room 321, East Tower
Environmental Protection Agency
Washington, D.C. 20460

Mr. Crockett will testify as to the results and findings of Respondent's ppt residue monitoring program for tetra-dioxin (TCDD).

James R. Horst, Economist
Criteria and Evaluation Division
Office of Pesticides Programs
Environmental Protection Agency
Washington, D.C. 20460

Dr. Horst's testimony will examine the economic consequences of 2,4,5-T cancellation on rice, rangeland, rights of way and forestry.

H. D. Kerr, Ph.D.
Associate Professor
Weed Science
Department of Agronomy
University of Missouri

Dr. Kerr will testify on the cultural and production practices followed in the rice growing areas of Missouri. Points to be covered are the following: Missouri herbicide recommendations for rice; specific weeds causing problems; efficacy of the recommended herbicides; special recommendations in certain growing areas; and the programs followed for satisfactory levels of rice production.

Exhibit to be offered
Missouri 1974 Herbicide
Recommendation for Rice

Renate Kimbrough, M.D.
Center for Disease Control
Atlanta, Ga. 30333

Dr. Kimbrough will review the general toxicity of the chlorinated dibenzodioxins with the main emphasis on TCDD. Her review will include the extreme acute toxicity of TCDD, TCDD's ability to cause hepatic porphyria and chloracne and a general critical commentary on the potential hazard of TCDD to humans.

Exhibits to be offered
Kimbrough, R., "Toxicity of chlorinated hydrocarbons and related compounds" Arch. Environ. Health 25:125-131(1972)

Kimbrough, R. "The toxicity of polychlorinated polycyclic compounds and related chemicals," (Submitted to CRC Critical Reviews in Toxicology).

Maurice King, Ph.D.
Life Science Research Division
ITT Research Institute
Chicago, Illinois 60616

Dr. King will discuss data obtained from a TCDD intubation study on rats performed at the ITT Research Institute, Chicago.

George W. Lucier, Ph.D.
Research Chemist
National Institutes of Health
Health Sciences
P. O. Box 12233
Research Triangle Park,
North Carolina

Dr. Lucier will testify as to the effects of TCDD on rats, particularly as to enzyme activities in liver, kidney, lung, small intestine, placenta and brain. He will also discuss the effects of TCDD on fetal microsomial enzymes after maternal exposure.

Exhibits to be offered

Poland, G. and Glover, E., Environ. Health Perspect., 5:245-252(1973).

Greig, J., Environ. Health Perspect., 5:211-220(1973),

Hook, G., Orton, T., Moore, J. and Lucier, G., "The Induction of Biphenyl 3- and 4- Hydroxylases and the Suppression of Testosterone 2 B- and 16 L- Hydroxylases by TCDD Pretreatment of Rats." (Submitted to Biochem. Pharmacol.)

Lucier, G., McDaniel, O. and Hook, G., "Nature of the Enhancement of Hepatic UDP Glucuronyltransferase Activity by TCDD in Rats (Submitted to Biochem. Pharmacol.)

John A. Moore, Ph.D.
Chief, Environmental
Biology and Chemistry Branch
National Institute of Environmental
Health Science
Box 12233
Research Triangle Park,
North Carolina 27709

Dr. Moore will discuss various acute and subacute effects of TCDD. As chairman of the Conference on Chlorinated Dibenzodioxins and Dibenzofurans, April 2-3, 1974 and as an author of numerous publications on TCDD toxic effects, Dr. Moore will present an overview of many aspects of TCDD toxicity, including pre and postnatal effects, effects in the immune system and the pathological effect of TCDD on various organs. Dr. Moore will be accompanied by a statistician who will offer statistical information about his data.

Exhibits to be offered

J.G. Vos, J.A. Moore, and J.G. Zinkl. "Effects of 2,3,7,8-Tetrachlorodibenzo-p-dioxin on the Immune System of Laboratory Animals," Environ, Health Perspect. 5: 149-162

K.A. Moore, B.N. Gupta, J.G. Zinkl, and J.G. Vos, "Post-natal Effects of Maternal Exposure to 2,3,7,8-Tetrachlorodibenzo-p-dioxins (TCDD)," Environ, Health Perspect 5: 81-85(1973).

B.N. Gupta, J.G. Vos, J.A. Moore, J.G. Zinkl, and B.C. Bullock, "Pathologic Effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin in Laboratory Animals," Environ, Health Perspect 5: 125-140(1973).

J.G. Zinkl, J.G. Vos, J.A. Moore, and B.N. Gupta, "Hematologic and Clinical Chemistry Effects of 2,3,7,8-Tetrachlorodibenzo-p-dioxin in Laboratory Animals," Environ, Health Perspect 5: 111-118(1973).

Eugene Perrin, M.D.
Institute of Pathology
Case Western Reserve
2085 Adelbert Road
Cleveland, Ohio 44106

As a pediatrician involved in human teratology, Dr. Perrin will present a general review of concepts in teratology, including the state of the art as it relates to 2,4,5-T and TCDD, a review of epidemiology of birth defects and the concepts of the laboratory animal as a predator of human malformations.

Exhibits to be offered

1. The Testing of Chemicals for Carcinogenicity, Mutagenicity, Tera-Togenicity (Published by authority of the Hon. Marc Lalonde, Minister of Health & Welfare, Canada, 1973).

2. Wilson, James H., , Environmental Birth Defects, Academic Press, 1973.

3. Shepard, Thomas Catalog of Teratogenic Agents, Johns Hopkins Press, 1973.

Alan Poland, M.D.
Dept. of Pharmacology
and Toxicology
University of Rochester
School of Medicine & Dentistry
Rochester, New York 14642

Dr. Poland will discuss his experiences as a medical officer in the United States Public Health Service relating to an investigation of workers in a factory producing 2,4-D and 2,4,5-T. Additional research by Dr. Poland includes the potential of TCDD to increase the activity of various important enzymes at extremely low levels and the possible significance of this to human health.

Exhibits to be offered

Poland, A. and Glover, E., "Chlorinated dibenzo-p-dioxins- Potent Inducers of Delta - Amino Levulinic Acid Synthetase and Aryl Hydrocarbon Hydroxylase Mole," Pharmacol. 9:736-747(1973).

Poland, A., Smith, D., Netter, H., Possick, P., "A Health Survey of Workers in a 2,4-D and 2,4,5-T Plant," Arch. Environ. Health 22:316-327(1971)

Poland, A. and Glover, E., "2,3,7,8-tetrachlorodibenzo-p-dioxin: a potent inducer of delta-amino leuvulinic acid synthetase." Science 179: 476-477(1973)

Dr. James F. Ryan
Mass Spectrometry Group Leader
Instrumental Analysis Section
Environmental Protection Agency
Perrine, Florida

Dr. Ryan will testify as to the TCDD analysis method performed by Respondent's Pesticides and Toxic Substances Effects Laboratory. He will also testify as to the procedure by which each sample is analyzed for TCDD recovery percentage.

R. E. Sosebee, Ph.D.
Assistant Professor of Range Management
Texas Tech University
Lubbock, Texas

Dr. Sosebee will testify on his research and findings concerning the chemical control of brush on rangeland. Among the topics to be covered are the following: the susceptibility of several brush species to different herbicides; chemicals currently being evaluated for control of brush on rangeland; and the Texas herbicide recommendations for rangeland brush control.

D.N. Ueckert, Ph.D.
Assistant Professor of
Range Management
Range and Wildlife Management Dept.
Texas Tech University
Lubbock, Texas

Dr. Ueckert will testify on his research concerning the use of populations of native insects as biological control agents for mesquite and other noxious species infesting rangeland. Among the topics to be discussed are: the effects of leaf-footed bugs on mesquite reproduction; relation of wood boring insects to mesquite control practices; influence of insects on mesquite seed production; the mesquite twig girdler as a possible means of control; defoliation of mesquite and creosote bush by walking-sticks; and the effects of several other native insects on noxious rangeland species.

Exhibits to be offered

Ueckert, D.N., Polk, K.L. and Ward, C.R., "The Mesquite Twig Girdler: a possible means of Mesquite Control," J. Range Manage. 24(2): 116-118(1971).

Ueckert, D.N., "Natural Control of Mesquite on Texas Rangeland by Insects," Proc. Southern Weed Sci. Soc., 25: 453-457(1972)

Ueckert, D.N., "Effects of Leaf-footed Bugs on Mesquite Reproduction," J. Range Manage. 26: 227-229(1973).

Ueckert, D.N., Wright, H.A., "Wood Boring Insects Infestations in Relation to Mesquite Control Practices," J. Range Manage. (In press).

Smith, L.L. and Ueckert, D.N., "Influence of Insects on Mesquite Seed Production," J. Range Manage (In press).

H. A. Wright, Ph.D.
Associate Professor of
Range Management
Range and Wildlife Management Dept.
Texas Tech University
Lubbock, Texas

Dr. Wright will testify on his research concerning the use of fire as a tool to reduce competiton from mesquite and other noxious species on rangeland. Among the many topics to be covered are: prescribed burning techniques, regrowth of noxious species after burning, effects of fire on mesquite, and the effects of fire on grasses.

Exhibits to be offered

Wright, H.A., "Prescribed Burning for West Texas," Proc. Range Manage. Conf. 8: 18-22(1970).

Wright, H.A., "Fire as a Tool to Manage Tobosa Grasslands," Proc. of Tall Timbers Fire Ecology Conf. 12: 153-167(1972)

Burton, C.E., Portnoy, W.M., Wright, H.A., "Borer Activity and Mesquite Ignition Parameters," Proc. Southern Weed Sci. Soc. 25: 303-313(1972).

Heirman, A.L., Wright, H.A., "Fire in Medium Fuels of West Texas," J. Range Manage. 26: 331-335(1973).

Robert W. Baughman, Ph.D.
Department of Chemistry
Harvard University
Cambridge, Massachusetts 02138

Dr. Baughman will testify as to the development of a method of analytical analysis to measure TCDD in ppt by use of high resolution time-averaged mass spectrometry.

Exhibits to be offered

Baughman, R. and Meselson, M., "An Improved Analysis for 2,3,7,8-tetrachlorodibenzo-p-dioxin." In: Advances in Chemistry Ser. 120, E. Blair, Ed., American Chemical Society, Washington, D.C., 1973, p. 92

Baughman, R. and Meselson, M., "Note on an Improved Cleanup Procedure for Mass Spectroscopic Analysis of TCDD and the Confirmation of TCDD in Fish from South Vietnam," Unpublished paper presented at the 166th meeting of the American Chemical Society, Chicago (August 1973).

Matthew S. Meselson, Ph.D.
Professor of Biochemistry
Harvard University
Cambridge, Massachusetts 02138

Dr. Meselson will testify on the South Vietnam residue study, the AAAS Vietnamese survey, bioaccumulation, and the persistence of TCDD.

M. Chessin, Ph.D.
Professor
Dept. of Botany
University of Montana
Missoula, Montana 59801

Dr. Chessin will testify to the ecological effects of 2,4,5-T and related phenoxy herbicides and the alternatives to the use of 2,4,5-T in forest applications.

Samuel S. Epstein, M.D.
Swetland Professor of
Environmental Health and Human Ecology
Prof. of Pharmacology and
Director of Environmental Health Programs
Case Western Reserve University
Medical School
Cleveland, Ohio

Dr. Epstein will testify as to the adverse biological effects of phenoxy herbicides, their contaminants, degradation and pyrolytic products.

Granville F. Knight, M.D.
2901 Wilshire Blvd., Suite 345
Santa Monica, California 90403

Dr. Knight will testify on human residues of 2,4,5-T and related phenoxy herbicides and the toxic reactions from exposure.

Theodore Sterling, Ph.D.
Director, Computing Science Programme
Simon Fraser University
Burnaby, B.C., Canada

Dr. Sterling will testify on the 2,4,5-T epidemiological surveys conducted in South Vietnam and on the 2,4,5-T National Advisory Committee Report and the adequacy of experimental design of 2,4,5-T TCDD teratological studies.

Respectfully submitted,

Timothy L. Harker

John W. Lyon
Counsel for Respondent
Office of Hazardous Materials Control

Environmental Protection Agency
Office of General Counsel
401 M Street, S.W.
Washington, D.C. 20460

March 21, 1974

CERTIFICATE OF SERVICE

I hereby certify that I have this 21st day of March, 1974 served by mail one copy of Respondent's Initial List of Witnesses upon every other party to the 2,4,5-T proceeding and have served by hand delivery one copy of said Initial List on the Administrative Law Judge and five copies on the Office of Hearing Clerk of the Environmental Protection Agency.

John W. Lyon

Dated: March 21, 1974

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE ADMINISTRATOR

IN RE:	)	FIFRA CONSOLIDATED DOCKET
	)	No. 295
2, 4, 5-T	)	

RESPONDENT'S SUPPLEMENTAL LIST OF WITNESSES

Pursuant to the Procedural Order dated March 11, 1974, Respondent submits the following supplemental list of witnesses, narrative summaries of their anticipated testimony and exhibits which they propose to offer.

D. E. Bayer, Ph.D.
Lecturer, Plant Physiology
and Weed Control
Botany Department
University of California - Davis

Dr. Bayer will testify on rice production in California. Points to be discussed include the following: California herbicide recommendations for rice; production practices followed; specific problem weeds in California; efficacy of recommended herbicides; and herbicides currently being evaluated for use on rice.

Exhibit to be offered

California 1974 Herbicide
Recommendations for Rice

A. B. Crow, Ph.D.
Professor of Silviculture
School of Forestry and
Wildlife Management
Louisiana State University
Baton Rouge, Louisiana

Dr. Crow will testify on the use of fire as a silviculture tool. Points to be covered include: programs utilizing prescribed burning for brush control; effect of prescribed burning on desirable as well as

undesirable species; and importance of prescribed burning as a silvicultural tool in the southern United States.

Exhibit to be offered

Crow, A. B., "Use of Fire in Southern Forests," J. Forestry 71(10): 629-632(1973).

Dr. David Gaylor
Biostatistician
National Center for Toxicological Research
Jefferson, Arkansas 72079

Dr. Gaylor will discuss the statistical implications of various teratogenic experiments with 2,4,5-T and dioxins, including recent work done at NCTR with 2,4,5-T on mice.

Renate Kimbrough, M.D.
Center for disease Control
Atlanta, Georgia

Dr. Kimbrough has already been listed as a witness in Respondent's Initial List of Witnesses filed on March 21, 1974. The following additional exhibits published in German or French will be offered:

Kimmig, J. and Schulz, K., "Berutliche Akne (Sog. Chlorakne) durch chlorierte aromatische zyklische Ather." Dermatologica (Basel) 115: 540(1957).

Kimmig, J. and Schulz, K., Naturwissenschaften 44: 337-338 (1957).

Hofmann, H., Arch. Exp. Pathol. Pharmacol. 232: 228(1957).

Goldmann, P., "Schwertse acute Chlorakne durch Trichlorophenol-zersetzungs produkte," Arbeitsmed. Socialmed Arbeitshyg 7: 12 (1972).

Dugois, P. and Colomb, L., Lyon Med. 88: 446-447(1956)

Braun, W., "Klinische Beobactungen Zur Entstehung der Chloracne," Haut Arzt. 10: 126(1959).

Baur, H., Schulz, K. and Spiegelberg, U., Arch. Gewerbepathol. Gewerbehyg. 18: 538(1961).

Schulz, K. Arch. Klin. Exp. Dermatol. 206: 589(1957).

Dr. Andrew Peoples
Department of Physiological Sciences
University of California - Davis

Dr. Peoples will discuss accumulation of TCDD and 2,4,5-T residues in animal tissues. Available data on accumulation/elimination profiles will be reviewed and comparisons made with other toxic substances possessing accumulative properties. Data obtained from field monitoring programs will be reviewed in light of similar data from controlled experimental studies.

Morris F. Cranmer, Ph.D.
Director
National Center for Toxicological Research
Jefferson, Arkansas 72079

Dr. Cranmer will discuss recent data from NCTR concerning the teratogenic and pathological effects of 2,4,5-T on mice.

Samuel S. Epstein, M.D.
Swetland Professor of
Environmental Health and Human Ecology
Prof. of Pharmacology and
Director of Environmental Health Programs
Case Western Reserve, University Medical School
Cleveland, Ohio

Dr. Epstein has already been listed as a witness on Respondent's Initial List of Witnesses. The following exhibit will also be offered:

Exhibit to be offered

Yoder, J., Watson, M. and Benson, W., "Lymphocyte Chromosome Analysis of Agricultural Workers During Extensive Occupational Exposure to Pesticides," Mutation Research 21: 335-40(1973)

Additional exhibit to be offered to which numerous witnesses may refer:

Hearings on the Effects of 2,4,5-T on Man and the Environment before the Subcommittee on Energy, Natural Resources and the Environment of the Senate Committee on Commerce, 91st Cong., 2nd Sess. (April 1970).

Respectfully submitted,

Timothy L. Harker

John W. Lyon
Counsel for Respondent
Office of Hazardous Materials Control

Environmental Protection Agency
Office of General Counsel
401 M Street, S.W.
Washington, D.C. 20460

April 5, 1974

CERTIFICATE OF SERVICE

I hereby certify that I have this 5th day of April, 1974 served by mail one copy of Respondent's Supplemental List of Witnesses upon every other party to the 2,4,5-T proceeding and have served by hand delivery one copy of said Supplemental List on the Administrative Law Judge and five copies on the Office of Hearing Clerk of the Environmental Protection Agency.

John W. Lyon

Dated: April 5, 1974

ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE ADMINISTRATOR

IN RE:	)	
	)	I.F. & R.
2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)	)	No. 295
	)	

FIRST LISTING OF PROPOSED WITNESSES:
ENVIRONMENTAL DEFENSE FUND, ET AL.

The Environmental Defense Fund, Consumers Union and Harrison Wellford (EDF, et al.) hereby submit their first listing of proposed witnesses:

1. Ms. Billee Shoecraft
   Route 1, Box 25
   Globe, Arizona 85501

Ms. Shoecraft will discuss the unintended but devastating secondary effects of spraying 2,4,5-T near humans, domestic animals, and crops. Her testimony will be based on scores of interviews with other victims as well as on her own personal experience. Ms. Shoecraft will report recurring patterns of health complaints as well as of agricultural damage. She will, in effect, synthesize the experiences of scores of potential lay witnesses scattered throughout the country. The individual testimony of these complainants, delivered in person, would be repetitious, burdensome on the court, and beyond our financial means. However, we believe that the fact of the multiplicity and the similarities of these individual complaints is important to these hearings. Her testimony will be accompanied by

the written and signed statements of many of those upon whose personal experience, in addition to her own, she relied for her conclusions that use of 2,4,5-T near areas of human habitation and agricultural cultivation has unacceptably severe adverse effects.

Sincerely,

William A. Butler

William A. Butler
Counsel for EDF, et al.

1525 18th Street, N.W.
Washington, D.C. 20036
(202)833-1484

March 21, 1974

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing First Listing Of Proposed Witnesses: Environmental Defense Fund, Et Al. have been served on the following, this 21st day of March, 1974, by hand or by first-class mail, postage prepaid:

Mr. R.J. Otten
Manager, Regulatory Affairs
Amchem Products, Inc.
Ambler, Pennsylvania 19002

Harry J. Breithaupt, Jr., Esq.
General Counsel, Law Department
Association of American Railroads
American Railroads Building
Washington, D.C. 20036

Miriam C. Feigelson, Esq.
Milton R. Wessel, Esq.
Kaye, Scholer, Fierman, Hays & Handler
425 Park Avenue
New York, New York 10022

William D. Rogers, Esq.
Arnold & Porter
1229 19th Street, N.W.
Washington, D.C. 20036

Mr. J. Robert Hasness
Director of Technical Services
Transvaal, Inc.
P.O. Box 69
Jacksonville, Arkansas 72076

Margaret B. Carlson, Esq.
Raymond W. Fullerton, Esq.
Alfred R. Nolting, Esq.
Office of the General Counsel
U.S. Department of Agriculture
Washington, D.C. 20250

Mr. W.E. Chappell, Technical Adviser
Mountain Lake Right-of-Way Management Council, Inc.
P.O. Box 32
Blacksburg, Virginia 24060

William J. Kuhfuss, President
American Farm Bureau Federation
225 Touhy Avenue
Park Ridge, Illinois 60068

Timothy L. Harker, Esq.
Office of the General Counsel
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

C.E. Lombardi, Esq.
Blackwell, Sanders, Matheny, Weary & Lombardi
2480 Pershing Road
Five Crown Center
Kansas City, Missouri 64108

Kaye, Scholer, Fierman, Hays & Handler
1625 I Street, N.W., Suite 707
Washington, D.C. 20006

William A. Butler

UNITED STATES OF AMERICA
ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE ADMINISTRATOR

In re:	)	
	)	
2,4,5-Trichlorophenoxyacetic Acid	)	FIFRA Docket No. 295
	)	

INITIAL WITNESS LIST OF THE
UNITED STATES DEPARTMENT OF AGRICULTURE

Pursuant to the Administrative Law Judge's Procedural Order of March 11, 1974, the United States Department of Agriculture (USDA) hereby submits the following initial list of witnesses and narrative summaries of their expected testimony together with a list of proposed documents and exhibits.

The witnesses will be divided into the following subject-matter groupings:

1. Rule of reason.
2. Chemical properties of 2,4,5-T.
3. Range land uses of 2,4,5-T.
4. Forestry uses of 2,4,5-T.

1. "Rule of reason" witnesses.

The following group of witnesses will address what we believe to be the most crucial aspect of the 2,4,5-T administrative proceeding, that is the implementation of a "rule of reason" in deciding the questions concerning the various uses of 2,4,5-T as well as other chemical substances.

Dr. Detlev Bronk
Rockefeller University
1230 York Ave.
New York, New York 10021

Dr. T. C. Byerly
6-J Ridge Road
Greenbelt, Maryland 20770

Dr. Frederick Coulston
Director, Institute of Experimental Pathology
Albany Medical College
Albany, New York 12201

Mr. Carl Djerassi
Zoecon Corporation
975 California Ave.
Palo Alto, California 94304

Dr. Lee A. DuBridge
2355-3A Via Mariposa
West Laguna Hills, California 92635

Dr. Richard Hall
11350 McCormick Road
Hunt Valley, Maryland 21031

Dr. Wayland J. Hayes, Jr.
Professor of Biochemistry
School of Medicine
Vanderbilt University
Nashville, Tennessee 37332

Dr. Dale R. Lindsay
Associate Director
Medical and Allied Health Education
Duke University
Durham, North Carolina 27701

Dr. Bernard S. Schweigert
Chairman Department of Food Science and Technology
University of California
Davis, California 95616

Dr. Kenneth V. Thimann
Professor of Biology
Thimann Laboratory
Division of Natural Sciences
University of California at Santa Cruz
Santa Cruz, California 95060

2. Chemical properties of 2,4,5-T.

Philip C. Kearney
Pesticide Degradation Laboratory
Agricultural Environmental Quality Institute
Agricultural Research Service
USDA, Agricultural Research Center-West
Beltsville, Maryland 20705

Dr. Kearney will describe the persistence of 2,4,5-T and the dioxin TCDD in soils. Dr. Kearney is also leader of the pesticide group in the Department of Agriculture that has had primary responsibility for dioxin research in the environment. He has published on the persistence of TCDD in two soils at three concentrations. He has also summarized the existing literature and published on the persistence of 2,4,5-T under a variety of soil and climatic conditions.

Exhibits or documents:

Kearney, P. C., E. A. Woolson, A. R. Isensee, C. S. Helling, Tetrachlorodibenzodioxin in the Environment: Sources, Fate, and Decontamination. USDA ARS.

Kearney, Philip C. 1970. Chlorinated Dioxin Research. Presented before joint meeting on Pesticides. Sponsored by the Council on Environmental Quality and President's Cabinet Committee on the Environment Working Group on Pesticides, Washington, D.C. November 5, 1970.

Jack R. Plimmer
Pesticide Degradation Laboratory
Agricultural Environmental Quality Institute
Agricultural Research Service
USDA, Agricultural Research Center-West
Beltsville, Maryland 20705

Dr. Plimmer will describe the breakdown of chlorinated dibenzo-p-dioxins in sunlight. Dr. Plimmer is an authority on the photochemical behavior of pesticides.

George F. Fries
Pesticide Degradation Laboratory
Agricultural Environmental Quality Institute
Agricultural Research Service
USDA, Agricultural Research Center-West
Beltsville, Maryland 20705

Dr. Fries will testify on his studies on the retention and excretion of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) fed to rats.

Edwin A. Woolson
Pesticide Degradation Laboratory
Agricultural Environmental Quality Institute
Agricultural Research Service
USDA, Agricultural Research Center-West
Beltsville, Maryland 20705

Dr. Woolson will testify on pesticides possibly containing 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and dioxin residues in Lakeland sand from massive aerial application of 2,4,5-T. Dr. Woolson is an analytical chemist with extensive experience working on the chlorinated pesticides. The contaminant TCDD arises in the manufacture of certain pesticides which have as a precursor 2,4,5-trichlorophenol.

Allan R. Isensee
Pesticide Degradation Laboratory
Agricultural Environmental Quality Institute
Agricultural Research Service
USDA, Agricultural Research Center-West
Beltsville, Maryland 20705

Dr. Isensee will testify on TCDD uptake and translocation by plants, and the distribution and bioaccumulation of TCDD in aquatic model ecosystems.

Charles S. Helling
Pesticide Degradation Laboratory
Agricultural Environmental Quality Institute
Agricultural Research Service
USDA, Agricultural Research Center-West
Beltsville, Maryland 20705

Dr. Helling will testify on his experiments on leaching in soils of 2,4,5-T and the dioxin TCDD.

3. Range land uses of 2,4,5-T.

Dr. J. R. Baur
Department of Range Science
Texas A & M University
College Station, Texas 77843

Dr. Baur will testify as to residues of 2,4,5-T in livestock and range grasses.

Exhibits or documents:

Baur, J. R., Bovey, R. W., and Smith, J. D. 1969. Herbicide Concentrations in Live Oak Treated with Mixtures of Picloram and 2,4,5-T. Weed Science 16: 567-570.

Bovey, R. W. and Baur, J. R. 1972. Persistence of 2,4,5-T in Grasslands of Texas. Bulletin of Environmental Contamination and Toxicology 8: 229-233.

Dr. Rodney W Bovey
Department of Range Science
Texas A & M University
College Station, Texas 77843

Dr. Bovey will testify on field evaluations of herbicides for brush control, absorption and translocation of 2,4,5-T, 2,4,5-T residues in plants and soils, and the effect of 2,4,5-T on the growth and anatomy of plants.

Exhibits or documents:

Bovey, R. W. and Baur, J. R. 1972. Persistence of 2,4,5-T in Grasslands of Texas. Bulletin of Environmental Contamination and Toxicology 8: 229-233.

Bovey, R. W. and Merkle, M. G. 1970. Persistence of Picloram in Texas Soils, Texas Agricultural Experiment Station, PR-2822.

Baur, J. R., Bovey, R. W., and Smith J. D. 1969. Herbicide Concentrations in Live Oak Treated with Mixtures of Picloram and 2,4,5-T. Weed Science 16: 567-570.

Calvin C. Boykin, Economist, Meat Analyst
ERS
USDA
Texas A & M University
College Park, Texas

Mr. Boykin will testify on investment costs of livestock operations in the Southwest region. He will evaluate the impact of 2,4,5-T on the livestock operations and will analyze the effect different levels of control have on investment return. He will also talk about his study of the economics of aerial spraying of mesquite with 2,4,5-T as a range improvement practice and the significance of such spraying on beef production.

Exhibits or documents:

Boykin, Charles, Jr., Costs of Rootplowing and Seeding Rangeland, Rio Grande Plain, March 1960, Publication of Texas Agricultural Experiment Station - MP 425.

Mr. Charles E. Fisher
Texas A & M University Agricultural
Research and Extension Center
Lubbock, Texas

Mr. Fisher will describe his work with ranchers in 20 locations in southern and western Texas in their effort to control brush on rangeland. He has been working with 2,4,5-T since 1945.

Exhibits or documents:

Fisher, C. E., Wiedemann, H. T., Walter, J. P., Meadors, C. H., Brock, J. H., Cross, B. T., 1971. Brush Control Research on Rangeland, Texas A & M University, College Station, Texas. 1971.

Fisher, C. E. 1968. An expanded brush control and grazing management research program for West Texas. Abstract, Proc. So. Weed Conference.

Fisher, C. E., Hoffman, G. O., Robison, E. D., Meadors, C. H. and Cross, B. T., Brush Research in Texas 1970. Texas A & M University, 1970.

Dr. Howard Greer
Department of Agronomy
Oklahoma State University
Stillwater, Oklahoma 74074

Dr. Greer will testify as to the use of 2,4,5-T on the range lands in Oklahoma where there are approximately 11 million acres of land covered with woody species of plants. 2,4,5-T is used for the treatment of blackjack oak and post oak, as well as for the control of brush such as wild blackberry and persimmon. Dr. Greer will testify on the effectiveness of 2,4,5-T and the feasibility of alternatives.

Exhibits or documents:

Elwell, H. M., Santelmann, P. W., Stutzke, J. F., and Greer, Howard. 1974. Brush Control Research in Oklahoma. ARS-Oklahoma State U. Bulletin B-712.

Wayne Hamilton
Chaparoosa Ranch
P. O. Box 187
LaPryor, Texas

As manager of one of the largest ranches in Texas, Mr. Hamilton will describe his experience with 2,4,5-T to control brush in the Rio Grande plains area, its economic effect on livestock production and its effect on wildlife habitats.

Garlyn O. Hoffman
Department of Range Science
Texas A & M University
College Station, Texas 77843

Mr. Hoffman is a brush and weed control specialist who will describe his research into all methods of control for woody plants in Texas. He will testify to the acreage of brush controlled in Texas since 1940, describe the research demonstration projects of the County Agricultural Agents. He will also describe a study he conducted for EPA of cattle grazed on rangeland immediately after spraying with 2,4,5-T.

Exhibits or documents:

Hoffman, G. O., Merkel, M. G. and Haas, R. H., 1972. Controlling mesquite with Tordon 225 Mixture herbicide in the Texas backland prairie. Down to Earth 27:4.

Hoffman, G. O., Hoermann, H. G., and Allen, J. V., 1969. Putting the Heat on Mesquite. Texas Agricultural Progress, 15: 1; pp. 15-17.

Hoffman, G. O., Dodd, J. D., 1967. How to Whip Pricklypear. Texas Agricultural Progress, 13: 3; pp. 16-18.

Hoffman, G. O., Maintenance Control for Mesquite. Cooperative Extension Work in Agriculture and Home Economics, Texas A & M University. 1-766.

Hoffman, G. O., Fisher, C. E., Robison, E. D., Meadors, C. H. and Cross, B. T., Brush Research in Texas 1970. Texas A & M University, 1970.

Hoffman, G. O., Brush and Weed Control Acreages in Texas, Texas A & M University, College Station, Texas, March 1973.

Jack Holmer
Herbicide Specialist
Texas Dept. of Agriculture
Route 2, Box 90
Bertram, Texas

Mr. Holmer will describe his experience with 2,4,5-T as an Herbicide Specialist with the Texas Department of Agriculture. He will introduce cost/benefit information from surveys of ranchers whom he advises in the State of Texas.

Douglas Manigold
U.S. Dept. of Interior
Geological Survey
300 E. 8th St.
Austin, Texas 78701

Mr. Manigold will describe his work monitoring pesticides in the streams of the western United States.

Exhibits or documents:

Schulze, Jean A., Manigold, Douglas B., and Andrews, Freeman L., Pesticides in Selected Western Streams 1968-1971. Pesticides in Water, 7: 1, June 1973.

Manigold, Douglas B. and Schulze, Jean A., Pesticides in Selected Western Streams--A Progress Report. Pesticides Monitoring Journal, 3: 124-134. September 1969.

Rupert D. Palmer
Department Soil and Crop Sciences
Texas A & M University
College Station, Texas 77843

Dr. Palmer will describe his experience with the use of 2,4,5-T to control early indigo and in rights-of-way. Dr. Palmer has also been involved with 2,4,5-T in his work in woody plant control as an Agricultural extension agent and as Coordinator of publications on weed brush control for the State of Texas.

Dr. Elroy J. Peters
Research Agronomist, USDA
Department of Agronomy
University of Missouri
Columbia, Missouri 65201

Dr. Peters will testify as to the use and effectiveness of 2,4,5-T on oak, hickory, and associated species in Missouri. He will compare the effectiveness of 2,4,5-T with other herbicides and provide data on increases in forage production and the impact of 2,4,5-T on beef production.

Ernest Snook
State Range Specialist
Soil Conservation Service, USDA
USDA Building
Farm Road
Stillwater, Oklahoma 74074

Mr. Snook will testify as to the brush control problems in Oklahoma and the acres treated with herbicides.

Dr. J. F. Stritzke
Brush Control Research
Department of Agronomy
Oklahoma State University
Stillwater, Oklahoma 74074

Dr. Stritzke will testify as to the performance of herbicides for brush control and the breakdown of herbicides in the soil. More specifically, Dr. Stritzke will testify as to (1) the pests that 2,4,5-T controls, (2) the cost, timing, and rate of application of 2,4,5-T for brush control in Oklahoma, (3) alternative methods (including no control) and the economics, effectiveness, and ecological soundness of these methods.

Exhibits or documents:

Elwell, H. M., Santelmann, P. W., Stritzke, J. F. and Greer, Howard. 1974. Brush Control Research in Oklahoma. ARS-Oklahoma State U. Bulletin B-712.

Doug Waldrup, General Manager
Spade Ranches
Box 2763
Lubbock, Texas 79401

As manager of one of the largest ranches in Texas, Mr. Waldrup will describe his experience with 2,4,5-T as a method of controlling brush on rangeland. He will also testify on the effect of 2,4,5-T on the economy of beef production and the improvement of wildlife habitats on his ranch where brush has been cleared by 2,4,5-T use.

4. Forestry uses of 2,4,5-T.

Dr. Homer A. Brady
Alexandria Forestry Center
Southern Forest Experiment Station
2500 Shreveport Highway
Pineville, Louisiana 71360

Dr. Brady will describe the role of 2,4,5-T in Southern Forest Management. More than one-third of the nation's timber comes from southern forests. The timber species are weak competitors for light, water, and nutrients, therefore competition must be controlled. 2,4,5-T is useful for site preparation, pine seedling release, and removal of competition. It is less expensive than mechanical site preparation and can be used in areas where machines cannot operate. Dr. Brady will testify on the feasibility of alternatives to 2,4,5-T as well as the effectiveness and safety of 2,4,5-T.

W. F. Currier
U.S. Forest Service
517 Gold Avenue, S.W.
Albuquerque, New Mexico 87102

Mr. Currier will testify as to the necessity of a plant control program for the forest lands of New Mexico and Arizona. He will discuss plant ecology and the relationship of man's intervention and associated disturbances to plant succession. In discussing a plant control program, Mr. Currier will testify as to the specific plants needing control for which there is no comparable herbicide substitute for 2,4,5-T. The cost, effectiveness, environmental impact, and limitations of alternative methods of control will be discussed.

Dr. Henry J. Gratkowski
Plant Ecologist
Pacific Northwest Forest and
Range Experiment Station
U.S. Forest Service
P. O. Box 3141
Portland, Oregon 97208

Dr. Gratkowski will testify on the need for the use of herbicides in the forests of the United States, and the safety and economy of using 2,4,5-T. Dr. Gratkowski will discuss the various plant communities, each with its own distinctive combination of environmental conditions, trees, shrubs, and other vegetation. The effectiveness of 2,4,5-T will be discussed as well as the feasibility of alternatives.

Exhibits or documents:

Gratkowski, H. and R. Stewart, 1973. Aerial Spray Adjuvants for Herbicidal Drift Control. USDA Forest Service General Technical Report PNW-3.

Gratkowski, H. 1959. Effects of Herbicides on some Important Brush Species in Southwestern Oregon, USDA Forest Service Research Paper 31.

Gratkowski, H. and Lyle Anderson 1968, Reclamation of Nonsprouting Greenleaf Manzanita Brushfields in the Cascade Range. USDA Forest Service Research Paper PNW-72.

Gratkowski, H. 1968. Repeated Spraying to Control Southwest Oregon Brush Species, USDA Forest Service Research Paper PNW-59.

Gratkowski H., 1961. Toxicity of Herbicides on Three Northwestern Conifers, USDA Research Paper PNW-42.

Gratkowski, H. J. 1961. Use of Herbicides on Forest Lands in Southwestern Oregon. USDA Forest Service Research Note 217.

Gratkowski, H. J. and J. R. Philbrick, Dec. 1965 Repeated Aerial Spraying and Burning to Control Sclerophyllous Brush. Reprint from Journal of Forestry.

Dr. Ken Holtje
Branch Chief, Water Quality
U.S. Forest Service
Rm. 800, 633 W. Wisconsin Ave.
Milwaukee, Wisconsin 53203

Dr. Holtje was testify on water quality monitoring for selected herbicides following aerial application in the north central states. Dr. Holtje will discuss the results of monitoring studies and the techniques employed in conducting the studies.

Jay R. Law
Timber Staff Officer
U.S. Forest Service
P. O. Box 937
Rolla, Missouri 65401

Mr. Law will testify as to the necessity of 2,4,5-T use in the forests of the central United States. He will discuss the effectiveness of 2,4,5-T as well as the feasibility of alternatives.

Dr. Logan A. Norris
Pacific Northwest Forest
and Range Experiment Station
3200 Jefferson Way
Corvallis, Oregon 97331

Dr. Norris will testify as to 2,4,5-T persistence in the forest floor, adsorption on the forest floor, residues in forest streams, and the toxicity of TCDD to aquatic organisms.

Exhibits or documents:

Norris, L. A. 1967 Chemical Brush Control and Herbicide Residues in the Forest Environment, Symposium Proceedings: Herbicides and Vegetation Management in Forest, Ranges, and Noncrop Lands, Oregon State University.

Norris, Logan A. 1970. Degradation of Herbicides in the Forest Floor. Tree Growth and Forest Soils Oregon. State University Press.

Tarrant, R. F. and L. A. Norris, Residues of Herbicides and Diesel Oil Carriers in Forest Waters: A Review: Reprinted from Symposium Proceedings: Herbicides and Vegetation Management in Forests, Ranges and Noncrop Lands, 1967. Oregon State University p. 94-102. For use of Forest Service, U.S. Department of Agriculture.

Peter A. Theisen
U.S. Forest Service
P. O. Box 3623
Portland, Oregon 97208

Mr. Theisen will testify as to the use of 2,4,5-T for woody plant control by the Forest Service, Pacific Northwest Region. Mr. Theisen will discuss the application of 2,4,5-T, the effectiveness of 2,4,5-T, and the feasibility of alternatives.

Respectfully Submitted,

Raymond W. Fullerton

Margaret Bresnahan Carlson

Alfred R. Nolting

Attorneys for the
Secretary of Agriculture

March 21, 1974

Certificate of Service

I hereby certify that copies of the foregoing List of Witnesses filed by Intervenor Secretary of Agriculture were served this date either by hand or by mailing the same, postage prepaid, to all parties of record as follows:

Mr. J. R. Otten
Manager/Regulatory Affairs
Amchem Products, Inc.
Ambler, Pennsylvania 19002

Harry J. Breithaupt, Jr., Esquire
Phillip F. Welsh, Esquire
Law Department
Association of American Railroads
American Railroads Building
Washington, D.C. 20036

Ms. Miriam C. Feigelson, Esquire
Kaye, Scholer, Fierman, Hays & Handler
Counsel for The Dow Chemical Company
425 Park Avenue
New York, New York 10022

Milton R. Wessel, Esquire
Counsel for The Dow Chemical Company
1625 I St., N.W.
Suite 707
Washington, D.C. 20006

William D. Rogers, Esquire
Richard J. Wertheimer, Esquire
Arnold & Porter
Counsel for National Forest Products
Association
1229 19th Street, N.W.
Washington, D.C. 20036

Mr. Larry C. Wallace, Esquire
Mr. Sam Hilburn, Esquire
Wallace, Hilburn, Williams
Counsel for Transvaal, Inc.
219 Main Street
North Little Rock, Arkansas 72114

C. E. Lombardi, Jr., Esquire
Blackwell Sanders Matheny
Weary & Lombardi
Counsel for the Thompson-
Hayward Chemical Company
Five Crown Center
2480 Pershing Road
Kansas City, Missouri 64108

William A. Butler, Esquire
Counsel for Environmental Devense
Fund, Inc., Consumers Union of United
States, Inc., and Harrison Wellford
1525 18th Street, N.W.
Washington, D.C. 20036

C. David Mayfield, Esquire
Office of the Legal Counsel
American Farm Bureau Federation
225 Touhy Avenue
Park Ridge, Illinois 60068

Timothy L. Harker, Esquire
Office of the General Counsel
Environmental Protection Agency
401 M Street, S.W., Room 519-WSMW
Washington, D.C. 20460

Alfred R. Nolting
Attorney for the
Secretary of Agriculture

Dated: March 21, 1974

UNITED STATES OF AMERICA
ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE ADMINISTRATOR

In re:	)	
	)	
2,4,5-Trichlorophenoxyacetic Acid	)	FIFRA Docket No. 295
	)	

SUPPLEMENTAL WITNESS LIST OF THE
UNITED STATES DEPARTMENT OF AGRICULTURE

Pursuant to the Administrative Law Judge's Procedural Order of March 11, 1974, the United States Department of Agriculture (USDA) hereby submits the following supplemental list of witnesses and narrative summaries of their expected testimony together with a list of proposed documents and exhibits.

As in our March 21, 1974 submission, the witnesses will be divided into the following subject-matter groupings:

1. Rule of reason.
2. Chemical properties and toxicity studies of 2,4,5-T.
3. Range land studies and uses of 2,4,5-T.

1. "Rule of reason" witnesses.

Dr. John Baldeschwieler
California Institute of Technology
Division of Chemistry and Chemical Engineering
Pasadena, California 91102

Dr. Fred H. Tschirley
Acting Coordinator
Environmental Quality Activities
Office of the Secretary
United States Department of Agriculture
Washington, D. C. 20250

The position of the U. S. Department of Agriculture with regard to continued usage of 2,4,5-T has been documented in several pre-hearing briefs. Dr. Tschirley's testimony will expand on the USDA position and will discuss the critical importance to society of applying a rule of reason in such cases.

2. Chemical properties and toxicity studies of 2,4,5-T.

Dr. Kurt Erne
National Veterinary Institute
104 05 Stockholm 50 Sweden

Dr. Erne will testify to residue levels of 2,4,5-T in reindeer actively feeding on treated leaves in Sweden. He will also testify on the work of the expert group of which he was a member and whose work was cited by the U. S. Advisory Committee on 2,4,5-T.

Exhibits or documents:

Erne, Kurt Toxicitetsstudier Med Fenoxiherbicider Pa Ren; February 17, 1972

Erne, Kurt Sartryk ur Svensk Veterinartidning nr 7-1972. "Hormoslyr" - forsok med ren.

3. Range land studies and uses of 2,4,5-T.

Dr. Wayne Binns
555 North 3rd Street
Logan, Utah 84321

Dr. Binns will testify on feeding studies with sheep that had been fed vegetation treated with 2,4,5-T.

John Matthews
P. O. Box 176
Abilene, Texas 79604

Mr. Matthews is a Texas rancher with extensive use experience with 2,4,5-T. He will testify on the need for 2,4,5-T and the lack of any observable adverse effects on livestock caused by the use of 2,4,5-T.

E. H. McIlvain
Superintendent, Southern Great Plains Field Station
Woodward, Oklahoma 73801

Mr. McIlvain will testify on herbicide research he has conducted and the effect of 2,4,5-T on brush. Also, he will testify on studies of grass release and beef production.

Dr. Morris G. Merkle
Department of Soil and Crop Sciences
Texas A & M University
College Station, Texas 77843

Mr. Morris will testify on analytical techniques used in the detection of 2,4,5-T, and on persistence and runoff data relating to 2,4,5-T.

Dr. J. S. Palmer
United States Livestock Insects Laboratory
ARS-USDA
P. O. Box 232
Kerrville, Texas 78028

Dr. Palmer will testify on the toxicity of 2,4,5-T to cattle, sheep, and chickens along with residue and metabolic aspects in cattle and sheep.

Exhibits on documents:

Clark, D. E., and Palmer, J. S. Residual Aspects of 2,4,5-T and an Ester in Sheep and Cattle with Observations on Concomitant Toxicological Effects. J. Agr. Food. Chem. 19 (July/Aug. 1971):

Dalgaard-Mikkelson, S. V. and Poulson, E. The Toxicology of Herbicides. Pharm. Rev. 14 (June 1962): 225-250.

Palmer, J. S. Toxicity of 45 Organic Herbicides to Cattle, Sheep, and Chickens. U.S. Dept. Agr. Prod. Res. Rpt. 137 (March 1972): 41 pp.

Palmer, J. S. and Radeleff, R. D. The Toxicity of Some Organic Herbicides to Cattle, Sheep, and Chickens. U.S. Dept. Agr. Prod. Res. Rpt. 106 May 1969): 26 pp.

Wright, F. C., Riner, J. C., Palmer, J. S., and Schlinke, J. C. Metabolic and Residue Studies with 2-(2,4,5-Trichlorophenoxy)-ethyl 2,2-Dichloropropionate (Erbon) Herbicide in Sheep. J. Agr. Food Chem. 18 (Sept/Oct. 1970): 845-847.

Frank Pagel
Tivoli, Texas 77990

Mr. Pagel is an aerial applicator as well as a rancher. He will testify on application procedures for 2,4,5-T and the safety of such

procedures. He will also discuss the effectiveness of 2,4,5-T and the need for 2,4,5-T.

Foster Price
P. O. Box 723
Sterling City, Texas 76951

Mr. Price will testify on his use experience with 2,4,5-T as a rancher and will discuss the necessity for the use of 2,4,5-T on range lands.

Dr. Paul Santelmann
Department of Agronomy
Oklahoma State University
Stillwater, Oklahoma 74074

Dr. Santelmann is president-elect of the Southern Weed Science Society and has served as a member of the Advisory Committee on Pest Management of the President's Council on Environmental Quality. He will testify on the overall problem of weed and brush control and, more specifically, on weed and brush control research he has done.

Dr. Joseph L. Schuster
Department of Range Science
Texas A & M University
College Station, Texas 77843

Dr. Schuster will provide an overall view of the use of 2,4,5-T on southwestern range lands and the necessity for such use.

Dr. Alvin L. Young
Associate Professor of Life Sciences
Department of Life and Behavioral Science
USAF Academy, Colorado 80840

Dr. Young will testify on field studies of the persistence and movement of 2,4,5-T and TCDD.

Respectfully submitted,

MARGARET BRESNAHAN CARLSON

ALFRED R. NOLTING

RAYMOND W. FULLERTON

Attorneys for the Secretary of
Agriculture of the United States

April 5, 1974

Certificate of Service

I hereby certify that copies of the foregoing List of Witnesses filed by Intervenor Secretary of Agriculture were served this date either by hand or by mailing the same, postage prepaid, to all parties of record as follows:

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Dated: April 5, 1974

ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE ADMINISTRATOR

In re	)	
	)	FIFRA Docket No. 295, et al.
2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)	)	

DOW PREHEARING MEMORANDUM (NO. 4)

This memorandum is submitted in compliance with the direction of the Chief Administrative Law Judge at the first Prehearing Conference, as modified by the Order dated February 20, 1974. It will be organized as follows:

A. Witnesses Dow anticipates calling to testify at the Hearing during its affirmative case.

B. Dow responses to March 11, 1974 submissions of other parties.

C. Dow Proposed Agenda for March 26, 1974, Prehearing Conference.

A. Dow Witnesses. The following identifies the witnesses whom Dow presently anticipates calling to testify at the Hearing during Dow's affirmative case. It includes a summary of anticipated testimony in the form requested by the Chief Administrative Law Judge.

Most of the listed witnesses are toxicologists, analytical chemists or other scientists in Dow's employment. Ordinarily only one witness has been named in each area, in order to avoid cumulative testimony. However it may be necessary at some later time to request permission to add or substitute one or more other scientists in the same specialty to testify with regard to the same subject matter, for corroboration or because of the unavailability of a witness on account of illness or other special circumstance. The primary difference between the new witness or witnesses and the person listed will be in background and qualifications. Any such request will be made as promptly as possible.

In addition to the specific area of testimony identified in connection with each witness, as supplemented by the bibliography,* each witness will testify with regard to the fundamentals of his own specialty. Thus, for example, witnesses in the teratology area will testify regarding research methodology and witnesses testifying with respect to analytical chemistry will describe the problems incident to distinguishing true findings from background interference or "noise".

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* Documents listed in the bibliographies which Dow intends to offer into evidence during its affirmative case will be included in Dow's third Document Repository submission, to be made shortly. However, copies of any bibliography references will be furnished to any party now on request, including those which will probably be used by the witness only for purposes of illustration (such as sample forms).

Dow's identification of anticipated witnesses is based in part upon the January 18 and March 11 submissions of Respondent and EDF. Those submissions set forth positions and identify issues. To the extent that Respondent's and EDF's evidence at the Hearing materially extends beyond these earlier submissions, it may of course be necessary for Dow to request permission to call additional witnesses.

Dow's witness list is also based in part upon the January 18 and March 11 submissions of parties aligned with registrants. Those parties have identified the areas for which they are assuming primary responsibility and in which they expect to adduce evidence. The March 21 submissions of such parties will identify the witnesses they intend to call. To the extent that Dow considers that the lists of witnesses to be called by such parties may not entirely cover the evidentiary areas concerned, it may wish to call additional witnesses. For example, in its January 18 submission AFBF indicated that it intended to assume responsibility for the introduction of evidence bearing on the rice use/benefit area and that it expected to call 3-5 farmer witnesses in this connection. Dow in its January 18 submission stated that it had been preparing this area and expected to call 20 to 30 witnesses, but that it would defer to AFBF. The disparity between the anticipated numbers of Dow and AFBF witnesses may have been because Dow's estimate

included many others besides farmers, such as aerial applicators, distributors and university extension personnel. Dow has not identified any rice use/benefit witnesses below, but may wish to supplement this list after it reviews the AFBF March 21 submissions to the extent such other categories of witnesses are not included. It will do so in its April 5, 1974 submission.

Name:	E. L. Bjerke
Address:	Senior Research Chemist Residue Research Ag-Organics Department Dow Chemical U.S.A. P. O. Box 1706 Midland, Michigan 48640
Background:	MS - Organic Chemistry
Area of Testimony:	Mr. Bjerke will testify regarding 2,4,5-T, TCDD and 2,4,5-Trichlorophenol residues in milk.
Bibliography:	DD160, DD164

Name:	E. H. Blair
Address:	Director, Health and Environmental Research Dow Chemical U.S.A. 2020 Dow Center Midland, Michigan 48640
Background:	Ph.D. - Organic Chemistry
Area of Testimony:	Dr. Blair will testify regarding the history and organization of the Dow 2,4,5-T

effort. He will introduce each of the scientific and other areas involved and identify its relationship to the whole.

Bibliography:

1973. Modern Methods of Research and Analysis (Dow, Rev. Ed. 1973).

Other samples of Dow internal environmental and informational materials, including the weekly "Reports Received Bulletin" and monthly "R&D Document Summaries".

Blair, E. H. 1971. Editor, Chlorodioxins -- Origin and Fate. A Symposium sponsored by Div. of Pesticide Chemistry ACS. Advances in Chemistry Series 120.

1973. American Chemical Society. Chemistry in the Economy -- Pesticides. Social and Economic Impacts. Chapter 11, p. 226-43.

Name: Warren B. Crummett

Address:
Research Scientist
Technical Manager Analyses Laboratory
Dow Chemical U.S.A.
574 Building
Midland, Michigan 48640

Background: Ph.D. - Chemistry

Area of Testimony: Dr. Crummett will testify regarding the interpretation of data suggesting the presence of chemical compounds at extremely low levels (parts per trillion)

	and findings with respect to TCDD levels in current manufacture and in residue research.
Bibliography:	DD112 (also EPA1).
	Exchange of correspondence between C.W. Collier and others regarding Dec. 13, 1973 EPA conference considering low level (ppt) analyses.
Name:	James L. Emerson
Address:	Pathologist, Dept. of Pathology and Toxicology Indianapolis Division Life Science Dept. Dow Chemical U.S.A. P. O. Box 68511 Indianapolis, Indiana 46268
Background:	D.V.M., M.S., Ph.D. Pathology
Area of Testimony:	Dr. Emerson will testify regarding 2,4,5-T teratology studies in rats and rabbits.
Bibliography:	DD13 (also EPA1 and USDA1-6), DD180 (also EPA1 and EDF15).
Name:	Perry J. Gehring
Address:	Director, Toxicology Laboratory Health and Environmental Research Dow Chemical, U.S.A. 1803 Building Midland, Michigan 48640
Background:	D.V.M., Ph.D. Pharmacology
Area of Testimony:	Dr. Gehring will testify regarding the toxicology of 2,4,5-T and TCDD, including specifically accumulation and the differences between the effects

of large and normal doses.

Bibliography: DD27, DD31, DD34, DD36, DD41, DD42, DD43, DD44, DD52, DD123 (also EPA1, EDF35, USDA1-27), DD155, DD156, DD157, DD159, DD176 (same as DD123), DD178, DD180 (also EPA1 and EDF15), DD181.

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Matsumura, A. The fate of 2,4,5-trichlorophenoxy-acetic acid in man. Jap. J. Ind. Hlt. 12:20-25, 1970.

McChesney, E.W., Golberg, L., Parekh, Russell, J.C. and Min, B.H. Reappraisal of the toxicology of ethylene glycol. II. Metabolism studies in laboratory animals. Fd. Cosmet. Toxicol. 9:21-28.

Quinn, G.P., Axelrod, J. and Brodie, B.B. (1958) Species, strain and sex differences in the metabolism of hexobaritone, amidopyrine, antipyrine and aniline. Biochemical Pharmacol. 1:152.

Vos, J.G., Moore, J.A., and Zinkl, J.G. Toxicology of 2,3,7,8-tetrachlorodibenzo-p-dioxin(TCDD) in C-57Bl/6 mice. Tox. Appl. Pharmacol. (In Press).

Weil, C.S., Carpenter, C.P. and Smyth, H.F. Urinary bladder calculus and tumor response following either repeated feeding or diethylene glycol or calcium oxalate stone implantation. Med. Sur. 36:66-67, 1967.

Name:	Milton E. Getzendaner
Address:	Research Manager Residue - Environmental - Metabolism Ag-Organics Department Dow Chemical U.S.A. P. O. 1706 Midland, Michigan 48640
Background:	Ph.D. - Organic Biochemistry
Area of Testimony:	Dr. Getzendaner will testify regarding 2,4,5-T and TCDD residue levels in grass and certain other food crops.
Bibliography:	DD48, DD49, DD51, DD108, DD120, DD127, DD148-151, DD153, DD157, DD160, DD161, DD164-173 (DD173 also EPA5), DD174, DD175, DD188.

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Statistical abstracts of the U.S. 1972, 3rd Annual Edition, U.S. Dept. of Commerce, Bureau of Census (1972). New York 7-9 million, Queens Borough 2.0 million = 9.9 million people.

Name:	Harold Gordon
Address:	Director, Corporate Medical Department Dow Chemical U.S.A. 2030 Dow Center Midland, Michigan 48640
Background:	M.D.
Area of Testimony:	Dr. Gordon will testify regard-

	ing studies of employees exposed to 2,4,5-T during production operations.
Bibliography:	DD50

Name:	James Robert Grumbles
Address:	Field Specialist - Herbicides Ag-Organics Department Dow Chemical U.S.A. Lubbock, Texas 79408
Background:	Ph.D., Range Management
Area of Testimony:	Dr. Grumbles will testify regarding the rangeland use of 2,4,5-T.

Name:	David J. Jensen
Address:	Research Scientist Residue Research Ag-Organics Department Dow Chemical U.S.A. P. O. Box 1706 Midland, Michigan 48640
Background:	Ph.D. - Biochemistry
Area of Testimony:	Dr. Jensen will testify regarding residues of 2,4,5-T and TCDD in meat.
Bibliography:	DD36, DD48, DD49, DD108, DD121, DD164, DD165, DD167, DD169, DD173 (also EPA5), USDA-2-3.

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Klingman, D.L., C.H. Gordon, G. Yip, and H.P. Burchfield. Weeds 14, 164-167 (1966).

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Slife, K.W., J.L. Key, S. Yamaguchi, and A.J. Crafts. Weeds 10, 29 (1962).

Yip, G. and R. Ney. Weeds 14, 167 (1966).

Name:	Julius E. Johnson
Address:	Vice-President, The Dow Chemical Company Manager, Life Sciences Department 2030 Dow Center Midland, Michigan 48640
Background:	Ph.D. - Biochemistry
Area of Testimony:	Dr. Johnson will testify regarding the overall Dow effort in the environmental area, including its Ecology Council, its Product Stewardship policy and the need for application of the rule of reason in all aspects of corporate management and operations.

Bibliography:	Dow organization chart. 1973 Annual Report.
Name:	Eugene E. Kenaga
Address:	Associate Scientist Health and Environmental Health Research Dept. Dow Chemical U.S.A. P. O. Box 1706 Midland, Michigan 48640
Background:	M.A. - Entomology
Area of Testimony:	Mr. Kenaga will testify regarding evaluation of the impact of 2,4,5-T and TCDD on the environment, particularly fish and wildlife.
Bibliography:	DD103, DD105, DD106, DD107, DD109 DD110. Young, A.L., C.E. Thalken, W. E. Ward and W. J. Cairney. 1974. The Ecological Consequences of Massive Quantities of 2,4-D and 2,4,5-T Herbicides -- Summary of a Five Year Field Study. Presented at Weed Science Society of America, Las Vegas, Nevada, 14 February 1974. Abstract No. 164. Young, A.L., E.L. Arnold and A.M. Wachinaki. 1974. Field Studies on the Soil Persistence and Movement of 2,4-D, 2,4,5-T and TCDD. Presented at Weed Science Society of America, Las Vegas, Nevada, 13 February 1974. Abstract No. 226.
Name:	D. J. Kilian
Address:	Director Industrial Medicine, Toxicology,

	and Biomedical Research Laboratory Dow Chemical U.S.A. Freeport, Texas 77541
Background:	M.D.
Area of Testimony:	Dr. Kilian will testify regarding the non-mutagenicity of 2,4,5-T based on karyotyping studies of exposed Dow workers.
Name:	Richard J. Kociba
Address:	Research Pathologist - Toxicology Laboratory Health and Environmental Research Dow Chemical U.S.A. 1803 Building Midland, Michigan 48640
Background:	D.V.M., Diplomate, American Veterinary Pathologists Ph.D. - Pathology
Area of Testimony:	Dr. Kociba will testify regarding the toxicity of 2,4,5-T and TCDD based on ninety-day studies of repeated oral doses on rats.
Bibliography:	DD43, DD44, DD181
Name:	Horst G. Langer
Address:	Associate Scientist Dow Chemical U.S.A. Eastern Research Laboratory P. O. Box 400 Wayland, Massachusetts 01778
Background:	Diploma in Chemistry D.Sc. - Chemistry Technical University, Braunschweig, Germany

Area of Testimony:	Dr. Langer will testify regarding the formation of TCDD from thermal stress of 2,4,5-T under ordinary environmental conditions.
Bibliography:	DD101 (also EPA1, EDF3), DD154 (also EPA1, EDF4), EDF38 (also EPA1), EPA2 (also EDF5). Langer, H.G., et al., Chlorodioxins - Origin and Fate, E.H. Blair, ed., Advances in Chemistry Series, pp. 26-32 (1973)

Name:	Fumio Matsumura
Address:	Professor of Insect Toxicology Dept. of Entomology University of Wisconsin Madison, Wisconsin 53703
Background:	Ph.D. - Zoology
Area of Testimony:	Dr. Matsumura will testify regarding the bioaccumulation and degradation of TCDD.
Bibliography:	DD129 (also EPA1 and EDF36)

Name:	Donald D. McCollister
Address:	Manager, Product Registration Section Health and Environmental Research Dow Chemical U.S.A. P. O. Box 1706 Midland, Michigan 48640
Background:	B.S. - Industrial Chemistry
Area of Testimony:	Mr. McCollister will testify regarding the mammalian toxicology of 2,4,5-T registration and cancellation proceedings; and label and use precautions.

Bibliography:	DD30, DD36, DD41, DD42, DD43, DD44, DD45, DD46, DD47, DD108, DD174, DD182-187.

Name:	Robert E. Naegele
Address:	Manager, Ag-Organics Department Dow Chemical U.S.A. P. O. Box 1706 Midland, Michigan 48640
Background:	B.S. - Engineering M.S. - Organic Chemistry
Area of Testimony:	Mr. Naegele will testify regarding the marketing of 2,4,5-T.

Name:	Jesse M. Norris
Address:	Research Specialist in Toxicology Health and Environmental Research Dow Chemical U.S.A. 1803 Building Midland, Michigan 48640
Background:	M.S. - Zoology
Area of Testimony:	Ms. Norris will testify regarding toxicological studies of TCDD and, to the extent in issue, the relative toxicological properties of the other dioxins which may occur in 2,4,5-T.
Bibliography:	DD3, DD24, (also EPA27, EDF7, USDA 1-35), DD28, DD52, DD53, DD180 (also EPA1 and EDF15), USDA1-16, EPA 22, EPA 24.

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Flick, D.F., Winbush, J. and Friedman L. 1963. Bioassay of chick edema factor. J. of A.O.A.C. 46, 406.

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Arbeitshygiene 3, 25.

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Vos, J.G. and Beems, R.B. (1971). Dermal toxicity studies of technical polychlorinated biphenyls and fractions thereof in rabbits. Toxic. Appl. Pharmac. 19, 617.

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Vos, J.G., Koeman, J.H., Van der Maas, H.L., ten Noever de Brauw, M.C. and De Vos, R.H. (1970). Identification and toxicological evaluation of chlorinated dibenzofurans and chlorinated naphthalene in two commercial polychlorinated biphenyls. Food Cosmet. Toxicol. 8, 625.

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Name: Virgil B. Robinson

Address: Director, Dept. Pathology and Toxicology
Indianapolis Division Life Sciences Dept.
Dow Chemical U.S.A.
P. O. Box 68511

Indianapolis, Indiana 46268

Background: M.S., D.V.M., Ph.D. - Comparative Pathology

Area of Testimony: Dr. Robinson will testify regarding the teratogenicity studies of 2,4,5-T on rats and rabbits.

Bibliography: DD13 (also EPA16 and USDA1-6)

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Background:	M.S. Biochemistry Sc.D. (honorary)
Area of Testimony:	Dr. Rowe will testify regarding the toxicology of 2,4,5-T and TCDD generally, as foundation for the testimony of scientists in specific areas.
Bibliography:	DD20 (also USDA1-34), DD24 (also EPA27, EDF7, USDA1-35), DD25, DD41, DD52, DD180 (also EPA1 and EDF15), EDF11. Adams, Irish, Spencer and Rowe, Industrial Medicine, Jan. 1941, "The Response of Rabbit Skin to Compounds Reported to Have Caused Acneform Dermatitis." Lehman, A.J. 1952. Chemicals In Foods: A Report to the Association of Food and Drug Officials on Current Developments. Part II. Pesticides. Association Food and Drug Officials of U.S. 16(2) p. 49. Lehman, A.J. 1952. Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments. Part V. Pathology.

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Background:	D.V.M., Ph.D. - Pharmacology
Area of Testimony:	Dr. Schwetz will testify regarding the effects of 2,4,5-T and, to the extent in issue, the chlorinated dibenzo-p-dioxins, on the developing embryo and fetus.
Bibliography:	DD1 (also EDF21), DD3 (also EPA17, EDF22 and USDA1-5), DD4, DD5 (also EPA18), DD6 (also EPA19), DD7, DD13 (also EPA16 and USDA1-6), DD14 (also USDA1), DD15, DD16, DD17 (also USDA1-2), DD18, DD19 (also USDA1-19), DD20 (also USDA1-34), DD21, DD22, DD23, DD24 (also EPA27, EDF7, USDA1-35), DD25, DD27, DD28, DD52, DD163 (also USDA1-29, EDF1) DD180 (also EPA1 and EDF15), DD181. Stotzer and Niggerschutzer, Private Communications, Dec. 10, 1970 and June 18, 1971.

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Background:	M.D., Ph.D. - Pharmacology
Area of Testimony:	Dr. Seevers will testify to the