BEFORE THE
ENVIRONMENTAL PROTECTION AGENCY

In re:  
STEVEN'S INDUSTRIES, INC., et al.  
(Consolidated DDT Hearings)

OPINION OF THE ADMINISTRATOR

This hearing represents the culmination of approximately three years of intensive administrative inquiry into the uses of DDT. Part I sets forth the background of these proceedings and Part II contains a discussion of the evidence and law and my factual conclusions. I am persuaded for reasons set forth in Part III of this opinion that the long-range risks of continued use of DDT for use on cotton and most other crops is unacceptable and outweighs any benefits. Cancellation for all uses of DDT for crop production and non-health purposes is hereby reaffirmed and will become effective December 31, 1972, in accordance with Part V of this opinion and the accompanying order, except that certain uses, for green peppers, onions, and sweet potatoes in storage may continue on terms and conditions set forth in Part V of this opinion and the accompanying order.

I.

A. Background.

DDT is the familiar abbreviation for the chemical (1,1,1, trichlorophenyl ethane), which was for many years the most widely-
used chemical pesticide in this country. DDT's insecticidal properties were originally discovered, apparently by accident, in 1939, and during World War II it was used extensively for typhus control. Since 1945 DDT has been used for general control of mosquitos, boll weevil infestation in cotton-growing areas, and a variety of other uses. Peak use of DDT occurred at the end of the 1950's and present domestic use of DDT in various formulations has been estimated at 6,000 tons per year. According to Admission 7 of the record, approximately 86% or 10,277,258 pounds of domestically used DDT is applied to cotton crops. The same admission indicates that 603,053 pounds and 937,901 pounds, or approximately 5 and 9% of the total formulated by twenty-seven of the petitioners in these hearings are used respectively on

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1/ Admission 6 shows that domestic shipments of DDT by its sole manufacturer, Montrose Chemical Company, totaled 8,827,900 pounds between January 1 and August 1, 1971. Total domestic sales in 1970 were 11,966,196, as stipulated in Admission No. 7. The Examiner found, apparently based on Admission 7, that domestic use in 1970 "was just under 12 million pounds." Exm. Report at 92.

Counsel for the Agency has called to our attention publication of the Department of Agriculture, The Pesticide Review of 1971, which estimates "a domestic disappearance" rate of 25,457,000 pounds for DDT in 1970. See p. 28. The motion to incorporate this publication is granted, as is the motion by registrants to supplement the record, see infra. I do not believe, however, that the Pesticide Review figure can be accepted, on its face, without further explanation. Since the result I reach today would, if anything, only be reinforced by the higher figure, I see no need to remand.
soybean and peanut crops. All other uses of the 11,966,196 pounds amount to 158,833 of the total, or little over 1 percent.

Public concern over the widespread use of pesticides was stirred by Rachel Carson's book, *Silent Spring*, and a natural outgrowth was the investigation of this popular and widely-sprayed chemical. DDT, which for many years had been used with apparent safety, was, the critics alleged, a highly dangerous substance which killed beneficial insects, upset the natural ecological balance, and collected in the food chain, thus posing a hazard to man, and other forms of advanced aquatic and avian life. In 1969 the United States Department of Agriculture commenced a review of the health and environmental hazards attendant to the use of DDT.

Certain uses of DDT were canceled by the Department of Agriculture in 1969 and informal review of remaining uses continued through 1970.

2/ Some discrepancy in the figures exists since the figures given in breakdown of use categories total 11,977,065 pounds, slightly more than the total sold by the twenty-seven formulators who supplied figures.

For the above uses it appears that DDT is sold in four different formulations: emulsifiable sprays; dust; wettable powder; and granular form.

3/ PR Notice 69-17. Among the canceled uses were applications to trees for control of Dutch Elm disease, tobacco, home uses, and aquatic uses. 34 Fed. Reg. 18827 (1969).
In early 1971 this Agency commenced formal administrative review of DDT registrations by the cancellation of all registrations for DDT products and uses pursuant to Section 4(c) of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) 7 U.S.C. § 135 (1972).

B. Statement of the Case.

This hearing is the final stage of formal administrative review. Thirty-one registrants have challenged fifteen of the canceled uses of DDT and its metabolite, TDE. These uses of DDT include applications to cotton fields to control the boll weevil and bollworm applications to various vegetable crops, and a variety of lesser uses in public programs. The case for cancellation has been presented

4/ In Environmental Defense Fund v. Ruckelshaus, 439 F.2d 584 (D.C. Cir. 1971), the Court of Appeals held that cancellation proceedings should be commenced whenever a registration of a pesticide raises a "substantial question of safety" which warrants further study. On January 15, 1971, all uses of DDT not canceled in 1969 were canceled. PR Notice 71-1. And on March 18, 1971, notices of cancellation were issued for all registered uses of TDE, a DDT metabolite. PR Notice 71-5.

5/ Under FIFRA a registrant is entitled to either a public hearing or a scientific advisory committee or both to review his registration. Pending completion of that review, a registrant is allowed to continue shipment of his product.

6/ Unless specified, discussion of DDT in this opinion applies to TDE. DDT has three major breakdown products, DDA, DDE, and DDD; separate registrations exist for TDE (DDE).
by counsel for the Pesticides Office of the Environmental Protection Agency and attorneys for the Environmental Defense Fund which is an intervenor. Other parties include Eli Lilly & Co., which held a DDT registration for "topocide," a prescription drug, H. P. Cannon & Son, a user of DDT, and representatives of the chemical manufacturing industry and various wildlife groups.

The testimony and exhibits cover in exhaustive fashion all aspects of DDT's chemical and toxicological properties. The evidence of record, however, is not so extensive concerning the benefits from using DDT, and most of it has been directed to the major

7/ There has been some controversy over Eli Lilly's status because it failed to appeal cancellation of its registration within 30 days as required by Section 4(c) of FIFRA. For the purposes of this case I believe they should be accorded status as parties.

8/ There has been some question as to whether or not a "user" has standing to appeal a cancellation and thus seek reinstatement of a canceled use even though no registrant has stepped forward to appeal. The same reasoning employed by the court in Environmental Defense Fund v. Ruckelshaus, supra, and Environmental Defense Fund v. Hardin, 428 F.2d 1093 (D.C. Cir. 1970), which accords standing to "public interest" groups gives "users" a right to appeal a cancellation.

9/ The groups are: National Agricultural Chemicals Association; National Audubon Society; The Sierra Club; and West Michigan Environmental Action Council. As already noted, the Secretary of Agriculture, in addition to being a party-registrant by virtue of registrations held by its Plant Regulation Division, has appeared as an intervenor.
use, which is on cotton crops.

The Pesticides Office and Environmental Defense Fund (EDF), in presenting their cases against continued registration for DDT, lean most heavily on evidence which, they contend, establishes:

(1) that DDT and its metabolites are toxicants which persist in soil and the aquasphere; (2) that once unleashed, DDT is an uncontrollable chemical which can be transported by leaching, erosion, run-off and volatilization; (3) that DDT is not water-soluble and collects in fat tissue; (4) that organisms tend to collect and concentrate DDT; (5) that these qualities result in accumulations of DDT in wildlife and humans; that once stored or consumed, DDT can be toxic to both animals and humans, and in the case of fish and wildlife inhibit regeneration of species; and (7) that the benefits accruing from DDT usage are marginal, given the availability of alternative insecticides and pest management programs, and also the fact that crops produced with DDT are in ample supply. The testimony

10/ The following uses are involved: for cotton; for military use on clothing; for peppers and pimentos; for fresh market corn; for peanuts; for cabbage, cauliflower, and brussel sprouts; for tomatoes; for lettuce; for potatoes; for sweet potatoes in storage (southern states only); for use in commercial greenhouses and nurseries; for beans (dry, lima, snap); for bat and rodent control; for emergency use for agriculture, health or quarantine purposes; and for onions and garlic; and for lice control. There has been considerable controversy as to what uses were at issue during the hearing. Admission No. 2 sets forth those uses which the Department of Agriculture considers essential. Many of those uses have been canceled and no appeal was taken. The uses at issue in this hearing are only those noted in Admission 11.
and exhibits include numerous reports of expert scientists who have described observed effects of DDT in the environment and the laboratory.

Group Petitioners and the United States Department of Agriculture (USDA) seek to discredit the Agency's case by citing the record of safety DDT has compiled throughout the years, and point to the negative findings of epidemiological and human feeding studies carried out over the years on industrial workers and volunteers exposed to concentrated levels of DDT far in excess of that to which the average individual is exposed. Proponents of continued registration have also introduced expert testimony to the effect that DDT's chronic toxicity to man or animals has not been established by adequate proof. The registrants have attacked the assumption that laboratory data, as to effects of exaggerated doses of DDT, can provide a meaningful basis for extrapolating effects on man or the environment. In the alternative, Group Petitioners contend that whatever harm to the environment might be attributed to DDT, it results from misuse and overdosing that occurred in years past. Lastly, Group Petitioners and USDA have attempted to prove that DDT is effective and that its use is more desirable than the organophosphates which are more acutely toxic and costly than DDT.
On April 25, the Hearing Examiner issued an opinion with proposed findings, conclusions and orders recommending that all "essential" uses of DDT be retained and that cancellation be lifted. The Examiner's report which has findings, conclusions and an opinion, is attached as an appendix. The Examiner apparently accepted in his report the Agency's proof that DDT is a hazard to aquatic and terrestrial wildlife and substitutes exist. He found, as a "matter of fact," DDT can have adverse effects on beneficial animals; that it is transferred through the food chain; that DDT is fat soluble. He concluded, however, as a "matter of law," that DDT is neither a carcinogen nor teratogen, that the particular uses at issue do not adversely affect wildlife, that DDT use has rapidly declined. Examiner's Rept. p. 93.

The Pesticides Office of this Agency and intervenor Environmental Defense Fund (EDF) filed exceptions to the Examiner's report, challenging his application of the burden of proof to this case, his findings of fact, conclusions of law, and numerous evidentiary rulings. Exception was also taken to the Examiner's application of the so-called "risk and benefit" standard of FIFRA.

11/ There is some confusion as to what the term "essential" means. By Admission number 2 the parties stipulated that certain uses were "essential" in the view of USDA. No stipulation exists that these uses are, in fact, essential in that no alternatives exist or that a shortage of a crop would result without DDT.

12/ Exceptions have also been received in Docket 106, In Re Wallerstein. Stark Bros. Nurseries held a registration for use of DDT on nursery plants. The Examiner recommended cancellation on the grounds that this was not an "essential" use according to USDA.
On May 2, 1972, the Judicial Officer propounded by order, at my direction, a series of questions for briefing and discussion at oral argument, and oral argument was held on May 16. That argument was transcribed and is part of this record. Group Petitioners, USDA, Eli Lilly and H. P. Cannon & Sons have also responded to the briefs on exceptions.

II.

A. Applicable Law.

1. **FIFRA**

The Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. § 135 (1972), establishes a strict standard for the registration of pesticides. Any "economic poison" which cannot be used without injury to "man or other vertebrate animals, vegetation, and useful invertebrate animals" is 'misbranded' and is therefore subject to cancellation.

13/ Sections 2(z)(2)(c), (d) and (g), respectively provide:

"The term 'misbranded' shall apply --

(a) to any economic poison

* * *

(c) if the labeling accompanying it does not contain directions for use which are necessary and if complied with adequate for the protection of the public;

(d) if the label does not contain a warning or caution statement which may be necessary and if complied with adequate to prevent injury to living man and other vertebrate animals, vegetation, and useful invertebrate animals;

* * *

(g) if in the case of an insecticide, nematocide, fungicide, or herbicide when used as directed or in accordance with commonly recognized practice it shall be injurious to living man or other vertebrate animals, or vegetation, except weeds, to which it is applied, or to the person applying such economic poison;

14/ Section 4 permits the Administrator to cancel a registration if it appears that "the article and its labeling . . . do not comply with [the Act]." Since the Act prohibits distribution of a "misbranded" pesticide, Section 3(a)(5), the registration for a "misbranded" product may be canceled.
While the language of the statute, taken literally, requires only a finding of injury to non-target species, the inquiry cannot, however, end with a simplistic application of this plain statutory language. Both judicial and administrative precedent recognize that Congress intended the application of a balancing test, that would measure the risks of using a particular chemical against its benefits. If a product is "misbranded" within the meaning of the Act, i.e., if it bears a label for use that does not meet the criteria of Section 2, it may no longer be shipped in interstate commerce and stocks in hand in the original package may be seized. 7 U.S.C. § 135(g) (1972).

2. Risks and Benefits

It follows from the statutory scheme and this Agency's decisions that evidence of each alleged risk must be reviewed and a conclusion reached as to whether or not, and in what degree, such risk is incident to the directed use of a particular product. The task, however, is complicated in the case of a "persistent" pesticide by its possible chronic effects. The degree of persistence, extent of overall usage and mobility all bear on the amplitude or indeed the existence

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of the risk curve. I believe, however, it is useful to isolate the alleged risks and evaluate each on the assumption that they are unaffected by overall levels of use, and defer to Part IV the discussion of the significance of the relationship between risk and overall use.

III.

A. Analysis of Evidence.

1. Risks

a. Health Effects and Environmental Properties. There is no dispute on this record that DDT is a non-specific chemical that kills both target and non-target species in the immediate area of application. Few chemicals, however, are so selective that they can be used without causing some injury to "non-target" species. We must therefore proceed to the evidence bearing on other "risks" and the "benefits" from using DDT.

I am convinced by a preponderance of the evidence that, once dispersed, DDT is an uncontrollable, durable chemical that persists in the aquatic and terrestrial environments. Given its insolubility in water and its propensity to be stored in tissues, it collects in

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16/ Other factors bearing on risk may include the geographical location of application, see, e.g., Statement of Reasons Underlying Registrations for Strychnine, 1080, and Sodium Cyanide, 37 Fed. Reg. 5718 (1972), although this may not be as significant where the chemical is highly volatile as is the case with DDT. See also Statement of Reasons Underlying the Cancellation of Mirex, Determination and Order of the Administrator at 7, 32 Fed. Reg. 106, June 1, 1972.
the food chain and is passed up to higher forms of aquatic and terrestrial life. There is ample evidence to show that under certain conditions DDT or its metabolites can persist in soil for many years, that it will volatilize or move along with eroding soil. While the degree of transportability is unknown, evidence of record shows that it is occasionally found in remote areas or in ocean species, such as whales, far from any known area of application.

Persistence and biomagnification in the food chain are, of themselves, a cause for concern, given the unknown and possibly forever undeterminable long-range effects of DDT in man, and the environment. Laboratory tests have, however, produced tumorigenic

17/ Method of application and type of soil and climate can affect persistence in soil and likewise run-off into aquatic areas.

18/ Registrants have made much of the fact that aquatic contamination and the spread of DDT have resulted from drift during aerial application. While the Examiner's Report dwells at some length on improved methods of application, it recognizes run-off as a significant source of aquatic contamination, even with improved aerial spraying techniques.

19/ It is particularly difficult to anticipate the long-range effects of exposure to a low dose of a chemical. It may take many years before adverse effects would take place. Diseases like cancer have an extended latency period. Mutagenic effects will be apparent only in future generations. Lastly, it may be impossible to relate observed pathology in man to a particular chemical because of the inability to isolate control groups which are not exposed in the same degree as the rest of the population.
effects on mice when DDT was fed to them at high levels. Most of the cancer research experts who testified at this hearing indicated that it was their opinion that the tumorigenic results of tests thus far conducted are an indicator of carcinogenicity and that DDT should be considered a potential carcinogen.

Group Petitioners argue that the testimony is in conflict and fasten on to the testimony of the Surgeon General that of Drs. Loomis and Butler. The Surgeon General's Statement was, however, cautious and, by no means, carries the burden that the Group Petitioners seek to place on it. In very general terms the Surgeon General stated: "We have no information on which to indict DDT either as a tumorigen or as a carcinogen for man and on the basis now available, I cannot conclude DDT represents an imminent health hazard." (Tr. 1350) This testimony, however, does not bear on the long-term effects of DDT.

20/ Tumorigenic effects have been noted in a number of laboratory experiments. The most positive results were developed by the Bionetics Study and the Lyons and Milan tests. The Bionetics Study of the National Cancer Institute fed 120 compounds to two strains of mice. DDT was one of 11 compounds to produce an elevated incidence of tumors. The Lyons and Milan Studies of the International Agency for Research of the World Health Organization is a multigenerational study (still in progress) of 6,000 mice of in-and outbred strains. Increased hepatomas were noted in male and female mice fed DDT at 250 ppm. Metastasis to the lungs or kidneys has been recorded in five instances.

21/ Witnesses testifying to the positive correlation between tumorigens and carcinogens were Dr. Umberto Saffiotti, Associate Scientific Director for Carcinogenesis, Etiology Area, National Cancer Institute; Dr. Marvin Schneiderman, Associate Chief, Biometry Branch and Associated Director for Demography, National Cancer Institute; Dr. Samuel Epstein, Senior Research Associate in Pathology, Children's Cancer Research Foundation, Inc., Boston.
nor did the Surgeon General express a view on what uses, apart from health uses, would justify continued use of DDT. Indeed, the entire thrust of the Surgeon General's testimony was only that use for immediate health needs outweighs the possible long-range effects of DDT on human health. Group Petitioners' other witnesses, Drs. Loomis and Butler, while men of stature in their fields -- toxicology and pathology -- and knowledgeable about cancer treatment and diagnosis, are not specialists in cancer research as is Dr. Saffiotti. Indeed, Dr. Butler disclaimed such expertise.

Group Petitioners also take refuge under a broad canopy of data -- human feeding studies and epidemiological studies -- and support it with the increasingly familiar argument that exposure to any substance in sufficient quantities may cause cancer.

None of the feeding studies carried out with DDT have been designed adequately to detect carcinogenicity; and given the latency period of cancer, these studies would have to be carried out for a much longer period. Statistical population samples for epidemiological studies are also virtually impossible given the latency period for cancer and the long-term exposure of the general population. Since there is no sharp distinction between population groups exposed to low doses and higher doses of DDT, adequate control groups cannot be established. The "everything is cancerous argument" falls because it ignores the fact that not all chemicals fed to animals in equally concentrated doses have produced the same tumorigenic results.
b. Environmental Effects. The case against DDT involves more, however, than a long-range hazard to man's health. The evidence presented by the Agency's Pesticides Office and the intervenors, EDF, compellingly demonstrates the adverse impact of DDT on fish and birdlife. Several witnesses testified to first-hand observed effects of DDT on fish and birdlife, reporting lethal or sub-acute effects on aquatic and avian life exposed in DDT-treated areas. Laboratory evidence is also impressively abundant to show the acute and chronic effects of DDT on avian animal species and suggest that DDT impairs their reproductive capabilities.

The Petitioner-registrants' assertion that there is no evidence of declining aquatic or avian populations, even if actually true, is an attempt at confession and avoidance. It does not refute the basic proposition that DDT causes damage to wildlife species. Group Petitioners' argument that DDT is only one toxic substance in a polluted environment, and thus, whatever its laboratory effects, it cannot be shown to be the causative agent of damage in nature, does not refute the basic proposition that DDT causes damage to wildlife species.

22/ See the testimony of Drs. Tarzwell, Nicholson, Philip Butler, Duke, Burdick, Dimond, Risebrough, Hickey, and Cade.

While the Examiner erroneously excluded testimony as to economic losses caused by DDT's contamination of the aquatic environment -- losses to commercial fishermen caused by inability to market contaminated fish -- this risk is significant, even if it could not be economically quantified. Not all risks can be translated into dollars and cents, nor can all benefits be assessed in cash terms.
not redeem DDT, but only underscores the magnitude of effort that will be necessary for cleaning up the environment. Were we forced to isolate in nature, rather than in the laboratory, the effects of various toxic substances, it would be difficult if not impossible to make a judgment as to the chronic effects of any chemical. As our DDT Statement of March, 1971, has noted: "Development of adequate testing protocols and facilities is a priority undertaking. But in the short term, extrapolation from small-scale laboratory analyses must err on the side of safety." See DDT Statement of Reasons, at 11.

Finally, I am persuaded that a preponderance of the evidence shows that DDE causes thinning of eggshells in certain bird species. The evidence presented included both laboratory data and observational data. Thus, results of feeding experiments were introduced to show that birds in the laboratory, when fed DDT, produced abnormally thin eggshells. In addition, researchers have also correlated thinning of shells by comparing the thickness of eggs found in nature with that of eggs taken from museums. The museum eggs show little thinning, whereas eggs taken from the wild after DDT use had become extensive reveal reduced thickness.

Group Petitioners and USDA argue that the laboratory feeding studies, conducted with exaggerated doses of DDE and under stress conditions, provide no basis for extrapolating to nature. They
suggest that the study results are contradictory and place particular emphasis on documents which were not part of the original record and the inconsistencies in Dr. Heath's testimony as brought out during cross-examination. Group Petitioners also contend that the observed phenomenon of eggshell thinning and DDE residue data are tied by a statistical thread too slender to connect the two in any meaningful way.

Viewing the evidence as a total picture, a preponderance supports the conclusion that DDE does cause eggshell thinning. Whether or not the laboratory data above would sustain this conclusion is beside the point. For here there is laboratory data and observational data, and in addition, a scientific hypothesis, which might explain the phenomenon.

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23/ The chief witness introduced to rebut Drs. Risebrough, Hickey and Cade was a graduate student with limited training in statistical analysis. In view of the credentials of EDF's witnesses -- Dr. Hickey, Professor of Wildlife Ecology at College of Agriculture, University of Wisconsin; Dr. Risebrough, Associate Ecologist, University of California at Berkeley; and Dr. Cade, Professor of Zoology at Cornell and Research Director of Cornell Ornithology Laboratory -- I cannot credit this attempt at rebuttal.

The Hearing Examiner apparently resolved the conflict in the evidence by concluding that "there was no evidence that DDT was the only factor in a decline of bird populations . . ." and that no evidence "focused its direct thrust on damage to birds by the uses of DDT that are permitted under the registrations in question." Examiner's Report, 70-71. In view of DDT's persistence and mobility, evidence as to the causal effect of these uses was not required.

At argument and by motion Group Petitioners have offered additional evidence, some of which bears on the issue of eggshell thinning. I have granted that motion and considered all that data . . . and ignored it.
B. Benefits.

1. Cotton

I am convinced by the evidence that continued use of DDT is not necessary to insure an adequate supply of cotton at a reasonable cost. Only 38% of cotton-producing acreage is treated with DDT, although the approximately 10,277,258 pounds used in cotton production is a substantial volume of DDT and accounts for most of its use. The record contains testimony by witnesses called by registrants and USDA attesting to the efficacy of organophosphate chemicals as substitutes for DDT and, long-range, the viability of pest management methods, such as the diapause program. At present most areas that use DDT combine it with an organophosphate and toxaphene in a 4-2-1 mixture (4 lbs. toxaphene, 2 DDT, 1 methyl parathion). Some areas, however, according to the testimony, which normally use DDT occasionally apply concentrated methyl parathion in a 4-lb. mixture.

There is evidence that organophosphates would not raise costs to the farmer and might, indeed, be cheaper. Any suggestion that the organophosphates are not economically viable cannot be maintained in face of the undisputed evidence that cotton continues to be tenable crop in Arkansas and Texas where DDT use has
declined. There is also testimony in the record to the effect that methyl parathion costs less per application than the DDT-toxaphene formula. Nor are the testimony and exhibits that show cotton insects develop resistance to organophosphate chemicals to the point. The very same exhibits make clear that DDT is also subject to resistance.

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24/ The parties have referred neither in briefs nor argument to testimony or exhibits describing in detail the economics of cotton production or substitutes. There is general testimony that cotton producers receive a per bushel subsidy and that this subsidy is the difference between profit and break-even. It is not clear whether or not break-even includes a return to the farm owner in terms of salary or return on his investment. While some evidence suggests that organophosphates are more costly, because of higher price and the need for repeated applications in concentrated quantities, there is little to suggest that the possible increased variable cost from use of organophosphates would be a disincentive to producers. Indeed, with subsidies it is not clear what rate of return a cotton producer receives for invested capital. There was a reference made to an unidentified study showing that the cost of using substitutes would involve $15 million. This figure alone has no meaning. While later testimony suggests that elimination of DDT would increase variable costs per acre by 5%, this, too, is of limited significance since the record does not relate it to the support program and the study looked at only a limited area.

25/ I cannot accept the suggestion that we should continue to use DDT until it is good to the very last drop. Whatever the long-term efficacy of the organophosphates the fact remains that they generally work. While the fact of insect resistance is important and underscores the need for retaining a variety of chemicals or methods to manage the same pest problem, this fact does not justify an avoidable use of a harmful chemical.
Group Petitioners and USDA, while not disputing the lesser persistence of organophosphates, have stressed their demonstrated acute toxicity. While they are toxic to beneficial soil insects and non-target species, particularly birds alighting on treated fields, these organophosphates break down more readily than DDT. They apparently are not transported in their toxic state to remote areas, unlike DDT which has been found far from treated areas, and consequently do not pose the same magnitude of risk to the aquasphere. Both testimony and exhibits also demonstrate that organophosphates are less acutely toxic to aquatic life, although different compounds have different toxicities. The effect of organophosphates on non-target terrestrial life can, unlike the effects of DDT, also be minimized by prudent use. Application in known nesting areas for rare or extinct birds can be avoided.

2. Other Crop and Produce Uses

The testimony of record, while sparse, shows that registered alternatives, primarily organophosphates, exist for all other crop and ornamental uses of DDT, except for storage use on sweet potatoes to control weevils, on heavy corn borer infestations of green peppers, and perhaps onions.

26/ Toxaphene and diazinon are registered for control of cutworms but it is not clear from the record as to whether or not these chemicals are registered or effective to control cutworm infestations on onions. While none of the parties have pointed to helpful evidence in connection with use for controlling cutworms on onions and weevils on stored sweet potatoes, I have taken judicial notice of the non-existence of registered alternatives.
3. **Non-Crop Uses**

In addition to the registrations for use on crops and in nurseries, several registrations for non-crop uses are also in issue. Admission 11 lists "public health pests -- bats and rodents," "Agricultural, Health and Quarantine Treatments in Emergencies as Recommended by and Under Direction of State-federal Officials" and "fabric treatment" by the military.

The record is not, unfortunately, well developed as to the scope or method of application for these uses nor as to the overall volume applied for these purposes. While use for bat and mice control is characterized in Admission 11 as a "public health use," application for these purposes is not supervised by public health officials. The briefs suggest that use for control of bats and mice is a proprietary use by the military, even though a private pest control operator testified that use for bats was considered essential by private operators. **With respect to "Agricultural and**

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27/ The only evidence as to the amount of DDT used for these purposes was given by Col. Fowler, who said the total used by the military for bat and mouse control is approximately 800-900 pounds.
Quarantine" uses it is difficult to determine to what extent applications are for health purposes or for nuisance prevention.

With respect to all of these uses, both for public health programs and proprietary use, alternatives do exist. The Public Health Service testified that DDT is no longer the chemical of choice for controlling disease vectors. As for mice, warfarin is used effectively, and fumigation and non-chemical means are available for use on bats. Colonel Fowler testified that the military has not used DDT in this country for two years for mothproofing purposes and stated that he was aware of alternatives.

C. Weight to Be Accorded the Examiner's Opinion.

In reaching the factual conclusions set forth in the preceding sections, I have been mindful of Group Petitioners' argument, stressed in their briefs and at oral argument, that the Hearing Examiner's findings deserve particular deference in view of his opportunity to resolve contradictions in testimony based on demeanor evidence.
Nowhere does the Examiner state that his conclusions were based on credibility choices. Whatever extra weight, then, that might be due findings based expressly on a credibility judgment is not appropriate in the case before me. See, e.g., NLRB v. Dinion Coil Co., 201 F.2d 484 (2d Cir. 1952) where the Examiner's report set forth his assessment of the witnesses' credibility.

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28/ During oral argument counsel admitted that the Examiner's report did not purport to make findings based on credibility of witnesses, nor could he point to findings which might be explained in light of a credibility contest. (Transcript of Argument, p. 96-98.) The basic questions of fact in this case, the hazard to man and the environment, were cast and resolved by the Examiner as "conclusions of law."

29/ The precedents, moreover, make clear that the Agency is free to make its own findings and that the Examiner's findings and report only comprise part of the record which a court will then evaluate. FCC v. Allentown Broadcasting Corp., 349 U.S. 358 (1955); Universal Camara Corp. v. NLRB, 340 U.S. 474 (1951). Even where an Examiner's findings are based on credibility, the Agency may reach a contrary conclusion. See FCC v. Allentown Broadcasting Corp., supra.
IV.

The application of the risk-benefit test to the facts of record is, by no means, simple. We have noted in our Statement of March 18, 1971, that the variables are numerous. It should also be borne in mind that the variables are not static in point of time. As build-up of a chemical occurs or is detected in the environment, risk increases. Indeed, it may be that the same tendency of a chemical to persist or build up in the food chain is present but not known about substitute chemicals. It may also be that circumspect application of a chemical in limited quantities for those uses most necessary changes the benefit-risk coefficients so as to tilt the scales differently than when we weigh aggregate use for all purposes against aggregate benefits. See generally EDF v. EPA (Opinion of Judge Leventhal), supra.

A. Burden of Proof.

The crux of a cancellation proceeding is the safety of the product when used as directed or in accordance with "commonly-recognized practice." Stearns Phosphorus Paste Co. v. EPA, supra. This, simply stated, means that this Agency has the burden of going forward to establish those risks which it believes to require
cancellation. In addition, an affirmative aspect of the Agency's case should be the availability of preferable substitute means of controlling the pests that are controlled by the canceled chemical where the Agency is relying on this fact to establish that risks outweigh benefits. Evidence showing the availability of a registered chemical or other means of control which this Agency's

30/ The legislative history of FIFRA, judicial decisions and Agency pronouncements all state that the "burden of proof" remains on the registrant to demonstrate that his product satisfies the requirements for registration under the Act. See S. Rept. No. 573 at 5 (88th Cong., 1st Sess. 1963); H. Rept. No. 1125 at 4 (88th Cong., 1st Sess. 1963); EDF v. EPA, supra; EDF v. Ruckelshaus, supra; Statement of Reasons, March 18, 1971. There has, unfortunately, been a great deal of mis-understanding concerning these statements. Simply stated, the burden of proof referred to by the legislative history is the burden of persuasion which requires a party to establish the existence of primary facts. It should not be confused with the burden of going forward which is generally a rule to establish the order for the presentation of evidence. The burden of going forward may, however, have substantive consequences. Where a party which has the burden of going forward fails to satisfy that burden, the facts will be decided against him, even though the other party may have been responsible for the burden of persuasion.

While in most legal proceedings the party which has the burden of going forward bears the burden of persuasion, this is not necessarily the case. On some issues, like contributory negligence in some jurisdictions, it may be that once one party has introduced evidence to put the issue in the case, the other party bears the burden of persuasion on that point. In a FIFRA cancellation hearing the proponent of cancellation bears the burden of going forward, but does not bear the burden of persuasion.

31/ While a mere showing of a high degree of risk would make out a prima facie case for cancellation, where the Agency is relying on the existence of an alternative rather than simply a showing of risk, it should, as here, present its own witnesses.
Pesticides Office is prepared to recommend as a substitute at that point in time, coupled with the Agency's proof on risk, makes out an affirmative case.

The burden of rebuttal then falls on registrants or users. They may either seek to negate the proof on risks either by rebutting the basic scientific data or by showing that a particular use is so limited as not to engender the risks from widespread use of the chemical. They can also seek to establish aggregate benefits. Where, as here, the existence of alternatives bears on the benefit of the chemical under review they may choose to show non-viability of alternatives, either for general substitution or in a particular geographical region. They may also seek to show the non-desirability (or risks) of the alternative if they disagree with the staff judgment of this Agency.

32/ This hearing was conducted under rules which have since been amended. (See 37 Fed. Reg. 9476 (May 11, 1972)). Under the Agency's former rules registrants proceeded first at the hearing. This order of presentation, which is now changed, was not prejudicial in this case. The Agency more than discharged its burden to put on a prima facie case. Registrants had an ample opportunity for rebuttal. At worst this inverted presentation unnecessarily protracted the hearing.

33/ Where there is a generally viable substitute, which will insure an adequate crop supply, the non-viability of the alternative in a particular area will bear on the advisability of a transition period. See Part IV, infra.
B. Application of Risk-Benefit to Crop Uses of DDT.

The Agency and EDF have established that DDT is toxic to non-target insects and animals, persistent, mobile and transferable and that it builds up in the food chain. No label directions for use can completely prevent these hazards. In short, they have established at the very least the risk of the unknown. That risk is compounded where, as is the case with DDT, man and animals tend to accumulate and store the chemical. These facts alone constitute risks that are unjustified where apparently safer alternatives exist to achieve the same benefit. Where, however, there is a demonstrated laboratory relationship between the chemical and toxic effects in man or animals, this risk is, generally speaking, rendered even more unacceptable, if alternatives exist. In the case before us the risk to human health from using DDT cannot be discounted. While these risks might be acceptable were we forced to use DDT, they are not so trivial that we can be indifferent to assuming them unnecessarily.

The evidence of record showing storage in man and magnification in the food chain is a warning to the prudent that man may be exposing himself to a substance that may ultimately have a serious effect on his health.

34/ In enacting the present law one of the greatest concerns expressed to Congress was the risk of the unknown. See Statement of Congressman Dingell. Hearings Before the Subcommittee on Departmental Oversight and Consumer Relations of the House Committee on Agriculture, at 39 (88th Cong., 1st Sess. 1963).
As Judge Leventhal recently pointed out, cancer is a "sensitive and fright-laden" matter and noted earlier in his opinion that carcinogenic effects are "generally cumulative and irreversible when discovered." EDF v. EPA, Slip Op, at 12 and 16. The possibility that DDT is a carcinogen is at present remote and unquantifiable; but if it is not a siren to panic, it is a semaphore which suggests that an identifiable public benefit is required to justify continued use of DDT. Where one chemical tests tumorigenic in a laboratory and one does not, and both accomplish the same task, the latter is to be preferred, absent some extenuating circumstances.

The risks to the environment from continued use of DDT are more clearly established. There is no doubt that DDT run-off can cause contamination of waters and given its propensity to volatilize and disperse during application, there is no assurance that curtailed usage on the order of 12,000,000 pounds per year will not continue to affect widespread areas beyond the location of application. The Agency staff established, as well, the existence of acceptable substitutes for all crop uses of DDT except on onions and sweet potatoes in storage and green peppers.

Registrants attempted but failed to surmount the evidence of established risks and the existence of substitutes by arguing that the build-up of DDT in the environment and its migration to remote
areas has resulted from past uses and misuses. There is, however, no persuasive evidence of record to show that the aggregate volume of use of DDT for all uses in question, given the method of application, will not result in continuing dispersal and build-up in the environment and thus add to or maintain the stress on the environment resulting from past use. The Department of Agriculture has, for its part, emphasized DDT's low acute toxicity in comparison to that of alternative chemicals and thus tried to make the risk and benefit equation balance out favorably for the continued use of DDT. While the acute toxicity of methyl parathion must, in the short run, be taken into account, see infra, it does not justify continued use of DDT on a long-term basis. Where a chemical can be safely used if label directions are followed, a producer cannot avoid the risk of his own negligence by exposing third-parties and the environment to a long-term hazard.

Accordingly, all crop uses of DDT are hereby canceled except for application to onions for control of cutworm, weevils on stored sweet potatoes, and sweet peppers. Shipments of DDT labeled for those uses may continue on terms set forth in Part V-A. We defer to Part V-B, infra, consideration of the proper timing of cancellation of other uses in light of the short-run dangers of switching to the use of organophosphates without providing training.35/

35/ Registrants adduced considerable testimony on the effects of organophosphates on non-target species. Sevin,[fn. cont'd]
There remains the question of the disposition on the registered health and government uses and other non-crop uses of DDT. It should be emphasized that these hearings have never involved the use of DDT by other nations in their health control programs. As we said in our DDT Statement of March, 1971, "this Agency will not presume to regulate the felt necessities of other countries." Statement, at 8. Indeed, the FIFRA does not apply to exports. Section 7, 7 U.S.C. § 135 (1972).

Given the alternatives for mothproofing and control of bats and mice -- proprietary governmental uses of DDT -- I am persuaded that the benefits are even more de minimis than the risks. On the other hand, public health and quarantine programs fall into a wholly separate category. See EDF v. Ruckelshaus, 439 F.2d at 594; DDT Statement of Reasons at 11.

Fn. cont'd] it appears, is highly toxic to bees and most witnesses agreed that the organophosphates were toxic to non-target animals, usually birds and insect life, present when a field is sprayed. The present evidence demonstrates, however, that these organophosphate compounds are less "persistent," and thus do not leach or erode into waters or collect in the human food chain. While it may be that in time the familiar phrase "familiarity breeds contempt" will apply, as we learn more about these compounds, they appear not to present a long-range hazard to man or aquatic areas. Where registrants have scored, is by demonstrating the acute toxicity of methyl parathion which is the primary alternative chemical for many of the crop uses in question. That fact does not, however, alter the long-term balance between the risks and benefits, in view of the non-persistence of the organophosphates.
While alternatives also exist for use in public health-quarantine programs and, in most instances, DDT is no longer the yeoman chemical, I believe that it would be unwise to restrict knowledgeable public officials to the choice of one or two chemicals. Like a physician, the public official must have an ample arsenal for the combat of disease and infestation.

I cannot, however, be indifferent to the fact that the record suggests that "health and quarantine" uses have, in the past, apparently included proprietary uses by government. Nor can I be complacent about non-supervised use for these purposes by private citizens. I am, accordingly, requiring a label which will restrain indiscriminate use of DDT for a wide variety of purposes under the rubric of official use. That label language is set forth in the order accompanying this opinion, and is designed to restrict shipment of DDT only to U.S. Government officials and State Health Departments who will be knowledgeable as to the most effective means for control and mindful of the risks of using DDT. Thus, on an application-by-application basis for necessary health and quarantine purposes, the benefits will be maximized and outweigh the risks. Cf. 42 U.S.C. §4332 (1971) which requires an environmental impact statement on ongoing official programs.

36/ The use of DDT in Topocide, a prescription drug, is regulated by both the Food and Drug Administration and this Agency. The alternative, Kwell, is a lindane product. I am, however, taking judicial notice of the fact that lindane registrations are presently under review by this Agency's Pesticides Office and several uses of lindane have, in the past, been the subject of cancellation proceedings. See In Re Hari Kari Lindane, supra. I am not prepared to judge on this record whether or not the risk to the environment and the public at large from DDT shampoo is greater than from lindane shampoo. As for the direct effects on the user of the drug, this matter is for FDA and the prescribing physician.
V.

I turn now to the disposition of these dockets in light of the foregoing principles. At the outset it should be noted that recent judicial decisions have urged this Agency to use its "flexibility, in both final decisions and suspension orders, to differentiate between uses of the product" (See EDF v. EPA (opinion of Judge Leventhal), supra, at 20), and reminded us that creative adaptability is the keystone of a workable regulatory process. Cf. SEC v. National Securities, Inc., 393 U.S. 453, 463 (1969). EDF v. EPA, while discussing suspension, serves as a beacon in this regard, suggesting that registrations be continued selectively, taking into account "restrictions on kinds and extent of use." Id. at 23.

Bearing these principles in mind, I turn first to the form and shape our orders should take.

A. Disposition as to Onions, Stored Sweet Potatoes and Sweet Peppers

There is evidence that DDT is the only useful chemical for controlling heavy corn borer infestations which attack green peppers in the Del Marva Peninsula. The record shows that about 13,500 pounds of DDT are used regularly as a ground application for prophylactic purposes. Sevin, Guthion, and phosphamidon can, however, be used at less than 30% infestation. Del Marva produces less than 5% of the nation's sweet peppers and other crops can be
profitably produced. The Agency staff has conceded in its April 15 brief in support of proposed findings, conclusions and order that this use of DDT "comes closest -- of all the uses in issue -- to being necessary in the sense that no real alternative insect control method exists under certain conditions." (Brief, at 93.)

The evidence concerning use of DDT to control cutworms is less clear-cut. Apparently cutworm infestations in the northwest are sporadic and localized. While it would appear that other chemicals could be used to control cutworm infestations on onions as with peanuts, none are apparently registered. No party has cited evidence of record showing what percent of the onion-producing acreage would be affected by a cancellation of DDT.

The evidence with respect to use of DDT as a "dip" to protect stored sweet potatoes against woolly infestation is even spottier. Neither counsel for the parties nor our research has pointed us to evidence of record showing the precise volume of DDT use for this purpose, its likely effect on the environment, or the degree of loss that might be sustained by producers.

While it would be far easier simply to cancel or not cancel the registrations for these uses, I believe that environmental problems should be parsed with a scalpel, not a hacksaw. While EDF and my own staff urge cancellation, on the ground that producers can easily shift to producing different crops, there is no
evidence as to how long such transition might require. Moreover, it may be that continued use of a limited volume of DDT in these few areas, taken in conjunction with aggregate volume of use for other purposes, like health, present no risk to the environment. Obviously much of the stress on the "global" environment is reduced by curtailing overall volume of usage and we must then estimate the impact of use, both on the environment as a whole, and the local surroundings. Lastly, it may well be relevant to examine the impact on overall supply of a commodity. Even though peppers, onions and sweet potatoes may not be "food "staples," it may be that the other acreage is not suited for producing these crops. In that event, it will be necessary to determine whether or not supplies will satisfy demand, and whether or not a transition period should be fixed to permit a market adjustment.

It follows that additional evidence is required to determine the answers to these questions. In the interim the cancellation orders will remain in effect, subject to registrants or users petitioning to present additional evidence. In that event, a stay order will issue pending the determination on remand. If these users

37/ It is a recognized policy of common law nuisance and also of federal environmental legislation to afford affected producers a transitional period for implementing new requirements.
or registrants can demonstrate that a produce shortage will result and their particular use of DDT, taken with other uses, does not create undue stress on the general or local environment, particularly the aquasphere, cancellation should be lifted. If no produce shortage will result because other acreage is suitable for these crops, it shall still be open to demonstrate that a transitional period is required for switching to new crops. If the interim use of DDT does not constitute an environmental risk, final orders of cancellation for these uses will be deferred until the transition can be accomplished, provided assurances are received at the hearing that formulators and users will not permit bootlegging.

V. The Switch to Methyl Parathion.

The need for a transition period arises also in connection with those uses that are being canceled based on the existence of methyl parathion.

The record before me leaves no doubt that the chief substitute for most uses of DDT, methyl parathion, is a highly toxic chemical and, if misused, is dangerous to applicators. This was the virtually

38/ Not all of the possible substitutes for DDT are equally potent. For example, trichlorofon, monocrotophos, malathion and carbaryl, among others, are available to control many cotton pests; carbaryl is an all-purpose chemical for most cotton pests. It is, however, abundantly clear that methyl parathion will be widely used.
unanimous opinion of all the witnesses. The introduction into use
of organophosphates has, in the past, caused deaths among users
who are untrained in their application and the testimony and exhibits
of record point to the unhappy experience of several years ago
where four deaths occurred at the time ethyl parathion began to be
used on tobacco crops. Other testimony noted the increase in non-
fatal accidents and attributed almost one-half reported pesticide
poisonings to the organophosphate group. A survey conducted after
the organophosphates began to replace chlorinated hydrocarbons in
Texas suggests a significantly increased incidence of poisonings.

That the skilled and trained user may apply organophosphates
with complete safety is of comfort only if there is an orderly
transition from DDT to methyl parathion so as to train workers now
untutored in the ways of proper use.

I am accordingly making this order effective as of December 31,
1972, insofar as the cancellations of any particular use is predicated
on the availability of methyl parathion as a substitute. In the
months that follow the Department of Agriculture and state extension
services and representatives of EPA will have time to begin educating
those workers who will have to use methyl parathion in future growing
seasons. Such a program can also introduce farmers to the less acutely
toxic organophosphates, like carbaryl, which may be satisfactory for
many uses.

(indicates EPA's knowledge)
(Carbaryl is NOT in organophosphates!)
VI.

Far from being inconsistent with the general congressional mandate of FIFRA, a period of adjustment to train users of methyl parathion or permit a needed transition where no substitutes exist is a logical outgrowth of a sensible application of risk-benefit analysis. While the legislative history does not address the specific problem before me -- the timing of cancellation orders -- the hearings that preceded the enactment of FIFRA indicate that congressional concern for safety of the farmer-user of pesticides was no less than Congress' solicitude for the environment. While Congress ultimately struck a balance that generally places the risk of negligence on the applicator, see Stearns v. E&F, supra, it did so in light of assurances that farmers are for their own safety as well as that of the environment being trained in proper methods of application. See Hearings before the Subcommittee on Departmental Oversight and Consumer Relations of the House Committee on Agriculture, supra, at 54, 68.

39/ At least two courts have given express recognition to the similarity between the regulatory schemes in FIFRA and the Food, Drug, and Cosmetic Act. See Welford v. Ruckelshaus, 439 F.2d 598 (D.C. Cir. 1971); Nor-Am v. Hardin, 435 F.2d 1133 (7th Cir. 1970) (en banc). I believe that the trail Congress intended me to follow is marked by its directive in Section 348 of the Food, Drug, and Cosmetic Act, 21 U.S.C. § 348(f)(3) (1971), which permits the Secretary to set an effective date for his orders. While similar language has not been expressly included in FIFRA, its omission can hardly be considered advertent in view of the legislative history. See S. Rept. No. 573 (88th Cong., 1st Sess. 1963); H. Rept. No. 1125 (88th Cong., 2d Sess. 1964). The purpose of the 1964 amendments was to eliminate registration under protest.
The risk-benefit equation is a dynamic one. Timing is a variable in that equation. What may, in the long run, be necessary to protect the environment could be a short-term threat to human health. This is exactly the case before me now. The benefits of using organophosphates are a long-range benefit and the risks of DDT result from continued long-term use. In the very short run, however, the equation balances out very differently. Likewise, the prospect of dislocation which might ensue were the use of DDT immediately halted where no alternatives exist is a factor we must reckon with.

The major environmental regulatory statutes, enacted and pending, provide "lead time" for an adjustment to new requirements.

40 I do not believe that the Seventh Circuit's decision in Stearns Phosphorous Paste Co. v. EPA, supra, precludes me from taking into account the short-term dangers that could result from increased use of methyl parathion by untrained users. Stearns holds that a product is not "misbranded" simply because it can be highly dangerous if the user is careless. This reasoning does not, however, compel me to ignore the tendency of human beings to be negligent where we are dealing with the implementation of an order that will increase use of a highly dangerous substance. Even negligence can be minimized by training. (Suits will hold any death or illness due to parathion as negligence?)

41 While the Examiner excluded from evidence a study of the DDT problem for this Agency undertaken by a Committee of the National Academy of Sciences, it is appropriate to note that Committee recommended a phase-out period for the same reasons outlined in this opinion. While I reach my conclusions without relying on that report's factual findings and recommendations, and base them on the record as compiled below, I believe the report was erroneously excluded from the record, particularly in view of the offer by counsel for the Agency to produce a committee member for cross-examination.
While impatience is understandable in view of the past history of delay, we must not be lulled into the belief that long-standing problems can be corrected by overnight solutions. Today's decision provides a definitive answer to the status of DDT registrations and all concerned: to this Agency, farmers, manufacturers, the Department of Agriculture, and extension services; all must proceed with alacrity toward the implementation of this order.
BEFORE THE
ENVIRONMENTAL PROTECTION AGENCY

In re:

STEVEN S INDUSTRIES, INC., et al.

(Consolidated DDT Hearings)

ORDER

In accordance with the foregoing opinion, findings and conclusions of law, use of DDT on cotton, beans (snap, lima, and dry), peanuts, cabbage, cauliflower, brussel sprouts, tomatoes, fresh market corn, garlic, pimentos, in commercial greenhouses, for mothproofing and control of bats and rodents are hereby canceled as of December 31, 1972.

Use of DDT for control of weevils on stored sweet potatoes, green peppers in the Del Marva Peninsula and cutworms on onions are canceled unless within 30 days users or registrants move to supplement the record in accordance with Part V of my opinion of today. In such event the order shall be stayed, pending the completion of the record, on terms and conditions set by the Hearing Examiner, provided that this stay may be dissolved if interested users or registrants do not present the required evidence in an expeditious fashion. At the conclusion of such proceedings, the issue of cancellation shall be resolved in accordance with my opinion today.
Cancellation for uses of DDT by public health officials in disease control programs and by USDA and the military for health quarantine and use in prescription drugs is lifted.

In order to implement this decision no DDT shall be shipped in interstate commerce or within the District of Columbia or any American territory after December 31, 1972, unless its label bears in a prominent fashion in bold type and capital letters, in a manner satisfactory to the Pesticides Regulation Division, the following language:

"(1) FOR USE BY AND DISTRIBUTION TO ONLY U. S. PUBLIC HEALTH SERVICE OFFICIALS OR FOR DISTRIBUTION BY OR ON APPROVAL BY THE U. S. PUBLIC HEALTH SERVICE TO OTHER HEALTH SERVICE OFFICIALS FOR CONTROL OF VECTOR DISEASES;

(2) FOR USE BY AND DISTRIBUTION TO THE USDA OR MILITARY FOR HEALTH QUARANTINE USE; (3) FOR USE IN THE FORMULATION FOR PRESCRIPTION DRUGS FOR CONTROLLING BODY LICE;

(4) OR IN DRUG; FOR USE IN CONTROLLING BODY LICE -- TO BE DISPENSED ONLY BY PHYSICIANS.

"USE BY OR DISTRIBUTION TO UNAUTHORIZED USERS OR USE FOR A PURPOSE NOT SPECIFIED HEREON OR NOT IN ACCORDANCE WITH DIRECTIONS IS DISAPPROVED BY THE FEDERAL GOVERNMENT: THIS
SUBSTANCE IS HARMFUL TO THE ENVIRONMENT."

The Pesticides Regulation Division may require such other language as it considers appropriate.

This label may be adjusted to reflect the terms and conditions for shipment for use on green peppers in Del Marva, cutworms on onions, and weevils on stored sweet potatoes if a stay is in effect.

WILLIAM D. RUCKELSHAUS

Dated: June 2, 1977

Not referred until 14 June 72.
but EDF from 7/1 about it in advance (USDA did not)
The Opinion is jammed with errors and misstatements, but I shall only include a small number of them here. Surely the others will also play an important role in the subsequent review of the decision by the Circuit Court judges.

1. What is DDT?

Ruckelshaus statement (page 1): "DDT is the familiar abbreviation for the chemical (1,1,1 - trichlorophenyl ethane), which was for many years...."

**Corrections:** DDT is not the chemical Mr. Ruckelshaus thinks it is, but is instead 1,1,1-trichloro-2,2-bis (p-chlorophenyl)ethane. This error on the first page unfortunately is a harbinger of worse errors yet to come.

2. What does DDT break down into?

Ruckelshaus statement (page 4): "DDT has three major breakdown products, DDA, DDE, and DDD; separate registrations exist for TDE (DDE)."

**Correction:** TDE is the chemical that is also known as DDD, not DDE. These are entirely different compounds, and DDE is not even an insecticide! This fact is well known to most entomology students and to practically every grower and orchardist. Mr. Ruckelshaus must have been misadvised by some one who had heard about DDE because of allegations that it inhibits carbonic anhydrase, thus causing thin eggshells to form (an EDF theory which was refuted by at least five research teams last year). It might also be of interest to point out here that DDD does not even break down into DDE.

3. What substitutes will be used for DDT?

Ruckelshaus statement (page 37): "Such a program can also introduce farmers to the less acutely toxic organophosphates, like carbaryl, which may be satisfactory for many uses." (Emphasis added)

**Correction:** Carbaryl is a carbamate insecticide, not even remotely related to the organophosphates! This fact is well known to most entomology students and to practically every grower and orchardist.
I know there are those who feel that the great machine of Western man is running out of control and that the juggernaut must be stopped -- if necessary by such drastic steps as outlawing of chemical pesticides and fertilizers, immediate recycling of all factory wastes, prohibition of nuclear power plants, compulsory population control or declaring a moratorium on growth.

While I sympathize with such feelings of frustration and dread, I can only say that overreaction to the enormity of our plight may be counter-productive. It is neither obstinacy nor indifference which requires us to evaluate the facts before taking action. It is the sure knowledge that hasty, arbitrary or unsupportable decisions can only create a credibility gap which would undermine all our efforts.

The matter of DDT is a good case in point. This issue is fraught with emotion and controversy. As a member of the Audubon Society myself, and knowing the impact of this chlorinated hydrocarbon in certain species of raptorial birds, I was highly suspicious of this compound, to put it mildly. But I was compelled by the facts to temper my emotions. I declined to require immediate suspension of its use because the best scientific evidence now available did not warrant such a precipitate step.

However, we in EPA have streamlined our administrative procedures so that we can make our final decision regarding DDT and its use expeditiously in accord with all the facts developed in the statutory hearing process now underway. In addition, we can suspend registration of DDT and the other persistent pesticides at any time during the period of review, if new facts are brought out.

Again, let me say I won't hesitate to act at once, when and if the facts require action. As you know, many mass uses of DDT have already been prohibited, including all uses around the home. Certainly we'll all feel better when the persistent compounds can be phased out in favor of biological controls. But awaiting this millennium does not permit the luxury of dodging the harsh decisions of today.
Dear Friend,

The scramble is on for new energy supplies. As the shortage continues, you may be wondering who is protecting the public's environmental interest.

One group that has done so with great success and little fanfare is the Environmental Defense Fund. I'm writing to urge you to join me in their support.

EDF is a legal action group with a staff of highly skilled attorneys and scientists. It works to protect your environment and to end waste of precious resources -- so that your future needs and those of your children can be met.

EDF also works to lessen hazards to your health. Through careful research and tough lawsuits, EDF has obtained tighter enforcement of environmental standards.

But EDF does more than file lawsuits. In many cases it presents carefully documented alternative plans for solving environmental problems. EDF often provides the government with the facts needed to act on a problem before it gets out of hand.

EDF needs your support. The more concentrated interests are well organized and financed. Industry represents itself well in government decision-making -- as it has every right to do.

By contrast, the general public is often disorganized and sometimes powerless. With EDF's vigorous, effective representation, however, the public good has a better chance. It's well worth the $15 it costs to join EDF.

I hope you will read this brochure explaining some of the critical problems EDF has fought to solve and I hope you will join.

Sincerely,

William Ruckelshaus

William Ruckelshaus

This letter printed on 100% recycled paper.

ğer Ruckelshaus,

ON we know why the EPA worked hand-in-glove with the EDF during seven months of "EPA Hearings on DDT"!

ON we understand why Mr. Ruckelshaus banned DDT personally, after seven months of "EPA Hearings" had exonerated DDT of all those EDF allegations!

ON we know why Mr. Ruckelshaus overruled the recommendations of the Hearing Examiner on every count, even though Ruckelshaus never attended any part of the hearings and never read any of the pages of the Hearings transcript!
CONGRESSIONAL RECORD—SENATE
July 25, 1972
S 11545
S 11546

DECEMBER ON USE OF DDT

Mr. GOLDWATER. Mr. President, the whole country has had its attention called to the decision made on the use of DDT and I imagine that the majority of Americans think upon this chemical as one concocted by the devil. While I recognize that DDT in some areas has caused some damage, I also recognize that it has been a great boon to people in all parts of this country.

I have been concerned that chemicals recommended to replace DDT might not be as good and might even be more dangerous.

Arizona State University has long been interested in these chemicals, because it is located in a region of the United States infested by the type of bug and insect pests which birds and cattle are very helpful to citizens and difficult to get rid of.

Dr. J. Gordon Edwards, of Arizona State University, has reviewed the decision not to use DDT in a complete and interesting way and has also been critical of the decision. I have read his paper with great interest, and I feel that anyone who lives in an area that requires insect control should read this paper to have a better understanding of what we are faced with in this field. Dr. Edwards has appended a suggestion on the bottom of his paper. I ask unanimous consent that the entire matter be printed in the Record.

There being no objection, the paper was ordered to be printed in the Record, as follows:

THE INNOCUOUS RUCKELSHAUS DDT DECISION

The recent Ruckelhaus decision regarding DDT restrictions is an object lesson to professional environmental extremists and a warning to mainstream American thinking. Most concerned persons are mindful of the waste of holding seven months of federal hearings on DDT and then ignoring or rejecting all evidence which did not support the preconceived decision of this EPA Administrator. If Mr. Ruckelhaus had been accountable to professional environmental extremists, he would have been converted to their cause.

Mr. Ruckelhaus stated that the term "substitute" was used to refer to substitutes for DDT, not to substitute for DDT in its role as a pesticide.

The decision of the EPA Administrator in this case is an object lesson to professional environmental extremists and a warning to mainstream American thinking. Most concerned persons are mindful of the waste of holding seven months of federal hearings on DDT and then ignoring or rejecting all evidence which did not support the preconceived decision of this EPA Administrator. If Mr. Ruckelhaus had been accountable to professional environmental extremists, he would have been converted to their cause.
CONGRESSIONAL RECORD — SENATE
July 21, 1972
S 1547

sima of law! That doesn't sound like the EPA substantiated its non-advocate position very long ago. The evidence is overwhelming in favor of a powerful, tax-exempt anti-DDT lobby (the EP), which lobbied the Senate to pass a bill that would have made it illegal to use or sell DDT. This bill would have prohibited the use of DDT and would have imposed severe penalties on anyone found guilty of using or selling DDT. The EPA, which supports the use of DDT, was threatened with arrest for violating the law.

Obviously, very few people would take the risks involved in using DDT. However, DDT is a chemical that is not safe to use. It is toxic to humans, animals, and even insects. The EPA has been forced to admit that DDT is a danger to public health.

The EPA has been forced to admit that DDT is a danger to public health. This admission is a victory for those who have been fighting to ban DDT. It is a victory for those who have been fighting to protect the environment. It is a victory for those who have been fighting to protect the health of all people.

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WASHINGTON (UPI) — The House Appropriations Committee, saying DDT had saved millions of lives, questioned Monday the government's ban on its use and said substitute insecticides may prove a real hazard to man.

The committee said the Environmental Protection Agency (EPA) displayed a "regrettable lack of information" in taking the action. It said underdeveloped nations especially may pay a big price if the DDT prohibition spreads to the rest of the world.

In a report to the House on a $12.9 billion money bill for farm price supports and consumer and environmental protection, the committee questioned whether EPA was giving sufficient consideration to long range effects of its actions.

Use of DDT was banned in this country effective Dec. 31 this year except for use on green peppers, onions and sweet potatoes in storage. The committee noted that in effecting this almost total prohibition the EPA overrode findings of hearing examiner "who ruled, based on evidence at hand, that no reason existed for banning DDT."

"The committee is convinced that the administration's decision on DDT raises serious questions," the report said.
April 26, 1979

Mr. Allan Grant
President
American Farm Bureau Federation
225 Touhy Avenue
Park Ridge IL 60068

Dear Mr. Grant:

Our company has received a request for a contribution to a Dispute Resolution Conference on 2,4,5-T sponsored by the American Farm Bureau Federation. Any effort to enhance our societies' ability to rationally resolve questions as complicated as the use of herbicides is to be applauded. All the more reason why the "background and rationale" paper on the conference is so unfortunate.

In the first place, the basic assumption of the paper is that the question of continued use of 2,4,5-T is a scientific one. Decisions by the government involving the use of toxic substances are political with a small "p." Political in the sense that it reflects a society weighing what risks it is willing to accept in return for what benefits. Obviously, scientists have a role to play in this decision-making process. A careful assessment of the nature of the substance, its toxicity, persistence, etc. is crucial to framing the factual background for a rational decision. Needless to say, many of these questions are not subject to scientific certitude. Likewise, in weighing the benefits, science along with other disciplines such as economics, has a role to play.

The ultimate judgment remains political. In the case of pesticides in our country, the power to make this judgment has been delegated to the Administrator of EPA. If your Dispute Resolution Conference does not explicitly recognize this delegation, properly characterize the nature of the decision as political, and restrict the scientific inquiry to areas proper for science's role, it will resolve nothing.
The background paper on page 2 uses DDT as a case in point. It erroneously claims that I have stated the decision on DDT was a Political one. Political in the background paper is used in a pejorative sense of being the result of unwarranted pressure. It was my judgment in 1972, when I made the decision regarding DDT, that the risks outweighed the benefits. Politics with a capital "P" had nothing to do with it, nor have I ever so stated. The paper then correctly states that my decision was contrary to a conclusion of an administrative law judge that the uses of DDT should not be cancelled. The paper overlooks the fact that since 1963 three scientific advisory committees had been convened by government agencies to look into the allegations regarding DDT. They all recommended first to the Agricultural Department, and then later EPA, the discontinuance of the use of DDT. If the government had relied solely on the scientists in the DDT controversy, it would have been banned years before it finally was. This is not to say the scientists were right, or the hearing officer was wrong, but rather that decisions of this nature are inherently complex and emotional and trying to characterize them as subject to neat, scientific exactness further obscures this complexity.

Further, if your conference is to achieve its stated purpose of objectivity, it should avoid statements regarding the current scientific opinions regarding the analysis of EPA's ALSEA study. On page 2 of the background paper the author indicates no knowledge by your organization of anyone supporting EPA's conclusions. This may or may not be true, but should be a goal of the conference and not an assumption at its commencement.

If you detect a note of outrage in my letter, you are correct. My concern is not that the background paper simply repeats certain allegations regarding the DDT decision that have become part of the rhetoric of those opposed to that decision, but that they are made in the context of an effort that could be very important to the country. I am convinced that many of the decisions made in the health, safety and environment arena do not properly balance the risks and benefits to our
society. The imbalance is too often struck in favor of health, safety and the environment and away from other equally legitimate social concerns. The way your conference is headed, it will only fuel the emotion- alism of the debate and likely tip the balance further. Please change this background document so that it strikes the balance it recommends for our society. If not, I would request you make this letter a part of your conference material.

Under the circumstances, we must at present decline to support your conference.

Sincerely yours,

W. D. Ruckelshaus

cc: Dr. T. C. Byerly
    Dr. F. H. Tshirley
    Mr. Rick Main
    Mr. Milton Wessel
    Mr. Ralph Hodges, Jr.