

What follows are excerpts from the Examiner's Report of the Wisconsin hearings, held in 1968-1969, on the question of whether or not DDT is a highly toxic, persistent chemical, whose existence constitutes "pollution" as defined by state statute. How the hearing came about, and what was its aftermath, is recounted in: Frank Graham Jr., 1970, "Since Silent Spring" (Houghton-Mifflin, Boston MA); and, Thomas R. Dunlap, 1981, "DDT -- Scientists, citizens, and public policy" (Princeton U. Press, Princeton NJ).

The excerpts define the issues under consideration; show who and what organizations were involving themselves in the matter; and present the opinion and the ruling. What is omitted is the examiner's summary of the evidence, although a table of contents of that material is included below.

The page numbers and general formatting have been retained from the original, but the line lengths have been changed (lengthened).

Surprisingly, considering its historical significance, this is a rare document in Wisconsin; my own copy is a copy of a discard from the library of the University of Oregon (Eugene). However, the Milwaukee Public Library and the Marquette University Law Library have copies, as does (presumably) the Wisconsin DNR. A transcript of the hearings is to be found in the UW Madison Memorial Library (SB952.D2 W5 GZMA)

BEFORE THE

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Petition of Citizens Natural Resources)	
Association, Inc. and Wisconsin Division,)	
Izaak Walton League of America, Inc. for)	3-DR-1
a Declaratory Ruling on Use of Dichloro-)	
Diphenyl-Trichloro-Ethane, Commonly Known)	
as DDT, in the State of Wisconsin)	

EXAMINER'S SUMMARY OF EVIDENCE

AND

PROPOSED RULING

On October 28, 1968, the Citizens Natural Resources Association, Inc. by Frederick L. Ott, Wauwatosa, Wisconsin, and on November 1, 1968, the Izaak Walton League of America, Inc., Wisconsin Division, by J. Michael Borden, Elm Grove, Wisconsin, filed petitions with the Department of Natural Resources requesting a declaratory ruling in respect to the use of Dichloro-Diphenyl-Trichloro-Ethane, commonly known as DDT, in the State of Wisconsin.

The Department issued its Notice of Hearing on November 5, 1968 and held hearing on the matter December 2, 1968 and on days there-after at Madison, Wisconsin, before Examiner Maurice H. Van Susteren.

Appearances

PETITIONERS:

CITIZENS NATURAL RESOURCES ASSOCIATION
WISCONSIN DIVISION IZAAK WALTON LEAGUE OF AMERICA
MICHIGAN AUDUBON SOCIETY, INC.

by

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and

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IN SUPPORT OF THE PETITION:

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by

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WISCONSIN RESOURCE CONSERVATION COUNCIL

by
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IN OPPOSITION:

BUCKLEY TREE SERVICE and WISCONSIN ARBORIST ASSOCIATION

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EGELHOFF TREE SERVICE, INC.

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INDUSTRY TASK FORCE FOR DDT of the
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ILLINOIS WATER POLLUTION AND WATER RESOURCES COMMISSION

by
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WISCONSIN DEPARTMENT OF AGRICULTURE

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by
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U. S. DEPARTMENT OF AGRICULTURE
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WORKING GROUP ON ENVIRONMENTAL TOXICOLOGY,
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Examiner's Summary of Evidence

I. Statutes, Rules, Issues.

A. The petitioners seek a declaratory ruling under Section 227.06, Wisconsin Statutes, which provides that any interested person may petition for a declaratory ruling with respect to the applicability to any person, property or state of facts of any rule or statute enforced by it. A ruling is sought declaring DDT to be a highly toxic persistent chemical, that its use be restricted in such way that it cannot enter the biosphere and that its existence in the biosphere constitutes pollution.

Section 144.01 (II), Wis. Stats. , defines pollution:

"Pollution includes contaminating or rendering unclean or impure the waters of the state, or making the same injurious to public health, harmful for commercial or recreational use, or deleterious to fish, bird, animal or plant life. "

Section 144.30 (9), Wis. Stats. , defines environmental pollution:

"Environmental pollution means the contaminating or rendering unclean or impure the air, land or waters of the state, or making the same injurious to public health, harmful for commercial or recreational use, or deleterious to fish, bird, animal or plant life."

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B. Rules

Under the provisions of Section 144.025 (2)(b), the Department is authorized to adopt rules setting standards of water quality, to protect the public interest which includes the protection of the public health and welfare and the use of the waters for public and private water supplies, the propagation of fish and aquatic life and wildlife and other uses.

In compliance with the above, the Department adopted minimum standards of water quality in Wisconsin Administrative Code section RD 2.02 (I) (d):

"Substances in concentrations or combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts, which by bio-assay and other appropriate tests, indicate acute or chronic levels harmful to animal, plant or aquatic life. "

C. Issues.

1. DDT in what concentrations or combinations is toxic or harmful to humans and its presence in water in what amounts can be found to be of public health significance?
2. What amounts of DDT in water, which by bio-assay and other appropriate tests, indicates acute or chronic levels harmful to animals, plant or aquatic life?
3. Is DDT a pollutant within the statutory definitions of "pollution" as found in Sections 144.01 (II) and 144.30 (9), Wis. Stats.?

II. DDT- Chemical Structure

A. Chemical Structure

DDT, a chlorinated hydrocarbon, is chemically described as 1, 1, 1-trichloro-2, 2-bis (para-chlorophenyl) ethane (T-223). It

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-- pages omitted at this point --

The following is a table of contents of the omitted material. The excerpt then continues at page 26.

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II . DDT- Chemical Structure

A. Chemical Structure

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B. Properties, Uses, and Tests

1. Physical Properties

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2. Uses

3. Toxicity

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4. Translocation

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5. Storage/Accumulation in Organisms

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III. Enzyme Induction

A. Enzymes -- Function and Body System Effects

1. Enzymes and Liver Function

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2. Clinical Effects

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3. Sub-Clinical Effects

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B. Environmental Effects

1. Birds

- a. Sea or Waterfowl
- b. Upland Birds
- c. Omnivores

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IV. Effect on Nerves

A. Anatomy and Physiology

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B. Environmental Effects

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3. Mammals

V. Other Effects

A. Hormone Mimicry in Quail and Rats

[on p.25]

B. DDT and Human Pathology

Opinion

Clinically observable toxic effects of DDT in humans are obtained only with extremely large dosages by sudden extreme exposure, or of accidental origin. Clinically observable effects are evident injury, illness, loss of body function which directly inconveniences a person at work or play. Toxicity, as the word is ordinarily expressed, is related to dosage which in turn is related to storage.

DDT is ubiquitous. It is found in the atmosphere, soil, water and in food in what might be considered minute amounts. The chemical property of being soluble in lipid or fat tissue results in storage primarily in the body fat and nervous systems of all organisms in all levels of food chains. It is therefore impossible to establish levels, tolerances or concentrations at which DDT is toxic or harmful to human, animal or aquatic life.

The principle that DDT, being a chlorinated hydrocarbon, induces the production of non-specific detoxifying hydroxylating hepatic enzymes is well established. The induction of the enzymes is a normal adaptive hepatic process for the detoxification of substances and no definitive pathological effects are observed at present dosages. A high level of induced hepatic hydroxylating enzymes, however, causes a pharmacological biochemical effect in accelerating the metabolism of body steroids and drugs such as barbiturates and

nonbarbiturate depressants.

While the exact physiological mechanisms are not known in enzyme induction, it is established by feeding studies that DDT and one or more of its metabolites will by themselves cause a thinning of eggshells in raptor, pelagic or waterfowl birds. The effect explains the existence of the phenomena in the environment but does not exclude other causative factors, namely diet, illness and other chlorinated

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hydrocarbons among them being polychlorinated biphenyls. The appearance of the phenomena, however, on two continents simultaneously, would seem to eliminate illness, diet or predator interference as causative factors. Waterfowl and raptors on the top of water and other food chains are suffering decline and insect/worm-eaters are affected whereas gallinaceous birds are not. The differences in dosage reactions can also be explained by well-known order differences in birds.

The effect of DDT in minute amounts on the extremely complex, complicated mammalian nerve system is unknown. Huge dosages of DDT bordering on the accidental will cause gross clinically observable neurological symptoms in humans. It is uncontroverted that DDT has an almost immediate nerve effect on the primitive nerve systems of insects and on the less well-developed nervous systems of other forms of life. It is also uncontroverted that nerve tissue of vertebrates and invertebrates is the same, that DDT has a harmful effect on nerve conductance as shown by experiments on the axon of crustaceans and amphibians, that the effects are irreversible during the duration of the experiments. Clinically observable signs of nerve effects in humans such as tremor disappear upon reduction of dosage. That there are sub-clinical residual effects can only be postulated on mathematical equations and principles worked out in conjunction with nerve conductance experiments on nerve axons of crustaceans and amphibians and shown to be valid in all cases. Taking into consideration the above experiments together with the fact that DDT is used as a rodenticide for mice and bats, the only valid permissible inference is that DDT in small dosages has a harmful residual effect on the mammalian nervous system.

While physiological mechanism causing a reduced reproductive

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success in fish and a reduced resistance to stress when dosed with fairly high levels of DDT is unknown, the known effects themselves can only be considered harmful ones.

The record is replete with evidence of the economic benefits derived from use of DDT in the control of pests in agriculture and in the control of mosquitoes for both comfort and prevention of disease. Without doubt DDT has provided enormous economic benefits, but economic benefits are not an issue or part of any issue in this case.

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Ruling

DDT, including one or more of its metabolites in any concentration or in combination with other chemicals at any level, within any tolerances, or in any amounts, is harmful to humans and found to be of public health significance.

No concentrations, levels, tolerances or amounts can be established. Chemical properties and characteristics of DDT enable it to be stored or accumulated in the human body and in each trophic level of various food chains, particularly the aquatic, which provides food for human consumption. Its ingestion and dosage therefore cannot be controlled and consequently its storage is uncontrolled. Minute amounts of the chemical, while not producing observable clinical effects, do have biochemical, pharmacological, and neurophysiological effects of public health significance.

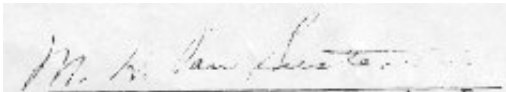
No acute or chronic levels of DDT which are harmful to animal or aquatic life can be established. For the reasons above set forth a chronic level may become an acute level. Feeding tests, laboratory experiments and environmental studies establish that DDT or one or more of its analogs is harmful to raptors and waterfowl by interfering with their reproductive process and in other birds by having a direct neurophysiological effect.

Feeding tests or experiments and environmental studies establish that DDT at chronic low levels is harmful to fish by reducing their resistance to stress.

DDT and its analogs are therefore environmental pollutants within the definitions of Sections 144.01 (11) and 144.30 (9), Wisconsin Statutes by contaminating and rendering unclean and impure the air, land and waters of the state and making the same injurious to public health and deleterious to fish, bird and animal life.

Dated at Madison Wisconsin, this 21st day of May, 1970.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES



M. H. Van Susteren, Hearing Examiner