

SUPREME COURT OF THE STATE OF NEW YORK  
COUNTY OF SUFFOLK  
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CAROL A. YANNACONE, individually and on the  
behalf of all the people of the County of Suffolk,

Plaintiffs,

-against-

H. LEE DENNISON, Suffolk County Executive;  
THE SUFFOLK COUNTY MOSQUITO CONTROL  
COMMISSION, and the COUNTY OF SUFFOLK,

Defendants  
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THE FACT HAS BEEN ESTABLISHED  
THAT THE CONTINUED USE OF DDT  
BY DEFENDANTS WILL CAUSE SERIOUS,  
PERMANENT AND IRREPARABLE HARM  
TO THE NATURAL RESOURCES OF SUFFOLK COUNTY.

The uncontradicted expert testimony of Anthony S. Taormina, Regional Director of Fish & Game for the New York State Conservation Department, Charles F. Wurster, Ph.D., of the Department of Biological Sciences of the State University of New York at Stony Brook, George M. Woodwell, Ph.D., Ecologist at Brookhaven National Laboratory, and Robert H. Whittaker, Ph.D., Professor of Ecology at the University of California at Irvine, is more than sufficient to establish with such certainty as currently accepted by the life sciences that any further use of DDT in the County of Suffolk, by the Defendant will cause serious, permanent and irreparable harm.

Mr. Taormina gave his opinion unequivocally,

Q. Now, just answer this question yes or no. Can you form an opinion with a reasonable degree of scientific certainty--and by that I mean the scientific certainty that is peculiar or unique to your discipline of wildlife management--can you form an opinion with such certainty as to the potential effects of DDT on natural resources of the County of Suffolk?

A. Yes.

Q. Have you formed such an opinion?

A. Yes, I have.

Q. As briefly as possible, tell us what that opinion is?

MR. CORWIN: Objection.

THE COURT: Overruled.

\* \* \*

A. All right. That opinion is simply that we feel very strongly that (393) DDT and some other hydrocarbons, but DDT is what we are talking about here today, are responsible for very serious harmful effects to certain fish and wildlife populations that are long-term, long-lasting, and that these effects are so serious that we are most anxious that DDT be eliminated as part of our control program for whatever purpose that it may be required.

Q. You heard the testimony of Mr. Williamson yesterday, didn't you? (404)

A. Yes.

Q. And you heard his description of 20 years of use of DDT, did you not?

A. Yes.

Q. Do you have an opinion with a reasonable degree of scientific certainty as to whether or not the DDT present in the environment as a result of that use over 20 years is significant with respect to wildlife menace?

A. I would say it is.

Q. Now, do you have an opinion with a reasonable degree of scientific certainty as to whether or not the continuance of the use of DDT by the defendant commission would have any potential harmful effect on wildlife in this county?

A. I believe it would.

**THE WITNESS:** But we do believe that the marine edge is something that we must preserve, because in the future his will become the most important part of Suffolk County.

**THE COURT:** Well, does DDT affect the marine edge?

**THE WITNESS:** We think it does. (424)

**THE COURT:** Do you think or know?

**THE WITNESS:** Well, we know it does.

**THE COURT:** All right.

**Q.** Mr. Taormina, can you state with a reasonable degree of scientific certainty whether or not DDT affects the estuarine environment of this county?

**A.** Yes. As a matter of fact, we are monitoring, and we have at this moment 15 monitoring stations in ten different waters for this specific purpose of measuring the quantity of ten or twelve chlorinated hydrocarbons, which include DDT, DDD, and DDE. This is on a continuing basis just so we can have more documentation of our own to indicate what has happened in these environments. These are very expensive things to do, very difficult things to do. We are not equipped in our own labs to do this, and we must send our materials to Gulf Breeze, Florida, for our own analysis.

**Q.** Do you feel that in the regular course of your activities in the Conservation Department that you have had occasion to determine whether or not DDT is present in the estuary environment of the county? (425)

**A.** Well, I just mentioned the one thing we are doing.

**Q.** How long has this program been going on?

**A.** Well, this specific program about a year.

**Q.** Have you had any results from it yet?

**A.** Oh, yes.

**Q.** Have you found DDT present in the environment?

**A.** Oh, yes.

**Q.** Now, do you feel that this DDT that is present in the environment is potentially inimical to the natural resources of the county?

**A.** I think we agreed on that.

(Transcript, pages 392, 404, 424;  
Appendix, pages A-97, A-100, A-103)

Dr. Wurster gave his opinion,

**Q.** Have you studied the biological effects of DDT? (560)

**A.** Yes.

**Q.** Have you studied it in your own laboratory?

**A.** Yes.

**Q.** Will you tell us in your own words generally the biological effects of DDT? \* \* \*

**A.** DDT is a general nerve poison. It will kill essentially any organism in the animal kingdom. If there are exceptions to that, I haven't come across them.

**Q.** And this is its mechanism, and it somehow works on the nervous system? (561)

**A.** Its mechanism is not thoroughly understood, although there are some hypotheses that have a good deal of support and which explain at least a good bit of what we see.

Q. Would you say at this time with a reasonable degree of scientific certainty that the residues of chlorinated hydrocarbon pesticides have become an environmental parameter for Suffolk County and other areas? \* \* \*

Can you tell us with a reasonable degree of scientific certainty whether chlorinated hydrocarbon residues are a part of the general overall environment in which fish and wildlife are forced to survive? \* \* \*

In Suffolk County and elsewhere?

A. Yes, it is.

Q. Would you say this was world wide?

A. There is every indication that it is world wide. (666)

Q. Is there any indication that it has become an environmental factor in Suffolk County?

A. Yes, there is.

Q. . . . Is there any way to form a reasonable scientific opinion as to how much longer DDT will remain an environmental factor in Suffolk County, assuming that from this day forward not another drop is used in this county?

A. In this county or elsewhere as well?

Q. Start with this county.

A. Well, if Suffolk County stopped entirely and everybody continued to use it, I think that for Suffolk County itself many of the problems would be solved. The osprey feeds all over the place, so he would continue to get DDT. I don't think it would solve all the problems. It would certainly materially help, at least, insofar as Suffolk County is concerned. It would eliminate problems with shellfish and crustaceans, for example. It would eliminate problems with some birds, but not all. (667)

Q. Do you have an opinion as to whether the banning of the use by one agency, such as the defendant Suffolk County Mosquito Control Commission, will contribute to bettering the situation in the county?

A. I have no doubt that it will contribute to improvement. It certainly is not going to solve all of the problems.

Q. But it will improve?

A. It will improve it, in my opinion.

Q. Do you have an opinion if there were a failure to ban and the Suffolk County Mosquito Control Commission continued to use DDT in whatever small amounts they may use it, do you have an opinion as to whether this will contribute to the problems that you have described? (669)

A. I think it certainly will contribute towards it. The more they use, the worse matters will be.

Q. But even a little bit is bad?

A. Yes, and if they use a little bit, then it will be a little bit bad.

Q. Now, at this stage of our environment, DDT having been injected into it, I think by the testimony, for at least 20 years, . . . Can you give us an opinion on the argument that you have heard that a little bit is not going to do that much more damage? \* \* \*

Can you give us an opinion as to the effect of adding just a little more of DDT in Suffolk County as opposed to a lot more?

A. Well, I think that as a defense position, this is exceedingly weak, (670) because what it effectively says is this: "What we are doing is wrong, but we are not really doing very much of this. Therefore, it is okay." I don't subscribe to that philosophy at all. I think that a little bad is bad, and its that simple.

\* \* \*

Q. Are you familiar with the natural resources of the County of Suffolk?

A. Somewhat.

Q. Have you had occasion to observe yourself the birds, the fishes----

THE COURT: Can't we stipulate that we have birds, bees, fishes, and everything else on Long Island? Now, come on, counsel. You make that stipulation, don't you, Mr. Corwin?

MR. CORWIN: That we have them, yes. If he is going to start (562) talking about how many have been killed by DDT, I want to know the whole number.

THE COURT: So far I asked you just one thing. Will you stipulate that we have birds, bees, and fishes on Long Island?

MR. CORWIN: I will stipulate that we have natural life on Long Island, all kinds of organisms.

THE COURT: All right. Let us go on from there.

Q. Can you form an opinion with a reasonable degree of scientific certainty as to the biological effect of DDT on the natural resources of an area such as the County of Suffolk?

A. Yes.

Q. Have you formed such an opinion?

A. Yes.

Q. Can you tell us what that opinion is, briefly?

A. It is my opinion that DDT is doing permanent damage to the biological world of the natural resources, specifically the wildlife resources of (563) Suffolk County--not only Suffolk County, but we are talking about Suffolk County at this point.

Q. Can you form an opinion with a reasonable degree of scientific certainty as to whether the continued use of DDT by the Suffolk County Mosquito Control Commission in any way will cause serious or permanent damage to the natural resources of the County of Suffolk?

MR. CORWIN: Objection, Your Honor. There is no evidence here that he knows what that use is, nor is there any in the record.

\* \* \*

THE COURT: I will allow it. Go ahead.

\* \* \*

A. Yes.

Q. What is that opinion?

A. It is my opinion that it will cause such damage. (564)

THE COURT: Does it now?

THE WITNESS: I believe that it does now.

MR. YANNACONE: I have no further questions.

continuing on cross-examination,

THE COURT: Come on, Mr. Corwin. Let us get going. We are going to be here forever on this case if we don't get down to the issues.

MR. CORWIN: I just want to make sure of the way he makes a judgment.

THE COURT: Is this a basis for an opinion--how he makes a judgment? He is a professor, and he is a doctor. He has done all these things. He has a rating. What more do you want? The least he can do is to give an opinion, be it right or wrong. He can give an opinion. (571)

THE COURT: Counsel, his own knowledge comes from reading of things such as this, from going to school, reading books, going to lectures, (573) going to laboratories, and going out in the field. This is what gives him his own knowledge. I don't know where else he can get his knowledge from, counsel.

**MR. CORWIN:** When Mr. Yannacone was asking him questions about the effects that would flow if you were to issue an order banning its use, he indicated--at least this is the impression I got from his testimony: "Yes, that is what we want. It would be helpful."

**THE COURT:** He did say it would be helpful; that he did say. (691)

**Q.** Now, is that right?

**A.** I will say it again anyway. I think it would be helpful.

**Q.** So that then it is a fair statement to say, is it not, that the damage that has been done up to the present regarding this thing of long-range is not necessarily irreparable?

**A.** No, I don't agree with that at all.

(Transcript, pages 560, 561, 562, 563, 564,  
570, 573, 665, 666, 667, 668, 669, 670, 671,  
685, 686, 688, 689, 691;  
Appendix, pages A-136, A-137, A-139, A-164,  
A-165, A-169, A-170.)

Dr. Woodwell further supported Plaintiff's position,

**MR. YANNACONE:** I am going to connect it up by showing that there are parallel patterns of community evolution, and that what may be found in a community in Maine or in Texas or in California or Upstate New York, if there is a similar habitat and a similar food web in Suffolk County, the same relationship should hold. Now if counsel wants to concede that, I will do without it or (786) if the Courts wants to take judicial notice of this as a scientific fact.

**THE COURT:** I think he will concede that where habitat is the same. Certainly, there can be no other answer to that.

**MR. YANNACONE:** Your Honor, if the court will take judicial notice and if counsel will accept as a fundamental ecological law that where habitat and similar food webs are found, that similar relations exist; then we can eliminate a lot of testimony.

**THE COURT:** There can be no question about that in my mind.  
\* \* \* If the conditions are the same, you are going to get the same results.

**MR. YANNACONE:** All right, Your Honor.

**THE COURT:** That is conceded. Now, go ahead.

**Q.** Can you state with a reasonable degree of scientific certainty what the effects of elimination or serious reduction of the top carnivores' food web will do to the general ecosystem?

**A.** Well, it is certainly true that it introduces a number of instabilities. It simplifies the system. It moves successional stages in the pattern of things, which I have discussed, back farther down toward the earlier stages.

**Q.** Dr. Woodwell, does it permit the more quickly reproduced elements of the systems, such as insects and starlings and other general nuisance elements to increase at a greater rate? \* \* \* Does the elimination of the (805) top carnivores in those systems permit lesser elements of greater reproductive capacity to increase in a greater rate?

**A.** This is a generalization which is true.

Q. Do you have an opinion with a reasonable degree of scientific certainty as to whether or not any further use of DDT by anyone in the County of Suffolk should be permitted? (671)

A. My feeling is that there are such a vast number of substitutes that are effective and in many cases, most cases more effective than DDT, that DDT should go. It's outdated. We have outlived its usefulness. It is doing more harm than good, and I haven't yet discovered a single use for it where there wouldn't be a better substitute.

Q. You made a judgment with respect to what has been referred to (685) as the benefit-risk equation, and you said that you thought the use of DDT persists and remains present in our environment, not just Suffolk County, necessarily, but all over; and that was a state of unbalance on the risk side. Is that a fair statement of yours?

A. I believe that it has become such.

Q. Are you familiar with the report of the Report of the Committee on Government Operations, Interagency Environmental Hazards Coordination, Pesticides and Public Policy, United States Senate, made by the Subcommittee on Reorganization and International Organizations, commonly referred to as the Ribicoff Report?

A. I have seen excerpts from it. I haven't read it in total

Q. Are you familiar that there was an inquiry made by the Federal Government by the committees of Congress into this question of the benefit-risk equation? (686)

A. No, although I would assume it had been.

Q. Well, that is what it is all about. You don't agree then with the conclusion the committee came to when they said: ". . . there is no reasonable evidence to suggest that the benefit-risk equation is unbalanced in any significant way."

A. Well, I completely and totally disagree with the committee's findings. I think they have got horse-blinds on if they can't see any more clearly than that.

Q. Now, you said in answer to a question that Mr. Yannacone asked you that it would be useful and beneficial even if the use of DDT by the Suffolk County Mosquito Control Commission were to be curtailed or abandoned, is that correct?

A. Yes.

Q. And isn't one of the studies upon which you based your conclusion one included in the appendix entitled "The Status of the Peregrine in Great Britain", by D. A. Ratcliffe? (688)

A. That's right.

Q. Do you subscribe to what he said in paragraph 5 of the summary of that report, which states as follows: "Circumstantial evidence pointed strongly to agricultural toxic chemicals as the cause of decline, through contaminating prey taken by peregrines, which then accumulate the poison indirectly. This explanation is supported by the discovery of four different kinds of chlorinated hydrocarbon residues in an infertile peregrine's eggs, is that what you took into consideration?"

A. Your knowledge of the situation on the peregrine in Great Britain is out of date. Since that came out, there has been a much later edition published, and it is around here somewhere. I think Mr. Yannacone has it completely up to date, and it gives a long, long list of analyses which further substantiate the presence of various chlorinated hydrocarbons in the peregrine falcon's eggs. The prime factor in Great Britain seems to be dieldrin rather than DDT. There is DDD there also and there is DDE. There is heptachlor epoxide. These are all chlorinated hydrocarbons, and they are all among the worst actors. (689)

Q. But you are only interested in banning the use of DDT?

A. That is what we are here for in the courtroom.

Q. If you remove or seriously reduce the number of the top carnivores of those food webs-----

THE COURT: Such as the falcon and the like?

Q. Such as the peregrine falcon, the osprey, or the kingfisher, is it a general ecological expectation that the lower elements that reproduce more quickly in those chains, such as insects and certain nuisance birds, like starlings, will tend to increase?

A. Certainly, it is true. These communities that we have been talking about have built into them in an evolutionary area sense controls of population size. The carnivores are one of these controls. There are many others. Ecologists, indeed, are just learning the kind of controls that exist. (806)

Q. Can you form an opinion with a reasonable degree of scientific certainty whether or not it makes any difference to your opinion that the Suffolk County Mosquito Control Commission, the defendant herein, may use limited amounts of DDT that may be considerably less than the total amounts that is injected into the Suffolk County environment during any given year? Can you form an opinion as to that? (808)

A. Well, any application of DDT is limited; it is finite. I don't believe that we can now introduce more DDT into these natural cycles that we have been talking about with any degree of---I think we cannot do it at all. I believe that we have reached the point now where we cannot introduce more.

Q. Is it important to stop even a limited use of DDT being put into the ecosystem?

A. In my opinion, that is correct.

Q. Can you tell us or give us any information about the general persistence of DDT in the environment? Say the soil.

A. . . . Yes, indeed. (809)

Q. Just briefly tell us, without going into detail, do you have an opinion as to how long DDT can remain in its regular toxic state in soil?

A. Well, DDT and its decay products, which we will call DDT residues---DDE in addition to DDT--persists in soil for, well, it is safe to say a minimum of ten years. It probably persists a lot longer than that in certain organic soils.

Q. Does DDT in its present use persist with any other elements for general environment?

A. Well, certainly. These residues are propagated through these biological cycles we have been talking about through food webs. There are residues which are moved through water, apparently relatively efficiently, even though the concentrations in water at any time are seldom, in fact, never higher than one part per billion unless there has been something else applied to make an emulsion.

REDIRECT EXAMINATION by MR. YANNACONE:

Q. Dr. Woodwell, do you have any specific evidence of whether or not there is any DDT present in the environment of the County of Suffolk at this time?

A. I do.

Q. Do you have any evidence whether this DDT that is present is in areas that have been sprayed or otherwise treated with DDT by the Mosquito Commission, such as the salt marshes?

A. I do.



Q. Dr. Woodwell, is that amount of DDT--and I'm talking now about the amounts you found in that marsh--is that sufficient to account for the mortality or the loss of several elements of the food web described by Mr. Puleston, Mr. Cooley, and others in this area?

A. It certainly is.

Q. Is it of sufficient magnitude from a scientific point of view to virtually eliminate other potential causes other than complete destruction of habitat?

A. It is, in my opinion, the cause of a substantial loss in wildlife values in Suffolk County.

THE COURT: And you attribute this to DDT?

THE WITNESS: DDT residues in the marshes along the South Shore of Long Island.

THE COURT: All right.

RE-CROSS-EXAMINATION by MR. CORWIN:

Q. So that the basis that you took of the Carmans River is not typical of what you might find in many, many other places in Suffolk County, isn't that so?

A. That is not so. I think this is a very good representative marsh, and it was selected specifically because it was representative and because in this case we would isolate the DDT spraying from other possible sources of DDT.

Q. When you say it is representative, do you mean it is representative of a contribution that the Suffolk County Mosquito Control Commission made to the total DDT into the waters that you might find somewhere else?

A. That's right.

Q. Now, do you have an opinion with a reasonable degree of scientific certainty on the validity of those analyses?

A. I certainly do, or I would not present them here.

Q. Will you tell us what that opinion is?

A. I think they are perfectly valid analyses and correct in the same degree, to the greatest degree that we can make them correct. I think they are right. There is no question in my mind.

THE COURT: All right, Doctor. Thank you.  
Next witness.

(Transcript, pages 785, 786, 803, 804, 805,  
806, 807, 829, 851, 859;  
Appendix, pages A-196, A-201, A-202, A-207,  
A-212, A-213, A-215.

Dr. Whittaker, the plaintiff's final expert witness on direct examination succinctly summed up the Plaintiff's position,

Q. All right. Dr. Whittaker, are you familiar of your own knowledge with the natural resources of Suffolk County. (862)

A. I did spend two years out here.

Q. And you have had occasion to look at the food web set up and introduced into evidence as Plaintiff's Exhibits 3 through 9?

A. Yes, I have looked at those food webs.

Q. And do you feel that they fairly and accurately are representative of the food web of the ecosystem described in the County of Suffolk?

A. They are in fact fair representations of food relationships.

Q. And will it tend to remain in the food web or will it tend to settle out of the food web?

A. It both circulates through the food web and spreads to other communities.

Q. And is it possible then that a small amount used by the Suffolk County Mosquito Commission will affect populations in communities removed at a distance physically from the community to which this is applied?

A. It certainly would add to the amount of DDT in the Great South Bay.

Q. Do you have an opinion as to whether or not the environment from the ecological point of view can tolerate much more DDT? (871)

A. It is my opinion from the evidence I have seen that you are already producing extinctions of local wildlife, and that more DDT implies more such damage.

(Transcript, pages 862, 863, 865, 869, 870, 871;  
Appendix, pages A-216, A-217, A-218, A-219

Defendant's witness, Maurie Semel, Ph.D., an Associate Professor of Entomology employed by the College of Agriculture at Cornell University, testified on direct examination for the defendants,

THE WITNESS: We, meaning the College of Agriculture, we have no doubt whatsoever that DDT is harmful to crustacea, to fish, and things of that nature. We do not feel, however, that we should eliminate this material from use because of this particular reason.

Now, why we say this, Your Honor, is because DDT is perhaps one of the most extensively used materials which has ever been available to the farm group. I can speak with more certainty about farm groups than any other groups. However, this material has been most extensively tested.

We know what a lot of the effects are so far as human consumption is concerned. We know that in no instance has DDT been found to be detrimental to the human being. That is in the 20 years it has been tested, there is not one instance of a death being caused by DDT in humans if used properly.

THE COURT: All right. Now, let me interrupt you. Let us assume you have 50 farmers, and all their farms are in this area; that they use some tons of DDT. Now, would that increase the danger to the safety point or the tolerance by this use? Assume that the county desists. What effect will this have when I have 100 farmers piling it on?

THE WITNESS: Undoubtedly, as it has been stated before, each increment removed from use will help in the situation. (892)

CROSS-EXAMINATION by MR. YANNACONE:

Q. Dr. Semel, you have answered one question, \* \* \* in response to one of the judge's questions, that each increment of DDT removed from use will help. Is that your opinion?

A. Yes, certainly.

MR. YANNACONE: I have no further questions.

THE COURT: All right. You may step down.

\* \* \*

(Transcript, pages 885, 891, 892, 909;  
Appendix, pages A-222, A-224, A-229)

Q. Now, Doctor, can you form an opinion with a reasonable degree of scientific certainty as to the effect of DDT upon the ecosystem described at present in the County of Suffolk?

A. I have looked at the evidence that has been presented through Dr. Wurster and Dr. Woodwell, and I find the evidence of damage to the wildlife of Long Island very convincing.

Q. Can you relate that damage to DDT in any way? (863)

A. I am not a specialist in DDT, but I find it difficult to believe that anything else could be responsible for the observed damage.

Q. Can you form an opinion with a reasonable degree of scientific certainty as to the effect that the continued use of DDT will have upon the natural resources of the County of Suffolk? Can you form that opinion?

A. It seems to me that the picture is rather clear. You are losing wildlife and the continued use of DDT will mean more loss of wildlife. (864)

THE COURT: Attributed to DDT?

THE WITNESS: Yes. It is caused by DDT, Your Honor.

Q. . . . Can you form an opinion with a reasonable degree of scientific certainty whether or not the use of small quantities of DDT will cause any effect upon the wildlife of Suffolk County?

A. I would answer that one way, and that is by saying it seems to me that the evidence of damage presented implies that any additional DDT will produce some additional damage.

THE COURT: In the area where the DDT is applied or can it be in areas removed and far removed from the place of application?

THE WITNESS: One of the unfortunate things about DDT is that it is both in the salt marshes and the water bodies to which it spreads. There is also atmospheric transfer. It becomes very widespread and widely detrimental stuff.

THE COURT: And it will have this deleterious effect in distances far removed from the place of application? (865)

THE WITNESS: Indeed. It spreads through the oceans even.

Q. Can you form an opinion, based on your own scientific knowledge and what you heard and read with respect to the evidence as adduced here, as to whether or not topical applications of DDT by the defendant Suffolk County Mosquito Control Commission in limited areas of Suffolk County will remain confined to the areas to which it is applied?

A. It is predictable that they will not.

Q. And can you describe in general the mechanism whereby the DDT is spread outside of the topical area applied?

A. There are several ways. When DDT is sprayed, it is carried by the air. When DDT is in the soil or in the marsh, it is carried in water, although its solubility is low. It is thus carried. Also, organisms carrying DDT migrate and spread.

Q. Can you then form an opinion with a reasonable degree of scientific certainty on the general effect of topical applications by the Suffolk County Mosquito Commission of DDT for mosquito control?

A. It does seem to me that with the levels of DDT existing here (870) already, you will produce damage both certainly in the marshes and possibly elsewhere.

Q. . . . Can you form an opinion with a reasonable degree of scientific certainty whether the DDT applied allegedly in limited amounts by the Suffolk County Mosquito Control Commission will circulate to the food webs shown in exhibits 3 through 9?

A. It will. This is ecological knowledge.

We recognize that the scientific repugnance to the principle of 'post hoc, ergo propter hoc,' cannot fully extend to the law, and that, as in cases of circumstantial evidence, we regard as proof that which would be rejected by the scientist. . . . An illustration of the correct legal approach to the problem is found in Stubbs -v- City of Rochester, (226 NY 516) where the cause of disease was reached by process of elimination of other causes.

Matter of Miller -v- National Cabinet Company (1960) 8 NY2d 277, at pages 282, 283, 284, 287,

Defendant's raise the issue that the Plaintiff's experts have not testified with sufficient certitude the answer to the question,

"6) Can you state unequivocally that what the Commission used has caused serious, permanent, and irreparable damage to the natural wildlife of Suffolk County, or will?"

(Defendant's Memorandum, page 15)

The foregoing excerpts from the transcript indicate sufficient expert opinion to sustain the Plaintiff's allegations. Defendant's contentions were first denied by the New York State Court of Appeals in 1919, where,

". . . Counsel for respondent (City of Rochester) argues that even assuming that the city may be held liable to plaintiff for damages caused by its negligence in furnishing contaminated water for drinking purposes, . . . (b) that it was incumbent upon the plaintiff to establish that his illness was not due to any other cause to which typhoid fever may be attributed for which defendant is not liable. . .

Counsel for respondent asserts . . . in support of his argument . . . a rule of law, that when there are several possible causes of injury for one or more of which a defendant is not responsible, plaintiff cannot recover without proving that the injury was sustained wholly or in part by a cause for which defendant was responsible. He submits that it was essential for plaintiff to eliminate all other of the seven causes from which the disease might have been contracted. If the argument should prevail and the rule of law stated is not subject to any limitation, the present case illustrates the impossibility of a recovery in any case based on like facts.

While scientific accuracy demands of the doctor or scientist proof of cause which approaches absolute certainty, the law requires only a reasonable certainty or probably shown by a preponderance of the evidence, which may, of course, be circumstantial. Plaintiff's proof is not required to soar into the icy stratosphere of certainty; it is enough if, earth-bound and flatfooted, it merely tips the scales of more-probable-than-not.

The Court of Appeals in 1960 formally ratified the opinion of the Appellate Division, Third Department in the Matter of Zaepfel -v- duPont de Nemours & Co., (284 AD 693, aff'd without opinion 309 NY 962), in considering conflicting medical opinion on etiology of leukemia following exposure to benzol, stating,

"This lack of positiveness is no doubt commendable . . . in expressing an opinion about the cause of a disease which is conceded to be unknown to medical science. It is true that the interjection by an expert witness of the words, "could Produce," "it is possible," or similar expressions does not of itself destroy the probative force of the testimony, if, as the Appellate Division said in Zaepfel, his opinion evidence is "fortified by detailed explanation and other facts in the record which add to its reasonableness and probable correctness" (284 AD 693, 696). The probative force of an opinion is not to be defeated by semantics if it is reasonably apparent that the doctor intends to signify a probability supported by some rational basis. . . .

Nobody contends that there is scientific understanding of the cause of this leukemia. The only possible basis for drawing an inference in favor of claimant . . . would be statistics indicating that in many instances leukemia follows benzol exposure without knowing why. . . .

It is not customary, to be sure, to hold doctors to the strictness in testifying that was once required, provided that it can be perceived that they are testifying with some reasonable degree of medical certainty. The form of answers is less important than the context and background. Nevertheless, there must be some evidence of a basis for the opinion. . . .

Q. And assuming there is an adequate number of samples, and assuming that the sampling technique--By the way, Doctor, you don't challenge Dr. Wurster and Dr. Woodwell on their sampling techniques as regular scientific methods, do you?

THE COURT: He said this is one of the finest reports he has seen.

MR. YANNACONE: Well, not this one, Your Honor. He is referring to Dr. Wurster's report.

THE WITNESS: I say the same thing about this one too.

THE COURT: He said this one too, and he is referring to exhibit 10.

THE WITNESS: This is exhibit 10, Your Honor, yes.

THE COURT: That is what he said. That's twice already. All right.

THE WITNESS: I may add, if I could, that we need more information (974) along these lines.

MR. YANNACONE: Now, that information has been gathered for sometime prior to the commencement of this lawsuit; this wasn't just gone out and gotten for the purpose of this lawsuit.

(Transcript, page 973, 974;  
Appendix, page A-246)

The Court judicially noticed the basic ecological principle that similar ecosystems react similarly and the evidence of the Carman's River contamination confirms the opinions based on the evidence adduced in other areas following DDT application. The Carman's River, by the admission of Mr. Williamson, Executive Director of Defendant Suffolk County Mosquito Commission, has only been sprayed by said defendant:

Q. Do you at any time take any samples of water or soil of any of the areas where you have sprayed or do spray DDT?

A. No.

Q. In the entire 20 years since you have been spraying DDT, you never took any samples?

A. No.

Q. So you have no record whatsoever of the total accumulation of DDT?

A. No.

Q. Now to the best of your knowledge, does anyone else spray the salt-marsh areas? (153)

A. Not that I know of.

\* \* \*

Q. To the best of your knowledge, has anyone sprayed the fresh-water marsh areas with DDT?

A. Yes. \* \* \*

I believe it was in 1957. The federal and state governments sprayed all of these areas. (154)

Q. A single application?

A. I believe it was a single application. They may have repeated in one or two areas.

. . . Again the evidence showed that typhoid fever was caused by sources unknown to medical science. If the word of the rule stated is to prevail, plaintiff would be required to eliminate sources which had not yet been determined or ascertained. I do not believe the rule stated to be as inflexible as claimed for. If two or more possible causes exist, for only one of which a defendant may be liable, and a party injured establishes facts from which it can be said with reasonable certainty that the direct cause of the injury was the one for which the defendant was liable, the party has complied with the spirit of the rule."

Stubbs -v- City of Rochester (1919)  
226 NY 516, at pages 521, 525, 526

In 1963, the Court of Appeals again had occasion to consider the nature of scientific opinion testimony as to causal realltion, commenting,

"Our function is not to reject opinion evidence because non-lawyer witnesses fail to use words preferred by lawyers and Judges but to determine whether the whole record exhibits, as it does here, substantial evidence of aggravation (See Matter of Miller -v- National Cabinet Co., 8 NY2d 277, 284, 285; Sentilles -v- Inter-Carribean Shipping Corp., 361 US 107; Burke -v- Nelson Mfg. Co., 219 Minn 381, 386; Gaffney -v- Industrial Acc. Bd., 129 Mont. 394, 398).

Matter of Ernest -v- Boggs Lake Estates, Inc.  
(12 NY 2d 414, at page 416)

There has not been one scintilla of scientific evidence adduced by the Defendants' in opposition to the Plaintiff's claim. In a brilliant study of the Carman's River Marsh ecosystem, Dr. Woodwell and Dr. Wurster demonstrated the presence of large amounts of DDT in the marsh and in the food web dependent thereon. Plaintiff's Exhibit 10, the pre-publication summary of this study was commented upon by Defendant's expert, Thomas F. Bast, PhD., speaking on behalf of the New York State Department of Health,

Q. But just for one season?

A. One season, yes.

Q. And this was an aerial spraying for the gypsy moth?

A. Yes.

Q. Did any other groups use DDT to the best of your knowledge in the fresh or salt-water marshes other than that?

A. Not generally no. Individuals might have.

Q. But no other organized effort that you know of?

A. Not that I know of.

Q. What other areas in the year '65 were sprayed besides the fresh and salt marshes, the catch basins, the sumps and the sewers?

A. Those are the only ones that I can recall at this time. I don't know that we did any others.

\* \* \*

Q. Mr. Williamson, from the time you started using (155) DDT in 1946, through 1965, did you have occasion to spray the sumps that were then in existence, the sewer plants that were then in existence, the catch basins that were then in existence, and the salt and fresh-water marshes? Cover the field. Tell us what you did, and how many catch basins you sprayed. You know what to say.

A. We carried on the programs annually generally with DDT from 1947 or thereabouts.

Q. To the best of your knowledge, during that year was DDT applied by anyone else? \* \* \* (156)

A. No.

(Transcript, pages 153, 154, 155;  
Appendix, pages A-36, A-37)

The damage to wildlife related to applications of DDT to various areas as set forth in the Plaintiff's Technical Appendix has been summarized by Dr. Woodwell and Professor Wurster,



The Honorable Hollis S. Ingraham, M.D., Commissioner of Health of the State of New York, as amicus curiae, in support of the continued use of DDT by the Suffolk County Mosquito Control Commission, asserts:

". . . DDT has not been shown to cause irreparable damage to wildlife."

"Most of the evidence concerning DDT and its secondary effects are circumstantial and for the most-part based upon a relatively few and insignificant number of observations."

". . . why use DDT at all? . . .

1. It is still one of the safest insecticides known. . . .
2. He (Dr. Bast) knows of no deaths, abnormalities, loss of reproductive potential, etc., directly attributable to DDT. . . ."

"No study that Dr. Bast is aware of has ever established the concentration of DDT in fat which would prove harmful to particular organisms. . . ."

". . . He . . . (Dr. Bast) . . . also pointed out that there is evidence that some of these compounds, in particular dieldrin, can result in significant damage to fish and wildlife. This has not been demonstrated for D.D.T."

(Memorandum, pages 6, 7, 8, 19, 21)

It is obvious that the New York State Department of Health continues to ignore the voluminous record of damage to wildlife by DDT, dating back more than 22 years to the first application of this biocide.

". . . The following partial list of selected studies made by various authors summarizes certain results considered relevant to the question of the effects of chlorinated hydrocarbons on wildlife. Only published works are considered; far more effects of these biocides on wildlife, equally deleterious, undoubtedly remain unpublished and often unobserved. It is important to note that this documentation represents but a fraction of the published findings on the subject. . . . While further documentation is readily available, its inclusion would not materially change the substance of this outline."

(Plaintiff's Technical Appendix, Defendant's Exhibit C for Identification, prepared by Charles F. Wurster, Ph.D. and George M. Woodwell, Ph.D.)

Annual spraying with DDT for five consecutive years (1945-1949) was reported to have caused a 26% decrease in the breeding bird population in the area. (65)

1952

Heavy mortality of robins, myrtle warblers, and other bird species was caused by spraying of DDT in attempted Dutch Elm disease control in Princeton, New Jersey, during 1950. (96)

1953

"DDT at 3 lb/acre dosage caused considerable mortality to young nestlings" in Maryland; "the fledgling success in six active first brood wren nests in 1949 was 28% compared to 86% in the unsprayed check." (73)

1955

Laboratory studies with quail (bobwhite) and pheasants showed that chlorinated hydrocarbon insecticides, when fed in sub-lethal amounts, caused decreased reproductive success. (33, 34, 35)

DDT has been found to cause chromosomal aberrations during mitosis in onion root tips. (99)

1956

DDT reduced reproductive success in caged pheasants. (61)

DDT applications for attempted spruce budworm control in New Brunswick, Canada, resulted in severe mortality of young salmon, brook trout, and eels. Application of 1/2 lb/acre of DDT in 1954 resulted in not a single salmon fry being found that year. (80)

The same spray program produced the following additional results, "the insect fauna of the sprayed streams was found to be deficient in the kinds of insects on which salmon were mainly feeding in the unsprayed streams." (81)

Reproductive success among woodcocks was sharply reduced. (9)

A summary of the literature more than ten years ago by Rudd and Genelly cited more than 900 references of documented damage caused by DDT. (102)

1957

A few parts per billion DDT in water kills or immobilizes half of a shrimp population, according to laboratory tests. (2)

One part per million DDT in water exterminates oyster larvae. (47)

DDT at 0.2 lb/acre killed 75% of the marsh fiddler crabs on a tidal marsh in Delaware. (88)

1958

Large numbers of robins died in Urbana, Illinois, after elms were sprayed with DDT. Many analyses confirmed this conclusion. Analyses of leaves, soil, earthworms, and robins showed how DDT traveled through the food chain, terminating in robin mortality. (16)

(The numbers in parentheses refer to the references cited in the Bibliography submitted with Plaintiffs' Technical Appendix, as amended.)

1945

"SUMMARY & CONCLUSIONS:-Observations in the course of field experiments with mosquito larvicides containing DDT have indicated that this chemical is toxic to black bass, catfish and salt water minnows." Two water snakes and a turtle were also found dead. Laboratory studies showed a high toxicity to goldfish. (84)

1946

Early studies on the toxicity of DDT to wildlife by U.S. Fish & Wildlife Service Biologists indicated that dosages recommended for attempted Dutch Elm disease control would be lethal to birds. (14)

Use of DDT for gypsy moth control in Pennsylvania caused substantial population reduction among warblers, vireos, and tanagers during the following weeks. (14)

1948

Spraying with DDT in California for mosquito control was followed by the complete elimination of all aquatic life in the area. (64)

1949

Use of DDT in Texas caused high mortality of birds and reptiles. (43)

In 1946, two to three pounds of DDT per acre was sprayed over woodland and marshes of Bull's Island, South Carolina. "Green tree frogs started falling from the trees within two hours after spraying," and "by the second and third days after spraying a considerable number of these little frogs were found dead or undergoing 'DDT paralysis'." Leopard frogs were also killed, as were a few cameleons, a common water snake, and many mosquito fish (*Gambusia*) and killifish. DDT (2pounds/acre) on the marsh resulted in the virtually complete elimination of fiddler crabs. "This is a serious condition, when one considers what widespread salt-marsh spraying might do to this important food item in the diet of fishes, the clapper rail, shore birds, and the coastal racoon." (85)

1951

Dead and tremoring birds were found in Princeton, N. J., after DDT was sprayed for Dutch Elm disease in 1951. (15)

Tidal marshes at the Brigantine National Wildlife Refuge, New Jersey, were treated with various dosages of DDT in fuel oil. At 1/4 to 1/2 lb/acre there was a 50% reduction of two species of killifish; in another area, 0.4 lb/acre caused 86% mortality. Blue crabs were very sensitive, 0.2 lb/acre killed 60% of them, 0.4 lb/acre killed 90%, and mortality was nearly complete at higher dosages. After three sprayings at 1/2 lb/acre, no living crabs could be found. Fiddler crab losses were nearly as great. Bay shrimp, marsh fleas (amphipods), and salt-marsh sowbugs were very susceptible. Interestingly enough, red mites increased after DDT application. (46)

1959

Spraying of DDT on the campus of Michigan State University virtually eliminated the robin population. Insectivorous birds (warblers, vireos, nuthatches, chickadees, wrens, woodpeckers) were replaced by non-insectivorous "nuisance" birds (starlings, house sparrows, pigeons, grackles). (17, 18)

DDT sprayed on elms for Dutch elm disease has caused "a loss of millions of robins" in this country. "The current widespread and ever-expanding pesticide program poses the greatest threat that animal life in North America has ever faced - worse than deforestation; worse than market hunting and illegal shooting; worse than drainage, drought, or oil pollution, and possibly worse than all of these decimating factors combined." "We shall have been witnesses, within a single decade, to a greater extermination of animal life than in all the previous years of man's history on earth, if not since glaciation profoundly altered the life of the whole northern hemisphere." George Wallace, Professor of Zoology, Michigan State University (17)

1960

Heavy songbird mortality (more than 90% of the population) was caused by DDT used for Dutch elm disease in various Wisconsin Towns. (19, 20, 21)

Application of DDD to Clear Lake in California resulted in biological magnification through the food chain, a concentration factor more than 100,000 times that originally applied to the lake, and the death and/or reproductive failure of large numbers of water birds, especially western grebes. (7)

1961

Large numbers of birds of nearly 100 species were killed in East Lansing, Michigan, after elms were sprayed with DDT. Conclusions were supported by population counts and numerous analyses. (22, 23, 24)

Runoff from agricultural lands previously treated with DDD and toxaphene caused contamination of fish, and a subsequent heavy mortality of fish-eating birds on the Lower Klamath Wildlife Refuge in Oregon during June, 1960. (67)

Estuaries are among the most naturally fertile areas of the world. (68)

The great value of the mosquito fish, Gambusia, in control of mosquito larvae has been outlined by Mulla with extensive documentation. (70, 71)

Rees, for example, obtained complete control of mosquito larvae in ponds where the fish were added at the rate of 1 to 3 per square yard. These fish voraciously feed on the immature stages of mosquitoes, thereby exerting considerable pressure on mosquito populations. Applications of DDT "at high and low rates resulted in appreciable mortality on the fish within a period of 48 hours of exposure." At 1/2 pound per acre, 34% mortality occurred within 48 hours, and 88% mortality followed application of 2 lb/acre. (71)

1962

The seventh spring die-off of robins at East Lansing, Michigan. (25)

"DDT in the diet of the domestic fowl can greatly reduce sperm production." (32)

The organo-phosphate Abate is an outstanding mosquito larvicide that is non-toxic to mosquito fish, frog tadpoles, and other non-target aquatic organisms. (72)

A single application of 1 lb/acre DDT for attempted spruce budworm control in northern Maine caused a considerable reduction among both young and adult brook trout populations. The DDT was applied in June of 1958, but it was not until September of 1960 that the trout had recovered to their former numbers. Several other fish species appeared to be more seriously affected. (82)

DDT has been found to pass through the placental barrier and into the fetus in man. (93)

1963

Of 54 dead bald eagles analyzed by 1963, all but one, an Alaskan bird, contained DDT residues. Eggs from unsuccessful eagle nests were shown to contain substantial quantities (1.1 to 36.9 ppm) of DDT. (10)

Nesting success of bald eagles has been very low in the eastern United States. (36)

Declines in the populations of the sparrow hawk, sharp-shinned hawk, peregrine falcon, and golden eagle in Britain was correlated with the use of chlorinated hydrocarbons in that country. A great deal of evidence including analyses, was accumulated. (12)

Sharp declines in peregrine falcon populations in Britain are believed caused by reproductive failure in turn caused by sub-lethal quantities of chlorinated hydrocarbons. Supported by analyses and population counts geographically correlated with pesticide use in different regions in Britain. (4)

DDT (one part per million in water) decreased phytoplankton productivity by 50% to 90%. (2)

1964

Elms at Michigan State University were sprayed with DDT in the fall of 1962, the next spring there was heavy bird mortality, as there had been in previous years when spraying was done in the spring. (26)

Breeding ospreys at the mouth of the Connecticut River numbered 200 pairs in the early 1940's; 71 pairs in 1963; and at this continued decrease of 31% per year, will be down to 1-2 pairs by 1968. The main factor in this decline is failure of eggs to hatch. Factors other than DDT, such as human disturbance, loss of habitat, reduced food supply and the like do not appear to be involved. DDT has been found in the ospreys themselves, the fish they eat, the eggs they lay, and in those chicks that did hatch. (8)

Golden eagles in Scotland have suffered a sharp population decline, apparently caused by reproductive failure; analyses show chlorinated hydrocarbons in the eggs. Strong evidence indicates these toxins to be responsible for the decline. (11)

The use of DDT for spruce budworm in New Brunswick, Canada caused widespread reductions in salmon populations. (38)

The use of DDT in the Lake George, N.Y. watershed produced complete reproductive failure of lake trout in that lake. (40)

Reproduction in mice was inhibited by ingestion of sublethal amounts of DDT. (41)

Bat populations in the United States have decreased, and DDT may be suspected of causing the decrease. (Bats eat insects, including mosquitos.) Bats appear to be far more sensitive to DDT than any other mammal yet tested. (44)

Many people have concluded that because they see no dead organisms, wildlife mortality has not occurred; but Rosens and Lay (62), experimenting with searches for planted dead Bobwhite, found that in the field, at least half of the dead birds present disappeared within 2-3 days. (63) They concluded that: (1) "failure to find dead quail, even with search, is poor evidence that no dead quail are present"; (2) "finding even a small or moderate number of dead quail or their remains is reason to suspect a rather heavy mortality." (62)

xxxx Analyses of 85 dead birds and 72 eggs collected in Britain showed that 20 out of 21 taxonomic families were contaminated with DDT residues xxxx

Analyses of 85 dead birds and 72 eggs collected in Britain showed that 20 out of 21 taxonomic families were contaminated with residues of DDT, DDE and DDD, giving further substantiation to the extent of worldwide contamination with these toxic substances. (69)

Sixteen species of fish from New York waters contained 0.2 to 7.0 ppm DDT. Visceral fat, gills, eggs, and gonads contained up to 40 ppm. (74)

1965

Robins continued to die heavily at East Lansing in the Spring of 1964, even though the last DDT treatment had been 1-1/2 years earlier. Analyses confirmed that earthworms were still heavily contaminated with DDT (27).

Application of 1.9 lb/acre DDT for attempted Dutch elm disease control in Hanover, New Hampshire, caused the mortality of 70% of the robin population, as well as large numbers of other birds of 34 species, including chickadees, nuthatches, creepers, woodpeckers, warblers, and sparrows. Population surveys were made and more than 100 birds analyzed in support of these conclusions. (28, 29, 30)

Spraying for Dutch elm disease in Springfield, Massachusetts, caused the death of at least 40 robins; it was considered likely that many other birds were killed by DDT. (31)

As a breeding bird in the New York City region, the peregrine falcon has ceased to exist during the past 15 years. (37)

The use of DDT for spruce budworm in New Brunswick, caused decreased breeding success among woodcocks. (9)

DDT residues were shown to be completely distributed through food chains in the Lake Michigan ecosystems. (6) The DDT has apparently caused reproductive failure in herring gulls. (5)

Among the general human population in the United States, the fatty tissue contains about 12 ppm DDT residues. (42)

A tidal salt marsh near Pensacola, Florida was treated with 0.2 lb/acre DDT in March, 1963. During the following weeks there was substantial mortality of fish, shrimp and annelid worms. (45)

Blue crabs survived in seawater containing 1/4 part per billion DDT, but died after a few days in water containing DDT in excess of 1/2 part per billion. "The data suggest that a natural crab population could exist in estuarine waters chronically polluted with low levels of DDT, but that a sudden slight increase in concentration could be disastrous. (48)

"In order of frequency of occurrence, dieldrin, endrin, DDT, and DDT were found in all major river basins" in the United States. (59)

Analyses of eggs for residues of chlorinated hydrocarbons in Britain showed that five species of raptors (hawks) carried more than five times the residue concentration found in eggs of five species of corvids (crows). "This accords with the general observation that the raptors have suffered a decline in numbers and breeding success during recent years, while the corvids have been virtually unaffected." (13)

The situation with regard to the Peregrine Falcon in Great Britain has been brought up to date. (66)

Results show that the decline in the breeding population continued between 1962 and 1963, but some slight improvement was apparent in 1964. Ratcliffe concluded, "I feel there is no longer reasonable doubt that persistent organo-chlorine insecticides are causally involved in the recent decline in the British Peregrine population."

In laboratory discrimination tests on Bob-whites, birds fed small sub-lethal doses of DDT (20 ppm) committed significantly more errors than did control birds. (90)

DDT has been found to pass through the placental barrier and into the fetus in rabbits (52), and in mice (92).

1966

The earlier osprey story (8) is brought up to date. The decline of the osprey in the eastern United States is continuing. Reproductive success has been closely correlated with DDT residues in the fish they eat, and in the eggs they lay. These data can be summarized: (55)

	"normal"	Md.	Conn.
Reproductive success: Young/nest	2.3	1.1	0.5
DDT residues in osprey eggs, (ppm)	-	3.0	5.1
DDT residue ranges in fish prey (ppm)	-	0.05-0.3	1.3-5.5

Goldfish exposed to the minute concentration of 0.44 and 1.8 parts per billion of the chlorinated hydrocarbon toxaphene showed pathological behavior and hyperirritability of the nervous system. "These findings vigorously support the hypothesis that pesticides may have a profound effect on aquatic life at concentration levels far below those producing death or immobility. They also challenge the naivete of the prevalent philosophy which assumes that until harmful sub-lethal effects of a compound can be demonstrated, none exist. On the contrary, our position is quite clear. Until the biological effects of a compound known to have some toxic properties have been established through adequate research, that compound must be assumed to be potentially dangerous. Empirical research and experience are teaching us, sometimes the hard way, the folly of assuming that lack of evidence is the same as negative evidence." (56)

DDT residues have been found in the Antarctic, thousands of miles from the point of nearest DDT usage. Adelie Penguins, Weddell Seals, and Skuas contained these residues, even though the first two animals never leave the Antarctic. (57, 58)

A lake in Oregon was treated with toxaphene, a chlorinated hydrocarbon to combat "trash" fish. Trout could not be restocked for six years. (60)

Birds found dead in the Netherlands were analyzed for various chlorinated hydrocarbons, including DDT. "The results of this study show that birds of prey and fish eating birds in the Netherlands have accumulated large amounts of different chlorinated hydrocarbon insecticides. In some cases... death of the animal or its bad condition was probably due to the insecticides; in other cases the tissue levels were high enough to consider these animals to be in danger from poisoning. It seems likely that environmental contamination by these insecticides in coastal habitats has contributed... to the decline in population density of Spoonbills and Terns." (75)

Reproductive success among a population of Herring Gulls near Lake Michigan was about half that reported in other studies. This population was heavily contaminated with DDT residues - eggs, chicks and adults. Heavy mortality of embryos throughout incubation was primarily responsible. (76)

DDT residues were found throughout a food web at Green Bay, Wisconsin. The biological concentration effects were similar to that reported by Woodwell, Wurster and Isaacson in a Long Island estuary. (77, 78, 79)

The first generation of survivors among sheepshead minnows following DDT treatment were more sensitive to further doses of DDT than were the controls. (83)



Concerning estuarine contamination, Butler concluded, "DDT residues may be fatal to predators at different trophic levels depending on the amount ingested at one time. It is probable that higher death rates and significant losses in productivity exist undetected in estuarine fauna contaminated with DDT." (86)

"Laboratory studies of their acute and chronic toxicity indicate that pesticides may be the cause of ill-defined, but significant mortality, loss of production, and, perhaps, changes in the direction of natural selection in estuarine fauna." Oyster shell growth was reduced by 60% by exposure to 10 parts per billion of DDT in the water. (87)

Since the late 1800's, Sebago Lake, Maine, has been an important sport fishery for salmon, but during the late 1950's the fishing became poor. Strong "circumstantial evidence incriminated repeated applications of DDT to control human insect pests around the lake, as the major cause of the poor fishing." (89)

The subject of biological magnification of pesticides is summarized by Eldridge G. Hunt, Wildlife Research Biologist, California Department of Fish and Game. (91)

DDT was the most toxic of all chlorinated hydrocarbons tested on two species of Daphnia (small crustaceans). For one species, 50% were immobilized by 2.5 parts DDT per billion, while only 0.36 part per billion had the same effect on the other species. (94)

Black duck populations are now about half what they were in the early 1950's, and pesticides, especially DDT, are suspected as one causative factor. (95)

DDT has been found to be widely distributed in many species of birds and fish in Ireland, again demonstrating worldwide contamination with this toxin. (98)

DDT has been found to cause chromosomal aberrations during mitosis in onion root tips (99).

While this phenomena has not been studied in animals, the mitotic process is general to all organisms, so that one might question with some validity, what effects DDT might have on the genetic material in animals. For this reason Wu and Grant of the Department of Genetics of McGill University, Montreal, have made the following statement. "From studies in progress in this laboratory, and elsewhere, it is becoming clear that the hereditary constitution of organisms may be changed as a result of pesticide treatment. Such changes as they occur in nature following the use of pesticides may have far reaching implications in wildlife management, maintenance of pure seed lines, resistance of organisms to pesticides and evolutionary changes of biota, to mention only a few aspects." (100)

DDT (1.68 lb/acre) applied to rice fields in California killed large numbers of carp, green sunfish, bullfrogs, pollywogs, and crayfish within 24-48 hours. (101)

THE MEMORANDUM ON BEHALF OF  
THE COMMISSIONER OF HEALTH OF  
THE STATE OF NEW YORK AS AMICUS  
CURIAE, IN SUPPORT OF DEFENDANTS  
SHOULD BE STRICKEN FROM THE  
RECORD.

The misstatements of fact, and misrepresentations of the record, with which the Health Commissioner's Memorandum abounds are sufficient for the Court to dismiss the entire Memorandum and order it stricken from the record.

". . . As Dr. Bast pointed out, Mr. Walter Dykstra, U. S. Fish and Wildlife Service, told him that his Department now feels that the decline of the osprey is a result of human activity and encroachment upon its breeding grounds. . . ."

(Memorandum, Health Commissioner, page 6)

In response to a telegram from the National Audubon Society on February 15, 1967, requesting a statement from the Department of the Interior as to whether the above position imputed to Mr. Dykstra represented the Department of Interior position, John S. Gottschalk, Director of the Division of Wildlife Research, United States Department of the Interior stated:

"Re your telegram, February 16, the Bureau believes that the well documented decline in numbers of ospreys in the eastern United States can be attributed in large part to disturbance from a variety of human activities, including pesticides and other environmental pollutants. The influence of DDT which could induce subtle side effects on the behavior responses and life cycles of the birds cannot be dismissed. The cause or causes for the decline in ospreys have not been definitely established."  
(Telegram dated February 20, 1967)

It is also amusing to note that the Commissioner of Health attributes the hearsay testimony of Walter Dykstra to its witness, Dr. Bast. A search of the record fails to reveal a single statement about Walter Dykstra in the testimony of Dr. Bast. In fact the plaintiff's witnesses, when asked if they knew Mr. Dykstra, answered negatively, and only Dr. Dewey, representing the Agricultural Pesticide "Establishment" quoted Mr. Dkykstra t the extent of

Dr. Dewey, representing the Agricultural Pesticide "Establishment," did admit knowing who Mr. Dykstra was at page 1023 of the transcript (Appendix A-259).

Dr. Dewey, representing the "Agricultural Pesticide Establishment" did admit knowing who Mr. Dykstra was at Transcript page 1023, (Appendix A-259).

It appears from the positions and statements attributed to Dr. Bast by the Commissioner of Health in his Memorandum (all conveniently without any reference to pages of the transcript) really represent the statements that the Commissioner wished Dr. Bast, as his employee had made. They certainly do not represent a remotely fair rendering of the statements he actually did make under oath at the trial.

The Commissioner of Health continues to erect the straw man of danger to human health not having been shown by the plaintiff. The Plaintiff never alleged danger to human health in this action, nevertheless the Commissioner of Health rests smugly on the fact that there has been no demonstrated danger to human health from the continued use of DDT.

The Commissioner ignored the testimony of Dr. Bast on cross-examination, beginning at Transcript page 976 (Appendix, A-246),

Q. Now, we have talked with people down there also, and I think the statement was that to the best of anybody's knowledge, there has been no fetal abnormalities in humans from DDT. Is that right?

A. This is what I understood, yes.

Q. All right, fine. Is there any statement made that DDT does not pass through the placenta to the embryo?

A. I think there is a study underway, but I am not sure. In fact, I do not know what the results of it is or any data that has been collected as to this. (976)

Q. You don't know whether there have been studies to show that the DDT passes through the placenta into the embryo?

A. They do?

Q. Yes.

A. Well, now I do.

Q. Well, after this is over, I will give you a reference.

A. Well, this is very interesting, but do they have any effect on the fetus?

Q. Now, in the opening statement of this trial a quote was made, and it was done off the record. I didn't have the document in front of me, so I am now going to requote it for you. It is from the affidavit of Dr. Robert Smolker, who was a professor at State University, and I think you know him. He says:

".... an informed guess would be that DDT interferes with normal development resulting in death of the bird embryo at an early stage and death followed by resorption or abortion of the mammalian fetus. The probabilities would favor an effect earlier in development than occurs in the parallel case, thalidomide."

A. I can't place that.

Q. You know Dr. Smolker, don't you?

A. I do.

Q. Do you know that he is an embryologist?

A. Yes.

MR. YANNACONE: Your Honor, if necessary, we can produce Dr. Smolker on rebuttal and counsel can ask him questions about this, for one.

MR. CORWIN: I am not interested in having any guesses.

MR. YANNACONE: Well, you mentioned the word "fetus".

MR. CORWIN: I didn't mention fetus.

(978)

DEFENDANT MOSQUITO COMMISSION  
IS NOT IMMUNE FROM LIABILITY FOR  
MAINTAINING A NUISANCE.

Defendants contend that the Mosquito Commission is a body corporate and politic,

". . . As such its life comes from the legislature and in the twilight of legal semantics it becomes an independent public corporation exercising police power conferred upon it by the State."

(Agriculture & Markets Memorandum,  
page 7; Commissioner of Health,  
Memorandum, page 13)

Nevertheless, it is well settled law that a municipality has no immunity from legal responsibility for creating or maintaining nuisances;

". . . A municipal corporation has no greater right than an individual . . . nor has it any immunity from legal responsibility for creating or maintaining nuisances. (cases cited)

Noonan -v- City of Albany (1880)  
79 NY 470, at page 476

Nor, as has been said, neither in reason nor in authority, a municipal corporation or a quasi-public instrumentality entitled to preferential treatment where a case of nuisance has been established. Referring the short statutes of limitation with respect to notice of claim and commencement of actions against public bodies, the Court of Appeals laid down the rule in 1903,

". . . The short statute of limitations could not have been intended to bar actions for equitable relief against acts constituting invasion of property rights and of a continuing, and damaging nature. . . .

Q. Is it a fair statement that DDT causes that effect; that it would cause the embryo to be resorbed or aborted at a time prior to the abnormal development because of the traumatic effect of a chemical such as thalidomide. Do you have any objection to that statement?

A. Mr. Yannacone, if I knew something about embryology, I could venture a guess on it. But I would rather not even venture a guess on this, and I don't know anything about embryology.

Q. Therefore, on direct examination those questions that you answered about whether it causes abnormal fetuses in everything, this isn't your field?

MR. CORWIN: There has been no such testimony. Is this cross-examination?

MR. YANNAZONE: Do you want to start reading back the statement?

THE COURT: Gentlemen, the doctor says he knows nothing about embryology. He is not an embryologist. So there is no point in questioning him on this.

Let us never forget, before succumbing to the sophistry of an entrenched bureaucracy, that the drug thalidomide was approved for general use because tests indicated it was "safe". After the disaster, a review of the evidence indicated that by health department standards, it was still safe, it hadn't harmed a single mother.

The rule of law continued to develop through the years and was applied against a form of public utility supplying illuminating gas,

" . . . These views lead to the conclusion that the defendant obtained no immunity from liability for consequential injuries sustained by property surrounding its works by reason of its incorporation, or the privilege conferred upon the business by the acts of the legislature, and that the facts of the case do not take it out of the operation of the rules of law applicable to ordinary common-law nuisances."

Bohan -v- Port Jervis Gas-Light Co.  
(1890) 122 NY 18, at page 29

and against the water pumping station of the City of New York, with the defendant city contending,

" . . . that legal liability in damages cannot result from acts done by a corporation in the performance of a public duty by express legislative authority, resulting in consequential injury to others, which, as between individuals would be regarded as a nuisance. . . It is that the authority which will shelter an actual nuisance must be express or a clear and unquestionable implication from powers conferred, certain and unambiguous, such as to show that the legislature must have intended and contemplated the doing of the very act in question. (cases cited) . . .

The language of Chief Justice Marshall in U.S. -v- Fisher (2 Cranch, 358) is applicable: "Where rights are infringed, where fundamental principles are overthrown, where the general system of the laws is departed from, the legislative intention must be expressed with irresistible clearness to induce a court of justice to suppose a design to effect such objects. ""

Morton -v- The Mayor, &c., N.Y.C.  
(1893) 140 NY 207, at pp. 212, 213

A Court of Equity will take cognizance of an action based upon continued and continuing invasions of property rights and gaining jurisdiction upon the established facts of the case, to restrain their further continuance, and thus to prevent a multiplicity of suits . . . a legislative permission neither implies a right to appropriate property without compensation; nor confers a license to commit a nuisance. "

Sammons -v- The City of Gloversville  
(1903) 175 NY 346, at pages 351, 352.

In a more recent construction of the notice provisions of the Highway Law and the Town Law, it was held,

". . . The action is brought in equity and its main object is to prevent the continuing invasion of plaintiff's property rights. Such actions do not fall within the scope of either statute. (citing Sammon, supra). . . ."

Foster -v- Webster (1943)  
8 Misc2d 61, at page 63.

Indeed, in a moral sense, such an agency may be considered in duty bound to exercise yet greater self-restraint than a private person in order to prevent a nuisance.

Peters -v- Moses,  
171 Misc 441, 12 Supp2d 735,  
modified on other grounds,  
259 AD 307, 19 Supp2d 168

ONLY THIS COURT IS IN A POSITION  
TO PREVENT THE FURTHER LOSS OF  
WILDLIFE AND PERMANENT DAMAGE  
TO THE ECOSYSTEMS IN SUFFOLK  
COUNTY RESULTING FROM THE CON-  
TINUED USE OF DDT.

Throughout this action, the Defendants have chanted that the Plaintiff's proper relief is through the legislature. Without repeating the Constitutional arguments advanced in Plaintiff's memorandum on the application for a temporary injunction, it is obvious that the situation involving the damage to wildlife from DDT is unique to Suffolk County in the State of New York.

The Defendant County of Suffolk, by the Suffolk County Attorney, has the temerity to question the extent of Suffolk County's natural resources,

" . . . Plaintiff's brief also states, erroneously, ' . . . it has been further conceded, and the Court has judicially noticed that the County of Suffolk is uniquely blessed with natural resources\*\*\*'

Defendants didn't concede that at all. On the contrary we assumed Suffolk was like many other parts of the country and that its use of DDT was typical, not unique. . . ."

(Defendant's Memorandum, page 10)

Without manifesting too much local chauvinism, it is sufficient to quote Defendant's witness, Dr. Dewey, on cross-examination, with respect to the uniqueness of Suffolk County,

Q. I will tell you his title, Dr. Dewey. He is the regional director of fish and game for region number 9, which includes all of Long Island, Staten Island, and I think Westchester County and Metropolitan New York. Now, Dr. Dewey, you have traveled around the state, and you are familiar with the natural resources, I would assume, of the various counties, is that right?

A. In a general way, yes.

Q. All right. Are you familiar with the extent of agricultural development of the County of Suffolk?

A. Yes.

Q. And would you contrast this to agriculture conducted throughout (1107) the rest of the state?

A. Well, it is one of the larger agricultural areas. It has a particularly strong growth of crops like potatoes, cauliflower, things of this sort.

Q. Would you name the other counties in the State of New York that have a similar proportion of their activity or land area involved in agriculture?

A. Well, are we talking now about total acres in each county or are we talking about percentum.

Q. Proportionately.

A. Well, proportionately, I think we would have to consider a few of the upstate counties, like Wayne County, as being a very strong agricultural county. As far as direct comparison between the two, I would be reluctant--



Summarizing, a municipal corporation may be held liable to the same extent as an individual for creating or maintaining a nuisance. In 1888, the City of Rochester sought to evade liability for depositing sewage effluent on downstream lands, with these timeless arguments,

"... .The injunction should not be allowed to stand for the reason that it asks of the defendant an impossible act, but if it were otherwise, the act required would be productive of such extreme hardship and so onerous to the defendant, and of so little benefit to the plaintiff, it should not be required. . . .

If there has been any further or other pollution . . . such pollution is not the act of the defendant as a municipal corporation, but is the act or acts of the inhabitants of the city of Rochester, residing within said area, and for any damages resulting to the plaintiff therefrom, the city of Rochester, as such, is not liable."

(points of counsel, 110 NY, 273)

"In view of the principle upon which these and like decisions turn, the objections of learned counsel for the defendant . . . are quite unimportant. . . . In fine, the case comes within the general rule which gives to a person injured by the pollution of air or water, to the use of which, in its natural condition, he is entitled, an action against the party whether it be a natural person or a corporation who causes that pollution."

Chapman -v- City of Rochester (1888)  
110 NY 273, at page 276,

Q. Do you have any others?

A. We have, proportionately speaking, we are talking about different acreages, but proportionately of agricultural importance, and I think you would have to say that Ontario and Genesee, counties like this, are also large agricultural counties. (1108)

Q. Now, of those large agricultural counties that you named, how many of them have a population in excess of 950,000 people?

A. I don't believe any of them do.

Q. In other words, only Suffolk County combines large masses of people together with extensive agricultural development, isn't that so?

A. Of the counties we talked about, this is true.

Q. And this is unique in the State of New York, isn't it?

A. I would think so, yes.

Q. Wouldn't it be fair to say that it is pretty near unique in the United States?

MR. CORWIN: If he knows.

Q. If you know.

A. I am not sure that I know.

Q. This combination of factors, this is certainly not the usual occurrence throughout the agricultural areas in the United States, is it?

A. It is certainly not an occurrence. Would you repeat that question, please? (1109)

Q. It is general? It doesn't generally occur throughout the United States that a significant agriculturally productive area would have within the same governmental boundary almost 1,000,000 people?

A. Well, I will go along with that, yes.

It was stated by Mr. Williamson, the Executive Director, who seems to be the only one who does know, that the Suffolk County Mosquito Control Commission is subject to no other agency or authority in its operations. It can spray DDT and contaminate the environment without any restriction by local or State authority. Only a non-scientific dipper test stands between wholesale extermination of wildlife in our marshes and estuaries by the wanton disregard of the scientific evidence by the Commission, and a temporary reprieve. Current studies show that the Commission has already placed enough DDT on the Carman's River Marshlands to last twenty years, yet it still doesn't kill mosquitoes, only higher and more useful forms of wildlife.

If this Court cannot stop the Commission, the Plaintiff has no other forum, with jurisdiction to stop them.

## SUMMATION

It was Ralph Waldo Emerson, philosopher rather than jurist, who reminded us that "The law is only a memorandum." He saw well, "As fast as the public mind is open to more intelligence, the code is seen to be brute and stammering. It speaks not articulately, and must be made to."

If this was the political problem in that "Indian Summer" of America's transition from an agricultural to an industrial society; even as it was in the days of Socrates--how much more so is it in our day when change (no longer that leisurely succession of generations that men have always tried to circumvent, but that forced change that is the unplanned by-product of our technology) throws all our social institutions into crisis.

Our technoscience has learned to do what only the Greek Gods of old could do. We can hurl thunderbolts, calling them into being from the electromagnetic field that holds the very planet together. But in a society which still believes, as Adam Smith did in the eighteenth century, that "private greed will further the common good," the power given us by technoscience becomes a threat to man's survival instead of being harnessed to his service, and will remain a threat until social innovation has imposed new limits on an aggressive individualism made dangerous by ecological ignorance.

Many scientists have tried to awaken us to the fact that technology has made us interdependent--imposing a form of social ecology upon us. This calls for a deeper awareness of our respective roles in society and in Nature; it calls for a too-long neglected social conscience among us. Let R. H. Tawney, whose classic statement, The Acquisitive Society, gathers dust on most library shelves, speak to us about the abuses of power:

"Because Governments and the relics of feudalism had encroached upon the property of individuals, it was affirmed that the right of property was absolute; because they had strangled enterprise, it was affirmed that every man had a natural right to conduct his business as he pleased. But in reality, both the one assertion and the other are false, and, if applied to practice, must lead to disaster. The State has no absolute rights--they are limited by its commission. The individual has no absolute rights--they are relative to the function which he performs in the community of which he is a member, because, unless they are so limited, the consequences must be something in the nature of a private war."

Courts of Equity in England and in this State long ago recognized the delicate balance between rights and responsibilities.

"It is a general rule that every person may exercise exclusive dominion over his own property, and subject it to such uses as will best subserve his private interests. Generally no other person can say how he shall use or what he shall do with his property. But this general right of property has its exceptions and qualifications. Sic utere tuo ut alienum non laedas is an old maxim which has a broad application. It does not mean that one must never use his own so as to do any injury to his neighbor or his property. Such a rule could not be enforced in civilized society. Persons living in organized communities must suffer some damage, annoyance and inconvenience from each other. For these they are compensated by all the advantages of civilized society. . . .As Lord Justice James beautifully said, in *Salvin -v- Northbrancepeth Coal Co.* (9 Law R., Ch. Appeals, 705):

'If some picturesque haven opens its arms to invite the commerce of the world, it is not for this court to forbid the embrace, although the fruit of it should be the sights and sounds and smells of a common seaport and ship-building town which would drive the Dryads and their masters from their ancient solitudes.'

But every person is bound to make a reasonable use of his property so as to occasion no unnecessary damage or annoyance to his neighbor. If he makes an unreasonable, unwarrantable or unlawful use of it, so as to produce material annoyance, inconvenience, discomfort or hurt to his neighbor, he will be guilty of a nuisance to his neighbor. And the law will hold him responsible for the consequent damage.

As to what is a reasonable use of one's own property cannot be defined by any general rules, but must depend upon the circumstances of each case. A use of property in one locality and under some circumstances may be lawful and reasonable, which, under other circumstances, would be unlawful, unreasonable and a nuisance. To constitute a nuisance, the use must be such as to produce a tangible and appreciable injury to neighboring property, or such as to render its enjoyment specially uncomfortable or inconvenient."

Campbell -v- Seaman (1876) 63 NY 568, 577

We are at last coming to realize that our planet is no more than a spacecraft; and that like a team of astronauts strapped in their cradles, or sailors adrift in an open boat, we can no longer afford the delusion that irresponsible individualism—whether practiced by private persons, bureaucracies or corporations—can much longer serve us as a public philosophy without destroying society itself. The pollution crisis of our day, whether of air, water or soil, whether by noxious gases, persistent chemical pesticides, or radioactive wastes, will serve as well as any other illustration to make this plain.

The perspective needed is a long one. The Department of Health of the State of New York, the Department of Agriculture and Markets of the State of New York, and the County of Suffolk, in memorandum submitted in the action, Yannacone -v- Dennison, et al., hardly go back far enough to uncover the necessary precedents.

Copernicus, in detroning man from the center of the universe in a posthumous sixteenth century tract, unwittingly created a wave of pessimism that has inundated our souls to this day. Hobbes and Locke, in their seventeenth century search for a new ethic, thought they had discovered the inevitability of every man's subordination to economic forces, thus imposing a political obligation to a liberal state, and the acceptance of its police power. These tenets, transmitted to colonial America in naive form by Blackstone, only partly digested from the original works, were sanctified as holy writ in the American Constitution, which the courts, for more years than we now like to remember, used as a mere prohibition rather than a living instrument.

False theories are rarely disproved; they merely run aground on the shoals of reality. The growth of large corporations destroyed the very instrument of their creation, private property; universal suffrage taught men that they need not be eternally subservient to economic determinism; and, now, the rise of a demonic technology, most dramatically seen in the ever-poised atomic warhead, has undermined the whole structure of our civilization by creating a new equality of insecurity among individuals.

Hobbes, Hume, Locke and all those other English liberals who preceded us and still infect our thought, went astray because they were infected by the pessimism engendered by the Copernican revolution; henceforth, they thought, ethical systems must have recourse to neither God nor Nature, but must stand or fall alone.

It may very well be that God, however we conceive of Him, has not revealed all the laws we need to govern our strife-worn world; but we can make a start by giving heed to the fact that over a century ago Charles Darwin restored man to his central role, not only by making us realize that the Earth is a spaceship, but that it is now under our command because the process of Evolution produced Life, and later Mind, thus introducing self-consciousness into its own operations.

Darwin's views influenced political theory because they altered our view of Man and the Earth. Having corrected Hobbes' biology--and pointed up the inherited shortcomings of our cherished legal dicta--we can now recognize that in addition to an "equality of insecurity" vis-a-vis the atom, man also shares, as a society rather than a species, the awesome, ennobling, exciting responsibility for all future evolution.

This calls, not for legal sophistry in defending bureaucratic powers become arbitrary and tyrannous because they have failed to keep pace with ecological science, but for that new sense of humility expressed in the ecologist's creed,

"Disturb Nature as much as necessary,  
but as little as possible."

If the bureaucrats who are more devoted to the perpetuation of their rights and power than in their social function, fear that the equity this Court can dispense may "threaten the national defense" by allowing housewives to hail the Atomic Energy Commission into Court for contaminating mankind's environment with radionuclides, let them be reminded that

the courts are not normally less mindful of the public interest than bureaucrats and businessmen; the Atomic Energy Commission has been forced, time after time, to lower the "safe, maximum, permissible exposure rates to radiation," by an aroused community of scientists whose voices were loud and clear in a forum so new that its bureaucrats and politicians were able to heed and respond to the warnings;

comfortable men are never the innovators when society needs innovative services more than any other;

in those arenas open to mere housewives, a coalition of bureaucrats and industrialists bent on creating consumer wants rather than satisfying human needs, has so "jammed" the hearing of legislatures, the the representatives of the people, cannot hear the people they represent above the din; and

when change is too rapid--as it has been in our generation--the slow haggling process of legislation hardly suffices to cope with the social disorganization, and only that equity the courts can dispense will protect the generations yet unborn.

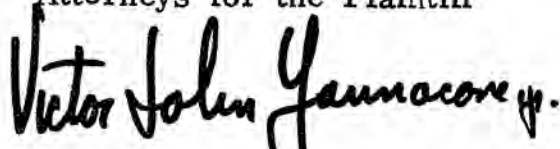
Let judgment for the Plaintiff in this case show our thanks to our founding fathers, frail humans just as we, though they were, for their inspiration in separating the sovereign powers of government into legislative, executive, and judicial branches, and permitting those who wish to preserve that government to proceed through the instrumentality of the law, when all else has failed.

"Ill fares the land, to hastening ills a prey,  
Where wealth accumulates, along with spray.  
Chemists and farmers flourish at their peril:  
The bird of freedom, thanks to them, is sterile.  
And a Bald Eagle, still its country's pride,  
When once destroyed, can never be supplied."

(The Deserted Nation, anon., New Yorker)

Respectfully submitted,

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