Q. Now, did you conduct further tests to determine whether PCB's were present?

A. Yes, we hydrolyzed a portion of the same extract so that we could remove any DDT and DDD from the analysis of those two particular compounds and subjected it to gas chromatographic analysis.

Q. All right now, you said you found 14 parts per million of DDT and its metabolites; can you break that finding down into DDT, DDD and DDE, please?

A. Yes, we found nine plus parts per million of DDE.

MR. YANNACONE: Your Honor, I submit this is an absolutely amazing feat of memory in a witness that's done umpteen thousand analyses and he suddenly remembers all the exact numbers without referring to anything.

MR. STAFFORD: Your Honor, if he objects to the credibility of the witness, he can check him on cross-examination.

EXAMINER VAN SUSTEREN: This correct. The objection is overruled. That was nine plus parts per million of what?

WITNESS: DDE.

WITNESS: One plus of DDD and three plus of DDT.

MR. STAFFORD: You want to take this exhibit before you. All right. Now of the DDT which you found, that's three plus parts per million of DDT. When you ran a more sophisticated analysis, did you find that any of that DDT was in fact PCB?

WITNERS: We had indications that part of the DDT and DDD reported was indeed due to PCB's.

MR. STAFFORD: Now what part?

MR. YANNACONE: Mr. Examiner—

EXAMINER VAN SUSTEREN: All right, now. —the Examiner will do it just so we can have some peace around

here. Mr. Coon, you have in front of you an exhibit marked 151, is that correct?

WITNESS: Yes, sir.

EXAMINER VAN SUSTEREN : All right.

Q. What part of the DDT that you reported is actually in your judgment a PCB?

A. If I may refer to the charts—

Q. You may.

A. These values are recorded on here for the information of the analyst doing the work. We initially—in our initial assay of the Coho salmon we had found that when the peak 'which came out close to the proper retention time of DDT, gave a result of 3.64 parts per million as DDT.

Q. Very well.

A. On subsequent analysis of the hydrolyzed portion of the extract and calculating then the disappearance of the DDT, we now show that the sample contained .78 parts per million of DDT.

Q. Rather than 3.64 parts per million, is that correct?

A. That is correct.

Q. All right, now. Will you go to the DDD?

A. The original analysis of the Coho salmon showed that it contained 1.49 parts per million as DDD, using the peak obtained from that particular chromatogram. The subsequent anal following hydrolysis of the extract and calculating the appearance of a portion of the DDD peak that we now show to contain .83 parts per million as DDD.

Q. So you have a total of 1.51 parts per million of DDT and DDD is that correct?

A. I didn't add them up on here.

Q. I'm adding .78 and .83. I'm sure that's correct. It's 1.61 parts per million. All right, referring now to DDE, E as in Easy, you , found 9. what parts per million DDE?

A. 9.64 parts per million as DDE.

WITNESS: This is on the sample as such without hydrolysis.

MR. YANNACONE: Could we have one point of clarification?

MR. STAFFORD: Certainly.

MR. YANNACONE**:** This hydrolysis is alkaline hydrolysis, isn't it, Doctor?

WITNESS: Yes, alkaline hydrolysis.

MR. YANNACONE: Sometimes called saponification?

WITNESS: Yes.

Q. Now, is there also an intervening peak or an overlaying peak which interferes with your finding on the DDE quantity?

A. Due to the fact that we do not eliminate the DDE during the hydrolysis step, we would not know for sure that such a peak did exist.

MR. YANNACONE**:** Which peak would exist?

MR. STAFFORD: Have you done any further work to determine whether such a peak exists or not?

MR. YANNACONE**:** I'm still not sure which peak we're talking about now?

MR. STAFFORD: DDE.

MR. YANNACONE: Whether the DDE peak exists?

Q. Whether there is an interference with the DDE peak. Will you answer that?

A. The answer was I did not know—to the best of our knowledge know at this point whether we had an interfering peak at DDE.

Q. Have you done any further work to indicate whether or not such a peak actually existed?

A. With this particular sample, no.

Q. Have you done it with other Coho?

A. No.

Q. Is there a reason why you haven't done it or is there no way to do this?

A. Yes, in our organization there is anyhow. We are a profitmaking organization. We try to do those things that we can do reasonably without—for our own information. To a point beyond that we would try to get funds of course for doing what would be research from people who would be concerned in that research. In this particular case we have been informed by what we consider many reputable people that one of the ways to conduct, at least an indication of what PCB's are present and to some extent a measure of perhaps their quantity that the procedure of hydrolysis or saponification is being used.

There are other procedures being used, one of which is the nitration step to which I mentioned in the Schechter-Haller procedure which should eliminate DDT, DDD

and DDE. But in the limited amount of work that ‘we did on this particular procedure, we found that our results were such that we would not want to draw any hard and fast conclusions from the analyses, due to the fact it was difficult to establish reproducible conditions from time to time.

MR. YANNACONE: I have an objection and a motion directed to the answer. This witness has testified to us that this whole chart and this analysis of this Coho was done at the request and instance of Mr. Stafford and his clients.

EXAMINER VAN SUSTEREN: All right.

MR. YANNACONE: Therefore, I move to strike the answer as being unresponsive as unresponsive in that he answered it by simply saying he’s a profit-making organization, he doesn’t have enough money to try other test. It’s his samples.

MR. STAFFORD: It’s much more extensive than that.

EXAMINER VAN SUSTEREN: All right. Well, so his client didn’t want to pay for a more expensive process for extraction or detection of DDE. Now, what’s your objection, Counsel?

MR. YANNACONE: I object to the answer as being absolutely **ir**relevant and immaterial and certainly not responsive to Mr. Stafford’s question.

EXAMINER VAN SUSTEREN: The objection is overruled.

MR. STAFFORD: Now, Mr. Coon, have you an opinion or can you arrive to your use phraseology—at a hard and fast conclusion that in this Bear Creek Coho there was in fact 9.4 parts per million DDE, none of which would be PCB’s?

MR. YANNACONE: I must object to this. This is the most blatantly self-serving kind of question I’ve ever heard of a witness who’s already working for this particular defendant’s organization or this particular attorney’s clients. This man has testified he can’t tell us—

EXAMINER VAN SUSTEREN: Well, according to your objection. Counsel, it would mean that these people and no respondents would ever be able to hire any doctors or engineers or architects or so on in order to prove a point.

MR. YANNACONE: No. He can prove a point. He’s proved it already. He doesn’t know. That was testimony—

EXAMINER VAN SUSTEREN: All right.

MR. YANNACONE: That was his testimony. Now, is he going to change it.

EXAMINATION BY MR. STAFFORD

Q. Yes, all right. Have you an opinion based upon a reasonable scientific certainty whether or not there are any PCB interference—there is any PCB interference with your finding of 9.64 parts per million DDE in the Bear Creek salmon?

EXAMINER VAN SUSTEREN: Can you answer the question?

WITNESS: Yes, I can answer the question. The answer is no.

Q. No, what? That there are no PCB—there is no PCB interference with the DDE?

A. No, but that there is no evidence in our hands at this time that we have scientific evidence that there is a peak.

MR. YANNACONE: What kind of peak?

WITNESS: An interfering peak at DDE.

Q. Now, are there any procedures which you can still use to determine whether or not the DDE finding in this Bear Creek salmon is in any way erroneous?

A. Yes. I would feel that one could determine this.

Q. In what length of time?

A. I would hesitate to put a time figure on it because of the limitations which I mentioned earlier with our work with the nitration procedure.

Q. Is this a long process or can it be done in several days?

A. It could be done in several days if everything worked properly.

Q. I see. And if not?

A. If not, it could be several weeks.

Q. Now, have you observed in your work with other—either fish or wildlife—any PCB interference with the DDE peak?

A. Not that we have been able to say with any degree of certainty that there was an interference.

Q. All right. Now, in your—have you detected other possible interferences with the DDE peak other than what you can identify as a PCB? Any other compounds—any other interferences?

A. In the procedure as we use it, uses florisil columns to separate certain of the chlorinated insecticides which, if the separation were not made on the particular column we're using, one would interfere with the other. For one reason or another if this florisil separation does not proceed properly any dieldrin present in the sample could show up as DDE in the subsequent *gas* chromatographic analysis.

MR. YANNACONE: Excuse me just a moment. A little bit of clarification. In the analysis on that one column, is that right?

WITNESS: When we use florisil column to cause a deliberate separation of one set of chlorinated insecticides from another **set;** this is not a GC column, this is a florisil column immediately preceding the gas chromatographic step.

WITNESS: Well no, not with all of them, no.

MR. YANNACONE: I see.

MR. YANNACONE: But the mistake in the florisil column that leads to the dieldrin interference and the subsequent analysis is with one specific gas chromatograph column, not with all of them, **is** it?

Q. Now, you've examined how many other? Four other Coho salmon for other clients recently to determine—DDT and metabolites residue?

A. We have analyzed an additional four to five samples for others.

Q. All right. Have you found the same relative interference in those other Cohos as you found in the Bear Creek cob, and I'm referring to interference by PCB's with DDT and DDD?

Q. Would you conclude then that on the basis of your research— strike that. What relative error percentage-wise would you conclude there is in your finding of DDT in metabolite quantities in Coho salmon due to this interference which you have talked about.

MR. YANNACONE: I'm going to object unless it's made abundantly clear it's an error as to this particular type of procedure described by this witness which involved only one column and checked by alkaline hydrolysis.

EXAMINER VAN SUSTEREN: Counsel, there is no—the witness has not testified as to other procedures or as to whether there were three columns or control columns or what. So let him testify as to the one column.

MR. YANNACONE: All right.

Q. Let's just put it this way. What per cent of DDT in metabolites which you have found in these Cohos actually have been erroneously assigned because of the interference of PCB?

A. Yes. We initially showed a total—the initial analysis showed a total DDT and DDD of 5.13 parts per million. Following hydrolysis we found that we have a total DDT and DDD of 1.61 parts per million, showing a reduction in the two answers of 70%.

MR. STAFFORD: It's a reduction of 70% in the categories of DDT and DDD, is that not correct?

WITNESS: That is correct.

Q. Now, did the recalculation result in any reduction in the metabolite DDE?

A. Not that we showed, no, sir.

Q. All right. Now, you've reduced the total DDT and metabolites from 14 to what then? Or is that just a straight mathematical computation?

A. Yes, it's merely adding the 1.61 total of **DDT** and DDD which we found to the 9.64 of DDE—which we had reported on the unhydrolyzed sample.

Q. Very well, from your work with the other Coho, you would assume that there would be also a 70% reduction in the DDT and the DDD of which you found, is that correct?

A. No.

MR. YANNACONE: I'm objecting to the form of the question in that it makes the assumption that the error will appear in the reported result which I would assume would be the total result after both procedures. This witness has not yet testified for us as to which result or both the reports. I don't think we can ask any more questions without clarifying that. The question is wrong in the form.

Q. Withdraw the question. Have you found PCB interferences in your residue study for DDT and metabolites study in raptor hawks?

A. We have found evidence that PCB's are undoubtedly present in some of our analyses, yes, sir.

Q. Are you in a position from your own experience and the literature you've read and the work you've done—I don't know that you are—tell us whether or not you find more PCB's in raptor hawks than you find in Coho.

A. I have no direct knowledge of this.

Q. Mr. Coon, in the initial procedure which you followed in testing the Bear Creek Coho salmon and in which you found 14 parts per million DDT and its metabolites, did you follow the same methods as those described in the Food and Drug Administration Manual and which they used?

A. We used the same methods as would be followed by the FDA Manual, yes.

MR. YANNACONE: Yes. I have got a legal objection to the form of the question. We are talking about a method and referring to an FDA circular referring to an FDA method; and yet the witness earlier described a preliminary run-through and then a second run-through followed by saponification. Is the method the combination of the two; one or the other?

Q. Before we get to this, you have also—I think you said yesterday afternoon that you have also run some tests on other Coho recently. Did you find PCB's in these other fish?

A. We found evidence of PCB's in these other fish, yes, sir.

Q. And you haven't run quantitative studies yet to determine what percent of PCB's in those fish?

A. No, we have not.

WITNESS: The far left side is a chromatogram of a mixed standard containing lindane, heptachlor, aldrin, heptachlor epoxide, para, para DDE, para DDD, and para, para DDT.

A. Chromatogram 2 contains additional injections of the same mixed standards, merely for purposes of being able to quantitate answers subsequently obtained on fish samples. In this case it is a lesser concentration.

A. Chromatogram 3 is again the same solution of mixed standards, but a further dilution to *give* us, to help us in establishing our chromatographic—or, our standard curve.

A. Chromatogram 4 is a larger injection of the standard solution to again aid in the standard curve.

A. Chromatogram 5 is an injection of Arochlor 1254.

A. Chromatogram 6 is merely an injection of the same Aroclor, but in lesser dilution.

A. Chromatogram 7 is the injection of a solution of the Coho fish from Bear Creek.

A. Chromatogram 8 is a dilution of the Coho solution to permit quantitation of the DDE peak.

A. Chromatogram 9 shows the hydrolyzed solution. This is following treatment of the Coho solution with sodium hydroxide.

The peaks here are much the same as we showed in Chromatogram 7, with differences which are noted on the chromatogram.

Chromatogram 10 is merely a dilution of the solution used for Chromatogram 9; to again quantitate DDE.

Q. Will you refer to chromatogram No. 1 and tell what these black ink lines are which are just above the peaks?

A. The black lines represent the relative retention times of DDD, DDT, and DDE on this particular chromatogram.

Q. And they are marked and so labelled, are they not, on chromatogram No. l?

A. They are on chromatogram No. **1.**

Q. And is that also true in chromatogram No. 2, 3, 4, 5, 7, and 9? If it is not true, just indicate in what respect it is not?

A. No, in every case where we have marked a black line with the specific designation, for instance, the para, para DDT, on all subsequent lines where the DDT is so delineated it refers to exactly the same lines as in these standards that we have prepared in chromatograms 1, 2, 3, and 4.

In addition, we have shown that where there was—the peak for DDT in chromatogram 7 came out close to the retention of —proper retention time of DDT has now changed and the retention time of the remaining peak now comes out at almost exactly the retention time of one of the 1254 peaks.

Q. All right. Referring back to the PCB chromatogram denominated No. 5,1 note a number of peaks there. Why do we have those peaks?

A. Well, the PCB's are not discreet compounds, they are mixtures of chlorinated biphenyls, and as such have not at this moment to my knowledge been completely identified.

I have shown on Chromatogram 7 that one of the PCB peaks, if it can be presumed to be present from the fact that we find other PCB peaks similar to 1254, we would presume that **it** also would be present; and if it were present, it would be obscured by the quantitate of DDE which overlays the total amount of the one peak of the PCB.

Q. And does this create any doubt in your mind as to the accuracy of the measurement of DDE?

A. Yes. I would have some doubt as to the total quantity of DDT we have calculated.

WITNESS: "E" for Edward, as to what we have calculated as DDE. The fact that it probably is present would lead one to assume that the DDE result would be somewhat less than we had reported.

MR. STAFFORD: I offer exhibit 151 for identification. If you would like **a** short recess, Counsel, I have no objection.

MR. YANNACONE: Oh, I don't think we need a short recess.