ROUGH DRAFT

R. E. Keller to [illegible] R. Richard per phone by M. Stanley - 2/28/69

Publications in hand (1,2) show that Risebrough has not made a positive structure identification to presence of chlorinated hydrocarbons (Biphenyls) let alone Aroclor products in material he has worked with. His approach is not an absolute identification procedure. It's based on similar retention times for 10 components eluted through a gas chromatography column. This measurement is not specific for chemical compounds in unknown mixtures. Furthermore, the electron capture detector used to monitor separated component is not specific for chlorine or even halogens. Work in our labs shows at least 13 components in Aroclor 1242, 17 in Aroclor 1254 and 14 in Aroclor 1260 with different retention times than those reported by Risebrough. More information is needed about un-reported experimental chromatographic conditions used by Risebrough to resolve differences between labs.

Risebrough has based his conclusions implicating chlorinated biphenyls on work by Holmes (3), Holden (3a) Widmark (4), and Jensen (5). Holmes and Holt obtained similar gas chromatography containing 11,13 and 7 peaks respectively for commercial polychlorobiphenyl resin. Holmes and Holden also did not make a positive structure identification.

Widmark and Jensen in Europe (Sweden) obtained a similar gas chromatography for eagle extracts. Chromatographic fractions from this work were identified structurally by Mass Spec as higher chlorinated biphenyls. Risebrough, in his reported work has apparently made no positive identification of this type. His implication of chlorinated biphenyls appears to be by reference back to above work through similar chromatograms. To the best of our knowledge, no one has identified components structurally in biological systems as chlorinated biphenyls in U.S.A. Work is underway in our labs on an unequivocal structure identification of unknown organic species in national products using gas chromatography and mass spectroscopy techniques.

DSW 201156

REFERENCES:

(1) Risebrough , R. W., Chem. Fall Out, First Rochester Conference on Toxicity, in the ~~Press (1968)~~

(2) Risebrough, R. W. Nature, Draft of Paper in Press

ROUGH DRAFT

REFERENCES - Cont'd.

(3) Holmes, D. C. & Simmons, J.H., Tatton, J., Nature 216, 227 (1967).

(3a) Holden, A.V. and Marsden, K., Nature 216, 1274 (1967)

(4) Widmark, G., J. Assoc. Off., Anal. Chem. 50, 1069 (1967)

(5) Jensen, S., New Scientist, 32, 612 (1966)

from R. E. Keller per phone
to M. Stanley
2/28/69

Monsanto

FROM (NAME & LOCATION) Mr. Tom C. Ford - St. Louis

DATE March 3, 1969

SUBJECT

REFERENCE

TO Mr. Harry M. Bennett
SHERMAN OAKS

Mr. Linton von Beroldingen
SAN FRANCISCO

cc: Mr. Dan J. Forrestal
Mr. J. E. McKee
Mr. D. R. Bishop
Mr. J. J. Spano
NEW YORK - Mr. P. R. Wilkins
Mr. W. C. Robinson - WROBI
Mr. E. P. Wheeler - EWHEE
Mr. H. S. Bergen - HBERG
SANTA CLARA - Mr. J. G. Hicks
LOS ANGELES - Mr. R. V. Johnson
SANTA CLARA - Mr. R.L.Brandenburg
WASHINGTON - Mr. S. Pickard
NEW YORK - Mr. R. T. Clark
DETROIT - Mr. D. J. Murphy
ATLANTA - Mr. M. R. Dalton

As you know, we didn't get a reply to David Perlman of the San Francisco Chronicle in time for his February 24 article on the supposed pollution of wildlife by polychlorinated biphenyls (PCB). I did get approved answers from our Organic Chemicals Division last Tuesday, February 25, and gave them to you, Linton, for transmission to Perlman.

Evidently the story has now spread further on the West Coast. Harry, I believe you said it was in a Los Angeles newspaper and on a local TV station.

Enclosed is a more detailed reply to these charges. This will probably be the full extent of our statements until we are able to make definite conclusions from our own research program. You are free to distribute this reply as you see fit.

Harry, you may or may not want to send it to appropriate LA media. I don't want to create more stories, but do want to answer questions.

Linton, I suggest you get a copy to Perlman. He called me again Friday and indicated he would be "open for a second round" of this story. This further answer might be enough; I would be glad to discuss it with him.

That's about it. Please let me know if other public relations needs arise. I have given your names and phone numbers to the marketing people in our Los Angeles and Santa Clara offices in case the press should contact them.

Tom C. Ford

TCF:mw

DSW 201158

IN-10 REV. 11-65

Mr. Harry M. Bennett
and Mr. Linton von Beroldingen

March 3, 1969

PS -- We have also been contacted by the San Francisco Regional Water Quality Board. Among other things, we told them we do not manufacture PCB on the West Coast, but do ship it to warehouses in Los Angeles and Santa Clara. However, we do not repackage the PCB there -- it comes in and goes out in the same container.

TCF

STATEMENT FROM:
MONSANTO COMPANY
ST. LOUIS, MO.

March 3, 1969

On February 24, the San Francisco Chronicle carried a major feature about "a menacing new pollutant" found in the San Francisco Bay area. The article was based on marine life research carried out by Dr. Robert Risebrough of the University of California. It stated that residues of polychlorinated biphenyl (PCB) were killing certain birds and implied a long-term threat to humans.

Monsanto manufactures polychlorinated biphenyl and markets it under our Aroclor trade name. (There are other manufacturers in Europe and Japan.) We, therefore, would like to present some additional facts.

The work done by Dr. Risebrough dates back to earlier research by other scientists to analyze the amount of pesticides in wildlife, soil and water. The initial pesticide research was extremely difficult since any search to detect materials in the parts-per-billion range also brings out other "interfering" substances.

-more-

Several years ago, two Swedish sceintists at Stockholm University's Institution of Analytical Chemistry, Professor Gunnar Widmark and Soren Jensen, reported they had identified the other substances which were appearing during analysis of chlorinated pesticide residues. They said some of the materials were polychlorinated biphenyl or PCB. The amount reported was in the parts-per-billion range, or less. Since PCBs are not "broadcast" or spread around the land as are pesticides, the scientists theorized that the source must be the industrial wastes of PCB users.

Dr. Risebrough's more recent work reports the identification of PCB, along with DDT and DDE pesticides, in the tissues of birds and fish on the West Coast.

The conclusions of these scientists are puzzling from several aspects. Polychlorinated biphenyls are stable chemical compounds which are essentially insoluble in water. Their use does not make them easily released into the natural environment.

A principal market for PCB is in electrical applications where they are used as insulating fluids for transformers and capacitors. In this use, the chemical is completely sealed in metal containers. Another market is for heat-transfer applications where the PCB fluid functions in a closed system.

DSW 201161

In the functional fluids market, we have carried out a program for several years for the reclamation of used PCBs to reuse these valuable materials.

PCBs are also used in several "plastic-type" applications. Here the chemical is incorporated into the polymer as an integral part of the solid material. This applies whether the polymer is used as an adhesive, an elastomer or a surface coating.

It has also been implied that polychlorinated biphenyls are "highly toxic" chemicals. This is not true. The toxicity of any material, whether it be chemicals, drugs, natural plants or even foods, is relative. Just like other industrial chemicals and home products now in widespread use, PCBs are not hazardous when properly handled and used. During more than 30 years of U.S. production and use, cases of any toxic effect have been extremely rare -- and then only where the simple precautions recommended for use were not followed.

To our knowledge, polychlorinated biphenyls are not sprayed or dusted on crops, woodlands or any other areas, as are pesticides. It is, therefore, not only puzzling, but extremely difficult to conceive how commercially produced PCB can show up in wildlife in the quantities reported. This raises the question whether the substances identified in the Swedish work, and now in California, are actually PCBs -- or whether they are compounds which, due to the metabolism of other materials in the marine environment, appear to be PCBs.

Unfortunately, even though techniques for analyzing tissue samples have become quite precise, the ability to analyze the possible impact of naturally occurring substances in the food cycle of living organisms has not made comparable advances.

Monsanto has a research program to identify the compounds reported to be PCB by the Swedish and California scientists. We have always cooperated, on a regular basis, with federal, state and university laboratories in their analysis of chlorinated hydrocarbon residues. We will continue to do so.

Additionally, Monsanto will continue to exercise the highest degree of control in its manufacturing, shipping and storing of PCB -- as we do with all products.

The source of the marine life residue identified as PCB is not yet known. It will take extensive research, on a worldwide basis, to confirm or deny these initial scientific conclusions.

-oOo-

Monsanto

FROM (NAME & LOCATION) St. Louis - General Office

DATE March 3, 1969

SUBJECT POLLUTION STUDIES

REFERENCE

TO : C. L. Bradford - LOS ANGELES
R. A. Garcia - AKRON SALES
R. P. Sullivan - WILMINGTON

R. S. Bevacqua - SEATTLE
J. H. Davidson - LOS ANGELES
D. E. Eriksen - LOS ANGELES
M. K. Ritterhouse - HOUSTON
G. F. Fague - DETROIT
D. A. Hall - CLEVELAND
R. C. Meyer - CINCINNATI
J. J. Roder - CHICAGO
R. A. Damiani - CHICAGO
G. R. Graham - NEW YORK
R. C. Hamil - ATLANTA
J. S. Pullman - NEW YORK
T. C. White - NEW YORK

cc: H. S. Bergen - HBERG
D. A. Olson - DOLSO
T. C. Ford - TFORD
P. G. Benignus
J. G. Bryant
J. R. Fallon
D. E. Roush
S. Shaw

LR

Aroclor Toxicity PJ

On February 24, the San Francisco Chronicle carried a feature about "a menacing new pollutant" found in the San Francisco Bay area. The article was based on marine life research by a scientist at the University of California. It stated that residues of polychlorinated biphenyl (PCB) were killing certain marine birds and posed a long-term threat to humans.

This sensational story has caused considerable comment on the West Coast and its claims may be repeated elsewhere. Our Aroclor polychlorinated biphenyl was used by the scientist in his work and we were identified as a producer.

A few facts are in order. This research dates back to earlier work done to analyze pesticide residue in wildlife, soil and water. The search for these materials, in the parts-per-billion range, also brought out other unidentified materials. Several years ago, two Swedish scientists reported they had identified these other substances -- with one of them being PCB. Since commercial PCB, such as Aroclor, is not spread around the land as are pesticides, the scientists theorized that the source must be the industrial waste of PCB users.

These conclusions are puzzling in several aspects. As you know, Aroclors are either used as functional fluids in "closed systems" or as a plasticizer which is an integral part of the polymer. They are not easily released to the natural environment. This raises the question whether the substance identified by the scientists is actually PCB -- or whether it is a compound which only appears to be PCB due to metabolism of other materials in the marine environment.

We have expanded our research program to confirm the identity of the compounds reported to be PCB. It will take extensive investigation to confirm or deny the initial scientific conclusions. We will keep you advised, and we are also directly writing our major Aroclor customers with background information so they will be prepared for any inquiries.

If customers or pollution control authorities in your area contact you, please have their medical/pollution representative contact Elmer Wheeler in the Medical Department. If a member of the press contacts you, please immediately notify Tom Ford in Public Relations.

P. G. Benignus
N. T. Johnson

/ecd

DSW 201165

March 3, 1969

On February 24, the San Francisco Chronicle carried a major feature about "a menancing new pollutant" found in the San Francisco Bay area. The article was based on marine life research carried out by Dr. Robert Risebrough of the University of California. It stated that residues of polychlorinated biphenyl (PCB) were killing certain marine birds and posed a long-term threat to humans.

This story has caused considerable comment on the West Coast and its claims may be repeated elsewhere. As you know, Monsanto manufactures polychlorinated biphenyl and markets it under our Aroclor trade name. We, therefore, would like to present some additional facts.

The work done by Dr. Risebrough dates back to earlier research by other scientists to analyze the amount of pesticides in wildlife, soil and water. The initial pesticide research was extremely difficult since any search to detect materials in the parts-per-billion range also brings out other "interferring" substances.

Several years ago, two Swedish scientists at Stockholm University's Institution of Analytical Chemistry, Professor Gunnar Widmark and Soren Jensen, reported they had identified the other substances which were appearing during analysis of chlorinated pesticide residues. They said some of the materials were polychlorinated biphenyls or PCB. The amount reported was in the parts-per-billion range, or less. Since PCB's are not "broadcast" or spread around the land as are pesticides, the scientists theorized that the source must be the industrial wastes of PCB users.

Dr. Risebrough's more recent work reports the identification of PCB, along with DDT and DDE pesticides, in the tissues of birds and fish on the West Coast.

The conclusionsof these scientists are puzzling from several aspects. Polychlorinated biphenyls are stable chemical compounds which are essentially insoluble in water. Their use does not make them easily released into the natural environment.

A principal market for PCB is in electrical applications where they are used as insulating fluids for transformers and capacitors. In this use, the chemical is completely sealed in metal containers. Another market is for heat transfer applications where the PCB fluid functions in a closed system.

PCB's are also used in several "plastic type" applications. Here the chemical is incorporated into the polymer as an integral part of the solid material. This applies whether the polymer is used as an adhesive, an elastomer or a surface coating.

The Swedish and American scientists also imply that polychlorinated biphenyls are "highly toxic" chemicals. This is simply not true. The toxicity of any material, whether it be chemicals, drugs, natural plants or even foods, is relative. Compared to the thousands of industrial chemicals and home products, PCB's are not toxic unless they are mishandled or misused. During more than thirty years of U.S. production and use, cases of any toxic effect have been extremely rare -- and then only where the simple precautions recommended for use were not followed.

To our knowledge, polychlorinated biphenyls are not sprayed or dusted on crops, woodlands or any other areas, as are pesticides. It is, therefore, not only puzzling, but extremely difficult to conceive how commercially produced PCB can show up in wildlife as DDT and other pesticides appear to be. This raises the question whether the substance identified in the Swedish work, and now in California, is actually PCB -- or whether they are materials which, due to the metabolism of other materials in the marine environment, appears to be PCB.

Unfortunately, even though techniques for analyzing tissue samples have become quite precise, the ability to analyze the possible impact of naturally occurring substances in the food cycle of living organisms has not made comparable advances.

Monsanto has a research program to confirm the identity of the compounds reported to be PCB by the Swedish and California scientists. We also cooperate, on a regular basis, with federal, state and university laboratories in their analysis of chlorinated hydrocarbon residues.

Additionally, Monsanto will continue to exercise the highest degree of control in its manufacturing, shipping and storage of PCB -- as we do with all products. In the functional fluids market, we have carried out a program for several years for the reclamation of used PCB's to avoid disposal of these valuable materials.

The source of the marine life residue identified as PCB is not yet known. It will take extensive research, on a worldwide basis, to confirm or deny the initial scientific conclusions. We will keep you advised of our own research and are available to answer questions as they may arise.

Very truly yours,

Elmer P. Wheeler
Manager Environmental Health

/ecd

DSW 201168

Recipients of the letter from Elmer P. Wheeler :

Mr. Abe Kalstein
Aerovox Corporation
740 Belleville Avenue
New Bedford, Massachusetts 02745

Mr. William N. Robinson
Cornell Dubilier
1605 Rodney French Boulevard
New Bedford, Massachusetts 02744

Mr. A. O. Hauser
Electrical Utilities Company
2427 Saint Vincent Avenue
La Salle, Illinois 61301

Mr. Ray Clark
Electronic Components, Inc.
902 Crescent Avenue
Bridgeport, Connecticut 06607

Mr. M. E. Scoville
General Electric Company
10 John Street
Hudson Falls, New York 12839

Mr. Jerry Rowe, Plant Manager
P. R. Mallory
Highway 32 East
Crawfordsville, Indiana 47933

Mr. E. Blase
Sangamo Electric Company
Pickens, South Carolina 29671

Mr. Joe Kuzela
Sangamo Electric Company
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Springfield, Illinois 62702

Mr. Livingston Rice
Sprague Electric Company
North Adams, Massachusetts 01247

Mr. Robert T. Innis
Westinghouse Electric Company
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Bloomington, Indiana 47401

Mr. James Kinney
General Electric Company
Redmond Circle
Rome, Georgia 30161

Mr. Jack Steel
R. E. Uptegraff and Company
Scottdale, Pennsylvania 15683

Mr. Edward L. Raab
General Electric Company
100 Woodlawn
Pittsfield, Massachusetts 01201

Mr. H. J. Zeck
Allis Chalmers Manufacturing Co.
Columbus and Preble Avenue N. W.
Pittsburgh, Pennsylvania 15233

Mr. Ralph Meyers
McGraw Edison/Line Materials Co.
12th and Madison Avenues
South Milwaukee, Wisconsin 53172

Mr. William Reinhardt
Moloney Electric Company
5390 Bircher Boulevard
St. Louis, Missouri 63120

Mr. Herman Gabel
Niagara Transformer
110 Church Street
Buffalo, New York 14202

Mr. John E. Schork
Research-Cottrell, Inc.
Radel Avenue
Bound Brook, New Jersey 08805

Sierra Transformer Company
8831 Miner Street
Los Angeles, California 90002

Mr. R. T. Beckler
Standard Transformer Company
Warren, Ohio 44482

Mr. B. L. Britt
Wagner Electric Corporation
6400 Plymouth Avenue
St. Louis, Missouri 63133

DSW 201169

STATEMENT FROM:
MONSANTO COMPANY
ST. LOUIS, MO.

March 3, 1969

On February 24, the San Francisco Chronicle carried a major feature about "a menacing new pollutant" found in the San Francisco Bay area. The article was based on marine life research carried out by Dr. Robert Risebrough of the University of California. It stated that residues of polychlorinated biphenyl (PCB) were killing certain birds and implied a long-term threat to humans.

Monsanto manufactures polychlorinated biphenyl and markets it under our Aroclor trade name. (There are other manufacturers in Europe and Japan.) We, therefore, would like to present some additional facts.

The work done by Dr. Risebrough dates back to earlier research by other scientists to analyze the amount of pesticides in wildlife, soil and water. The initial pesticide research was extremely difficult since any search to detect materials in the parts-per-billion range also brings out other "interfering" substances.

-more-

DSW 201170

Several years ago, two Swedish scientists at Stockholm University's Institution of Analytical Chemistry, Professor Gunnar Widmark and Soren Jensen, reported they had identified the other substances which were appearing during analysis of chlorinated pesticide residues. They said some of the materials were polychlorinated biphenyl or PCB. The amount reported was in the parts-per-billion range, or less. Since PCBs are not "broadcast" or spread around the land as are pesticides, the scientists theorized that the source must be the industrial wastes of PCB users.

Dr. Risebrough's more recent work reports the identification of PCB, along with DDT and DDE pesticides, in the tissues of birds and fish on the West Coast.

The conclusions of these scientists are puzzling from several aspects. Polychlorinated biphenyls are stable chemical compounds which are essentially insoluble in water. Their use does not make them easily released into the natural environment.

A principal market for PCB is in electrical applications where they are used as insulating fluids for transformers and capacitors. In this use, the chemical is completely sealed in metal containers. Another market is for heat-transfer applications where the PCB fluid functions in a closed system.

DSW 201171

In the functional fluids market, we have carried out a program for several years for the reclamation of used PCBs to reuse these valuable materials.

PCBs are also used in several "plastic-type" applications. Here the chemical is incorporated into the polymer as an integral part of the solid material. This applies whether the polymer is used as an adhesive, an elastomer or a surface coating.

It has also been implied that polychlorinated biphenyls are "highly toxic" chemicals. This is not true. The toxicity of any material, whether it be chemicals, drugs, natural plants or even foods, is relative. Just like other industrial chemicals and home products now in widespread use, PCBs are not hazardous when properly handled and used. During more than 30 years of U.S. production and use, cases of any toxic effect have been extremely rare -- and then only where the simple precautions recommended for use were not followed.

To our knowledge, polychlorinated biphenyls are not sprayed or dusted on crops, woodlands or any other areas, as are pesticides. It is, therefore, not only puzzling, but extremely difficult to conceive how commercially produced PCB can show up in wildlife in the quantities reported. This raises the question whether the substances identified in the Swedish work, and now in California, are actually PCBs -- or whether they are compounds which, due to the metabolism of other materials in the marine environment, appear to be PCBs.

Unfortunately, even though techniques for analyzing tissue samples have become quite precise, the ability to analyze the possible impact of naturally occurring substances in the food cycle of living organisms has not made comparable advances.

Monsanto has a research program to identify the compounds reported to be PCB by the Swedish and California scientists. We have always cooperated, on a regular basis, with federal, state and university laboratories in their analysis of chlorinated hydrocarbon residues. We will continue to do so.

Additionally, Monsanto will continue to exercise the highest degree of control in its manufacturing, shipping and storing of PCB -- as we do with all products.

The source of the marine life residue identified as PCB is not yet known. It will take extensive research, on a worldwide basis, to confirm or deny these initial scientific conclusions.

-oOo-

H. S. Bergen

February 28, 1969

MR. H. C. KNAPP

Elmer Wheeler EWHEE
R. D. Brandenburger -Santa Clara
B. J. Patnode -- Santa Clara
W. R. Richard WRICH

Tom Ford TFORD

After our telephone conversation of Wednesday, February 26th with Mr. Knapp regarding his overall conclusions on the San Francisco Chronicle Aroclor article, I telephoned him on Thursday the 27th and told him that we stocked Aroclor at only two warehouses on the West Coast, Santa Clara and Los Angeles, and that these were operated by Monsanto. I told him that our total Aroclor throughput of all types was approximately 40,000 pounds at Los Angeles and approximately 15,000 pounds at Santa Clara.

I also told him that we did no repackaging at either of these locations. He stated that perhaps he or a Dr. R. Robert Scholar or a Mr. T. C. Wu out of his office might visit the Santa Clara warehouse. He will clear through the Plant Manager or Roy Brandenburger.

He and his office may also visit any of the G.E. or Westinghouse transformer or capacitor servicing facilities in the area and we are alerting these major customers of ours regarding this whole subject.

Mr. Knapp stated that he knew the Monsanto Avon personnel so that Monsanto was not a new name to him. He seemed a little bit more relaxed today about the whole thing than he did Wednesday. I assured him of our continued cooperation.

~~W. A. Kuhn~~

DSW 201174

BCC: H. S. Bergen
E. J. Bock
T. C. Ford
E. P. Wheeler

February 28, 1969

Dear Mrs. DeGoff:

Mr. E. J. Bock, President of Monsanto, has asked that I, as division manager responsible for the marketing and manufacture of Aroclor, respond to your note of February 24th regarding the article about our product which appeared on February 24th in the San Francisco Chronicle.

We, too, are concerned about publicity of this type; and indeed it was unfortunate that the newspaper could not wait until we had time to respond to their inquiry on this very complicated technical subject.

We have since responded, however, and for your information attached are our comments which we are releasing for public and trade use.

We hope that these comments are self-explanatory and answer your questions. You can rest assured that Monsanto is taking action not only on this matter, but on any other matter that affects company or public health, safety and welfare.

Yours very truly,

(H. L. Minckler)

Mrs. Sidney DeGoff
109 Walnut Street
San Francisco, California 94118

MONSANTO COMPANY
PUBLIC RELATIONS

On February 24, the San Francisco Chronicle carried a major feature about "a menacing new pollutant" found in the San Francisco Bay area. The article was based on marine life research carried out by Dr. Robert Risebrough of the University of California. It stated that residues of polychlorinated biphenyl (PCB) were killing certain marine birds and posed a long-term threat to humans.

This sensational story has caused considerable comment on the West Coast, and its claims may be repeated elsewhere. As you know, Monsanto manufactures polychlorinated biphenyl and markets it under our Aroclor trade name. (There are other manufacturers in Europe and Japan.) We, therefore, would like to present some additional facts.

The work done by Dr. Risebrough dates back to earlier research by other scientists to analyze the amount of pesticides in wildlife, soil and water. The initial pesticide research was extremely difficult, since any search to detect materials in the parts-per-billion range also brings out other "interfering" substances.

Several years ago two Swedish scientists at Stockholm University's Institution of Analytical Chemistry, Professor Gunnar Widmark and Soren Jensen, reported they had identified the other substances which were appearing during analysis of chlorinated pesticide residues. They said some of the materials were polychlorinated biphenyls, or PCB. The amount reported was in the parts-per-billion range, or less. Since PCB's are not "broadcast" or spread around the land as are pesticides, the scientists theorized that the source must be the industrial wastes of PCB users.

Dr. Risebrough's more recent work reports the identification of PCB, along with DDT and DDE pesticides, in the tissues of birds and fish on the West Coast.

The conclusions of these scientists are puzzling from several aspects. Polychlorinated biphenyls are stable chemical compounds which are essentially insoluble in water. Their use does not make them easily released into the natural environment.

A principal market for PCB is in electrical applications, where they are used as insulating fluids for transformers and capacitors. In this use, the chemical is completely sealed in metal containers. Another market is for heat transfer applications, where the PCB fluid functions in a closed system.

PCB's are also used in several "plastic type" applications. Here the chemical is incorporated into the polymer as an integral part of the solid material. This applies whether the polymer is used as an adhesive, an elastomer or a surface coating.

The Swedish and American scientists also imply that polychlorinated biphenyls are "highly toxic" chemicals. This is not true. The toxicity of any material, whether it be chemicals, drugs, natural plants or even foods, is relative. Compared to thousands of industrial chemicals and home products, PCB's are not exceptionally hazardous unless they are mishandled or misused. During more than 30 years of U. S. production and use, cases of any toxic effect have been extremely rare -- and then only where the simple precautions recommended for use were not followed.

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Additionally, Monsanto will continue to exercise the highest degree of control in its manufacturing, shipping and storage of PCB -- as we do with all products. In the functional fluids market we have carried out a program for several years for the reclamation of used PCB's so as to recover and re-use these valuable materials.

The source of the marine life residue identified as PCB is not yet known. It will take extensive research, on a worldwide basis, to confirm or deny the initial scientific conclusions. We will keep you advised of our own research and are available to answer questions as they may arise.

From the Jesk of

H(ARD S. BERGEN, JR. 2/ [illegible]/69

→ ~~1) Dr. Wm [illegible]~~

~~2) R Davis~~

3) ~~D. Olson~~

~~4) P.G. [illegible]~~

~~5) J. [illegible]~~

~~6) Bill [illegible]~~

~~7) Bob [illegible]~~

8) ~~H [illegible]~~

attached is the agreed to statement, Tom Ford (PR) will send out to:

— stockholders who inquire

From the desk of

HOWARD S. BERGEN, JR.

- magazines who inquire
- to monsanto people internally who need to know
- We will not put out a news announcement (because that "fans the fire")
- This is OK for use with customers internally etc
- Tom Ford clearing house for all. (~~[illegible]~~ inquiries.

HSB

DSW 201180

JLR
Pf-Aroclor

2-28-69

MONSANTO COMPANY
PUBLIC RELATIONS

On February 24, the San Francisco Chronicle carried a major feature about "a menancing new pollutant" found in the San Francisco Bay area. The article was based on marine life research carried out by Dr. Robert Risebrough of the University of California. It stated that residues of polychlorinated biphenyl (PCB) were killing certain marine birds and posed a long-term threat to humans.

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DSW 201181

STLCOPCB4052560

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A principal market for PCB is in electrical applications where they are used as insulating fluids for transformers and capacitors. In this use, the chemical is completely sealed in metal containers. Another market is for heat transfer applications where the PCB fluid functions in a closed system.

PCB's are also used in several "plastic type" applications. Here the chemical is incorporated into the polymer as an integral part of the solid material. This applies whether the polymer is used as an adhesive, an elastomer or a surface coating.

The Swedish and American scientists also imply that polychlorinated biphenyls are "highly toxic" chemicals. This is not true. The toxicity of any material, whether it be chemicals, drugs, natural plants or even foods, is relative. Compared to the thousands of industrial chemicals and home products, PCB's are not exceptionally hazardous ~~toxic~~ unless they are mishandled or misused. During more than 30 years of U.S. production and use, cases of any toxic effect have

have been extremely rare -- and then only where the simple precautions recommended for use were not followed.

To our knowledge, polychlorinated biphenyls are not sprayed or dusted on crops, woodlands or any other areas, as are pesticides. It is, therefore, not only puzzling, but extremely difficult to conceive how commercially produced PCB can show up in wildlife as DDT and other pesticides appear to be. This raises the question whether the substances identified in the Swedish work, and now in California, are actually PCB's -- or whether they are compounds which, due to the metabolism of other materials in the marine environment, appear to be PCB's.

Unfortunately, even though techniques for analyzing tissue samples have become quite precise, the ability to analyze the possible impact of naturally occurring substances in the food cycle of living organisms has not made comparable advances.

Monsanto has a research program to confirm the identity of the compounds reported to be PCB by the Swedish and California scientists. We also cooperate, on a regular basis, with federal, state and university laboratories in their analysis of chlorinated hydrocarbon residues.

Additionally, Monsanto will continue to exercise the highest degree of control in its manufacturing, shipping and storage of PCB -- as we do with all products. In the functional fluids

market, we have carried out a program for several years for the reclamation of used PCB's so as to recover and reuse these valuable materials.

The source of the marine life residue identified as PCB is not yet known. It will take extensive research, on a worldwide basis, to confirm or deny the initial scientific conclusions. We will keep you advised of our own research and are available to answer questions as they may arise.

2-24-69

DSW 201184

Jack T. Garrett - Medical Department

February 27, 1969

Aroclors - San Francisco Bay
Regional Water Quality Board

Aroclor - Wildlife File

H. S. Bergen
J. E. Springgate
W. R. Richard
T. C. Ford
R. E. Kelly/E. P. Wheeler

Mr. H. C. Knapp of the technical staff of the San Francisco Bay Regional Water Quality Board called our San Francisco sales office during the early part of the week, February 23-28, 1969, and asked for information about Aroclor use in the bay area. The sales office told Mr. Knapp that he would be contacted by the St. Louis Office. They referred the call by phone to Mr. T. C. Ford of Public Relations. Mr. Ford then asked the Medical Department to answer the call.

On Wednesday, February 26, 1969, Mr. J. T. Garrett of the Medical Department staff called Mr. Knapp. Knapp said that he called because of concern expressed by his Board Chairman over an article that had appeared in the Monday, February 24, 1969 issue of the San Francisco Chronicle.

Mr. Knapp asked four questions about Monsanto Aroclor products. These questions were:

1. How are these products used in business and industry?

2. Does Monsanto manufacture or use appreciable quantities in its Bay Area plants?

3. Where does Monsanto store or warehouse these products in the Bay Area and in these operations is there any repackaging?

4. What analytical techniques are used to analyze for these products in water?

Mr. Garrett, Mr. E. P. Wheeler of the Medical Department, Mr. H. S. Bergen of Organic Division Fluids Marketing, and Dr. W. R. Richard of Organic Division Research answered the questions posed by Mr. Knapp.

Mr. Knapp was given a rather thorough briefing on the uses of Aroclors and was told that he would be given a list of the warehousing facilities in the Bay Area. He was told that Monsanto does no repackaging in these facilities. He was also

told that Monsanto does not produce or use appreciable quantities in its Bay Area plants.

The question of analysis was discussed and Mr. Knapp was told that the levels indicated in the Chronicle article were determined by gas chromatographic techniques. This type of analysis requires very expensive equipment and experience with the techniques and interpretations to get any meaningful results. Mr. Knapp was further told that Aroclors are soluble in water only to the extent of 200 parts per billion (ppb) and that the levels found in water are not considered hazardous to humans or aquatic life.

Mr. Knapp seemed satisfied with the information received. His technical staff will probably question some of the Monsanto customers in the Bay Area and in all probability will inspect their handling techniques. It is also probable that they will inspect all warehousing facilities in the Bay Area where Aroclors are stored.

Mr. Knapp's address and telephone number is:

Mr. H. C. Knapp
San Francisco Bay Regional Water
Quality Board
364 14th St., 3rd Floor
Oakland, California 94612
Telephone: (415) 834-3460 - Ext. 536.

Jack T. Garrett

DSW 201186

Aroclor

2/26/ Wheeler Spiegotte Barrett H&Z. Richards Ford Kelly

Chlorinated biphenyls

1. Not broadcase as DDT or chlorinated pesticides. Used in closed systems and incorporated into plastics.

2. ~~Reserved~~ Research to confirm or deny identification by gas chromatography and mass spectrometry.

3. If it is PCB and identical to commercially produced material (Not biological degradations) we will help track down source of contamination.

4. Possible to control pollution from plants. Extremely low water solubility. Closed systems.

5. Not produced solely by Monsanto:
   Other sources: Japan
   Italy
   Germany
   France
   Russia.

6. Acute toxicity related to other compounds.

7. Long term toxicity - Results of animals.

DSW 201187

STLCOPCB4052566

Monsanto

FROM (NAME & LOCATION) Tom C. Ford - St. Louis

DATE February 27, 1969

CC: Mr. D. A. Olson

SUBJECT

REFERENCE

TO Mr. Howard S. Bergen

Attached is a suggested memo you may want to send out to Organic personnel -- along with copies of the San Francisco Chronicle story and our answers for future press or "public" inquiries.

I know Elmer Wheeler and Bill Richard are working on a more detailed "white paper" which you plan to send to some of your major customers. I will be helping Wheeler edit the draft.

If I can be of any more help in your mailings, please let me know. We do have an original copy of the Chronicle story in case you need it for xeroxing, etc.

Tom

Tom C. Ford

TCF:sfh
attach.

DSW 201188

IN 10 REV 11 65

DRAFT
2-27-69

Memo to:

In the last several years, several scientists around the world have been investigating the existence of an unidentified chemical in the tissues of marine life - fish, birds, etc. This work sprang from earlier studies on DDT residues.

One unidentified element in chromatograph analysis was labeled by a Swedish scientist as polychlorinated biphenyls (PCB). Numerous other groups are now doing similar investigations and, in fact, are using samples of our Aroclors in their tests.

One such study is being carried out by a Dr. Risebrough at the University of California. His work has been published in Nature, a U.K. magazine, and Scientific American.

Last week a sceince writer of the San Francisco Chronicle interviewed Dr. Risebrough and prepared the attached article which appeared in the paper's February 24 issue. Timing, and other factors, did not permit us to present our side of the story in the article.

As you can appreciate, our West Coast offices have received several inquiries and we have also been contacted by the San Francisco Regional Water Quality Control Board.

-more-

DSW 201189

There will undoubtedly be other questions on this matter. Attached is a sheet which gives our answers to press inquiries, at this time. As we conduct further investigations, we will be in a better position for a more detailed reply.

-oOo-

February 27, 1969

Q. Is Monsanto aware of this problem?

A. Yes, we are aware of this and other studies.

Q. Who else manufactures polychlorinated biphenyls?

A. There are several other producers around the world -- in Germany, Japan, France and Italy. Monsanto is the only U.S. producer.

Q. How are your Aroclors used?

A. Primarily in two areas -- 1) as dielectric fluids, heat-transfer fluids and hydraulic fluids and 2) as a modifier for corrosion-resistant paints and industrial adhesives and as an extender in elastomers and waxes.

Q. Is Monsanto doing any work on this matter?

A. We are investigating the reports and conducting our own studies. We find it difficult to see how detectable quantities of commercial product can appear in the marine environment. One possible answer is that the substance under question occurs from metabolism of natural materials or other unidentified substances. This is one of the points we are investigating. However, our work is not far enough along for firm conclusions.

-oOo-