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MONSANTO KNEW ABOUT PCB TOXICITY FOR DECADES

[Anniston's PCBs in the press](#)

Monsanto's defense of its actions surrounding PCBs can best be summarized this way: the company claims it didn't know that PCBs were harmful to human health or persistent in the environment until the late 1960s, and as soon as the company learned of these threats, it acted quickly and responsibly to address the problem in a cooperative, forthright manner with the government. "And the truth is that in 1966 when we found out that PCBs were in the environment, we started an investigation journey and we tried to gather information and we acted responsibly." [Trial Transcript, *Owens v. Monsanto* CV-96-J-440-E, (N.D. Alabama April 4, 2001), pg. 454, line 6]

...

"when Monsanto learned that PCBs could possibly be in the environment, it acted promptly and responsibly and continues to do so." [Trial Transcript, *Owens v. Monsanto* CV-96-J-440-E, (N.D. Alabama April 4, 2001), pg. 455, line 14]

But as the company's own documents show, Monsanto went to extraordinary efforts to keep the public in the dark about PCBs, and even manipulated scientific studies by urging scientists to change their conclusions to downplay the risks of PCB exposure. Monsanto's conduct, throughout the entire period that the company made PCBs, was less than commendable. Their attempts today to backpedal on the science and shirk responsibility for the global saturation of PCBs is equally discouraging, as are their repeated attempts to "green" their image with flashy, expensive PR campaigns.

Today Monsanto does not deny that everyone is contaminated with PCBs. They argue instead that since they have contaminated the entire planet they are innocent of all liability. In Monsanto's opening statement to the court in the trial of *Owens v. Monsanto* on April 4, 2001, the company's lawyers acknowledged only one health threat posed by exposure to PCBs: chloracne, a serious skin condition. According to the lead attorney for Monsanto, defending the company against allegations that its PCB pollution poses a health threat to residents living near its Anniston, AL chemical plant,

"The truth is that PCBs are everywhere. They are in meat, they are in everyone in the courtroom, they are everywhere and they have been for a long time, along with a host of other substances. The truth is that the men and women who have worked around PCBs the most over forty, fifty, sixty

years, people in our plant, people in the electrical industry, have not experienced any significant health problems which can be associated or tied into or caused by PCBs other than a serious skin condition called chloracne, which is easily treatable." [Trial Transcript, *Owens v. Monsanto* CV-96-J-440-E, (N.D. Alabama April 4, 2001), pg. 453, line 16]

In making these arguments, Monsanto is ignoring the growing evidence that PCBs are quite capable of causing harm to the human body. Following in their predecessor's footsteps, a spokesperson for Solutia, the company created by Monsanto to assume control over (and liability for) its chemical operations, told Chemical Week in June 2000: "The overwhelming weight of scientific evidence suggests there are no chronic human health effects associated with exposure to PCBs." Government and independent scientists and public health agencies have concluded otherwise. Both the U.S. Environmental Protection Agency (EPA) and the International Agency for Research on Cancer (IARC) have concluded that PCBs are probably carcinogenic to humans (U.S. EPA 1996; IARC 1978, 1987). The Agency for Toxic Substances and Disease Registry (ATSDR) also suspects that PCBs accumulating in the human body as a result of fish consumption may be causing "developmental deficits and neurological problems in children." ([ATSDR http://www.atsdr.cdc.gov/DT/pcb007.html](http://www.atsdr.cdc.gov/DT/pcb007.html))

Other studies on health effects associated with PCB exposure indicate neurotoxicity, reproductive and developmental toxicity, immune system suppression, liver damage, skin irritation, and endocrine disruption (Cogliano 1998; Browner testimony 1998; U.S. EPA 1996; Rice 1995).

Available data on the toxicity and persistence of PCBs prompted the global community of nations to include PCBs in the "Dirty Dozen" chemicals being banned by U.N. convention through the Persistent Organic Pollutant or "POPs" Treaty, signed by President Bush.

As the world came to consensus on the hazards of PCBs, Monsanto made no effort to inform the residents of Anniston of the extent of contamination in their community. A 1975 memo from a Monsanto employee to company officials reveals:

"We have no information relating to the effects of PCBs on the people in the areas surrounding our producing facility. We have no programs underway at present to study these effects." [[Papageorge to Potter; December 24, 1975](#)]

"The World's Best Reference File" on PCBs

Besides ignoring mainstream scientific consensus and downplaying a significant skin disease, Monsanto has routinely displayed a capacity to ignore its own science, which decades ago documented an array of health effects. Most noteworthy is a correlation between PCB exposure and liver damage, which Monsanto learned about in 1938 and repeatedly mentioned in its internal communications and in warnings to some of its customers. Monsanto wouldn't have to go any further than its own file cabinets and libraries to find documentation of the toxic effects of PCBs.

One memo in particular describes the fact that Monsanto believed it had the most comprehensive collection of information on PCBs in the world.

"I can say that we have probably the world's best reference file on the PCB situation. This includes reprints from the literature beginning in 1936 to reports issued last week." [[Wheeler to Don Otto; August 6, 1971](#)]

As PCBs are found increasingly hazardous, safety precautions for workers are dropped

As early as 1937, Monsanto knew that repeated contact with PCBs, also referred to by their brand name Aroclors, could lead to "systemic toxic effects" including "an acne-form skin eruption." [[L.A. Watt; October 11, 1937](#)]

The following year, Monsanto learned that test animals exposed to PCBs developed liver damage, according to Dr. Cecil Drinker, who wrote a "Report to the Monsanto Chemical Company" about his findings in 1938. [["Report to the Monsanto Chemical Company" by Drinker](#)]

Dr. Drinker published his findings in The Journal of Industrial Hygiene and Toxicology in 1939. In response to a 1947 inquiry from one of its Aroclor customers about possible liver damage, Monsanto referred the customer to Dr. Drinker's published work, promoting it as the best information available on the subject:

"The best published information about the toxicity of Aroclor vapors with reference to possible damage to the liver is in a series of three articles written for the Journal of Industrial Hygiene and Toxicology...

We particularly wish to refer you to this article entitled, "Further Observations on the Possible Systemic Toxicity of Certain of the Chlorinated Hydrocarbons with Suggestions for Permissible Concentrations in the Air of Workrooms," by

Cecil K. Drinker, [The Journal of Industrial Hygiene and Toxicology](#), Vol. 21, No. 5, May, 1939." [[Monsanto to Celanese; December 30, 1947](#)]

At the conclusion of this letter highlighting Drinker's findings and praising it as the most accurate available science on PCBs, Monsanto wrote to a customer that:

"Based on our practical experience in the manufacture and sale of millions of pounds of Aroclors annually, the point that we would emphasize is that workers should not be exposed to Aroclor vapors and that the men working with Aroclors should observe "good housekeeping" rules about keeping their clothing and skins free of the material and avoid ingestion of it." [[Monsanto to Celanese; December 30, 1947](#)]

A memo from November 1950 which was sent to Monsanto offices in Anniston, St. Louis (headquarters), London and Newport, England (another PCB production facility) discussed the safety considerations and health issues pertaining to workers in the Aroclor plants. The memo reveals:

"For a time the Aroclor operators had to bathe on leaving work and a change of work clothing was provided, but this practice was discontinued." [[E. Mather November 1950, Process for the manufacture of diphenyl and santowax](#)].

An undated document entitled "The Handling of Aroclors (Chlorinated Diphenyl)" included a paragraph on this subject:

"Personal cleanliness is of utmost importance. Work clothes should be changed daily and must not be worn away from the plant. Before changing to street clothes at the end of the day the workmen should bathe with plenty of soap and warm water. Neglect of these simple precautions may result in skin infections, ill health, discomfort, inefficiency and loss of time." [[The Handling of Aroclors](#)]

The document "Process for the Production of Aroclors, Pyranols, Etc. at the Anniston and at the WM. G. Krummrich Plant" from April 1955 explains that (Note: The Krummrich Plant in Sauget, IL, was Monsanto's other U.S. PCB production facility besides Anniston):

"From the start of Aroclor manufacture at the Krummrich plant the operators have been supplied a clean change of clothes every day, and time has been allowed at the end of the shift for bathing. Operators are advised to wash hands and face before eating. The Anniston operators do not have the same

issue of clean clothes." [[Process for the Production of Aroclors, Pyranols, Etc. at the Anniston and at the WM. G. Krummrich Plant by E. Mather; April 1955](#)]

This document further states that:

"At Anniston, no special protective clothing is provided for the Diphenyl and Aroclors operators. A daily change of clothing was provided in the past but this practice ceased before the war... the men are expected to take a bath, in their own time, at the end of the shift." [[Process for the Production of Aroclors, Pyranols, Etc. at the Anniston and at the WM. G. Krummrich Plant by E. Mather; April 1955](#)]

This document also mentions that there had been an accident in Monsanto's UK PCB plant:

"Newport plant report for December 1951 records burns by hot Aroclor-a case of a splash into a man's eye-without serious damage." [[Process for the Production of Aroclors, Pyranols, Etc. at the Anniston and at the WM. G. Krummrich Plant by E. Mather; April 1955](#)]

In a 1949 inter-office memo, M.N. Strachan of Monsanto wrote to his colleague, Dr. J.W. Barrett, about the company's published information regarding Aroclor toxicity:

"As far as I know, we only publish one technical service bulletin on Aroclors (G2) and this states: 'Toxicity- Prolonged exposure to AROCLOR vapours will lead to systemic toxic effects. ... acne form skin eruptions... Toxic effects will follow considerable oral ingestion, but this hazard is unlikely to be encountered.'" [[Strachan to Barrett, 30.8.49 Aroclor Toxicity Summary of References](#)]

A letter dated February 14, 1950 from a Monsanto doctor to the Indiana Board of Health describes a situation in a Brazil, Indiana plant where workers exposed to PCBs had experienced health problems, and it shows that Monsanto was well aware of potential liver problems related to chronic high-level exposure.

"Upon hearing of the illness, one of our development engineers went to the plant and gave his recommendations, and then I called the plant physician to try to obtain some idea of what the illnesses were. As far as I could determine, two men suffered from gastrointestinal upset. I suspected the possibility that the Aroclor fumes might have caused liver damage, but was

unable to obtain this information over the phone." [[Kelly MD to Indiana State Board of Health regarding Brazil, Indiana workers sickened by aroclors](#)]

A memo from 1952 concerning an agreement between the U.S. Public Health Service and the manufacturers of chlorinated hydrocarbons (which include PCBs) about labeling requirements reveals an astonishing use of one the company's most toxic PCBs, which Monsanto referred to as "the prize application." The memo also referenced cases of chloracne and even deaths associated with exposure to PCBs among workers; and cases of workers' wives developing skin problems carried home on clothing:

"Back in 1938 or thereabouts, when the Aroclor applications were relatively few and the customers about equally few, there was indeed the prize application of using Aroclor 1254 as a chewing gum plasticizer. The wording of our label would not be compatible with this sort of thing."

"While the toxicity hazard of Aroclor's fumes is well established and should be thoroughly understood by all, yet, as we go along we find that we are always confronted with violations in one degree or another, and indeed, regard keeping in touch with these things to be a major responsibility in the promotion of Aroclors."

"Referring to the few deaths and the relatively large number of acne or dermatitis cases arising during the war, in connection with fabricators of Navy cable coating materials using a mixture of Aroclor 4465 and Halowax, there are two things to keep in mind. One is that this combination of chlorinated hydrocarbons is more toxic than the chlorinated biphenyl or terphenyls alone; and secondly, in this program of operations, proper working facilities and cleanliness were overlooked. In fact, the workers' wives at home even acquired acne and dermatitis which was traced back to the halogenated hydrocarbon compounds." [[P.G. Benignus to T.K. Smith; February 29, 1952](#)]

A document dated September 1, 1953 begins by stating:

"As I am sure you know, Aroclors cannot be considered nontoxic." [[Wheeler to Mather; September 1, 1953](#)]

The same document concludes by explaining that Monsanto was worried about the use of Aroclors in paints that might be used in unventilated areas.

"As you indicated, we are watching the use of the Aroclors as plasticizers in emulsion paints. We do not recommend that they be used in paints which might be applied in confined or unventilated areas, particularly if the paints

might be used on heated surfaces. As you stated, this is a case of worrying about the exposure of painters who might apply such materials day in and day out rather than the worrying about those who might occupy the room during or shortly after the paint has been applied." [[Wheeler to Mather; September 1, 1953](#)]

In 1954, a memo from Monsanto Medical Department's Dr. Emmet Kelly to Dr. N.R. Newman in Monsanto's Newport, England plant explained that:

"What we were really worrying about was the possibility that a man would develop hepatitis on an idiopathic, viral, or serum basis and on questioning would recall that he had painted a room with Aroclor paint and state that he had smelled it very strongly. I am afraid that we might be convicted by association even though we were sure one could not get a level high enough to cause trouble. We have, however, been concerned with the level of Aroclor during spray painting, but I think that level can only be determined by actual measurements.

Please do not worry about asking me these questions because we certainly want you to have the entire picture about Aroclor toxicity." [[Kelly to Newman; February 12, 1954](#)]

Also in 1954, Monsanto learned that one of its customers had had a serious problem with workers' health because of Aroclor exposure in its plant. Skin problems developed even after "continuous mild exposure."

"Lesions of chloracne developed in seven workers employed in an organic acid manufacturing plant when Aroclor was used..... An unusual feature of this out break of dermatitis was the long period of exposure before any cases were recognised. Sudden recognition of seven cases after 19 months was a result of the especially careful examination of the exposed employees after discovery of the first case. Of 14 exposed or potentially exposed, seven developed chloracne. The fact that air tests, even in the presence of vapors, showed only negligible amounts of chlorinated hydrocarbons indicates that this type of intermittent but fairly long continued mild exposure is not innocuous." [[1954 Seven Workers Develop Chloracne in Plant Using Aroclor](#)]

Indeed, even decades after these documents were written, Monsanto continued to hear of problematic exposures to workers in its customers' plants. As a 1976 memo from a Monsanto doctor explains, the chloracne and liver problems remained a serious issue in the workplace even then:

"I told him that his primary concern must be the possibility of chloracne and that I would do liver function studies on these workers in their periodic examinations. I told him that the most important study he could do was to get an analysis of the PCB content in the air and to instruct the workers to wear gloves when there was a chance of skin contact with PCB's." [[Roush to Weber re: phone call from J.J. Kelly of Transformer Consultants in Akron, Ohio; September 10, 1976](#)]

Furthermore, while Monsanto downplays its severity today, chloracne is a rare acne-like condition caused only by exposure to toxic chemicals. [[Chloracne Pictures](#)]. In contrast to Monsanto's blithe courtroom claim that the condition is "easily treatable," there is ample evidence that chloracne is resistant to usual acne treatments, leaves ugly scars, and in serious cases it can persist for decades after symptoms first appear. One study revealed that chloracne was still present in some workers 30 years after the original exposure. (Moses, 1984)

Monsanto's MD Questions Need for Safety Studies

In 1955, Monsanto's Medical Director, Dr. Emmet Kelly, wrote an internal memo which chastises a colleague for wanting to study Aroclor exposure problems in the workplace more extensively:

"I don't know how you would get any particular advantage in doing more work. What is it that you want to prove?"

Further down the memo states:

"MCC's position can be summarized in this fashion. We know Aroclors are toxic but the actual limit has not been precisely defined. It does not make too much difference, it seems to me, because our main worry is what will happen if an individual developes [sic] any type of liver disease and gives a history of Aroclor exposure. I am sure the juries would not pay a great deal of attention to MACs.

We, therefore, review every new Aroclor use..... if it is an industrial application... we are much more liberal in the use of Aroclor. If, however, it is distributed to householders where it can be used in almost any shape and form and we are never able to know how much of the concentration they are exposed to, we are much more strict. No amount of toxicity testing will obviate this last dilemma and therefore I do not believe any more testing would be justified." [[Letter from Dr. Kelly to Dr. Barrett Re: Aroclor Toxicity; September 20, 1955](#)]

No Eating in the Aroclor Department

Also in 1955, Monsanto announced its opinion that workers should not eat lunch in the Aroclor department. The document indicates that:

"It is the opinion of the Medical Department that the eating of lunches should not be allowed in this department.... early literature work claimed that chlorinated biphenyls were quite toxic materials by ingestion or inhalation. In any case where a workman claimed physical harm from any contaminated food, it would be extremely difficult on the basis of past literature reports to counter such claims." [[J.T. Garrett to H.B. Patrick; November 14, 1955](#)]

The Navy Rejects Monsanto's PCBs: "Just too toxic for use"

In 1956, the U.S. Navy considered using one of Monsanto's products which contained PCBs, called Pydraul 150, as a hydraulic fluid in Navy submarines. But after conducting their own toxicity tests, which showed that skin applications of Pydraul 150 killed all rabbits tested and that a statistical model on inhalation of Pydraul 150 indicated "definite liver damage," the Navy decided not to use Monsanto's product due to its potentially harmful effects. In Dr. Kelly's own words:

"No matter how we discussed the situation, it was impossible to change their thinking that Pydraul 150 is just too toxic for use in a submarine." [[Kelly to Armstrong; January 21, 1957](#)]

The Navy's decision to do its own toxicity tests, despite having been supplied Monsanto's tests, greatly bothered a member of Monsanto's Medical Department, Elmer Wheeler, who wrote on December 26, 1956 to a Monsanto colleague in Washington, D.C.:

"Out of all of this it appears quite certain that in the future we will not spend one nickel to develop toxicity data on hydraulic fluids for the Navy. We will continue to get information to satisfy ourselves that the use of our fluids is safe under any normal foreseeable conditions. This is generally enough to satisfy non-military customers. If the Navy has interest in any of these fluids and wishes to accept them toxicity wise on the information available, they are welcome to do so. If the fluids are not acceptable toxicity wise on the basis of such data, then perhaps we can save a lot of time and effort by advising the Navy to look elsewhere for their requirements.

In spite of the tone of the above memo, Emmet [Dr. Kelly] and I wish you the happiest of New Years!" [[Wheeler to Sido; December 26, 1956](#)]

Nine months later, Mr. Wheeler wrote the following to another colleague:

"The Navy convinced us that they would not accept Pydraul 150 and probably no other fluid containing chlorine or chlorinated diphenyls. We have not attempted to dissuade [the Navy representative] since it appears to be hopeless. Since the interpretation of toxicity data is quite relative, our interpretation of facts and data would not be sufficient to change their opinions." [[Wheeler to Slayton; September 25, 1957](#)]

Despite all the company knew of the toxic effects of PCBs, Monsanto consistently failed to adequately disclose its full knowledge to its customers. Most customers didn't take the initiative to run their own tests as the Navy had, and therefore, remained in the dark about the potential danger of exposure to PCBs.

Labeling: "Comply with the minimum"

A December 5, 1958 document explains Monsanto's disturbing approach toward compliance with labeling laws newly enacted in many states, and explains the company's reluctance to provide a label proposed by a customer:

"In order to comply with recent changes in labeling laws enacted by several state legislatures, the subject of correct labeling for the Pydrauls has been a great concern to us.

This situation was brought forcibly to our attention by a specific request from Socony Mobil that a caution stamp be affixed to all Pydraul which they purchase from Monsanto for resale. We believe the wording which they use on this stamp is not in the best interest of Pydraul sales, and is such that our competition could use to great advantage.....

It is our desire to comply with the necessary regulations, but to comply with the minimum and not to give any unnecessary information which could very well damage our sales position in the synthetic hydraulic fluid field." [[D.F. Smith to R.D. Minter; December 5, 1958](#)]

A 1959 letter from Dr. Kelly to Monsanto HQ in St. Louis further discusses problems with the Pydraul PCB product line, apparently referring to the difficulty of marketing the product in Germany for use in the food industry:

"I wish I could be as optimistic as you are in stating that "any information you can give us from a medical standpoint will certainly be helpful in promoting the sale of Pydraul AC in Germany." If these Germans are afraid of mineral oil,

I feel they will be rather suspicious of Pydraul AC. After all, the constituents are considerably more toxic than mineral oil." [[Kelly M.D. to O.F. Heasel](#)]

Further down, Dr. Kelly concludes the letter saying:

"I think the Germans are being overcautious in this matter, but I certainly can't give Pydraul an absolutely clean bill of health, assuming some might get into the food." [[Kelly to Heasel; June 23, 1959](#)]

Suspected Liver Damage

A letter from Dr. Kelly to Mr. Richard Davis at HQ in St. Louis dated February 2, 1961 reveals another case of workers sickened by PCB exposure:

"Yesterday, Mr. Allen of the subject company called and stated he had two employees nauseated from exposure to a leak in a heat transfer unit that used Aroclor 1248. One individual was under the care of a physician and the physician suspected liver damage although no jaundice could be seen (patient a negro) and was not hospitalized." [[Kelly to Allen; February 2, 1961](#)]

A letter from the Hexagon representative to Dr. Kelly dated February 14, 1961 provides more information:

"In reference to our recent telephone conversation, I would like to further discuss the incident wherein two of our plant personnel were exposed to hot Arochlor (1248) vapors generated by a broken pipe connection. For your information and records the two men developed symptoms of Hepatitis as you predicted and were confined to a hospital for approximately two weeks.

In view of the above experience which has given me considerable concern I felt that the matter should be brought to your attention. Since we are dealing with a highly toxic material at high temperatures and since these failures cannot be prevented, it is felt that a more thorough and clearly written description of the hazards be described under Safety of Handling. Also the antidote or first aid treatment if any be included. I certainly would be interested in this information if available.

I trust that this matter will be given your serious consideration so that other or new users are fully aware of the problem." [[Allen of Hexagon to Dr. Kelly; February 14, 1961](#)]

A year later, a letter from Dr. Kelly to a doctor with the U.S. Public Health Service in Ohio dated March 15, 1962 fails to mention the chloracne problem

and does not mention any of the other exposure incidents that Dr. Kelly was fully aware of:

"As I told you on the telephone, our experience and the experience of our customers over a period of nearly 25 years, has been singularly free of difficulties. To our knowledge, there have been only three instances where chloracne has occurred. In view of the millions of pounds which have been produced and used in many and varied applications, the low frequency of any difficulties has been gratifying...."

Further down:

"I would, however, assume that it has the same toxic character as the lower Aroclors. Therefore, if sufficient material were inhaled, liver problems would develop." [[M. Kelly M.D. to U.S. Public Health Service](#)]

Monsanto Favors "Minimum Precautionary Statement"

In 1964, Congress passed the Federal Hazardous Substances Labeling Act to ensure that toxic substances were properly identified as such on consumer products. A May 27, 1964 memo from Monsanto's Medical Department explains that Aroclor 1232 would need to be labeled under the new law. It notes that Monsanto would not take responsibility for assuring the proper labeling of its customers' products containing PCBs, but that it would suggest a "minimum precaution statement." Their idea of a warning seems more fitting for a bite-sized plastic accessory than a toxic chemical:

"We have several indications that the Aroclors are more toxic when in an oil solution than when administered undiluted to animals.

The ultimate responsibility for the proper labeling of a formulation remains with the customer since we cannot be expected to get animal data on every possible formulation containing a Monsanto product. In all the varying concentrations and with the innumerable combinations of other components such as antioxidants, colorants, etc.

The very minimum precautionary statement that I think would be necessary would be:

Caution-Harmful if swallowed.

Keep out of the reach of children"

[[Wheeler to Nemits; May 27, 1964](#)]

Warning Its PCB Customers

Monsanto was also fielding a lot of questions from its PCB customers who wrote to inquire about the chemical's toxicity. One customer in particular got an earful from Monsanto:

"[The concerned customer] went on to say that in his own plant Aroclor spills on the floor were common and that his own employees had complained of discomfort. I was brutally frank and told him that this had to stop before he killed somebody with liver or kidney damage-- not because of a single exposure necessarily but only to emphasize that 8-hour daily exposures of this type would be completely unsafe." [[Wheeler to Davis; September 3, 1965](#)]

In direct contrast to Monsanto's current claims of PCBs' harmlessness, the company advised a concerned customer in a February 2, 1967 letter that:

"...Aroclors can cause damage to the liver as a result of prolonged exposure to the vapour and to the liquid. To the best of our knowledge no fatality has ever been attributed to a chlorinated diphenyl, but in view of the chronic action on the liver we advise that contact with the vapour and liquid must be kept to a minimum." [[Hardy to Border Chemicals Ltd.](#)]

Concerns About Media Coverage

A memo dated February 10, 1967 from Dr. Kelly to Monsanto Europe discussed the concern Monsanto had about the probability that the American public would learn about the PCB problem through the media as the European public had, and also discussed the company's concern about customer inquiries regarding toxicity:

"We are very worried about what is liable to happen in the states when the various technical and lay news media pick up the subject. This is especially critical at this time because air pollution is getting a tremendous amount of publicity in the United States.

We have been receiving quite a few communications from our customers, but the most critical one is NCR, who are very much involved with their carbonless carbon paper.

...

The consensus in St. Louis is that while Monsanto would like to keep in the background in this problem, we don't see how we will be able to in the United States. We feel our customers, especially NCR, may ask us for some sort of

data concerning the safety of these residues in humans. This obviously might be opening the door to an extensive and quite expensive toxicological/pharmacological investigation." [[Kelly to D. Wood; February 10, 1967](#)]

Monsanto's Aroclor Ad-Hoc Committee: "We Can't Afford to Lose One Dollar of Business"

In the late 1960s, Monsanto was continuing to field questions from concerned customers and also struggling with major pollution problems in Anniston. The company became increasingly compelled to defend its PCB products from accusations of harmful effects coming from around the country.

On August 25, 1969 Monsanto formed its "Aroclor Ad-hoc Committee" in an effort to defend against governmental and public scrutiny regarding its PCBs. The Committee was charged with assessing the situation and determining how best to protect Monsanto's global Aroclor market, which had grown into a \$22 million a year business, with gross profits of \$10 million.

The goal of this committee, it seems, was to do everything possible to enable the continued production and sales of PCBs. Specifically, as the Committee's first report described in October 1969:

"...an "ad hoc" committee was appointed to prepare a resume of the situation concerning the environmental contamination through the manufacture and use of polychlorinated biphenyls (Aroclors).

The objective of the committee was to recommend action that will:

- (1) Protect continued sales and profits of Aroclors;
- (2) Permit continued development of new uses and sales;
- (3) Protect the image of the Organic Division and the Corporation as members of the business community recognizing their responsibilities to prevent and/or control contamination of the global ecosystem."

[[Confidential Report of Aroclor "Ad Hoc" Committee; October 2, 1969](#)]

Monsanto worried that:

"As the alarm concerning the contamination of the environment grows it is almost certain that a number of our customers or their products will be incriminated. The company could be considered derelict, morally if not legally, if it fails to notify all customers of the potential implication." [[Confidential Report of Aroclor "Ad Hoc" Committee; October 2, 1969](#)]

Monsanto recognized the fact that the environmental contamination at its facilities paled in comparison to the widespread contamination caused by the various uses of PCB by the company's customers. Today, General Electric Co.'s problems in the Hudson River and elsewhere are a prime example.

"Environmental Contamination by Customers:

Our in-plant problems are very small vs. problems of dealing with environmental contamination by customers. In one application alone (highway paints), one million lbs/year are used. Through abrasion and leaching we can assume that nearly all of this Aroclor winds up in the environment." [[Minutes of Aroclor Ad Hoc Committee First Meeting; September 5, 1969](#)]

The company realized that the stakes were high in defending itself and its PCB market:

"This is a serious matter, not only from the pollution viewpoint, but also because of the \$22M worldwide customer business involved with resultant gross profits of \$10M and a net investment of \$9M. In addition, there could be possible adverse legal and public relations issues leveled against Monsanto." [[PCB Presentation to Corporate Development Committee](#)]

Another internal document from 1970 put it plainly:

"We can't afford to lose one dollar of business. Our attitude in discussing this subject with our customer will be the deciding factor in our success or failure in retaining all our present business. Good luck." [[Monsanto \(St. Louis\), "Pollution Letter,"; February 16, 1970](#)]

There were certainly some uses of Aroclors which seemed particularly vulnerable to scrutiny, like use in paints for water storage tanks and swimming pools.

"In the plasticizer use area, the Aroclors may be used in rubber based paints or surface coatings. The uses for these surface coatings include the interior walls of potable water supply storage tanks in some communities. In Europe we have been told that similar paints are widely used for swimming pools. In spite of the low degree of solubility of the PCB's in water, there are sentiments among the European scientists (and our PCB competitive manufacturers) that such uses may be sources of pollution.

Other customer applications or uses which could be suspect include highway marking paints, any of the oil and/or grease lubricant applications, caulking

compounds and sealants." [[Confidential Report of Aroclor "Ad Hoc" Committee; October 2, 1969](#)]

PCBs in Detergents

As the list of products that PCBs were used in or had contaminated grew, Monsanto attempted to test each one to determine if there were indeed PCBs in the product. The company quickly accumulated more samples than it could analyze, and was struggling to manage its backlog. Monsanto, therefore, decided not to tell some of its customers that PCBs had been found in their product, choosing to delay until after Monsanto had a chance to confirm it in the company's labs.

"A case in point is the delay in analyzing thirteen samples from the Inorganic Division. Samples were submitted following the finding that five of five commercially available electric dishwashing compounds analyzed showed the presence of PCB's. The Inorganic Division can not exonerate the products it sells to the detergent manufacturers until it has some data showing whether or not Monsanto supplied materials are contaminated. In the meantime Inorganic Division Quality Control has suggested to its Division Engineering that future designs for making detergent components insure that the use of Aroclors will not permit contamination. Secondly, it is obvious that the Division cannot approach its detergent manufacturing customers about their potential problems until the above data indicate that 'our own skirts are clean.'"

[[Confidential Report of Ad Hoc Committee; October 2, 1969](#)]

The Committee's report painted a grim picture of its prospects for successfully saving the more highly chlorinated PCB product line from fatal scrutiny:

"The committee believes there is little probability that any action that can be taken will prevent the growing incrimination of specific polychlorinated biphenyls (the higher chlorinated-e.g. Aroclors 1254 and 1260) as nearly global environmental contaminants leading to contamination of human food (particularly fish), the killing of some marine species (shrimp), and the possible extinction of several species of fish eating birds." [[Confidential Report of Aroclor "Ad Hoc" Committee; October 2, 1969](#)]

"When are we going to tell our customers?"

In an internal memo dated January 29, 1970 with the subject "Status of Aroclor Toxicological Studies" Monsanto's Emmet Wheeler reported about the company's recent animal studies:

"Our interpretation is that the PCB's are exhibiting a greater degree of toxicity in this chronic study than we had anticipated. Secondly, although there are variations depending on species of animals, the PCB's are about the same as DDT in mammals.

We have additional interim data which will perhaps be more discouraging. We are repeating some of the experiments to confirm or deny the earlier findings and are not distributing the early results at this time." [[Wheeler to Cameron; January 29, 1970](#)]

PCBs in Animal Feed

A March 30, 1970 letter from Dr. Kelly to W.B. Papageorge of Monsanto discusses a problem in Ohio that had Monsanto worried and wondering what to tell its customers using paints containing Aroclors:

"We have been in communication with a Dr. Hill of the Ohio State Board of Health. He has found PCB, particularly Aroclor 1254, in samples of milk from at least three herds in Ohio. He has traced this contamination back to silage from three different silos. Dr. Hill reported concentrations of 0.2 ppm of PCB in the silage in the center of the silo and up to 20 ppm in the material next to the walls. He also stated that concentration in the milk were between 0.1 ppm and 0.6 ppm and that some of the milk had been destroyed.

The silos are concrete silos whose interior surfaces were painted in 1967 using a formulation that contained 1254. I don't know if there was any other Aroclor in the formulation nor do we know the coating manufacturer; although, this could be found out if important. The presence of PCB in the silage came from flaking off of the material and possibly from leaching out during the silage storage. At present they will have to destroy about 150 tons of silage which is valued at about \$30 a ton. As a rough guess, they consider there may be 50 other silos involved in Ohio that were painted with the same formulation. They are also looking into the fat contamination of the cows themselves.

All in all, this could be quite a serious problem, having legal and publicity overtones.

This brings us to a very serious point. When are we going to tell our customers not to use any Aroclor in any paint formulation that contacts food, feed, or water for animals or humans? I think it is very important that this be done." [[Kelly to Papageorge; March 30, 1970](#)]

A week later, Dr. Kelly wrote again to W.B. Papageorge, explaining that the FDA and/or USDA was considering setting tolerance levels for PCBs in milk and fat of animals, but that he had been unable to find out who within the government he should talk to in order to find out more about the subject:

"...At present, I am at a dead end as far as finding out anything from the FDA or Department of Agriculture. I am not so sure whether it might not do more harm than good for us to start poking around to find out. Let me know if anyone has any firm convictions that I should start digging." [[Kelly to Papageorge; April 7, 1970](#)]

By October 1970, the executives at Monsanto's Headquarters office in St. Louis were coming to grips with the fact that their PCB customers were still largely in the dark about the problems with the product. Though the company had already withdrawn some Aroclor plasticizer products from the market, many Aroclor products remained, and the company recognized that they needed to get the word out to customers if they hoped to have a credible defense in case of lawsuits.

"It was emphasized that that we must continue to emphasize to all remaining users of PCB's the importance of preventing escape to the environment and we must ensure that these warnings are fully documented so that they will support the action we have taken in this area should we become involved in legal actions." [[Papageorge to various employees; October 6, 1970](#)]

Monsanto continued to defend its Aroclor line of products, and sought to prolong the sale of PCBs despite having plenty of indication that this chemical was harmful to human health and the environment. As this document [[September 9, 1969 Memo](#)] describes, Monsanto's strategy for dealing with its PCB contamination problems seems to have focused only on how to protect the company's bottom line and to guard against liability for the pollution.

A September 29, 1976 Monsanto document provides insight into the company's approach to disclosing information about the toxicity of PCBs even after it ceased production of Aroclors in Anniston:

"Note: If a question comes up about carcinogenicity, use the following statement which you may attribute to George Roush, M.D., Director of Monsanto's Medical and Environmental Health Department:

We have seen nothing in our preliminary health studies with our PCB workers or, indeed, in our extensive long-term feeding studies with animals that would indicate that PCBs are carcinogenic.

General Recommendations:

- (1) Avoid any comments that suggest liability.
- (2) Avoid any medical questions if possible.
- (3) Do not offer information on MCS 1238 or our development program. If a question comes up, say our development work was shelved in the late spring when it became obvious that our proprietary approach would not enable us to compete with the commodity type alternates being pursued by industry.
- (4) Make NO comments about the U.S. law suits that have been recently publicized.
- (5) Make no comments on the PCBs in mothers' milk stories that have been circulating in the U.S. press.
- (6) Feel free to use any of the information contained in the attached U.S. press release but avoid lifting phrases out of context."

[Bishop and Wood, Monsanto; September 29, 1976]

PCB production in Anniston officially ceased on May 1, 1972 (liquid Aroclor production ceased at Anniston in August 1971, while solid Aroclor production ceased in May of 1972). [Jessee to EPA; July 5, 1972; AWIC to Jessee; November 13, 1972] However, PCB production would continue at Monsanto's other U.S. plant in Sauget, IL until 1977.

References

Moses, M., Lilis, R. Crow, K.D., Thornton, J., Fischbein, A., Anderson, H.A., and Selikoff, I.J. (1984) "Health status of workers with past exposure to 2,3,7,8-tetrachlorodibenzo-p-dioxin in the manufacture of 2,4,5-trichlorophenoxyacetic acid. Comparison of findings with and without chloracne." American Journal of Industrial Medicine 5:161-82.