PCB HEARING

SPECIAL MEETING OF

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION V - CHICAGO, ILLINOIS

July 19, 1977

10:00 a.m.

Pick Congress Hotel
Chicago, Illinois

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MR. BREMER: Good morning, I'm Karl Bremer. I am the Toxic Substances Coordinator for the Environmental Protection Agency in Chicago.

The meeting this morning will be opened by Mr. Val Adamkus. Mr. Adamkus is the Deputy Regional Administrator of the U.S. Environmental Protection Agency in Chicago.

Mr. Adamkus has been active in overall administration of Toxic Substances programs since 1970, starting with programs to haul mercury contamination in on the Ohio Basin.

His continual persistence and attentativeness to PCB problems as well as other toxic problems has enabled us to actively respond to the Toxic Substances Control Act.

Mr. Adamkus.

MR. ADAMKUS: Good morning, ladies and gentlemen.

I would like to take this opportunity to welcome you here today.

We hope that today's meeting will be extremely informative to all from industry, citizen groups, the general public, and of course to Environmental Protection Agency.

We consider this meeting a necessity

in our rulemaking procedure to arrive at a balance and objective viewpoint.

With a recent enactment of the Toxic Substances Control Act, the first compounds of concern are polychlorinated biphenyls.

In fact, the Act made special provisions for PCBs requiring the Environmental Protection Agency to issue labeling and disposal regulations by July, 1977, to restrict use to close systems by January of 1978, to prohibit all production by January 1979, and to prohibit all distribution of PCBs in commerce by July, '79.

Why then have PCBs received special consideration?

To the unique physical and chemical properties of PCBs include low vapor pressure at ambient temperatures, resistance to combustion, remarkable chemical stability, high dielectric constant, and high specific electrical stability and flow water solubility.

At the same time, PCBs are liquid solubles, and hence the potentials for absorption into fatty tissue and into the liver is high.

Thus once ingested, PCBs are retained

by most organisms rather than excreted.

The qualities of resistance which made PCBs useful for industrial purposes greatly aggravate their potential for harm in the eco system.

The principal uses for PCBs today are enclosed electrical systems. PCBs have been used over the years resulting in great and greater direct contamination of the environment.

These uses includes an additive in investment casting waxes, lubricant additives, hydraulic and compressor fluids, carbonless paper, plasticizers, paints, heat exchange fluids, certain types of paper and sealants.

Most of these uses have been substantially curtailed by the PCBs which have entered the environment, will be here for many years.

Water and sediments seem to be the final major thing for PCBs when they are supported by contributory streams, municipal and industrial outfalls or transported by the atmosphere.

Because PCBs are extremely persistent, we may expect to deal with this problem over a long period of time.

In today's presentations, and during each question period, we are asking for objective facts, facts which will give the Environmental Protection Agency adequate input prior to proposing PCBs ban regulations under the Toxic Substance Control Act.

I am positive that your contribution will be of great significance.

At this time I would like to introduce to you Mr. George Wirth.

Mr. Wirth is the Chairman of our PCB Board group in Washington and has been actively involved in PCBs in EPA's Office of Toxic Substances.

Mr. Wirth will chair today's meeting and will explain the meeting's objectives, procedures, and the rules.

Mr. Wirth?

HEARING OFFICER WIRTH: Thank you.

Good morning, ladies and gentlemen.

As Mr. Adamkus pointed out, the meeting this morning concerns PCBs and specifically it concerns the development of regulations surrounding the various bans on manufacturing, processing,

distribution and commerce and use proposed starting January 1st, 1978, and the final distribution commerce ban that will take effect July 1st, 1979.

The Environmental Protection Agency has recently proposed rules on the labeling and disposal requirements for PCBs as a requirement of the Toxic Substance Control Act, and we have also completed the Informal Hearing requirement specified by the Toxic Substance Control Act in the end of June of last month.

Those regulations now are in final consideration and comment period, and we anticipate that we will promulgate such regulations sometime toward the end of August or September.

So basically we have progressed to the point that we just about have regulations on labeling and disposal and this general meeting is to discuss the future bans on manufacturing and use and other activities.

The panel this morning consists of representatives from Region V, the Chicago Region, that have been involved in the PCBs in the Environmental Protection Agency, and representa-

tives from Washington who form the major core of the Work Group involving this regulation.

This Work Group has probably 25 members strong and roughly a third of that Work Group here with us appear today to hear your points.

This meeting is an informal meeting, public participation meeting. It is not the Informal Hearing required by the Toxic Substance Act.

So generally this meeting will be less formal in nature than that meeting, and it is a meeting intended for the public to have input to the agency before we go actively propose a regulation or consider how a regulation should be constructed.

This is the sixth such meeting we have had in the Toxic Substance Control area. This will be the fourth one on PCBs, the second one on manufacture.

There was one last Friday in Washington on this same subject, and we have had two previously on chloroflourocarbons, banning of use on chloroflourocarbons, and aersol sprays.

The general procedures that we will

follow for today is that the people that have previously signed up to make a presentation at this meeting will be called in the order of their sign up, and be allowed to make whatever general statement they would like.

When they complete that statement, we will go down the panel to ask various questions concerning our testimony, and concerning our interest, and when we complete that, we will be happy, as time allows, to ask any question of the witness from the general audience so that during the individual's presentation or during his questioning by the panel, we invite the audience to formulate whatever question they would like to ask, and raise their hand at some point that is opportune and it will be brought to the panel to be asked of the witness.

When we complete all witnesses, if time allows, we will be happy to have any general statement or additional question or any comment that anyone would like to make from the audience for the record.

Concerning the rules on or procedure on calling individual witnesses, we will call

you and we essentially allow four options on your request to take the podium.

You may, of course, speak. You may yield your time to anyone else that you wish. You may cancel your time or you may pass if you wish for whatever reason you may have.

If anyone passes, he will be recalled after we have gone through the entire witness list, and we will keep calling the passes in the order in which they pass until everyone either passes or cancels and then we will end the testimony for today.

It is very similar to a Midwestern poker game called 7/27. Those types of rules I am sure many of you out there understand -- and having grown-up in this part of the country myself.

If there are no general questions on today's procedures, I think we are prepared to call the first witness and proceed with this meeting.

Yes, I am sorry, thank you, Karl.

I forgot the procedure of this myself -- and that is to introduce the panel --

essentially tell you what their interest is in this particular regulatory activity.

Starting at my extreme right, I have Mr. Gary Burin who is out of the Office of Toxic Substance, and is assigned to work on the PCB manufacturing and banning regulations.

He is an engineer and scientist, and background in public health administration.

Next to Mr. Burin is Dr. Emilio Sturino who is out of the Chicago Central Regional Lab of EPA from the Organic Section and background in doing analytical work on finding PCBs and determining levels of PCBs.

Next to him is Mr. Jay Goldstein of the Solid Waste Program in Chicago Region.

Next to him Mr. Hal Snyder out of the Office of Enforcement in Washington, D.C.

Formerly out of the Office of Toxic Substance and basically the author of the labeling and disposal regulations, if we have a single author.

To my immediate right is Mr. Karl Bremer, the Toxic Substance Coordinator for Region V in Chicago, and he also is a member of

our PCB Work Group, and the Regional representative on that work.

On my immediate left is Mr. Blake Biles from the Office of General Counsel who has been involved with PCBs for quite a number of years and is also a member of the Work Group on PCBs.

Next to him is Mr. Brian Davis, the Regional Counsel's Office in Chicago.

Next to him is Mr. Edwin Shykind, Director of Environmental Affairs and Bureau of Domestic Commerce in the Department of Commerce.

He is one of the representatives to the PCB Work Group and he is also a member of the Chloroflourocarbon Work Group and was involved in the regulatory activity.

Next to him is Mr. Peter Principe, Environmental Engineer out of the Office of Toxic Substance, primary responsibility in my office for writing second phase PCBs, to regulations.

Next to Mr. Principe is Mr. Glenn Pratt who is out of the Enforcement Division in the Chicago Regional Office. And he is Chief of the National pollution discharge elimination

system in Chicago -- the water pollution control permits.

And next to him, Mr. Pratt, is Mr. Robert Pearson out of the Office of Enforcement in Chicago Region.

With that, then, we call the first witness, Mr. E. M. Freegard of the Advance Transformer Company of Chicago, Illinois.

Is he here? Mr. Freegard, feel free, as all witnesses, to bring whoever you like with you to the podium for whatever reason you like.

MR. FREEGARD: Good morning, ladies and gentlemen.

I am Ernest Freegard, and these comments are presented by the Advance Transformer Company of Chicago, Illinois.

We are a company of the North American Philips Corporation which is a corporation of Delaware.

The Advance Transformer Company is one of the largest consumers of small oil-filled capacitors for AC application in the lighting industry.

And we are directly affected by any rulemaking regarding polychlorinated biphenyls.

This testimony pertains to information regarding PCBs printed in the Federal Register Volume 42, Number 123, dated Monday, June 27th, 1977 -- Page 32555.

This document indicates that Section 6(e) of the Toxic Substances Control Act provides that after January 1, 1978, PCBs may not be manufactured, processed, distributed in commerce or used in other than a totally enclosed manner.

No PCBs may be manufactured after January 1, 1979, and PCBs may not be processed or distributed in commerce after July 1, 1979.

Since the small AC capacitors utilized by the lighting industry are hermetically sealed, I assume that these are considered to utilize PCBs in a quote totally enclosed manner unquote.

If there is no disagreement on this, then I assume the proposed January 1, 1978 ban does not affect the distribution in commerce of capacitors used in the lighting industry.

I am, however, concerned regarding the intention of the Act with respect to the January 1 and July 1, 1979 bans.

Let me take a minute to explain

just how discharged lamp lighting fixtures works their way through the manufacturing and distribution chain before they finally reach the user.

First, the capacitor industry manufactures the hermetically sealed small AC capacitors and sells them to the many companies who are in the business of manufacturing and selling discharge lamp ballasts.

The Advance Transformer Company is one of more than a dozen companies who make ballasts.

Second, the ballast industry makes ballasts, utilizing these capacitors and sells them to about 500 lighting fixture companies who build the ballasts into their lines of lighting fixtures.

Third, the lighting fixture industry produces a nearly endless variety of lighting fixtures which are typically sold to about 4,000 electrical distributors located throughout all of the 50 states.

And last, the electrical distributor sells the lighting fixtures to thousands of

electrical contractors who subsequently install the lighting system for the user.

There are, then, in this manufacturing and distribution chain, no less than five separate industries involving thousands of business enterprises.

Obviously, this pipeline is long and involved at each step are product inventories.

As a ballast manufacturer, I can say that we have ballasts with PCB capacitors in stock which will not be sold to the fixture industry for several years.

Likewise, the fixture industry builds for stock and many items will remain in their inventory for some time.

The electrical distributor also stocks lighting fixtures, and many of these will be in a slow-moving category. I believe that this illustrates why I am concerned about what is intended in the Act.

I would hope that the Agency would agree that the important ban involved here is the one affecting future production processing

and distribution of the PCB fluid and PCB capacitors.

Ballasts intended for lighting fixture applications, which have already been produced, or will be produced in the process of using up capacitor inventories must not be subject to further restrictions on their distribution and use.

These are small capacitors containing less than one pound of PCB fluid in sealed containers.

Any exposure to human beings or the environment to PCBs from these capacitors must certainly be deemed insignificant.

Once these capacitors are produced, legally, in conformance to whatever rules are promulgated by the Agency, it makes no sense to say that they cannot be used.

The lighting industry is a large one, consuming 20 percent of our total electrical energy.

It should not be surprising that it has tremendous inertia.

It cannot be stopped and restarted without a devasting effect on the several industries involved.

Referring now to Section 4, Resale of PCBs, under General Issue on Page 32556 of the Register, it appears to me that this issue is made difficult by our use of the letters "PCB".

Some of the earlier documents which we have studied introduced more restrictive terms such as "PCB Articles" and "PCB Equipment".

I believe we might achieve better understanding if we make use of these more restrictive terms.

As a manufacturer of discharge lamp ballasts, fluorescent as well as HID, we purchased PCB articles, that is capacitors, and we sell PCB equipment, those are ballasts.

Likewise, the fixture manufacturer, the electrical distributor, and the electrical contractor all deal with PCB equipment -- at least this would be my understanding of the definition of these terms.

Certainly lighting fixtures are sold more than once.

They are sold to the electrical distributor, to the contractor, and to the user.

Since the ballast is included in the lighting fixture, it also is sold more than once.

But both ballasts and fixtures are PCB equipment, and there should be no ban on distribution in commerce of such equipment.

It is this very process of buying and reselling wich can take years to accomplish and makes any date limiting distribution in commerce of PCB equipment unworkable in my view.

I suggest to the Agency that if we have bans on the manufacture and distribution in commerce of PCB fluid and PCB articles that will be affective as far as the lighting industry is concerned, additional bans affecting use or distribution in commerce of PCB equipment such as ballasts or lighting fixtures will provide no additional safeguards and will be extremely disruptive and costly to the lighting industry and ultimately to the consumer.

This concludes my prepared remarks

and I thank you for the opportunity to present them today.

HEARING OFFICER WIRTH: Thank you.

Thank you, Mr. Freegard.

Okay, let's begin with questions starting on the left end of the table down here at my left with Mr. Pearson.

Do you have any questions?

MR. PEARSON: No.

HEARING OFFICER WIRTH: Mr. Shykind?

MR. SHYKIND: I would just like to know if you estimated any costs versus the January versus July bans on these articles. Do you have any idea what the construction would be economically?

MR. FREEGARD: Well, if -- if the rule finally became that PCB equipment could not be distributed in commerce after July 1, 1979, it would be extremely difficult for me to estimate. But this -- this would involve not only the ballast industry but, as I mentioned the lighting fixture industry, some 500 companies, electrical distributors, even contractors who would have their inventories frozen, if you will, and this equipment would either have to be modified or

scrapped.

Certainly if it is scrapped we don't get away from the disposal problem of the PCB article which is inside.

I have -- I have not attempted to make any estimate of total cost of such a ban at that time, but it would be very, very high.

MR. PRINCIPE: I would like to ask a question.

Does Advance Transformer make capacitors?

MR. FREEGARD: No, we do not.

MR. PRINCIPE: You buy capacitors?

MR. FREEGARD: We purchase capacitors.

MR. PRINCIPE: Do you -- if you purchase capacitors, you could make an estimate of the cost impact for your own company given different possible regulatory approaches, couldn't you?

MR. FREEGARD: I made an estimate which I presented on June 27th, I believe, in Washington.

Assuming that I would have to go into our inventory, and now this would not be to remove capacitors, this was simply on the basis of having to label them.

I reckoned the cost to my company of

something in the neighborhood of $150,000.

Now, that number would not be applicable in this instance because in this case we would have to replace the capacitors and purchase new ones to replace them and handle the disposal problem of the old ones. It would be much, much higher.

MR. PRINCIPE: How many capacitors do you have in inventory right now, do you know?

MR. FREEGARD: I really couldn't tell you.

MR. PRINCIPE: Could you give me any idea of the dollar -- I don't know if this is practical, but do you know what the dollar value is?

MR. FREEGARD: If I had the number, I would consider it to be proprietary.

MR. PRINCIPE: Has Advance Transformer made any efforts to purchase capacitors that do not contain PCBs?

MR. FREEGARD: We do purchase some that do not contain PCBs.

MR. PRINCIPE: How long would it take you to change over to purchase all of your capacitors?

MR. FREEGARD: Non-PCB capacitors are not necessarily generally available to the extent

that they are needed by the industry.

In other words, they are in short supply.

They also cost more.

MR. PRINCIPE: Okay.

HEARING OFFICER WIRTH: Along that same line, Mr. Freegard, could you give us any idea of how much of the ballast industry or what percentage of the market your company represents, roughly? Is it 57, 5, 30, 10?

MR. FREEGARD: No, I know that number. but I couldn't give it to you.

HEARING OFFICER WIRTH: You wouldn't care to give a range at all?

MR. FREEGARD: We are one -- we are one of the largest.

HEARING OFFICER WIRTH: One of the largest? Okay.

HEARING OFFICER WIRTH: Do you have any more?

MR. SHYKIND: No more.

HEARING OFFICER WIRTH: Okay.

Mr. Davis? No?

MR. DAVIS: No.

HEARING OFFICER WIRTH: Mr. Biles?

MR. BILES: In manufacturing ballasts for

fixtures, and so forth, is there any contact with the liquid PCB mixtures in the -- chemical substances themselves?

MR. FREEGARD: No.

MR. BILES: Do you have any economic use for those that are leaking other than -- other than disposing of them?

MR. FREEGARD: No.

MR. BILES: Is there anything you -- in which you can do in which there is liquid PCB coming out of it?

MR. FREEGARD: No, no.

MR. BILES: Do you think it would be possible for a company such as your own to sell all of your ballasts prior to July, 1979, have contracts and make the sale of them?

MR. FREEGARD: No.

MR. BILES: Approximately how long do you think it would take given your current inventories and your projection of sales before you think you could have contracted the last sales?

MR. FREEGARD: I really --

MR. BILES: Or would that be possible to come up with some information?

MR. FREEGARD: It would be -- it would be -- any answer I would give you would be rather speculative.

I can say that we have ballasts in stock that we have had for five years.

MR. BILES: Okay.

MR. FREEGARD: If that is any indication of what might happen in the future, I don't know. That is about as good as I could do.

MR. BILES: As far as you know, are any of the ballasts that you sell resold as ballasts as opposed to being resold after they have been incorporated into a fixture?

Do you think -- in terms of the industry you are talking about?

MR. FREEGARD: There is -- a very small segment of the market that deals with replacements in existing lighting fixtures.

MR. BILES: Okay.

MR. FREEGARD: Now those products moved to their final application directly from us to electrical distributors to either the user or to a contractor who is going to replace the product.

That is a rather small segment.

MR. BILES: So by and large, when you sell them, you sell them?

MR. FREEGARD: To lighting fixture manufacturers.

MR. BILES: Who then puts them in their fixtures and resells them to distributors?

MR. FREEGARD: Right.

MR. BILES: All right, thank you.

HEARING OFFICER WIRTH: Karl?

MR. BREMER: I have nothing.

HEARING OFFICER WIRTH: Tom, questions? None? Okay.

Questions from the audience, anyone?

Excuse me one second.

All right, if there is no further questions, thank you very much.

MR. FREEGARD: Thank you.

HEARING OFFICER WIRTH: The next witness is Mr. E. M. Warner of the Joy Manufacturing Company of Franklin, Pennsylvania.

MR. WARNER: Good morning, ladies and gentlemen.

HEARING OFFICER WIRTH: Excuse me, sir, we have a question here.

Is Mr. Steinberg to speak with you?

MR. STEINBERG: I am signed up to -- I think fourth or fifth this morning.

HEARING OFFICER WIRTH: Yes, that's correct.

Do you want to speak with Mr. Warner?

I have a note on the card here, Frederick W. Steinberg to speak with E. M. Warner of Joy Manufacturing.

MR. STEINBERG: I am going to hold my position as fifth.

HEARING OFFICER WIRTH: That is fine, that is fine.

Mr. Warner, would you state and spell your name and your association?

MR. WARNER: My name is Edward Warner, E. M. Warner. I am with the Joy Manufacturing Company, Mining Machinery Division. I am the Director of Engineering.

We are a leading manufacturer of underground mining machinery.

Our company has only one use for PCBs. It is used as a coolant internally in electrical motors.

While new machinery has not been produced using PCB motors since 1973, hundreds of motors are still in operation in underground coal mines.

It is the continued utilization of the equipment using these PCB-filled motors that concerns Joy and our customers.

We believe that EPA should be informed as to the economic impact and the production and dislocations in the coal industry that could occur if total ban were being placed on PCBs beginning in 1978.

As long ago as March, 1972, our company advised our customers of the need for special care in handling and disposal of PCBs.

Joy first used petroleum hydraulic oil as a cooling fluid internally in motors in 1960. But the flammability of the oil concerned mine safety authorities.

Even though these mine motors were explosion tested and could not emit sparks or flame to the mine atmosphere, it was decided that a flame-resistant coolant

was required.

After exhaustive testing, Monsanto Aroclor 1242, the PCB fluid was chosen.

May I have the first slide?

Ultimately PCB fluid was used in three different motors.

Because of the great heat transfer --

HEARING OFFICER WIRTH: Excuse me one second, can the panel see this? If not, why don't we take one second?

MR. WARNER: It is difficult to see, I know, in this area.

HEARING OFFICER WIRTH: Just take chairs out here if you like.

MR. WARNER: Surely.

I have about nine slides.

Because of the greatly superior heat transfer qualities of PCB liquid as compared to air, it was possible to dramatically reduce the physical size of motors.

This illustration shows one comparison of two, 100 horsepower motors, one PCB-filled and the other of conventional air-filled construction.

The first application was on a continuous mining machine known as a CU-43.

Fifteen of these continuous miners were built over a four-year period beginning in 1963.

The approximate selling price of this machine was $105,000.

Three motors were used on each machine.

Due to the motor's location and size constraints, it was not possible to build these miners using conventional motor construction.

Seven of these machines remained in operation as of this time mining coal in two small coal companies in West Virginia and Pennsylvania.

The second application of PCB-filled motors was made in 1963 -- excuse me -- 1965.

In this design two motors were used to provide traction power for a coal loading machine. The approximate selling price of these loaders was $60,000.

The size of the motors was not

reduced because of the very high operating temperatures experienced with this motor.

PCB was added internally to the motors to greatly reduce the operating temperature.

One thousand and twenty-eight of these motors were used on loaders shipped between 1965 and 1973 to 88 different companies.

Many of these users are small coal operators. In fact, 36 companies own only one machine.

Sixty companies own one, two, or three machines.

Because of the wide distribution of these loaders, rulings affecting the distribution and use of PCB would have a substantial effect on small coal operators.

The third application of PCB-filled motors was on another continuous miner called the 9 CM.

These miners sold for approximately $120,000.

In this design, two cutter-head

motors were completely hidden inside the cutting element at the front of the machine.

The third PCB motor was used as a hydraulic pump motor.

As with the CU-43 shown previously, the motor size was shrunk in order to locate it in its position.

From 1967 until 1970, 64 of these miners were constructed. It is estimated that 30 of these machines are still in operation.

Beginning in 1974, Joy provided a conversion kit to our service centers to change PCB loader motors to conventional construction.

It was recognized that regulations were forthcoming to prohibit the use of PCBs.

To date, 353 motors have been converted or approximately one-third of the total.

Loader users have not been receptive to this change because the conventional motors run much hotter and the service life

is shorter.

There is no conversion possible for either the CU-43 or the 9 CM motors.

Conventional motors of adequate horsepower cannot be installed on these machines because of their increased size.

Beginning in 1972, Joy Manufacturing and our motor supplier, Reliance Electric Company, in Cleveland, began a search for a substitute for a Aroclor 1242.

Nineteen different chemical companies were contacted and 21 fluids were evaluated in the search for replacement.

The cost of this program was approximately $60,000.

Heat stability and compatibility with electrical insulation were primary requirements.

Only one fluid was found to meet the test, but unfortunately it gave a very pungent odor while operating, while under operating conditions. And consequently, it was abandoned.

We are convinced that a suitable

substitute does not exist for our requirements. We are continuing to evaluate possibilities as they become available.

Our company believes that continued use of PCB fluid in mining motors constitutes a minimal risk to the environment.

Although PCB-filled mine motors cannot be classed as totally enclosed, great efforts have been expended to assure low loss of PCB from the motors.

The liquid is contained within an explosion-tested enclosure under a pressure of 20 pounds per square inch.

Under very extreme conditions, such as a motor-winding failure, PCB vapor may be emitted from a pressure relief valve.

The only other possible leakage point is around the motor shaft seal.

If the seal becomes badly worn, PCB can leak, but it would go into a gear reducer to which the motor is connected.

In normal operation, the loss of PCB from the motor is zero.

Joy sells PCB in one-gallon

containers to customers who need small amounts to replenish losses from motors.

The primary risk of environmental contamination is during motor repair.

PCB handling and disposal at Joy's service center in Bluefield, West Virginia, is being done in accordance with suggestions from EPA.

This is the facility that repairs motors.

This facility has been examined twice by EPA and has not been cited for any misuse or contamination of the environment.

Used PCB is accumulated and returned to the Monsanto Company for incinceration.

Additional detailed safeguards have been adopted as a result of visits by EPA personnel.

The quantity of PCB used in each motor is small averaging about four gallons.

Handling is restricted to a few people who are carefully instructed and supervised.

At the present time our company

is repairing PCB motors at three different locations, but it has proposed to consolidate all repairs of service center.

As a final consideration, we would like EPA to be aware of the impact on the coal industry -- if an outright ban on the use of PCB for mine motors were to be implemented, underground coal mining is a sequential process. It is accomplished by the use or the machines to do certain jobs in sequence.

One system known as conventional mining uses a group of six machines, the cutting, machine, a face drill, a loader, two coal haulage vehicles known as shuttle cars, and a roof bolter.

It is obvious that when any single machine becomes inoperative, the mining of coal stops.

In additions to the loss of productivity, five other machines must cease operation -- with no consequent return on their capital investment.

The cost of downtime varies. However, an average production loss might well be 500 ton

of coal in a single working shift.

Which at today's prices would be worth at least $10,000.

The value of the group of machines involved would total $300,000 to $450,000 depending on their age and condition.

In continuous mining, the mining sequence is simpler, and only four machines are used.

One continuous miner, two shuttle cars, and a roof bolter.

Again, loss of operation of any machine stops the mining process.

Loss of coal production is comparable to that in conventional mining.

The capital investment would only be slightly less than that for conventional machines.

It is for these economic reasons that coal mine operators exert maximum effort to keep all machines in operation simultaneously.

Taking mining machines out of operation to make conversions obviously would be a costly procedure.

In conclusion, Joy Manufacturing proposes that use authorization be granted by EPA to us and our customers for three years beyond January 1st, 1978.

This authorization would be contingent upon the following:

One, no additional PCBs to be imported by Joy Manufacturing.

We have been importing PCBs in the past.

Two, if recommended by EPA, Joy could sell part of our present inventory of PCBs to our customers before January 1st, 1978.

This would eliminate future need to transport PCB.

Three, Joy would handle all future motor repairs at a single service center operating under rules prescribed by EPA.

Four, conversion of loader traction motors would continue at a rate to complete the remaining 675 motors by January 1st, 1981.

The program would be planned to make conversions as motors fail and not to convert

the good PCB motors while they are still in operation.

Five, coal operators using CU-43 or 9 CM continuous miners with PCB-filled motors would be advised to phase out this equipment by 1981.

In case of the 9 CM, a conversion kit could be designed for a new cutter head at approximate cost of $80,000 to $100,000.

We thank you for this opportunity to present our views on this important subject, thank you.

HEARING OFFICER WIRTH: Thank you, Mr. Warner.

Questions, starting on my right, Gary?

MR. BURIN: I have two questions.

One is who owns the 9 CM machines? Are those also the small operators' or are those --

MR. WARNER: The 9 CM miners.

This is -- these are owned by actually a number of larger customers.

The distribution of continuous miners

quite frequently go to the larger coal operators.

I am sorry I don't have a statistical count who has the 9 CM continuous miners, but we could provide EPA with such information.

MR. BURIN: Okay.

And how often are loaders routinely repaired?

MR. WARNER: This varies depending upon the application that is involved.

In the case of a loading machine, which is the application in which we have the largest numbers, the average life as defined by when 50 percent failures would take place would be somewhere between 18 and 24 months.

The life of the motors on the 9 CM and the CU-43 is somewhat shorter.

I am not sure of the figure on this, but I would guess it was probably closer to one year.

MR. BURIN: And it would be in the course of this repair that the conversions would take place?

MR. WARNER: The conversion is possible only with the loading machine motor.

It is not possible to convert the continuous miner motor, but referred to as CU-43 or 9 CM no conversion is possible on those motors.

It is an engineering problem in which the motor has been located on the machine in such a way and shrunk to such a size that if you attempt to substitute a conventional motor, this space is not available.

MR. BURIN: Thank you.

DR. STURINO: What is the total amount of PCB in any of those machines?

MR. WARNER: The total amount in any one machine?

DR. STURINO: Total in any one operation -- are we talking about 5,000 gallons a year? Are we talking about millions a year?

MR. WARNER: I don't think I can give you a direct answer to that because it is not calculated.

I can tell you that our present

inventory of Aroclor is approximately 9,000 gallons.

There are four gallons used in each motor on the average, and since we are talking 30 machines in the -- say 37 machines on the continuous miners, we could take 37 times 4 and end up with the approximate amount of PCB in use on the continuous miners.

All or nearly all of the loading machines are in operation and this would be 514 machines.

So we could, in that case, average it out by saying 514 machines times 2 -- there are two motors, multiply that by four gallons each and that would be the amount that is presently in use in underground mines.

I am not sure what that figure would be --

DR. STURINO: All right, thank you.

MR. SNYDER: My questions are oriented towards the kinds of environmental exposures that might occur from the use of the motor in mining.

You have indicated that the motor

shaft seal problem and the vapor pressure relief point, pressure relief valve, are ycu aware of any cases where there has been what I would call a rather catastrophic failure or some rupture of the case, something of that nature, where one of these motors and if so what was referred to -- where do the PCBs go or where would they go?

MR. WARNER: I am aware of the catastrophic failures when we had hydraulic motors, yes, I am aware of this.

This is one of the things that really concerns us and one of the reasons why mine safety authorities wanted a fire-resistant fluid in the motor.

This did occur in the early days of the CU-43.

MR. SNYDER: And those motors caught fire?

MR. WARNER: Pardon?

MR. SNYDER: Did those motors catch fire? Was there oil-filled motors --

MR. WARNER: No, to my -- to the best of my knowledge, there was no actual fire resulting from this, but there was a rupture

of the enclosure.

MR. SNYDER: Okay.

And you are not aware of any -- with any of the PCB motors?

MR. WARNER: I am not aware of any catastrophic failure on the PCB motor.

MR. SNYDER: You have indicated two sources, one the pressure relief valve and then a motor shaft seal failure?

MR. WARNER: Right.

MY. SNYDER: Are you aware of any other kinds of failures when motors were in service to cause PCBs to go out of the motor either into some other part of the machine or on the floor around?

MR. WARNER: There are check level plugs in the motors, and I feel sure that at some point in time, mine maintenance people could possibly overfill the motor. In which case, if it does, it could expel that much to get down to the proper level.

It would be difficult to say how many cases like that took place. It is like the man perhaps overfilling your radiator.

It does happen once in a while.

And under those circumstances, the excess could be expelled to the pressure relief valve.

MR. SNYDER: What kind of programs do you have relative to educating and informing the users when they are involved in some sort of a topping-off process?

You have indicated you sold one-gallon quantities of PCBs to various users and the presumption is for them to fill motors overheated and whatever.

Is there any kind of program that you have undertaken to improve the level of environmental control, reduce burn procedures -- that sort of thing?

MR. WARNER: No, we have no actual training program to train mining people in such an endeavor.

This could be accomplished, however, through the simple procedure including it in our company sponsored training schools.

We have treatment activity where we bring our customers into our plant and

train them for maintenance and operating people.

And this could be included in such a program.

I might add, though, going back to the early days, we did spell out in considerable detail the type of advice that we offer to our customers.

I believe it was in 1972 on a precautionary measures in handling and disposal.

For instance, if there was a need to dispose of it to -- going back or to ship it back to our shipment center. Consequent return for consideration.

If EPA does not have a copy of that document, we would be glad to supply this.

I believe it was dated 1972.

MR. SNYDER: Well, the purpose of my questioning is -- is oriented towards your request, suggestion, that some extended period of time, several years, what have you, be allowed for further use of the motors. And my thought is what -- what kind of a

program could be developed, in a cooperative way, perhaps, in cooperation with the Agency or the Agency serving some sort of advisor role, critique what you may have done to enhance the degree of environmental safety that might be possible in actual use situations.

And so -- it sounds like you are leaning towards that and just expanding a bit on my question, would that be the kind of thing that you would consider to be a reasonable venture in any decision by the Agency that would extend the use of the motor?

MR. WARNER: Yes, Mr. Snyder, I am sure this could be done.

As a matter of fact, at the present time, when we have our training schools for customers, we already have participation by Department of the Interior, MESA, the Bureau of Mines, and other people in offering to mine maintenance and operating people, special precautionary and safety measures that would be practiced in underground mines.

It would be a reasonably simple

procedure to set up in conjunction with EPA, a suitable training program for mine people that were directly involved in maintaining this equipment about proper handling and disposal procedures.

MR. SNYDER: I have no further questions.

MR. BREMER: Two short ones -- this is Karl Bremer.

Primarily, which Aroclor is used?

MR. WARNER: Sir?

MR. BREMER: Which Aroclor are you using?

MR. WARNER: Aroclor? 1242.

MR. BREMER: Okay, 1242?

You don't use any 1016, then?

MR. WARNER: I am sorry -- I apologize -- I have a hearing problem.

MR. BREMER: Okay.

It is just an Aroclor 1242?

MR. WARNER: Just.

MR. BREMER: No other, 1016 or any other?

MR. WARNER: I should, I should qualify that to the extent that we did import PCBs as EPA knows, and of course when we imported, it was to our knowledge, a direct substitute

chemically for Aroclor 1242.

I believe -- this one case, it was -- I had a trade name of Pyrolene or something of this nature.

But when we used an Aroclor fluid purchased in the U.S.A., it was Aroclor Monstanto's 1242.

MR. BREMER: Uh-huh.

And offhand, are there -- can you name any of the substitutes which you have attempted to evaluate?

MR. WARNER: I could specifically pinpoint for you the substitute which we say they tried and was not successful.

This was TCB, trichlorobenzene, and we found that this would have been acceptable in all respects except for this very pungent odor.

For this reason, we did abandon that one.

We also evaluated a number of silicone oils, for example, and unfortunately the silicone oil will not pass the flame-resistant properties required by -- the

Mining Enforcement and Safety Administration.

And the other problems were mostly with regard to the compatibilities of the fluid with the insulation system in the motor.

MR. BREMER: So this mine safety organization has tested the silicone oils and they don't come up to snuff?

MR. WARNER: That is my best recollection, Mr. Bremer, that is my best recollection.

MR. BREMER: Because we would be interested in seeing those documents, if they are available. Okay?

I have no further questions.

HEARING OFFICER WIRTH: Okay, Mr. Biles?

MR. WARNER: Perhaps I should say this way -- I can't categorically state that MESA tested silicone oil and said that it was not flame-resistant.

This could have been a matter of compatibility with the insulation.

I am really not prepared, at the moment, to speak in detail on those fluids which were tested and the results.

However, we would be very willing

to provide EPA with any listing of the fluids that were tested and the exact reasons why they were not utilized.

MR. BILES: First couple of questions, to understand what you said, it is my understanding that several hundred of the loaders have been converted.

Does that mean that they no longer use PCBs?

MR. WARNER: That's right.

MR. BILES: Okay.

And do you know how many companies use the 9 CM miners?

MR. WARNER: The 9 CM miners, we do not have an exact count.

As close as we can tell, there are 30 -- approximately 30 of these machines still in operation.

MR. BILES: Okay.

And how many motors are there on each one of the loaders?

MR. WARNER: On the 9 CM?

MR. BILES: No, on the loaders?

MR. WARNER: On the loading machine?

MR. BILES: Yes?

MR. WARNER: There are two traction motors each.

On each of the two continuous miners, there were three motors each.

MR. BILES: Okay.

Now, it is my understanding that, you know, you are not currently, you -- are not currently processing the machines and you have no anticipated future production of them?

MR. WARNER: No, sir, we are not producing any new equipment or shipping any motors.

MR. BILES: To your knowledge, I know we can ask Reliance, but as far as you know, are they continuing to make the motors or have they ceased production, too?

MR. WARNER: Oh, Reliance?

MR. BILES: Reliance?

MR. WARNER: No, they are making no motors with PCBs in them.

MR. BILES: Okay.

When I took the figures that you have suggested on how many gallons per machines,

it sounded like if you take away the loader, which you maintain the conversion kit for and I guess it is mainly a matter of economics?

MR. WARNER: Excuse me?

MR. BILES: That that leaves approximately 450 gallons being used in the continuous miners.

That the overwhelming amount of PCBs being used right now is used in loaders which you say there is a conversion kit available which --

MR. WARNER: And we are converting these currently.

MR. BILES: Okay.

What -- could you talk a little bit about what you mean when you said that you recognized that this is not a totally enclosed use?

Did you mean by that that -- I recognize you said there were 2 or 3 means of escaping PCBs but it sounded like you said that under normal operating -- operations, there were no PCBs getting out?

MR. WARNER: Mr. Steinberg asked the same question.

The reason that I made my statement that -- the mine motor could not be classed as a totally enclosed application for PCBs is simply because I read the article, in the Federal Register that the EPA had already concluded that it was not.

And I was simply accepting what I believed to be your definition to be totally enclosed.

MR. BILES: Okay.

Part of this hearing and the rule-making is to define that term.

MR. WARNER: I see.

MR. BILES: Actually what we are trying to define is what is significant exposure.

So, what I am asking in that practical application of these machines, what kind of exposure is there of PCBs beyond the fact that they might get out through vapors or as through the leaking through the motor shafts? Does that -- PCBs escaping in that manner go anywhere other than first of all the leaking?

You seemed to indicate that those

may be caught somehow -- the ones that were leaking through the motor shaft?

MR. WARNER: Well, the ones that were leaking through the motor shaft --

MR. BILES: Yes?

MR. WARNER: This leaks into the gear case -- the gear -- a gear box -- that is located directly in front of the motor, in each case. That is true for all applications.

MR. BILES: Then where does it go?

Does it just stay there?

MR. WARNER: It goes into the lubrication systems for the machine and that is a gear case in which lubricants are periodically added.

It is not usual mine procedure ever to drain lubricants out purposely.

The mine people normally just keep adding to the lubricant.

MR. BILES: Okay.

Then, under what conditions would you see the vapor escape?

Is that normal or is that --

MR. WARNER: With the number one assumption

that the motor is not overfilled.

MR. BILES: Yes?

MR. WARNER: If the motor is properly filled, there is an expansion provision provided for the PCB.

And under those circumstances, the only expelling would be under a severe condition such as a winding failure.

Now, even that can be qualified because it has to be a sustained electrical fault inside the motor.

Normally, normally the electrical protection on the machine will isolate that motor very quickly.

But mining machine maintenance being such as it is, you can't be 100 percent sure that that protection is there and operable.

MR. BILES: To your knowledge, have either state officials or federal officials, employees, labor unions, any of those kinds of groups expressed any concern to you about PCBs associated with the use of machines?

MR. WARNER: I am sorry, I didn't hear.

Something about expressing concern?

MR. BILES: Yes, have unions or state officials --

MR. WARNER: Unions.

MR. BILES: Or other officials expressed any concern to you or to your knowledge to the companies using these machines about any possible risks associated with PCBs as far as you are --

MR. WARNER: No, sir, not as far as I am aware in our engineering department.

MR. BILES: Okay.

The last question goes to -- the three year phase-out that you proposed.

From what I gather, your main argument for needing the phase-out is an economic one.

That if you were required to do it -- in other words, you are not going to be producing these machines any more in the future even whether or not you have a substitute right now, that you want to have a phase-out over a period of time so mainly the economic impact will not be as great as if today you --

were forced to say, "No more machines," and the companies out there couldn't use them.

Is that the main reason that you think the phase-out is needed over a three year period?

MR. WARNER: Yes.

The reason for displaying the sequential slides there was to indicate that it is highly necessary to keep all this equipment operating simultaneously.

Now, even though a conversion is available, for example --

MR. BILES: Right.

MR. WARNER: In the case of a loading machine, if you didn't make this conversion at the time that the motor failed, for some other reason, this would be additional down-time -- additional time that the equipment would be out of operation.

Therefore, our proposal is to convert the motor at the time that it electrical fails.

It was going to be out of operation

anyway.

MR. BILES: If EPA granted you a use operation as you propose and three years from now there wasn't a substitute for the continuous miners, what -- then what do you think would or should happen?

MR. WARNER: Well, we have taken the position that -- at the end of three years it will be necessary to advise those customers that those machines can no longer be used.

MR. BILES: Okay, fine, thank you very much.

HEARING OFFICER WIRTH: Mr. Davis? Mr. Principe?

MR. PRINCIPE: What is the useful life of a loader -- approximately in years?

MR. WARNER: I am sorry -- again, I am having trouble.

The useful life of --

HEARING OFFICER WIRTH: A little louder, please.

MR. PRINCIPE: What is the useful life of the loaders?

MR. WARNER: Of the loading machine?

MR. PRINCIPE: Yes?

MR. WARNER: Are you referring now to the loading machine itself or the motor on the loading machine?

MR. PRINCIPE: The machine itself?

MR. WARNER: The machine itself -- we have to answer that question in the context of how many times it is rebuilt.

It is common practice in coal mines to rebuild such specific machinery.

A loading machine, such as the one here that uses PCBs, motors, might well load a million tons of coal before the machine was brought out for a rebuild.

That may take a year or two.

The criteria really can be expressed in another way and that is to say that we have many machines out.

They are still operating -- still being rebuilt. They are 20 and 25 years old.

In fact, in some of the cutting machine lines, there is equipment in operating -- in underground coal mines that is probably more than 30 years old.

MR. PRINCIPE: Okay.

What is the useful life of the miners -- continuous miners -- like the 9 CM?

MR. WARNER: The 9 CM?

MR. PRINCIPE: And the CU-43? What is their useful life?

MR. WARNER: Continuous miners -- tend to be taken out of operation more frequently than something like a loading machine -- simply because the technology and the development of continuous miners is such -- that what you -- the coal operator very often finds is that he must dispose of that machine and buy a higher productivity machine.

One of the reasons that we state that it is probably reasonable to assume phasing-out of these machines by 1981 is there are much more powerful, more highly productive continuous miners available so that in the case of asking the age of the continuous miner, as far as their actual utilization is concerned, I am sure they are good for many more years.

Again, in the case of continuous miners are continuous miners that have been in operation for 10, 15 or 20 years. But coal operations tend to obsolete these machines themselves simply because they can buy higher productivity machines.

MR. PRINCIPE: And you think that by 1981 that point would be reached for those PCBs?

MR. WARNER: There are already machines available at much higher productivity -- machines either the CU-43 or the 9 CM, they are already available today.

MR. PRINCIPE: Is there a secondhand market available for these machines, like could a coal miner resell it to a --

MR. WARNER: Yes, yes, there is quite an active used machine market for machines and very often the small operator will tend to buy a -- secondhand machinery.

MR. PRINCIPE: All right.

How long does it take to use the kit or to -- when the loader motor, traction motor dies, and it's got to be rebuilt, how

long does it take to do that problem?

MR. WARNER: To rebuild it?

MR. PRINCIPE: Yes -- using -- using the conversion time?

MR. WARNER: It would depend a great deal, at one -- any one time, what happens at the service center as to what their backlog and repair were.

But, I would say that -- from the time a motor was taken off the machine, shipped back to a service center, repair, return and install the machine, it would be fair to say that -- at best, a week would take place.

It could be longer, but I would say that a week would be a reasonable period of time.

MR. PRINCIPE: So all three rebuilding of these motors is done at your facility?

MR. WARNER: Yes.

We have three facilities, actually, now, that -- are rebuilding and we are proposing consolidating this rebuilding in a single facility.

MR. PRINCIPE: Does it take longer to convert the engine or is it -- does it take longer to convert the engine back to air than to do the normal rebuild that you do?

MR. WARNER: No, actually the rebuild or the conversion to the conventional construction is such that you supply a lot of new parts for the motor internally.

So that I would say there is not a great deal of difference between the time that it would take to restore it to its original PC built construction or whether you would actually convert it.

MR. PRINCIPE: Well the miner is out of use for the week that it is dead, aside waiting for another engine, another motor, I assume there are additional loaders or shuttle cars available to take its place in the mines, is that correct?

MR. WARNER: In some instances -- for a large coal producer, you could have expected him to have possibly a stand-by machine, and if not, possibly a spare motor or two.

Now, for those people who have

that investment, and have that capability, obviously they don't get hurt from the time point of view.

But, my point in outlining the profile of a smaller customer was to indicate that we had 36 customers that had only one machine.

You can be quite sure they don't have any backup.

MR. BILES: During the rebuilding operation, is there a significant exposure to be -- not exposure to the workers, that is not our concern, I guess, but is there a loss of PCB at any point during the rebuilding process -- a conversion process?

MR. WARNER: In the rebuilding process, this is something that has been discussed in quite considerable detail between our service center personnel and EPA personnel.

As I have said, we have had two visits from EPA and they have made a number of suggestions which we have adopted.

These are such things as concentrating the area -- restricting the area during to

which the repair work is confined and to also confining the number of personnel that are actually involved in the procedures.

They have screened such things as our activity to return for insertion and also the disposal methods that are presently used on the solid waste that is hooked up that may have PCB contaminated in it.

But all of these things have been reviewed by EPA and to the best of my knowledge is in accordance with your recommendations.

MR. PRINCIPE: Is it within the scope of your company to rebuild all of the loaders in the space of one year -- if that was required?

MR. WARNER: There have been in the past -- a small number of competitive facilities that have attempted to repair these motors.

But they are handicapped two ways.

One is they don't know the technology of the compatibility between the fluid and the insulation system and customers who

have tried these competitive repairs find that the life is so short that not many of them have stayed in business.

The other thing is, of course, the difficulty of these people getting PCB to replenish the rebuilt motor.

MR. PRINCIPE: My question is is that -- if we required that all of the loader motors be converted within the space of one year, could your company do that? In other words, do you have the facilities to convert all of the PCB loader motors to non-PCB loader motors in the space of one year?

MR. WARNER: Here I am attempting to speak to our service center facility.

We are presently doing this in three service centers now.

So, if you concentrate it in a single facility, it becomes more difficult.

The other thing is that the rate -- we -- this is obviously only one motor that we convert or excuse me, rebuild.

We rebuild all of the various motors on Joy mining equipment so the PCB

motors only represent a small part of what is done.

Your question is could we do this in a single year period -- I assume at a single facility.

The answer to this might be yes, but it would be highly dependent, I am sure, on expanding the present facility that we have -- because at the present time, we don't have capability to do it all in one year.

MR. PRINCIPE: Okay.

Suppose that at the end of three years we said that you couldn't use continuous miners any more, and they would have to be, you know, removed from the mines -- do you have any idea of what would happen to those miners if they just were left off to the side to rust or what does a mining company normally do with old equipment?

MR. WARNER: I am not sure I could tell you the answer to that.

When machines are taken out of operation, they are very often brought outside the mine.

I suppose all ultimately dismantled for scrap -- that's usually what happens to a -- to a used piece of machinery that is no longer in operation.

MR. PRINCIPE: Okay, one more question.

Did the 9 CM cutters have the -- redesigned cutter head?

You suggest it is possible to use a non-PCB motor head that cost $80,000 to $100,000 -- it feels much more reasonable to buy a new machine, wouldn't it?

MR. WARNER: Yes, obviously the 9 CM originally sold for $120,000.

And the figure I gave you on a conversion just for the cutter head was $80,000 to $100,000.

He would have to -- want it pretty bad to convert that machine in order to make that kind of investment.

MR. PRINCIPE: That you.

MR. WARNER: In other words, it is really not a practical conversion from a dollar point of view.

MR. PRINCIPE: Thank you.

HEARING OFFICER WIRTH: Mr. Pratt?

Mr. Pearson?

I just have one question, Mr. Warner.

In calculating on the numbers you gave for the number of motors -- there are roughly 3,000 gallons in the machines that are in current use that is the miners and the loaders.

If I understand you correctly, you said your current inventory was 9,000 gallons?

MR. WARNER: Yes, sir.

HEARING OFFICER WIRTH: How long would it take to go through that 9,000 gallons -- in let's say current rates on rebuilds?

Do you have any idea on that?

MR. WARNER: Again, I am afraid I would have to go to some arithmetic, Mr. Wirth, to answer your question.

I do know this, that when we looked at our inventory, we felt quite sure that the 9,000 gallons was far more than adequate to complete our program on the basis proposed.

Because obviously, as you convert

motors, the use both in the service center and the small amount used by a customer is declining. So there is no question in our mind whatsoever that the 9,000 gallons is completely adequate -- in fact, we end up with, I am sure, with a surplus.

HEARING OFFICER WIRTH: You in fact end up with a surplus?

MR. WARNER: Oh, sure.

HEARING OFFICER WIRTH: Have you in fact heard of miners -- I take it you would not then be importing any PCBs or --

MR. WARNER: I am sure we will be importing no more.

HEARING OFFICER WIRTH: Okay.

Is there any question from the audience?

Okay, thank you very much.

The next witness is Mr. John Hesse, the Michigan Department of Natural Resources.

MR. HESSE: My name is John Hesse with the Michigan Department of Natural Resources.

I think most of the panelists

are aware that Michigan has in effect now legislation already banning PCBs for many uses and we have talked to you many times about this.

I'll address or have a few comments regarding the announcement in the Federal Register of this meeting.

I will take the general issues pretty much in the order in which they were outlined.

First, the totally enclosed manner or issue over significant versus insignificant exposures.

We don't believe that there is adequate information to determine that there is some type or level of exposure to PCBs which could be called insignificant.

For an example, fish in Lake Superior are accumulating PCBs up to 60 parts per million and their tissue has been exposed to less than one part per trillion in the water.

This type of biomagnification potential for PCBs alone negates the probability of insignificant exposure.

To my knowledge, also, Dr. James Allen from the University of Wisconsin has not yet determined a no-affect level in his rhesus monkeys exposed to PCBs in their diet and also supports the conclusion that we simply do not know enough about the effects to deem any exposure insignificant.

From language in 6(e)(2)(a) of the Act, it appears clear to us that exposure during manufacturing processes was intended also to be relevant to the definition of the totally enclosed manner.

And we questioned whether the manufacturing industry has the capability to eliminate all environmental losses or employee exposure so as to qualify under the definition.

If not, then it seems that the one year and the two year phase-out dates of the ban are sort of redundant.

But Michigan can't speak to this with authority because we haven't had to address this question because we don't have any PCB manufacturers in our state.

Under the Category 2, 1978, of exemptions in Michigan, we have limited our definition of PCB use enclosed systems -- says that in electrical transformers and capacitors and therefore allow for the continued use of PCBs for these applications.

Although we recognized that environmental losses can occur through accidental rupture or leakage from these devices, or through incorrect disposal practices, we have chosen to allow these uses but apply strict control in reporting requirements upon the user thereby minimizing environmental losses.

These requirements in our program require that -- include the filing of pollution incident prevention plans covering such actions as diking around transformers or relocation of capacitors away from drains or water courses and also the development of cleanup and disposal procedures.

From past experience, we do not think other or any other categories of PCB use can be similarly controlled and we

strongly encourage that no other use exemptions be allowed.

Hydraulic fluid applications and heat transfer system uses were among the most commonly detected sources of PCB losses in Michigan surveys and especially should not be considered.

But to allow for continued use of PCB-filled transformers, we feel special provisions need to be made for transformer service companies who provide routine maintenance for such units.

Without servicing, we would expect that the life span of the units would be shortened drastically and unnecessary fires may result.

Yet we still believe that a high risk of exposure and environmental losses likely exist in such facilities.

We will be interested in hearing additional testimony on this subject and encourage EPA to require strict spill control measures and disposal requirements if this activity is allowed.

Under the 1979 exemption category or issue, the 1979 ban against manufacturing, it appears that it may be academic since Monsanto plans to phase out the manufacturing of PCBs by this fall.

The ban against distribution would still seem to be pertinent, though, in order to limit importation.

With regard to existing stacks, we feel they should be used for servicing of transformers only.

And that any excess that would be left over from that should be destroyed by incineration.

Under category 4 or Item 4, the resale of PCBs, it appears that the phrase, "sold for purposes other than resale", should be interpreted to allow transformer servicing companies and individual industries who buy stockpiles of PCB fluids for servicing of transformers to use these fluids following the July 1979 deadline on distribution.

Strict control over the storage

areas, though, must be a prerequisite.

In addition to our comments on these specific issues, we feel some provision needs to be made for residuals of PCBs remaining and retrofitted equipment such as heat transfer systems, hydraulic systems and transformers.

It is important to remove -- no, it is impossible to remove all PCBs in these systems.

Michigan's experience indicates that with the conscientious effort toward repeated flushings of hydraulic systems, the residual can be reduced below the 500 parts per million cutoff selected by EPA in its proposed disposal and labeling regulations.

We have a number of them that -- a number of industries that have reported concentrations in these transformed hydraulic systems that range between 100 and 300 parts per million.

Records on one heat transfer system in a Michigan industry show a PCB residual

after flushing of 3,750 parts per million.

Retrofitted transformers are likely to have a residual of one to two percent PCBs.

Michigan has exempted some of these systems and allowed their continued use, but these are not exempt from our labeling requirements and the retrofitted fluid containing the PCB quantity must be ultimately disposed of as if it were a PCB.

In Michigan our law automatically allows for use of products containing 100 parts per million or less.

Through the implementation of our PCB Control Act which went into effect in April, 1977, we will soon be able to supply EPA with a breakdown of total PCB quantities being used in capacitors containing more than 3,000 PCBs in Michigan and transformers, their average size and the number of industries reporting use of each.

Our questionnaire booklets were mailed to about 15,000 facilities in

Michigan and through a single follow-up letter, to those non-respondents who have received an extremely high percentage return.

When available, and we expect this might be available within a couple of weeks, we can provide you with a statistical summary of this information.

And that is the end of my prepared comments.

HEARING OFFICER WIRTH: Okay, thank you very much, Mr. Hesse.

Questions, Gary?

Questions? Mr. Biles has a question.

MR. BILES: Do you have any regulations right now concerning maintenance operations and how it is to be performed?

MR. HESSE: Servicing of transformers?

MR. BILES: Yes?

Do your regulations say how it should take place?

MR. HESSE: Not specifically addressing the servicing.

This is something that we did not

take into consideration in terms of our law that -- where we realize we are allowing the continued use of PCBs in those closed systems, but we have not made provisions for the servicing. So we have considered that we were going to have to make exceptions for the transformer servicing industry.

Our only regulations would be those involving the filing of a pollution incident prevention plan at each of those facilities and also the disposal of the materials from the operation.

MR. BILES: Do you think it is practical for the federal government to try to specify some minimal procedures to be followed?

MR. HESSE: I would hope so, yes.

MR. BILES: Michigan and several other states in this area have enacted laws or have enacted regulations on PCBs.

I think that was partly the fact that there was no official regulation in this area.

Do you have any feel for what the

state's attitude is going to be now if EPA or when EPA promulgates its regulations as to whether yours should continue in effect, whether you are going to want some exemption to continue yours in effect?

I am not asking you to go through your regulation and tell us reg by reg or just your general feeling about the federal government's role as compared to the state's?

MR. HESSE: Well, I think Michigan's Act is every bit as -- I was going to say every bit as restrictive as the Federal regulations appear to be going, but we will have some areas of conflict.

In terms of the lower limit that we allow, at 100 parts per million rather than 500, I think we will go ahead and adopt the 100 parts per million.

In terms of the labeling, it appears that our label will not be in conformance with Federal regs.

We would probably choose to adopt the Federal label in that case because we want to be, right from the start, we want

to be in conformity on a national basis with that.

MR. BILES: With regard to hydraulic fluids, if we prescribed any kind of requirements on systems that previously had PCB containing hydraulic fluids, if we did anything, should we do anything beyond prescribing some kind of flushing procedures?

I know that there are some companies in this area that have some kind of distillation processes for systems.

MR. HESSE: I don't know, it is bothering some that we know of continued losses -- it is hard to decide what is continued losses from the new, from the residual of the left and the new fluids from what it might be losses from the existing discharge lines and so on.

We do note, in some of these discharges, from plants where the hydraulic systems are used to have PCBs -- we still see PCBs coming out in the discharge.

And I don't know what the solution

to that is.

They would not be meeting the zero discharge limitation of the federal -- or the -- the effluence guidelines if they were divided across the board to all industries.

MR. BILES: Do you think that EPA should continue -- should authorize to continue the manufacture of transformer capacitors during '78?

MR. HESSE: The manufacture?

MR. BILES: Of the capacitors and of the transformers?

I recognize that there are none of those operations in your state?

MR. HESSE: Yes.

I don't know how effective the controls can be within these manufacturing facilities.

Just judging from what we have read about the Hudson Falls plants in New York, we have quantities of PCBs that were being lost there.

It just didn't seem reasonable that you could interpret those as being in

totally enclosed operations.

Now the manufacturing operation -- so we see that there is some conflict there appearing in the 1978 phase, in step.

But I don't know for sure what you ought to do.

I -- Just supply the best control as possible if you do allow it.

MR. BILES: Okay, and the last question, have you expressed any of the waste problems or sludge problems and what do you suggest we do, if anything, in those areas?

MR. HESSE: Back in about 1971 or 1972, I expect that we had, prior to looking, we probably had concentrations of PCBs in some of the municipal sludges in the neighborhood of a thousand parts per million.

But in 1973, when we first made a general survey of municipal sludges, the highest we have found was 350 parts per million, and we had already instituted a control on the industry that was contributing greatest to that source.

Since that time, the level in

that plant, and all the other plants have decreased to in the neighborhood of one to five parts per million, maximum, in municipal sledges.

And so we don't view this as a real critical situation, in Michigan, right now.

We have no existing guidelines on the use of sludges in terms of the maximum value of PCBs in them.

I have heard some statements that 10 parts per million is being considered as maximum level.

I don't think we would see that very often.

What was your other question?

MR. BILES: Waste oils?

MR. HESSE: The waste oil -- we have made a survey of the concentrations of PCBs in waste oil in Michigan, and it appears that the general level is very commonly in the range of 1 to 20 parts per million.

This falls below the 100 parts per million maximum in our law, and, there-

fore, we don't know that we can legally go after that unless we consider it a secondary contamination that was caused by the particular industry owning the oil at that time.

Then we would have some authority over it, and we do plan on implementing that authority where it is practical.

So that that oil is used in the -- in a manner so as to minimize the environmental losses from it.

Where a waste oil is received by another industry that was not responsible for the inclusion of PCBs, I think our position would be, at this point, to exempt them through our incidental PCB contamination clause in our Act.

MR. BILES: Thank you.

HEARING OFFICER WIRTH: I want to ask a question along the same line.

Are you aware of any other products that have contaminants -- in your surveys at work -- what products have contaminants of PCBs which are within the a hundred to 100 and 500 parts per million level?

When you move from 500 to 100, what things would you include as a definition of a PCB?

MR. HESSE: Well, I think the trans -- the hydraulic systems have been converted, they do fall between 100 and 500 in some cases. So they would be affected by our Act and not yours.

Another one, there is a foreign-made compound used by some industries in the United States that we have not investigated very extensively, but it has come to our attention that in some cases it has PCBs entered as a contaminant. And this is diphenylacetylene, dial, I am not sure how it is pronounced.

This appears addicting. The concentrations range anywhere from 200 to 1,500 parts per million of the lower chlorinated forms of PCBs.

HEARING OFFICER WIRTH: How about hexachlorobenzene?

MR. HESSE: I was unaware that hexachlorobenzene had PCB contaminants in it

until just recently. And I think I did read somewhere, but I have no personal knowledge of it.

HEARING OFFICER WIRTH: And you say most of your sludges with a pre-treatment program of some type or a control on industrial discharges to it -- now all less than five parts per million?

MR. HESSE: Yes.

HEARING OFFICER WIRTH: In all cases, to bring them down to that level, it was a point source of discharge in your municipal systems that you had to go against runoff.

MR. HESSE: That's right.

In our -- in the plants that had the highest levels, we went into the distribution systems, the interceptor system with treatment facilities, and were able to trace back to the originating source and apply controls at that point.

And apparently it's been effective.

HEARING OFFICER WIRTH: Any other questions? Mr. Pratt?

MR. PRATT: Yes, I have a couple, I have

a couple of questions, John.

In Michigan's problem -- two questions in part.

In following-up on industries, the automotive industry and some of the others, who are tremendous purchasers of PCBs and with millions of pounds of PCBs were lost in the Great Lakes or Great Lakes environment, there has been substitutes that have been instituted for these.

What work has the State of Michigan done, one in following-up the specific plans with the substitutes and what potential it does have and two, in the manufacture within the state of Michigan who are producing substitutes as to potential effect of these?

MR. HESSE: Well, the primary substitute for the hydraulic fluids appears to be the phosphate esters -- the ones that we are aware of, anyhow, that have converted.

And we have not done any environmental sampling for the triorial phosphates that these belong to.

And we are -- have been communicating with the federal government frequently on this subject and we will be glad to participate in any kind of a study that EPA might want to do.

And we are aware that there is apparently contracts have been let to study phosphate esters.

In terms of the substitutes by manufacturers in Michigan, I assume you are talking about the silicone fluids and the Dow products for capacitors.

We haven't done any environmental testing on those substitutes.

MR. PRATT: As far as on the disposal of sludge, back when you found that some of the sludge contained 350 or 1,000 milligrams per liter of PCBs, what has been the ultimate disposal of the sludge and what steps has the state taken in this?

MR. HESSE: Likely, I don't believe any of the high contaminated sludges was used for agricultural purposes.

The worst situation that we had, the sludge was being incinerated in the municipal incinerator and probably not satisfactorily to completely destroy the PCBs.

But I imagine if a percentage was destroyed, the rest went into the atmosphere was redistributed.

We are in the developmental stages of sludge disposal guidelines at this point. And we find it very difficult to adjust the PCB issue from lack of guidance in terms of what is significant being applied in various applications.

MR. PRATT: Looking at the Great Lakes at some data from some other people, where there has not been a particular decline in the Great Lakes, like DDT which is quite similar biologically to this, it has dropped off quite rapidly.

It appears that there are still major sources of PCBs getting into the Great Lakes.

And since, shall we say the auto-

motive industry and others have not used it for several years, would you attribute this in large part to things like incineration of sludge to PCBs in waste oil to the incineration of electrical appliances, to all of these various sources or what ideas do you have on this as far as controls of PCBs?

MR. HESSE: Well, it appears through the various math balance studies of two or three firms have come up with, that the point source losses that we were finding in your surveys directly to water were very insignificant contributions to the Great Lakes environment in terms of total PCB input.

That the majority of the input was coming from atmospheric deposition.

And this atmospheric contamination undoubtedly was the composite of all types of sources such as those you mentioned.

This is why we felt that the ban on the usage was entirely necessary to bring the Great Lakes contamination problem under control. And that it had to be more

than on a single state basis that it had to be on either at least a regional basis or a national basis and finally we do have it on that basis.

So we are hopeful that now, when this Act goes into effect, we will start seeing the same decline that we did for DDT.

But I don't think we have had complete control on PCBs up to this point that we had with DDT in 1969 and '71.

MR. PRATT: On the level of PCBs and waste oils and other materials, you initially said that as far as like Lake Superior is shown that you needed to get as near as possible -- wouldn't, therefore, these levels residuals of 500 or even 100 parts per million of waste oils released still be a significant source both as far as to the Great Lakes or other water waste contributing to the whole atmosphere of the earth as well as possible worker impairment?

MR. HESSE: Well, we haven't seen any as high as 100 or 500 in waste oils.

I think 20 is the maximum -- 20 parts

per million.

It's been very difficult to evaluate what kind of environmental impact that 20 parts per million has.

In terms of the Great Lakes environment or any other portion of the environment -- I just can't put it in terms that I can easily grasp.

I think we figured out that 20 parts per million -- in Michigan's waste oil stream, if we use that as a maximum or an average, even, that this would only amount to 100 pounds or so of PCBs which is equivalent to maybe one transformer.

Spread out over the entire Great Lakes area, I don't know how significant that is.

I am sure it adds to the problem, but I don't know whether we can -- we can really do anything about it at this point other than make sure that no additional disposal of PCBs is made so that it gets into the waste oil stream -- attack it at its source rather than the already contaminated

oils.

MR. PRATT: We found in a couple of the Great Lakes states such as Ohio, where they have commonly had 500 million grams per liter and why it is almost in a deliberate combination of the transformer fluid or other materials into the waste oils, to lend them down to quote acceptable levels, as they saw it, how much have you seen of this in Michigan of the potential problem?

MR. HESSE: I suspect that the purposeful addition of PCBs to waste oils was very common in the past, before the high level of concern became apparent or well publicized.

I have not seen any evidence that people are intentionally diluting it down into waste oils now to get under the maximum limits of our law.

This could be going on, but this is not an acceptable way of disposal of PCBs even if they are diluting it down to less than 100 parts per million, our law forbids such an application, and I just

don't have any records that it is being done -- I hope that it isn't.

But I assume that waste oils were probably much higher in PCBs in the 1960's than they are now with all the publicity.

It may have contributed very much to our atmospheric loading of PCBs, I feel.

MR. PRATT: Does Michigan, this is the last question --

Does Michigan have a program, and I should be more familiar with it than I am, but in Michigan, what controlling do you have over waste oils that come across state lines that come into the state of Michigan?

In other words, do you require any type of certification on these?

MR. HESSE: No, I am not aware of any.

MR. PRATT: As we know in this last fuel crisis we had last winter where we had waste oils that were shipped from Ohio to Minnesota to Arkansas that contains PCBs, hexa wastes, and a number of other highly toxic material.

You have no program for evaluating

this as they come into Michigan?

MR. HESSE: No.

MR. PRATT: Thank you.

HEARING OFFICER WIRTH: Mr. Pearson?

MR. PEARSON: Yes, I have one.

HEARING OFFICER WIRTH: Okay.

MR. PEARSON: You mentioned that you have -- advocate allowing the service centers to continue to use them for stockpiles of PCB fluids in servicing transformers, is that correct?

MR. HESSE: I felt that that was a reasonable action -- if we are going to allow the continued use of transformers, we have got to allow some servicing other than -- it seems like the two decisions go hand in hand.

We could go -- say -- okay, let's say we will take all of the transformers out of use right now or -- let's let them be used throughout their entire lifespan, and if we go one way, we might as well go, all the way and allow them to be serviced, but apply appropriate controls on that servicing.

MR. PEARSON: But that use extends to used transformer fluids that have been reconditioned.

Have you thought about that?

MR. HESSE: As long as the reconditioned fluids were going back into transformers, I see no difference there.

We are aware of at least one situation where transformer oil has been taken out of transformers, and put into another application, and we very much oppose the use of transformer oils in open-ended systems such as the one we have found.

MR. PEARSON: Had you considered the possibility that it may be advisable to continue manufacture of PCB fluids in order to service these transformers?

MR. HESSE: No, I think at that point, we have got to draw a line and as soon as the existing stocks of PCB fluids are depleted, then let's don't, let's stop the use of those transformers, let's let that be their natural lifespan at that point.

MR. PEARSON: Okay, that is it.

HEARING OFFICER WIRTH: Okay, is that all, Mr. Pearson?

MR. PEARSON: Yes.

HEARING OFFICER WIRTH: Any questions from the audience?

Thank you, Mr. Hesse.

We will take one more witness before we adjourn for lunch to get everyone in today.

Mr. Richard Rollins of the Electronic Industries Association or Richard --

MR. ROLLINS: No, Mr. Tylenos (phonetic) will not be here.

HEARING OFFICER WIRTH: Okay.

MR. ROLLINS: My name is Richard Rollins, and I am speaking today on behalf of the Electronics Industries Association and its committee on the PCB, yes.

Today, we would like to offer comments on two issues that were contemplated in your subject request.

One is the intended meaning of "totally enclosed manner", and two, the intended meaning of, "for purposes other

than resale".

Number one, the question on the first issue, does totally enclosed manner refer to exposure resulting from the manufacture of PCBs or articles containing PCBs?

It is our contention that the legislative record is clear and eliminates this question ambiguity.

Senator Nelson, for example, when introducing his PCB amendment in the daily edition of the Congresional Record in the Senate, March 26th, 1976, indicated that the use of non-enclosed PCBs such as carbonless paper, paints, coatings, soaps, and coffee and ink toners quote would be banned in one year after enactment comma while end of quote. "All PCBs used comma including closed uses such as electrical capacitors and transformers would be banned in two and a half years after enactment".

Senator Tony (phonetic), in the above-referenced to the Congressional Record, also understood that the amendment phases

PCBs out by eliminating non-closed systems.

Non-closed systems uses, within one year, and eliminated PCBs altogether within two years.

Further clarification is shown by Representative Dingle's (phonetic) comments.

Upon introducing his PCB amendment in the daily edition of the Congressional Record, August 9, 1976, where he indicated quote "This proposal would prohibit any person from manufacturing, processing or distributing in commerce any PCB for any use other than a use in a totally enclosed manner" end of quote.

In the Joint Conference between the House and the Senate on the PCB Amendment to the Toxic Substances Control Act, no disagreement existed in the fine language, and it is thus apparent that only cosmetic changes occurred there with no attempt to alter the meaning from the original versions.

We, therefore, conclude and suggest to the EPA that the words, "totally enclosed

manner", were intended by Congress to refer only to the product uses and not to the manufacture of the product.

Point two. The intent of the Congress as to the meaning of the phrase, "for purposes other than resale", is made clear by examining the Representative Goode's (phonetic) supporting arguments for Representative Dingle's PCB amendment and I quote, "As my colleague, the gentleman from Michigan, Mr. Dingle, has pointed out, this amendment does not specify replacement of PCBs in existing equipment or the equipment itself."

New language that we have added to the Amendment makes it clear that the distribution as well as the resale of PCB containing equipment manufactured prior to the ban is not prohibited.

This would apply to such everyday products as air conditioners.

Subpoint, the PCB ad hoc committee of the EIA further urges that the EPA classify

distributors of replacement capacitors in the category of purposes other than resale for the following reasons: One. Distributors of replacement components such as capacitors provide a valuable service to the consumer by facilitating care in installing equipment.

Without this service, the consumer cost of the function equipment could increase significantly due to premature purchasing of replacement equipment as the manufacturers could not supply the distributors.

Minimum inventories of a wide range of capacitor ratings must be available at the distributor's in order to service his account.

Two, between January, 1978, and July, 1979, only one full selling season for distributors will have occurred.

Thus, much of the present inventory at the distributor level will exist in mid-'79.

As there are many distributors, the potential exists for quantities of capacitors containing PCBs to be improperly disposed if their inventories are not

committed to diminish by attrition.

Three. Further, not permitting the gradual reduction of inventories, may cause a retrofit problem since the PCB substitute capacitors will be too large to be installed in some applications, again hastening the discarding of equipment.

Four. Finally the impracticality of enforcing the ban at this level suggests the allowance of a more appropriate alternative.

This concludes my remarks and I thank you for your attention.

HEARING OFFICER WIRTH: Thank you very much.

Any questions -- Gary?

MR. BURIN: No.

HEARING OFFICER WIRTH: Dr. Sturino?

DR. STURINO: No.

HEARING OFFICER WIRTH: Mr. Snyder? Blake?

MR. BILES: On your discussion of "totally enclosed manner", the -- obviously you have hold, as we have with legislative

history, you are trying to get some feel for what Congress intended for us to even reach these regulations are.

The language before the -- is quite different than that that appeared in the final Bill.

The House and the Senate Bills both said that totally enclosed manner, any manner which insures any leakage from any closure is significant.

And, as you know, the final Bill said, "any manner in which exposure of human beings or the environment is insignificant".

Now, our question is -- is a lot of the issues that EPA over the last two years has faced dealing with PCBs have been associated not only with the fact of you all putting PCBs in a sealed components -- in fact I doubt that you have seen EPA trying to build a strong argument that once in a capacitor it represents a great risk during the time the capacitor is being used -- obviously we feel that the disposal

problems are significant.

A lot of the problems we have faced have dealt with the facilities and the surrounding contamination of the environment itself.

And my question is is it your position that Congress did not intend to -- TSCA to be directed towards the problems associated with your facilities?

MR. ROLLINS: That's correct.

MR. BILES: So that your position would be that during 1978 as long as somebody is making capacitors or transformers, TSCA doesn't even apply?

MR. ROLLINS: That's correct.

We would like to add that we, as manufacturers, had taken many steps and you are aware of them to control the effluence containing of these PCBs both air and water and we are all voluntarily living with the guidelines as reported out of the American National Standards Institute back in 1974, and we believe that no useful purpose is going to be served by going further on

the manufacturing operation in this particular time span of January of '78 through January of '79.

MR. BILES: What do you think Congress was addressing when it changed the language from "no leakage from an enclosure to no significant exposure to humans or the environment"?

That certainly is a change in the language.

And the first specifically addresses leakage from a discreet component of this oil -- I think.

And the second, of exposure to humans and the environment?

MR. ROLLINS: We believe it was more of a cosmetic change rather than the intent to change the meaning of the two versions that were in the House and the Senate.

If we go back to the record, both in the House and the Senate, we see that -- the attention seems to be the same, and to make a modification there, a conference without having a report out as to why that

change occurred, seems to imply that the intention was not changed.

MR. BILES: Although both versions had -- both versions were changed in conference, do you think that that was a cosmetic change?

MR. ROLLINS: Yes, we do.

MR. BILES: There was no intent to make any change?

MR. ROLLINS: No, we did not believe there was.

MR. BILES: If EPA took the position that states from your facilities, associated with manufacturing, are covered by this Act, that does not mean that EPA is saying you therefore cannot manufacture capacitors?

MR. ROLLINS: Yes.

MR. BILES: We had discussed those situations.

If EPA took that position, how long do you think it would take for either your company or, I guess representing capacitors' manufacturers, how long would it take the industry to use up the liquid

PCBs that are in stock either as of now, or as of the beginning of next year, putting them in the capacitors?

MR. ROLLINS: Within a year.

MR. BILES: Do you believe that it will take you --

MR. ROLLINS: The maximum of one year.

MR. BILES: Do you think that it will take less time?

MR. ROLLINS: Yes.

MR. BILES: Do you have any idea how long?

MR. ROLLINS: That will be an individual company's decision, but it will be less than one year, probably significant.

MR. BILES: Okay.

The last question goes to your issue of people that are handling capacitors.

To understand what you are saying, are you saying that if somebody purchases capacitors prior to the middle of '79 and then uses those capacitors to repair the equipment of some sort, and in that second transaction there is some kind of, you know,

money exchange, you know somebody is paying for that service, that that person is not reselling a capacitor?

MR. ROLLINS: We are asking you to review that language under that guideline because we believe it would cause more disruption than would provide any benefits to the environment.

MR. BILES: Okay, thank you.

HEARING OFFICER WIRTH: Mr. Shykind?

MR. SHYKIND: I have a question.

One point which disturbs me greatly is the -- the secondary market for replacement to capacitors.

We have, in this room, that elegant TV set they are taking our pictures with, and the last 10 or 15 years we have been making most of the electronic components for commercial specifications or industrial specs as well as with PCB capacitors with reason.

If we cut off the manufacture, is it possible to develop in terms of electrical capacity, safety, exact replace-

ments for January inspection, multi-inspection, capacitors that will fill the replacement of secondary --

MR. ROLLINS: The question is a matter of time rather than whether it is a functional situation.

We have heard this morning, we have mentioned many times before, that the polychlorinated biphenyl has a special characteristic in its unflammability and the substitutes will not have that. It is the requirement upon the manufacturers to insure that the capacitor enclosure does not allow this fluid to get out in the environment and cause potential fires.

And this is a major concern of the capacitor manufacturers.

We are in the evaluation stages at this moment, and there are some people who have the -- a substitute available, but there are many others who are not yet ready with their substitute.

The question of, if you were to stop today, would you have an adequate

supply, the answer is absolutely not.

MR. SHYKIND: What happens to the multimillion or multibillion dollar secondary business in surplus electronics either in the government or some manufacturer's overrun?

They are companies that specialize in capacitors and transformers.

Would they then be out of business in July of '79?

MR. ROLLINS: We believe that there -- as John Hesse from Michigan has indicated, that there is -- there should be controls on the addition of equipment containing PCBs into new applications, even if it is on a resale basis.

But on a small capacitor, we believe that the -- to allow distributors to buy attrition to get rid of their product is probably the best way on an environmental basis.

We feel that to try to indoctrinate the people at the distributor level on what is the proper way of disposal, is an endless

task, and in that short span of time to get rid of this product probably is not going to be terribly beneficial.

MR. SHYKIND: Would you favor some sort of, perhaps adhesive label to be slapped on the small power supply capacitors, that sort of thing, this would accommodate that to say, "dispose of this environmentally safely"?

MR. ROLLINS: We, in the capacitor industry, under the American National Standards Institute, are beginning to identify the product that contains PCBs, in accordance with the State of Michigan rules and will eventually honor marketing disposal requirements, adhere to whatever policy as it is set.

So, the product will be identified, yes, sir.

MR. SHYKIND: That would include the many miles of relatively large capacitors with power supplies and things like that that are in surplus?

MR. ROLLINS: Well, you indicate large capacitors and cost-wise, there are large

capacitors used in the corrective action.

Those have been labeled for some time, ever since the American National Standards Institute got its guidelines back in 1974.

The smaller the capacitors with the advocation essentially encloses the capacitor -- there are no identifications shown in that capacitor or on that piece of equipment as it now stands.

MR. SHYKIND: Thank you.

HEARING OFFICER WIRTH: Okay, Mr. Pearson?

Anyone on this side?

Mr. Biles, you have another question?

MR. BILES: Assuming we take the position you advocate on what is "totally enclosed matter"? There are still a number of other industries that we are talking about so -- something affected by these regulations.

Your industry is certainly as much as any industry is affected by EPA and other federal agencies related by PCBs.

Do you have any idea what the

exposure should be for somebody else?

In other words, how do you think it is possible to regulate the different media of release with the type of manufacturing operation you are talking about?

Because even if we took the position with regard to your industry, EPA in its rulemaking, I believe, cannot escape the requirements that it comes up with some definition of the significance of exposure?

MR. ROLLINS: I really can't give you a good answer to that -- not being knowledgeable in the area of the identifying airborne contaminants and what levels, I not being a toxicologist, is what level is not harmful.

I really couldn't give you a good answer.

MR. BILES: Okay, thank you.

HEARING OFFICER WIRTH: I have a few questions, Mr. Rollins.

The first one is basically how well stocked is the industry, your industry, with PCBs?

My question is that should we follow

your argument that manufacture or processing the PCB capacitors was not meant to be restricted in '78, not until '79, was that being cut off? That if with the regulation, would your industry have sufficient PCBs to operate through '78 to make or really transfer over to the substitutes -- would we have sufficient PCBs in current stock? My question is would they be importing PCBs?

MR. ROLLINS: The Monsanto Company, as you know, it will cease shipping the product on the last day of October of this year.

Each company has -- set up its own plans on this, but I think you will find that the concensus is that they will have enough material on hand from Monsanto to finish off the use of PCBs in the capacitors and, therefore, that the attrition of the PCB-type capacitor will continue very quickly after the mid-'78.

HEARING OFFICER WIRTH: Would you anticipate of any cutoff of PCBs in the United States on the market?

MR. ROLLINS: I do not.

It appears to be rather orderly at the moment, in its transition.

HEARING OFFICER WIRTH: Okay.

The bottom question I have is you made a reference to the fact that the manufacturing process now, which would be subject to the toxic effluent guideline as of next February, that the industry was confirming to have standards of emissions.

You mentioned the ANSI standard.

Would you elaborate a little bit on that and explain certainly what air emissions -- my question is air emission standards are self-imposed or federally imposed standards that you mentioned?

MR. ROLLINS: OSHA, in its Act, has put in a requirement over air emissions over work stations of one milligram per cubic meter.

The maximum concentration on an eight hour average exposure.

And there has been no violations at any of the vaster operations that we are

familiar with on this particular point.

The effluent guidelines, both capacitor companies and the EPA are very familiar with what is being done there.

HEARING OFFICER WIRTH: Yes.

So the companies are conforming to the OSHA work place standard of guidelines.

Have there been, to your knowledge, any air emission standards imposed on any of your manufacturers through state implementation?

MR. ROLLINS: Yes. The answer is yes, some states have had that -- the state of New Jersey, for instance, and there have been some measurements, and the measurements have been found to be negligible, insignificant to the point of no measurement detected -- no level detected.

HEARING OFFICER WIRTH: There is no -- no levels detected emitting from the plant site?

MR. ROLLINS: That's right.

HEARING OFFICER WIRTH: Are you familiar with any place at any time when detectable

levels of PCBs were --

MR. ROLLINS: I have no record other than that one particular incident reported to me.

So I can't tell you whether other plans have been --

MR. BILES: If we, again, assume the particular position, do you anticipate you would be asking for an exception in '79?

MR. ROLLINS: No.

MR. BILES: So you think your position is now that if federal government did not put out regulations regarding the purchase of transformers in '78, that is all that is needed -- that there would be no need afterwards to make them with PCBs, I am specifically referring to --

MR. ROLLINS: Capacitors, because on transformers I can't, sir.

But the answer is January of '78 I would anticipate every capacitor company in the United States would be out of the use of PCBs.

MR. BILES: Okay, fine, thank you.

HEARING OFFICER WIRTH: Are there any more? Do you have one question?

MR. PRATT: If I could adjust one thing that there were several areas in -- where we found air emissions from capacitor plants and you said you had not found any -- to our knowledge, there are several within the six states where there has been a emission.

MR. ROLLINS: I only indicated that I knew of none.

MR. SNYDER: My question relates to the toxic effluent standards that become applicable in February for capacitors and transformer manufacture facilities that discharge directly in the stream.

For those plants that discharge to municipal systems, what do you think the impact would be if those standards, through some mechanism, were made applicable on capacitor manufacturers who were discharging to municipal systems?

MR. ROLLINS: As you know, the 307-A is in appeal by our group, by our committee, and we, therefore, are not sure what the

final outcome is.

But, on the -- if the 307-B that is the discharge to the treatment facilities, is the same as those, as presently proposed by 307-A, there would be requirements in some cases for additional treatments.

MR. SNYDER: Your comment that it is under appeal making the assumption that you would have to comply with those standards by February or direct discharges, were you not discharging into municipal system?

If you may -- if you are going to make some assumption, I perhaps I shouldn't, that your industry will be able to do that at least physically from an engineering point of view, would you be able to do the same thing with those operations in your discharging to municipal systems?

MR. ROLLINS: If the -- if we are forced to say, if we are forced to live with a standard that says, "No detectable levels can exist", even after being through passive treatment, it is going to be an extremely difficult task.

MR. SNYDER: Do you see both problems, both conditions essentially similar?

MR. ROLLINS: Yes.

MR. SNYDER: In their difficulty and also ability to meet, be very similar?

MR. ROLLINS: Absolutely.

MR. SNYDER: All right.

HEARING OFFICER WIRTH: Okay.

Are there any questions from the audience?

Okay, thank you very much, Mr. Rollins.

And with that we will adjourn for lunch and we convene promptly at 1:30.

(WHEREUPON, a luncheon recess was had until 1:30 p.m.)

PRESENTATION TO ENVIRONMENTAL PROTECTION AGENCY

PUBLIC MEETING - JULY 19, 1977

My name is Ed Warner, I am Director of Engineering for the Mining Machinery Division of Joy Manufacturing Company. We are a leading manufacturer of underground mining machinery.

Our company has only one use for PCB's. It is used as a coolant internally in electrical motors. While new machinery has not been produced using PCB motors, since 1973, hundreds of motors are still in operation in underground coal mines. It is the continued utilization of the equipment using these PCB filled motors that concerns Joy and our customers.

We believe that EPA should be informed as to the economic impact and production dislocations in the coal industry that could occur, if a total ban were to be placed on PCB's beginning in 1978. As long ago as March, 1972, our company advised our customers of th need for special care in handling and disposal of PCB's.

Applications

Joy first used petroleum hydraulic oil as a cooling fluid internally in motors in 1960, but the flammability of the oil concerned mine safety authorities. Even though these mine motors were explosion tested and could not emit sparks or flames to the mine

atmosphere, it was decided that a flame resistant coolant was required. After exhaustive testing Monsanto Aroclor 1242, a PCB fluid was chosen. Ultimately, PCB fluid was used in three different motors designs. Because of the greatly superior heat transfer qualities of PCB liquid as compared to air, it was possible to dramatically reduce the physical size of the motors. This illustration shows one comparison of two 100 H.P. motors - one PCB filled and the other of conventional air filled construction. The first application was on a continuous mining machine known as the CU43. Fifteen of these continuous miners were built over a four year period beginning in 1963. The approximate selling price of this machine was $105,000. Three motors were used on each machine. Due to the motor's location and size constraints, it was not possible to build these miners using conventional motor construction. Seven of these machines remain in operation as of this time, mining coal at two small coal companies in West Virginia and Pennsylvania.

The second application of PCB filled motors was made in 1965. The approximate selling price of these loaders was $60,000. In this design, two motors were used to provide traction power for a coal loading machine. The size of the motors was not reduced because of the very high operating temperatures experienced with this motor. PCB was added internally to the motors to greatly reduce operating temperature. 1,028 of these motors were used on loaders shipped between 1965 and 1973, to 88 different customers.

Many of these users are small coal operators. In fact, 36 companies own only one machine. Sixty companies own one, two, or three machines. Because of the wide distribution of these loaders, rulings affecting the distribution and use of PCB in mines would have a substantial effect on small coal operators.

The third application of PCB filled motors was on another continuous miner called the 9CM. These miners sold for approximately $120,000 each. In this design, two cutter head motors we completely hidden inside the cutting element at the front of the machine. A third PCB filled motor was used as a hydraulic pump motor. As with the CU43, the motor size was shrunk in order to locate it in these positions. From 1967 until 1970, sixty-four of these miners were constructed. It is estimated that 30 of thes machines are still in operation.

Conversion Program

Beginning in 1974, Joy provided a conversion kit to our Service Centers to change PCB filled loader motors to conventional construction. It was recognized that regulations were forthcoming to prohibit the use of PCB's. To date, 353 motors have been converted, or approximately one third of the total. Loader users have not been receptive to this change because the conventional motors run much hotter, and the service life is shorter.

There is no conversion possible for either the CU43 or 9CM miner motors. Conventional motors of adequate H.P. cannot be installed on these machines, because of their increased size.

Beginning in 1972, Joy Manufacturing and our motor supplier, Reliance Electric Company, began a search for a substitute for Arocl 1242 (PCB). Nineteen different chemical companies were contacted an twenty-one fluids were evaluated in the search for a replacement. T cost of this program was approximately $60,000. Heat stability and compatibility with electrical insulation were primary requirements. Only one fluid was found to meet the test, but unfortunately it gave a very pungent odor under operating conditions, so it was abandoned.

We are convinced that a suitable substitute does not exist for our requirements. We are continuing to evaluate possibilities as they become available.

Minimal Risk

Our company believes that continued use of PCB fluid in mine motors constitutes a minimal risk to the environment. Although PCB filled mine motors cannot be classed as totally enclosed, great efforts have been expended to assure low loss of PCB from the motors The liquid is contained within an explosion tested enclosure, under a pressure of 20 pounds per square inch. Under very extreme condi-

tions, such as a motor winding failure, PCB vapor may be emitted from a pressure relief valve. The only other possible leakage poir is around the motor shaft seal. If this seal becomes badly worn, PCB can leak but it would go into a gear reducer to which the motor is connected. In normal operation, the loss of PCB from the motor is zero. Joy sells PCB in one gallon containers to customers who need small amounts replenish losses from the motors.

The primary risk of environmental contamination is during motor repair. PCB handling and disposal at Joy's Service Center in Bluefield, West Virginia is being done in accordance with suggestion from EPA. This facility has been examined twice by EPA and has not been cited for any misuse or contamination of the environment. Used PCB is accumulated and returned to the Monsanto Company for incineration. Additional detailed safeguards have been adopted as the result of the visits by EPA personnel. The quantity of PCB used on each motor is small, averaging about four gallons. Handling is restricted to a few people who are carefully instructed and supervised.

At the present time, our company is repairing PCB motors at three different locations, but it is proposed to consolidate all repairs at a single Service Center.

Consequences of PCB Ban

As a final consideration, we would like EPA to be aware of the impact on the coal industry, if an outright ban on use of PCB for mine motors were to be implemented. Underground coal mining is a sequential process. It is accomplished by the use of a group of machines to do certain jobs in sequence. One system, known as "conventional mining" uses a group of six machines: A cutting machine, a face drill, a loader, two coal haulage vehicles known as shuttle cars, and a roof bolter. It is obvious that when any single machine becomes inoperative, the mining of coal stops. In addition to the loss of productivity, five other machines must cease operation, with no consequent return on their capital investment. The cost of down time varies, however an average production loss might well be 500 tons of coal in a single working shift, which at today's prices would be at least $10,000. The value of the group of machines involved would total $300,000 to $450,000, depending upon age and condition.

In continuous mining, the mining sequence is simpler, and only four machines are used: One continuous miner, two shuttle cars, and a roof bolter. Again, loss of operation of any machine stops the mining procedure. Loss of coal production is comparable to that in conventional mining. The capital investment would be only slightly less than for conventional machines.

It is for these economic reasons that coal mine operators exert maximum effort to keep all machines in operation simultaneously Taking mining machines out of operation to make conversions obviously would be a costly procedure.

Conclusion

Joy Manufacturing Company proposes that "use authorization" be granted by EPA to us, and our customers for three years beyond January 1, 1978. This authorization would be contingent upon the following:

1. No additional PCB to be imported by Joy Manufacturing.

2. If recommended by EPA, Joy could sell part of our present inventory of PCB to our customers before January, 1, 1978. This would eliminate future needs to transport PCB.

3. Joy would handle all future motor repairs at a single Service Center operating under rules prescribed by EPA.

4. Conversion of loader traction motors would continue at a rate to complete the remaining 675 motors by January 1, 1981. The program would be planned to make conversions as motors fail, and not to convert good PCB motors while still in operation.

5. Coal operators using CU43 or 9CM continuous miners with PCB filled motors would be advised to phase out this equipment by 1981. In case of the 9CM, a conversion kit could be designed for a new cutter head at an approximate cost of $80,000 to $100,000.

We thank you for this opportunity to present our views on this important subject.

Environmental Activities Staff
General Motors Corporation
General Motors Technical Center
Warren, Michigan 48090

July 18, 1977

U.S. Environmental Protection Agency
Office of Toxic Substances
401 M Street, S.W.
Washington, DC 20460

Gentlemen:

Re: Polychlorinated Biphenyls (PCB's)

In response to the solicitation of comments published in 42 FR 32555, June 27, 1977, General Motors Corporation requests that the following comments be placed in the record for consideration of proposed 40 CFR, Part 761.

COMMENTS

General Issues

1. Is any type or level of exposure to PCB's "insignificant"?

   Surveying the data in the EPA's "Criteria Document on PCB's" (EPA 440/9-76-021), most toxicological information seems to have been developed on short-term, high-dose exposure to PCB's. There appears to be relatively little information on long-term, low-dose exposures. Thus, it seems impossible to state that a specific exposure level is "insignificant." It appears concentrations on the order of 10 to 20 parts per million (ppm) may give certain long-term deleterious effects in various mammalian species. However, the general population has been exposed to levels in the low parts per billion (10^{-3} parts per million) for periods of at least 10 to 15 years with no apparent adverse effects. At least there are no data at present which would indicate adverse effects in humans at the low parts per billion exposure level. Therefore, an "insignificant" human exposure level might be in the low parts per billion range.

We presume that any discussion of exposure includes exposure of all portions of the environment. Thus, establishing a single, no effect exposure level becomes very difficult. It is well known that different organisms react differently to PCB's. An "insignificant" exposure level for a clam could be very different than that for a human. Therefore, in our opinion, "insignificant" exposure levels should be related to the specific organism (i.e., plants, worms, clams, birds, man, etc.) most likely to be exposed.

2. Does "totally enclosed manner" refer to exposure resulting from the manufacture of PCB's; e.g., escape of PCB's from manufacturing processes, or only the end use of PCB's?

The term "totally enclosed manner" is used in Section 6(e) of the Act in relation to "manufacture," "processing," "distribution," and "use." Therefore, the statute contemplates that all of those activities can occur in a totally enclosed manner and regulations should be drafted accordingly. It is, of course, possible that the term "totally enclosed manner" could be defined differently depending on which of the four classes of activities the term is applied to.

GM does not manufacture or process PCB's. Therefore, these comments do not address the question of how "totally enclosed manner" should be defined in relation to "manufacture" or "processing." However, GM does "use" PCB's in electrical capacitors and transformers, which are closed and sealed units. We recommend that such units be defined as "totally enclosed" even though they are physically capable of being opened by some means. Likewise, we recommend that electrical devices which contain PCB's and are factory-sealed at the time of manufacture also be classified as totally enclosed when used with their original seals intact.

An additional consideration in defining "totally enclosed" is the incidental contamination by PCB's of certain fluids used in heat transfer and hydraulic systems. Specifically, until 1972, PCB's were widely used as fire resistant hydraulic fluids. When the environmental risks associated with PCB's became known, GM ceased using PCB hydraulic fluids. Typically, PCB-containing hydraulic systems were drained, flushed, and refilled with non-PCB fluids. After nearly five years, we still find PCB contamination present in many hydraulic systems at the parts per million level. Hydraulic systems are, by nature, not permanently sealed.

However, they are sealed when in normal operation. The same is true of heat transfer systems used in some GM operations. Heat transfer systems are less susceptible to leakage because they are not subject to the pressures present in hydraulic systems. We, therefore, request the EPA to establish a PCB concentration of 500 ppm or less as being considered incidental contamination, and exempt such situations from the "totally enclosed manner" limitation.

1978 Exemptions

As stated above, an exemption should be granted for any type of incidentally contaminated system. The EPA has recognized, in the proposed PCB disposal regulations (40 CFR 761.4, proposed on May 24, 1977), that incidental contamination of various systems has occurred. A cutoff of 500 ppm is proposed in the definition of "PCB Mixture" for disposal purposes. This definition should also pertain to all exemptions authorized under Section 6(e) of the Act.

A hydraulic system containing residual PCB concentrations of less than 500 ppm does not pose an unreasonable risk to health or the environment. The system is enclosed, and, therefore, workers are shielded. Waterborne discharges from the system are controlled under the provisions of the NPDES permit program and other discharge regulations. We expect that systems which once held mixtures containing 60 percent to 90 percent PCB's will continue to show low levels of residual contamination for many years, even after being cleaned.

It is unreasonable, in our opinion, to require industry to reclean hydraulic or other fluid systems presently containing less than 500 ppm PCB. The incremental reductions in PCB content gained by successive draining of a system below about one percent residual PCB are small (on the order of 25 percent reduction with each clean out).

The material costs of cleaning a system are about $2.45/litre (L) of fluid replaced. In a facility having 500,000 L of hydraulic fluid, the materials cost alone would be over $1 million. (This cost is based on new hydraulic fluid at $2.00/L, flushing fluid at $0.30/L, and disposal at $0.15/L.) Labor and parts replacement would be additional costs. It is apparent that the costs of removing residual PCB concentrations are very high and the expected benefits are minimal. In our opinion, residually contaminated fluid systems containing less than 500 ppm PCB should be exempted from the provisions of Section 6(e).

Resale of PCB's

As a general position, GM believes PCB's should not be recycled. Once a PCB-containing system reaches the end of its useful service life, it should be properly discarded. However, there should be a small stockpile of PCB dielectric fluid available for routine maintenance of transformers. This would help avoid costly, premature scrapping of transformers due to the unavailability of dielectric fluids.

Specific PCB Activities and Uses

Existing Transformers

Transformers require different types of scheduled maintenance. Some units require no maintenance over their service lives, while for others the maintenance schedule varies with the unit type and use conditions. Some require annual checking; others may go five years between service checks.

During maintenance, one to two gallons of dielectric are removed, tested, and discarded. The scrap fluid is normally incinerated. If the technician performing the test exercises normal precautions to prevent spillage, the risks of PCB loss are minimal. The precautions include:

- testing to be performed only by trained, qualified individuals,
- use of an absorbent blanket to catch any drippage, and
- scrap fluid and the absorbent blanket to be placed in labeled containers for proper disposal.

Dielectric testing is required to maintain the proper characteristics of the fluid so that the transformer will continue to function. There are commercial techniques for filtering the fluid to remove suspended solids and other contaminants. The dielectric constant is checked to see if it is adequate to prevent arcing within the transformer (arcing or short circuiting can cause the transformer to explode). Thus, fluid testing according to manufacturer's specification is absolutely necessary to protect the transformer.

The release of PCB's resulting from transformer maintenance is negligible. As stated earlier, if proper, common sense care is exercised during maintenance, there is no reason to expect any uncontrolled release of PCB's. Consequently, the health and environmental impacts of transformer maintenance are also negligible. If routine maintenance is prohibited, the rate of transformer failures could increase significantly. A certain percentage of the failures could result in rupture of a transformer and release of PCB's to the environment. Therefore, transformer maintenance must be allowed as long as PCB transformers are in service. Common sense precautions to prevent spillage should be exercised. Disposal of scrap fluid and other contaminated articles should conform to EPA's rules on PCB disposal.

Existing Stockpiles

As stated earlier, some amount of PCB should be available only to supply the maintenance needs of existing transformers.

Locomotives

GM produces diesel-electric locomotives. There are several small capacitors used in the locomotives which have contained PCB's. Those capacitors contain paper impregnated with approximately 0.2 kilograms (kg) of liquid PCB. The capacitors are obtained from outside suppliers who are in the process of converting to non-PCB dielectric materials. GM has initiated a program to completely phase out all use of PCB-containing capacitors in diesel-electric locomotives by January 1, 1979. Thus, there does not presently appear to be a need for GM to seek an exemption from the July 1, 1979, ban on distribution of PCB's.

The main reason for using PCB's in locomotives is fire protection. Railroads are concerned over the possibilities of an electrical fire igniting diesel fuel while a locomotive is in a crowded train station or going through a tunnel. It has been our experience that electrical fires in locomotives are rare.

At this time, GM sees no compelling need to use PCB's in diesel-electric locomotives, but neither do we see a compelling need to retrofit locomotives presently in service with non-PCB capacitors. Electrical gear in locomotives should be allowed to remain in use until the end of its normal service life and be replaced with non-PCB gear at that time. The amount of PCB's in a diesel-electric locomotive is small (a total

of about 1 kg PCB per locomotive) and is well protected. Allowing continued use of PCB-containing electrical components in locomotives does not present any unreasonable risk to health or the environment. By allowing conversion to non-PCB components on a scheduled maintenance basis (rather than retrofit), unnecessary costs and rail service disruption can be avoided.

Other PCB Activities

The apparent intent of this inquiry is to determine if PCB-contaminated articles should be removed from service. It is unreasonable to expect industry to literally tear down a manufacturing facility which may contain pipes, pumps, concrete, etc. incidentally contaminated with small amounts of PCB. The economic and environmental costs of demolishing a building to remove a few kilograms of PCB are totally unreasonable. Manufacturing buildings cost millions of dollars to construct. Chemical landfills simply could not handle the quantities of construction rubble which would result from wholesale demolition of incidentally contaminated structures.

Disposal of PCB contaminated solid waste is covered by other EPA regulations (40 CFR 761.4, proposed on May 24, 1977). It is obvious that building materials secondarily or incidentally contaminated with PCB's must be exempted if the material does not qualify as a "PCB Mixture" under EPA's proposed disposal regulations. Therefore, we recommend that EPA abide by its proposed definition of "PCB Mixture" and specifically exempt any material containing less than 500 ppm PCB from the provisions of TSCA Section 6(e).

We hope these comments will be considered by EPA during formulation of regulations affecting the ban on PCB's required by TSCA.

Very truly yours,

W. R. Johnson, Director
Plant Environment

pm

PCB HEARING

SPECIAL MEETING OF

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION V - CHICAGO, ILLINOIS

July 19, 1977

1:30 p.m.

Pick Congress Hotel
Chicago, Illinois

Susan A. Dime
Court Reporter

PANEL MEMBERS:

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MR. WIRTH: Let's get started, gentlemen. 120

Good afternoon, ladies and gentlemen, we wll reconvene this session on the polychlorinated biphenyl marketing and -- excuse me, manufacturing ban regulation. We finished with the marketing and disposal ban.

If there is no procedural question or announcements we will proceed with the next witness.

The next witness then is Fredrick W. Steinberg, a lawyer. Is he here?

Would you state your name and would you spell your last name for the clerk and your association, sir?

MR. STEINBURG: My name is Fredrick W. Steinburg, S-t-e-i-n-b-u-r-g. I am associated with the law firm of Rose, Schmidt, Dixon, Hasley and White from Pittsburg, Pennsylvania, the law firm of which represents Joy Manufacturing Company who was represented earlier this morning by Mr. E. M. Warner, the Director of Engineering.

I am going to restrict my comments which will be very brief to a couple of the questions that Mr. Warner was asked by members of the panel.

I believe it was Mr. Burin who inquired about the identities of the owners of the 9 CM, Continuous mining machines and Mr. Warner did not have with him at that time a copy of the Joy Manufacturing Company's submittal to the EPA, dated September 22, 1975, which is a fairly thick document, but it was submitted to the EPA and I would direct Mr. Burin to documents seven and nine in that compilation which does state -- which do state the identity of those customers.

I think it was Mr. Bremer who inquired about the types of fluids that were evaluated by Reliance Electric Company who is working in conjunction with Joy Manufacturing Company in attempting to locate a suitable substitute for PCBs in the mining machinery category.

I have two volumes which

were prepared by Reliance Electric Company which essentially reflect that work. And I would be happy to share it with anybody at the EPA who would wish to look into this matter further.

It is my understanding that the EPA is continuing attempts to identify potential substitutes of PCBs in almost every application imaginable. So, I don't think Reliance Electric would have any objection to our supplying them to you.

A point that Mr. Warner mentioned this morning was that Joy Manufacturing Company would be happy if the EPA deemed it desirable to consolidate its loader motor conversion program at a single facility rather than the three facilities that are now being used or have been used in the past.

I think that such a consolidation of activities would probably involve a trade-off that the EPA would be concerned about. By restricting the conversion activities to a single facility I think it is safe to assume that unless Joy was required to

dedicate a very large amount of their resources of that Bluefield facility strictly to that conversation program that ultimately the conversion program would be slower than if three facilities were utilized.

The counter-balance factor that the EPA may wish to think about here is that if a single facility is involved, it is quite likely that the number of Joy employees who would be participating in the conversion would be reduced. I don't think that Joy itself has a preference. But, this is something that I simply offer for the EPA's consideration at this time.

Similarly the offer that Mr. Warner made this morning with respect to the willingness of the company to conclude its direct sales of PCBs to customers in one-gallon containers which are now used to top off motors in operation also involves a trade-off perhaps. In making the offer Joy in no way means to attempt to end one round of any of the deadlines contained in the act, but direct sales if concluded before the statutory deadlines

may simplify transportation of the fluids which presumably will also be in areas regulated.

In talking with Mr. Warner at lunch in connection with the company's willingness to divise an instructional program for customers, Mr. Warner or other appropriate associates at Joy will be happy to discuss with officials of the EPA at any time the contents of such a program, how it might best be implemented.

Those are the only remarks I have. I'd be happy to address myself to any questions that a lawyer is competent to answer in this field if there are any.

MR. WIRTH: Okay.

Thank you very much.

Professional competency is not a question here. The questions here are that we have a lot of problems in this entire work.

Okay questions?

No questions -- any questions?

I guess there are no

questions. I guess we exhausted Mr. Warner this morning on the subject.

Of course, we won't respond at this time. We will not respond on any of these particular comments, at this time we are not prepared to. I think the main issue here is for us to understand what your capabilities are; what Joy's capabilities are and what substitutes are available and write the regulations accordingly relative to the environmental risks associated with the operation and use of PCBs.

I have one question, I guess it concerns the three facilities versus one.

Is there any comment you would care to make about the relative environmental risk of three facilities versus one? Do you consider one environmentally safer, easier to operate or control than three?

MR. STEINBERG: Let me begin by saying that I have not personally visited any of the three facilities that have participated in the conversion program.

Mr. Warner stated this morning that EPA officials have visited the Bluefield, West Virginia facility on two prior occasions in the very recent past.

It is my understanding from hearing summaries of those visits that they were essentially satisfied with the handling procedures at that facility. There were some recommendations made and it is my understanding that they are now being implemented.

Except to say that -- as I previously indicated that if you can limit the number of persons participating in that kind of a conversion program I think it may be safe to conclude that those relatively small numbers of people will be more impressed with the hazards involved in handling PCBs.

I don't know that the physical facilities of those three plants vary to such an extent that the physical plant would make one more properly a subject of that kind of activity.

MR. WIRTH: Do we know where the other

-- where all three facilities are? One is Bluefield --

MR. STEINBURG: One is Bluefield, West Virginia, the second is the Meadowlanes facility, I believe, in Cannonsburg, Pennsylvannia, and the third is the Mount Vernon facility which is here in Illinois.

MR. WIRTH: Okay. Thank you. Any questions?

Okay.

We will call our next witness, Mr. Haryy Onishi, from the PCB Task Force of the Edison Electric Institute.

MR. ONISHI: Good afternoon. My name is Harry Onishi, O-N-I-S-H-I, and I am Manager of Transmission Engineering for Commonwealth Edison. I am appearing today as a member of the Edison Electric Institute.

And this task force is somewhat unique. It is comprised of representatives from investor-owned and municipal-owned utilities as well as TVA, BPA and REA.

The task force has had several meetings with EPA concerning the

problems of handling and disposal of PCBs, I guess this goes back to early 1976.

At that time we proposed that an effective control program encompass the following basic considerations: number one was that existing "closed system" uses such as transformers and power capacitors remain in service for the remainder of their useful life and that the PCB control efforts be directed towards maintaining adequate records of in-service equipment and establishing procedures and methods for the handling, containing, clean up and disposal of PCBs in an environmentally acceptable manner.

We believe this recommended course of action is appropriate and consistent with the Toxic Substances Control Act. And accordingly we have stated in the hearings on the promulgation of regulations covering the labelling and disposal of PCBs and PCB articles.

We also recognize that there are additional requirements associated with the promulgation of regulations concerning the manufacture, processing and distribution

of PCBs in commerce.

I think we have a few comments in this area. We do recommend that the exemption for closed-system uses continue. I think that has been fairly clear that the intent is there.

Our past experiences show that the transformers and capacitors are extremely reliable. The failure rates are very low. The releases to the environment because of inadvertant catastrophic failure is very small. This finding is supported by the Versor study. And I think it has been stated that probably the safest place for PCBs in any instances is in transformers or capacitors that are in normal operating conditions.

The ban on the manufacture, processing and distribution of PCBs will have some impact on utility operations. And it already has some impact. For example, on capacitors now most suppliers, to my knowledge, have indicated that they will not supply PCB-filled capacitors. So, we are purchasing non-PCB

power capacitors and transformers. I think there may be one or two suppliers that will still supply an askarel-filled transformer, but most companies are changing. And I would think the ordering of new askarel-filled transformers is very rare.

The unavailability of PCB does not directly affect power capacitors. As you know these units are hermetically sealed and there are no make-up fluid requirements. It does require that non PCB capacitors be available and they apparently are. I think we -- to my knowledge they are in service. We have not had time to effectively evaluate their in-service operation and we will be doing this over the period of years.

For PCB-filled transformers, however, there are nominal make-up fluid requirements. I think the industry intends to provide these make-up requirements by using in-stock PCBs initially and ultimately as we go look down the road, we figure it will have to be done by reclaiming PCBs from existing transformers that are removed from

service.

So, with this in mind we would recommend that the proposed regulations provide for the use of PCBs both from an inventory initially and then allow reclamation of PCBs from all transformers for future use. And these uses can be accomplished in an environmentally acceptable manner.

I think that is the extent of my comments. I'd be happy to answer any questions.

MR. WIRTH: Thank you very much.

Gary, do you have any questions?

MR. BURIN: No.

DR. STURINO: My only question is does any of the companies you deal with have any programs where they do recycle the PCBs or are they sent directly to some other proper disposal facility at this time?

MR. ONISHI: Well, for disposal I think most companies are sending them to a suitable disposal facility, whether it be Rollins or

whether it be Monsanto for recycling or reclamation of PCBs. There is equipment available to do that.

I think some companies, maybe the large utilities can do that. Certainly large transformer manufacturers can recycle.

DR. STURINO: Is anybody doing it at this time?

MR. ONISHI: I would imagine they are, yes.

MR. SNYDER: You commented earlier about the make-up procedures for transformers. There seem to be some question at some point down the road we won't have enough PCBs to satisfy this make-up requirement.

In what ways do PCBs escape from a transformer in a normal use situation such that make-up fill would be required?

MR. ONISHI: Well, many utilities will sample periodically the Dielectric fluid to make sure it is maintaining its properties. This would be a small quantity

but over the period of time this could have some impact.

In many other cases you may have oh, a loose gasket or something of this sort where moisture would enter into a transformer and you would then have to recycle that fluid, or perhaps even drain it and replace it with additional PCB fluid.

So, there are different ways in which you could have some loss of fluid or have need for added fluid.

MR. SNYDER: Do you feel that any of the practices present have perhaps been more on the side of why not go ahead and change because there is an adequate supply of PCBs to undertake such a change versus future situation where supplies would be limited for all reasons that we have discussed here today, and by virtue of this limitation that one might find that they don't have to undergo the change of Dielectric fluids that they may have undergone before; meaning that you sort of decide maybe life is getting a little tougher, maybe we don't have to fiddle around

so much with these fluids.

Is there any basis for that kind of a thought?

MR. ONISHI: I don't know. I think it is possible that some -- in some instances we might consider replacement of the transformer rather than say changing the fluid or something of this sort. I think most utilities would intend to continue their program of periodic sample of the fluid just to make sure that the Dielectric is adequate and there is no contaminents in this sort thing, because it is far more economical in most cases to keep a transformer serviced that it is to replace it.

MR. SNYDER: What are some of the consequences of PCBs becoming contaminated, whether it is moisture -- or perhaps -- you have mentioned moisture as a contaminent: what other kinds of contaminents would you describe and for those contaminents what kind of ill effects would occur if they were not corrected?

MR. ONISHI: Well, it would lead to

failure of the transformer, and the failure would be related to the level of contaminents and location of those contaminents, it could be rather quick and it could stretch over some period of time.

But the emphasis on insuring the Dielectric strength would be to maintain the life of the transformer and prevent any equipment failure.

MR. SNYDER: Can you mention any other contaminents other than moisture at this time that you would expect to find?

MR. ONISHI: There undoubtedly are but I am not aware of them.

MR. SNYDER: Are you aware of any way in which -- well. my understanding is that you can lose some PCBs from a transformer, this would contribute both to an environmental release and also a lowering of the level which may require make-up, that there is an off aspect of the transformer, it becomes overheated, for whatever reason --

MR. ONISHI: You mean to an operation of a pressure relief device or something of this

sort.

Normally, I should say on most transformers from the distribution level that have pressure relief devices.

However, on the askarel type transformers, network type transformers generally this pressure relief device is a frangible diaphragm. It is sealed, it does not release unless you have -- generally it is a failure that will crack or rupture that device, it is not a breathing device.

MR. SNYDER: If in the course of developing these ban regulations we were to develop essentially spill-protection regulations which might involve things such as secondary containment meaning diking or curbing or something of that nature around transformers, a. what would be your thoughts on the usefulness of that and b. the practicality and c. in a somewhat related way, what some of the cost impact may be?

MR. ONISHI: Well, I think the usefulness of some sort of spill prevention -- most utilities I think are very actively looking

in that area.

We do have a problem, many of our transformers are located in sub-surface locations, and many of them have either sumpumps or direct connections to the drain systems.

There is a lot of investigation going on on how you are going to seal those. Some companies are looking at standpipes.

When you are in a sub-surface condition diking is not effective because you can have water levels.

I think it is probable in our opinion it is necessary to do that.

When you're in an above inside building vault location, most of these either the drains -- if there are drains they can be plugged, and in many of the newer vaults there are no drain facilities so that if you would have a leak or a spill they would be contained within that area.

What is your third part of the question?

MR. SNYDER: The cost impact of this sort of program in relation to current practices?

MR. ONISHI: The cost impact of adding invirob to this sort of a thing I think is relatively nominal.

If you have to go into the redesigning of vaults and that sort of thing then it gets rather astronomical and we are trying to avoid that.

MR. SNYDER: Are you aware of any way to improve this accident or stroke of any potential other than secondary containment such as diking?

MR. ONISHI: Well, let me say first the type of occurrance or failure where you would have a tank rupture or something is extremely rare.

The way of improving that, of course, is if you do have a failure to have your protective equipment, remove that equipment from service rapidly.

I think most utilities do have equipment that operates in a matter

of seconds. And that does not preclude the possibility of having a catastrophic rupture under certain conditions. And in most cases I think you have to rely on the secondary containment.

MR. SNYDER: Are you aware of any cases where utilities, or users for that matter, that may not be utilities to the extent you are familiar in that area, where a transformer -- PCB transformer, for whatever reason they decide they won't go into service, in examining the cost of disposal or inconvenience or whatever, elect really to bypass that unit, take it out of service electrically but allow it to remain in place, assuming that it's cheaper than haggling with the unit, are you aware of that kind of practice?

MR. ONISHI: No, I am not aware of it. Personally I could force the situations under which that might occur.

MR. SNYDER: Would you consider it unreasonable if we had requirements that would preclude that sort of practice, in other words

truly define the useful life of the transformer as one that somehow relates to its useful life in its electrical system or as time passes properly removing the item from service on the assumption that it has become some greater risk whether it is corrosion or damage, incidental damage or something like that that might result in a leak?

MR. ONISHI: Well, I would think -- I would think it would probably be -- we would think it would be unreasonable to take that out.

I think if you have that equipment on a standby basis, standing there idle, we would think that it would be perfectly secure as far as environmental releases to the environment. And I don't think it would be necessary to pull that out and dispose of it.

MR. SNYDER: By "standby" are you suggesting that it could be back into service until such time as it has no further useful service life?

MR. ONISHI: Well, if it has no further useful life I think it should be disposed of.

MR. BREMER: Mr. Onishi, you indicated that a good majority of companies are not

ordering PCBs or askarel-filled transformers and capacitors at this time?

MR. ONISHI: That is correct. Most of our capacitors -- power capacitor suppliers have indicated that PCB-filled legal supply, only non-PCB capacitors and this has been in effect for some time.

Many of the transformer manufacturers have indicated that they will no longer supply PCB-filled transformers.

MR. BREMER: What replacement is either Commonwealth Edison using or is the Edison Electric Institute recommending at this time for both transformers and capacitors?

MR. ONISHI: For capacitors Edison Electric Institute is not recommending anything. They are relying on the manufacturers of power capacitors and many of the manufacturers have come out with substitute fluid, General Electric, McGraw Edison, Westinghouse --

MR. BREMER: They're letting the actual manufacturers make their own recommendations then?

MR. ONISHI: That is correct.

MR. BREMER: They haven't selected any?

MR. ONISHI: No.

MR. BREMER: I thought that the Institute was going to select, in fact they had some type of a survey going, to evaluate replacement substitutes?

MR. ONISHI: Well, I think we will monitor the performance of the substitute fluids and just to determine whether or not their reliability or whether or not there are other hazards.

I don't think it's the Institute's position to dictate the type of substitute fluid that should be used.

As far as transformers is concerned, again this would be a similar situation and there are several substitute fluids, most prominent being silicone, that has been a replacement fluid for askarels.

MR. BREMER: Okay.

Let's say for example Commonwealth Edison has to replace a transformer in the city of Chicago in a public building that was required by electrical

code to have an askarel-filled transformer in a particular situation you would use a silicone base fluid transformer oil at this time or would you use an askarel?

MR. ONISHI: Well, it would depend on circumstances. In many of the locations where we have askarel-filled transformers we do have -- they are installed in class A fire-proof vaults, so we could be ready to substitute an oil-filled transformer there.

MR. BREMER: Let's say for example on a new building, what would you put in now?

MR. ONISHI: In a new building we would probably go to oil and in some cases we are trying out some silicone transformers.

MR. BREMER: So, the Electrical Code doesn't keep you from using say mineral oil inside a building?

MR. ONISHI: No, I does not.

MR. BREMER: Maybe some of us were confused because when the --

MR. ONISHI: It does require --

MR. BREMER: -- NC Guideline was being developed they indicated that there were

specific places, public places where a number of people would be exposed to, you know, let's say fire from a transformer that they were required to use an askarel-filled transformer.

MR. ONISHI: That is correct.

MR. BREMER: But, now you are saying that you can go to oil-filled?

MR. ONISHI: Well, in our locations we do have the transformers installed in a fire-proof vault. In many locations the transformers are not installed in a fire-proof vault, which means that it does have to be a non-flammable or fire-resistant type transformer. In those cases you would have to go to askarel or silicone or something that is approved from an electrical code standpoint.

MR. BREMER: Is the silicone-filled acceptable at this time?

MR. ONISHI: My understanding is that the National Electrical Code -- at least the proposed regulations indicate that it will be accepted.

MR. BREMER: It will, but it isn't at this time?

MR. ONISHI: I don't think it has been formalized, but indications are that it will be.

MR. BREMER: Thank you.

MR. BILES: If we are going to accommodate transformers, it's certainly being urged upon us as a policy matter, we are going to try to fit this within what six(e)allows us to do.

And there are two or three questions that I want to see how ypu can help us interpret this.

One term that this act uses throughout, not only in sixty is the term due process, not from a legal standpoint, but just from a standpoint of how people actually use transformers, do you consider the repair of the transformer to be the processing of the PCB liquid itself?

MR. ONISHI: What was that question again?

MR. BILES: Do you consider the handling of liquids and putting them in a transformer to repair and maintain a transformer, is that processing of the liquid. Do you think it is reasonable or not reasonable to say that that

activity is processing?

MR. ONISHI: I think if you are in an extensive repair, where, say you are in a rewind operation or something of this sort, major repair, refilling the fluid, that would be part of the processing.

MR. BILES: Okay.

That leads into my next question. I am assuming that there are various kinds of activities that people would call servicing or maintenance, some of which may involve essentially building a new transformer, others of which may involve kind of routine maintenance, whatever that means.

Do you think we are going to have -- how difficult it is going to be for this agency to try to distinguish between what is necessary for routine maintenance to keep things for their current life and the activity necessary and associated with really building new transformers. Is that going to be a hard line for us to draw in your opinion?

MR. ONISHI: I don't think so. I think

on routine maintenance and servicing would be an analysis of the fluid, perhaps a bushing change, something like that.

I think whenever you have to open a transformer and get into the internals and start doing repairs within the windings and something like that, that would be a major repair and could be differentiated between service and maintenance.

MR. BILES: Do you think that second activity is also the kind of activity that should be authorized for the next ten, twenty, thirty years, or are you directing your comments to the first kind of activity?

MR. ONISHI: I am directing my comments to the first activity. The repair facility or operation is generally not part of the utility operations and our position right now would be it is going to be pretty much on an economic decision whether you can have a transformer repaired or whether you purchase a new one.

MR. BILES: If we attempt to write some regulations that account for repair, however

we define that term, another issue that we have got to face is how we project the amount of PCBs needed if they refer to the fact that you thought reclamation might be one source of the liquid?

How reasonable is it for EPA to try to project for the amount of transformers that are out there and we think may be out there for the next thirty to forty years to try to project the amount of liquids that could be needed and promulgate the regulations as opposed to being silent on the issue and just assume that you can't make any new ones, you can't import, so it has to come from reclamation, that is one of the issues that we have to allow the import to let people build up stock specifically for that purpose.

MR. ONISHI: Well, I think it would be very difficult to project what the requirements are going to be. And I think most companies have some difficulty with the situation since Monsanto went out of business they certainly don't intend to stockpile adequate amounts of PCBs to handle their needs for

the next thirty years.

MR. BILES: One of the things I have come to understand is that a lot of reclamation processes may be a source of a lot of sloppy handling of PCB, I am not saying that is true of some of the major companies who do that, but a lot of the stuff we have heard had indicated to us in the past that might be where a lot of PCBs are getting into the environment, not by the large companies that have their repair shops.

I am just wondering if you took all the recommendations of the source of the liquid and effectively say you can't make any new ones or import any pure ones, to what extent we are buying a bigger problem in twenty years or ten years. Leave that to the market.

MR. ONISHI: I think we leave it to the market, but I don't think it is going to be a real problem. The requirements or restraints on handling PCBs are so restrictive that I think repair of transformer facilities is going to be fairly costly.

MR. BILES: The other provision we have to deal with and people have commented on is the provision on resale. I think it is obvious that one of the things it was intended to cover in the maintenance of the transformers.

The Act says that you can distribute in commerce the liquids if in effect they were sold prior to the middle of '79 and are for purposes other than resale.

How possible is it for industry now to essentially get in stock the PCBs it is going to need because otherwise we face the problem of having to grant some kind of real exemptions for people who buy PCBs later and reduce them in granting the 1979 type of exemption time is difficult.

What I am here to say is that on hand all the things -- getting sold in the hands of repairers all the liquid they are going to need by the end of '79 doesn't make sense.

MR. ONISHI: I am not sure I understood

the question, but I would say that few, if not any of the utilities I know of, intend to try to stockpile adequate amounts of PCBs for any repairs or reclamation they may anticipate in the future.

MR. BILES: What I am referring to is that the legislation says you cannot distribute into commerce any PCBs after July 1st, '79 unless they were sold prior to that date for purpose of resale.

It sounds like you are going to have PCBs being sold after July 1 of '79, which in itself can --

MR. ONISHI: Wait a minute, I don't quite follow you.

MR. BILES: You are talking about reclamation then in selling --

MR. ONISHI: I am not talking about reclaiming and selling, I am just talking about reclaiming and reusing.

MR. BILES: Just one -- the one repair so you are not different entities?

MR. ONISHI: No.

MR. BILES: Thank you.

MR. PRINCIPE: On the maintenance of transformers, it is my understanding that when they take a sample of liquid to test, that it is approximately a pint. Do you know if that is some magic amount or would it be possible to reduce that amount?

MR. ONISHI: I think I understand our sample quantities to be a half a pint. But, I think you would have to have an adequate sample to make the analysis. But, I wouldn't see too much benefit to be gained by having to reduce that amount further.

MR. PRINCIPE: I have read something about trichlorobenzene to dilute PCBs in transformers to the point where you have approximately 60 percent TCB solution to 40 percent PCB. Is it possible that instead of using TCB to replace PCBs you take out to test, let me say the Dielectric fluid you take out to test instead of replacing that with PCBs you replace it with trichlorobenzene, and then over the life of the equipment it wouldn't really make much difference because your distribution factor is so small.

MR. ONISHI: You are correct, trichlorobenzene is added to PCB and PCB fluids, but it is a mixture at present. We have been looking at the use of trichlorobenzene as an additive rather than PCBs. Certainly if it is feasible we intend to do it.

There are some supply problems with trichlorobenzene and a few other properties that they have some difficulties with, at least in my last review of this literature it indicated that they had some difficulties.

MR. PRINCIPE: Could you elaborate what the difficulties were; are they safety?

MR. ONISHI: Safety, I think there was a pour problem, temperature and a few problems of that nature, chemical problems.

MR. PRINCIPE: Do you have any idea what stockpile in a normal utility would have today of PCBs, that is what quantity?

MR. ONISHI: No, I think you would find considerable variations, but it would probably range from a few gallons to maybe a couple of thousand gallons.

MR. PRINCIPE: Thank you.

MR. PEARSON: This may be a little repetitive, but have you looked into the possibility of the difficulties that smaller electrical utilities and cooperatives and municipal electrical companies are going to have with this?

MR. ONISHI: Most of the smaller utilities have a very limited number of transformers. Almost all utilities use capacitors and capacitors are primarily a replacement and the new product would not be PCB problems, you would not have make-up fluids in this sort of thing.

As long as the capacitors have the same electrical characteristics and possibly the same physical dimensions the major problem facing those utilities is record keeping and disposal.

MR. PEARSON: Well, the way I looked at it though was at what point where concern is going down to prevent the last drop of PCB to get out to the environment and the small electrical company has only one or two trans-

formers it would still be important.

MR. ONISHI: Well, that is correct.

MR. PEARSON: Would they have had to -- would you foresee them having a great deal of difficulty having the transformers serviced or replacing PCBs in them in the future?

MR. ONISHI: No, I would think that the small utilities would have very little in number, they would be in a position to phase out their transformers more quickly.

MR. WIRTH: Okay, thank you.

Any more questions? Any questions from the audience?

MR. RICE: Dan Rice, R-i-c-e, from the Illuminating Company, Clearwater, Ohio, and I address the question we had on repair here for transformers, because I think when we're talking about the larger power transformers most of them go back to the manufacturer or the repair shop.

At least in some companies what we might call minor repairs is doing it in a shop within the facility of the utility and minor repairs might be replacing bushings,

repainting the case to make it last longer and in general just refurbishing the transformer, putting in new oil if that is what is required.

I am not sure if you're trying to find an interpretation of what repair actually is for this. But, there are levels of repair as I see it.

MR. BILES: That is why I was asking the question for further opinions about processing and using because the statute allows us to authorize uses of PCBs in a non-totally-enclosed manner indefinitely. There is no 1979 ban on the uses.

But, if that particular activity also contains processing then there is a '79 ban on processing. And the question we have is if EPA wants to adopt a policy of allowing the continuing useful life of the transformer and therefore allowing the handling of the PCB liquid and transporting of the transformers, where do we draw the line between say in one activity constitutes actually really manufacturing the transformer which we're trying to prevent and the other allows

the continuing of the useful life of it.

I was still trying to find out where do you draw the line between those that constitute making a new transformer and those which are just, you know, routine maintenance operations. That is the kind of definition we are probably going to need.

MR. RICE: Maybe from a utility standpoint if you have to rewind the transformer to the core now you are talking about some type of remanufacturing, but if you are just painting the case or if you have got a force on a bushing and you're replacing a bushing, or you're filtering the oil this, at least from our standpoint, would be maintenance to keep the useful life and that is all and it wouldn't -- from our standpoint wouldn't be remanufacturing.

I don't know if that is clear on both sides, but it is just bringing the point so it is clear.

MR. WIRTH: I think it is clear now.

Is there another question?

MR. DONZAL: My name is Dave Donzal, D-o-n-z-a-l, from Toledo Edison Company. I

just want to make one comment in regards to the spill prevention problem.

Generally speaking, we have no problems with developing spill prevention as we have for oil, obviously PCBs are a lot worse environmentally than oil.

The two problems we have found in getting our thoughts together and developing these plans mainly are network transformers and precipitator transformers.

Mr. Onishi mentioned some of the problems with network transformers, in that a lot of times you have standpipes or you have pumps. What we are looking at right now is trying to get some sort of adequate sensing device such that you can determine when you have a detectable amount of PCB in the water, the rain water that comes into the vault, like in a downtown application, determining when it is safe to pump the water out.

The other problem which I am told that we do have is the physical location of some precipitator transformers which are

askarel containers, contain askarels because they're in an indoor enclosure, obviously in a power plant. And I guess there are some problems physically in developing an adequate spill prevention plan for this type of situation.

MR. WIRTH: What were the two terms you used, network transformers as one where, if I understand it correctly, the utility company owns that is part of its distribution system?

MR. DONZAL: That is generally what I was referring to.

MR. WIRTH: What was the other term?

MR. DONZAL: The thing I was pointing out is that the object right now is developing a spill prevention plan for PCBs, obviously it is coming up in the future.

We do have two problems, one with network vaults and one with electrostatic precipitator transformers. And the only point I was trying to make was to point out to the agency that there are some physical problems associated not only with the network transformers, as Mr. Onishi has pointed out, but also in the case of the -- when you have

a transformer in a power plant, you know, perhaps on top of the boilers or something.

MR. WIRTH: Okay, fine.

Any further questions?

Would you come forward at least to the middle of the room so the reporter can hear.

MR. FEW: Yes, I am Paul Few, from Ohio Transformer Company. We do repair transformers as you were discussing here.

I'd like to offer this advice that prices may be the separation in the repairs we are talking about. We get into major repairs of an askarel-filled transformer; today the cost of askarel is rising and practically puts us out of the market in every major repair of transformers. You may be limiting the major repairs in that aspect and still allow the service to go on without additional ruling on the thing.

I'd appreciate it if you would consider that. It is hard enough to try to compete in business without -- you know, without the additional rulings on things.

MR. WIRTH: Okay, thank you.

Any further questions?

Moving on to the next witness, Mr. William Curtis, Manager of the Electronic Division Northern States Power Company, Minneapolis.

MR. CURTIS: I just got a promotion I wasn't aware of.

My name is William Curtis and I am Manager of Electronic Distribution for NSP, we're an electric utility located in Minneapolis, Minnesota, and we serve a four-state area, Minnesota, Wisconsin, North and South Dakota, and our headquarters are in Minneapolis.

It is enjoyable to follow Harry because he generated all the questions that I was going to bring forth. But, I have a couple of comments I'd like to address myself to here.

As far as duration, extent of use for existing equipment, it is our recommendation that all field products such as capacitors and transformers containing

askarels be allowed to remain in service for their useful life.

The following reasons support our recommendation: the cost of this replacement would be prohibitive. We have 1800 capacitor banks and approximately 900 transformers in service that if we were to replace them immediately or in the near future would cost approximately $30,000,000 to our repairs, environmental costs are passed on to repairs.

We feel that we have already made strides in the requirement of 40 CFR 761 to implement programs in handling, storage and disposal. It would be impractical and wasteful use of our resources at this time to change all usable equipment.

We also feel that a mass replacement of useful equipment containing PCBs would result in immediate disposal problems which we feel would have a greater polluting potential to environment than an orderly phase out program.

I think the question of

maintenance was answered very good by the gentlemen that were here, but I think at NSP we would look at maintenance of transformers and relate the question to economic decisions whether the transformer would be scrapped or repaired would be an economic decision, so I see no reason to elaborate on that.

Some of the areas that we have worked with, at NSP we have an environmental department approximately fifty people that work on all the regulations, we audit and check on our division operating people to make sure they're abiding by our policy that we have established, we work with other customers such as primary customers that have PCB type transformers relating to them some of the problems they are faced with and trying to indoctrinate and educate.

That is the extent of my comments and I would be willing to answer some questions.

MR. WIRTH: Thank you, Mr. Curtis.

I am going to take the chair's perogative to ask the first one or two questions.

I understood Mr. Onishi, I guess it is a point I want to make absolutely straight in my mind, that in an askarel-filled transformer there is not a blow off or an expansion device that under normal conditions that would normally would be releasing PCBs to the environment, that the only type of escape from the tank was through a pressure valve in the case of massive overheating or failure, is this correct?

MR. CURTIS: That is correct.

MR. WIRTH: So that there should be no formal -- there should be no release from a transformer -- askarel-filled transformer unless it just completely failed on rare occasions?

MR. CURTIS: That is correct.

MR. WIRTH: The second question is back on the trichlorobenzene addition; is there any reason in the world why the make-up fluid has to be askarel in all cases or draw off only for testing purposes in pints? I mean, the size of most of these transformers, in my understanding, would be that it would be almost

non detectable replacement make-up fluid that you would draw for analytical testing purposes.

MR. CURTIS: Well, we would draw a half pint of fluid too.

If I understand your question -- would you repeat it, I am sorry I lost you a minute there.

MR. WIRTH: I am making some assumption here that if a transformer has a thirty or forty year life, I presume you test more than once a year?

MR. CURTIS: We draw fluid once a year, yes.

MR. WIRTH: You are drawing off a half a pint, even over forty years is ten pints, two and a half gallons that is make-up fluid and that ten gallons were other than PCBs that will have a very voluble impact on the performance of the transformer; is there anything wrong with that assumption?

MR. CURTIS: No, that would depend on the size of the transformer, and they vary from sixty gallons up to five hundred. So, I can't see that that is such a low percentage

that it would cause such a problem.

MR. WIRTH: Okay.

Is there any reason that the PCBs should be removed from the transformer other than complete rebuilding; in other words operations involving the rewinding or for the replacement of the fluid once it is determined on an analysis of the fluid that it is required to be replaced it will not function any longer?

MR. CURTIS: I see no reason why we would not use a smaller transformer, a non-PCB transformer, our distribution overhead, or oil, and we would ship it back to G.E., Westinghouse, the manufacturer.

The economics just aren't there. You have to have people to do it. You can't keep these people employed unless you have a volume. We don't.

MR. WIRTH: Okay.

Is there anything wrong with coming to the conclusion that I started to approach then, that is to say that while transformers are in use any material withdrawn

from it could be destroyed and it continues on in that way for its entire useful life?

MR. CURTIS: I can't see a problem personally in my experience.

MR. WIRTH: It makes it relatively safer environmentally to withdraw it and send it to disposal and in my opinion it would greatly reduce the possibility of environmental exposure to it than if you turn around and attempt to put some back in, is that a correct assumption?

MR. CURTIS: I think so, yes.

MR. WIRTH: Let's start with questions at the other end of the table.

Mr. Pearson do you have any?

MR. PEARSON: No.

MR. PRATT: Realizing this may not be totally appropriate since the Twin City area is in the middle of a drought as I understand it; but, if I recollect correctly NSP had a problem with PCB transformers with flooding conditions awhile back.

I was wondering what

type of procedures have you instituted to ensure that this would not reoccur in all of your facilities?

MR. CURTIS: I am not aware of a drought in the Twin City area. I am not aware of flooding problems either.

But, we have instituted policies that our distribution people follow on handling, storage and disposal of PCBs; we have forms that we fill out; we work very close with the State, we record every spillover, so many gallons; and as I said we work very closely with the State on this.

So, I am not aware of the problem that you are referring to, but I can sure check when I get back. Maybe it happened while I was gone.

MR. BILES: Does NSP perform any repair or maintenance operations for non-NSP transformers?

MR. CURTIS: No, no we don't.

MR. BILES: Do you foresee that, assuming you aren't going to be buying any new transformers after the middle of '79 which is the

date we are looking at, do you see any need for NSP to buy or sell transformers other than if you are selling them in the sense of sending them for disposal and money changes hands or you sell a whole facility that contains a transformer; is there any reason for you to buy or sell any transformers after that now or in the future?

MR. CURTIS: We wouldn't sell a transformer if it had useful life, if there is any economics to it we keep it in useful service.

The only other case, and I think you are referring to this, is where a municipality wants to buy us out and we are willing to sell.

MR. BILES: And is the major work on your transformers done by the people who make the transformer, if you have major work to be done?

MR. CURTIS: Most of the major work is done, yes.

MR. BREMER: I have had the opportunity about a year ago of testifying at the Minnesota Senate Hearings on PCBleg islation

for the State of Minnesota. And I was under the impression at that meeting that Northern States Power strongly objected to a ban on PCBs because of a very large facility that was in the planning stage for using a large number of power factor correction capacitors. And at that time the individual stated that they definitely had to be askarel-filled and that this type of, you know, they'd have to have exemptions to get this facility in some type of order.

Now, I was wondering do you have other replacements at this time that you think -- or have you solved that problem or is this ban proposing a great problem for your particular utility or do you have replacements at this time for power factor correction capacitors?

MR. CURTIS: Well, as Harry mentioned in his testimony, we no longer are buying askarel-filled capacitors or transformers. We are buying a silicone oil.

MR. BREMER: Also for capacitors?

MR. CURTIS: Capacitors, yes.

MR. BREMER: They're filled with silicone?

MR. CURTIS: Our shipment coming this year will be silicone oil.

MR. BREMER: So, then, silicone can be used in power factor type capacitors?

MR. CURTIS: That is what the bulk of our capacitors are for, power factor correction for our system.

I am not familiar with that testimony, but I surely can check, I am not familiar with that instance that you are quoting.

MR. BREMER: Well, you know, I just remembered that there was, you know, a very large problem by the very fact that they said there was no replacement, but your position now is that there are replacements that can take over in the situation?

MR. CURTIS: This could have been the case last year on our order with the manufacturers on the power factor correction type capacitors. We ordered quite a few of them every year and it could have been the case. But, this year we are getting non PCB type

fluid.

MR. BREMER: Very good. Thank you.

DR. STURNO: I have one question.

You have indicated, as well as Mr. Onish, that about half a pint of PCB is withdrawn for the test. Do they use the whole half pint to do the test, or do you use a small portion of it afterwards? I mean, what do they do with it after they tested it?

MR. CURTIS: They use the whole half pint for testing. They have to test such things as pour point, acidity of the fluid, Dielectric strength, they run a couple Dielectric strength tests. The whole -- there isn't much left when they finish their tests.

DR. STURINO: So, then the sample is consumed during this testing?

MR. CURTIS: No, it isn't consumed, then it is disposed according to the state regulations in Minnesota.

DR. STURINO: What I mean by consumed is the physical characteristics were changed

that it could not be used any more?

It seems to me a lot of people have been talking about adding the trichlorobenzene but nobody has indicated any toxicity or any of the other problems which are posed by trichlorobenzene; and it seems to me after testing if the PCB is still maintained in its characteristics I don't see any reason why it can't be used to refill the transformers again?

MR. CURTIS: I am sure in some of the tests they can. I am not completely familiar with the acidity tests, maybe Harry can comment on that. I am not in the maintenance area. I am very familiar with what they do, but I can't comment on acidity tests and that.

I know in the pour point they just check the viscosity and that. So, I don't think that would change the chemical properties of it, and I see no reason to reuse it where you haven't changed the chemical characteristics of it.

DR. STURINO: Thank you.

MR. WIRTH: Any questions from the

audience?

MR. ONISHI: Yes, I just wanted to comment. As I understood you, you are driving at since the amount of fluid that you took out of the sample is very small and the transformer is totally enclosed then the make-up fluid requirement ought to be very small. I think I made the assumption that in some cases the fluid itself might be contaminated by moisture or something, the transformer itself might be. In those cases we would have to drain the fluid and refill it so, in those cases we would have to use a much greater amount of make-up fluid than is taken out during chemical analysis.

MR. WIRTH: Yes, sir, if I didn't make it clear I understood that if the fluid test poorly, or malfunctioned the entire fluid would have to be replaced.

Mr. Bremer?

MR. BREMER: On the same line there, if you have a lot of moisture contamination in a transformer, isn't it rather an open system?

MR. ONISHI: No, it does mean you probably have a leaky seal somewhere around the bushing.

MR. BREMER: Where it would have taken the water from the outside it wouldn't be taken out of the air then it would have been, say, from rain water?

MR. ONISHI: It could be rain water. If you had a situation where you had a leaky seal it would be accumulating moisture from the transformer. Of course, there is no -- that is not a normal condition but it could happen.

MR. WIRTH: Do you replace those seals?

MR. ONISHI: If they are faulty, yes.

MR. WIRTH: Is that an in-place servicing or is the transformer usually hauled out for service at that time?

MR. ONISHI: No, that could be done in place.

MR. PRINCIPE: This is properly a question for both of you, but I will use your numbers.

Now, you indicated that

you had 900 transformers in use, of those 900 transformers about how many each year do you find that you have to replace or regenerate the fluids because of contamination; do you have any idea what that number would be?

MR. CURTIS: It depends. Very few, I wouldn't even want to guess.

Looking back over the past year I can't even recollect pulling a transformer out of a vault and moving it to another location except only in cases where the load -- the customer reduced his load and we had an oversized transformer and economically it would have been better off somewhere else. I can't recollect one case of this type of thing.

MR. WIRTH: Do you recall the last time you had to replace a transformer fluid in your system?

MR. CURTIS: I'd only be guessing, but in the last year I can't really recall going through any process of replacing -- these are completely sealed and unless we have -- the roof falls in or a catastrophic failure,

which I can't recollect, there is nothing that can get in or out to cause contamination, especially moisture.

MR. PRINCIPE: I guess my question then has to go to Mr. Onishi, then.

We have heard on a number of occations people have testified that contamination can take place and it appears that contamination -- that that type of contamination where you have got to regenerate the Dielectric fluid is very rare, is that a sound conclusion?

MR. ONISHI: Yes, I think it is fair.

MR. CURTIS: The tests that we go through, just to add to it, are for a specific purpose, and that is to determine the chemical properties of the material which is our insulating media. And, if there is something off, for our company's standards, then we go through this procedure. It is a normal procedure trying to maintain the reliability of the electric distribution system to better serve our customers.

MR. RICE: Dan Rice again.

I just have one comment.,

you mentioned buying or selling transformers. And maybe for some utilities it is rare, I guess it is for all utilities, it is rare, but occasionally we buy or sell a transformer to another utility where for some reason they have a particular emergency need for that transformer and it may not be available from a supplier for some period of time, we have purchased and sold equipment such as this.

MR. WIRTH: Okay. Thank you.

Any other comments?

Thank you very much.

MR. CURTIS: Thank you.

Would you come forward and state your name and affiliation?

MR. POWELL: My name is Walter Powell from Midwest Technical.

We do a lot of work for private industries as opposed to utilities. Okay. And I think the private industry isn't represented enought right now. We do work for manufacturing processors, industrial customers who have their own transformers, own their own equipment.

Utilities watch their equipment very closely so they may not have that much of a problem. We get involved with these customers, quite often in the repair of transformers -- PCB-filled transformers. Quite often we have to take the fluid out of the transformer right on site and repair it for whatever reason, it may be because the bushing leaks, because of a broken seal, or because of moisture contamination.

In the private sector, moisture contamination is not uncommon. I mean you are not talking about a large percentage at all, you are talking about a relatively low content of moisture, you aren't talking about water as you might visualize it.

So, in the private area as opposed to the utility, there is a l t of on-the-site repair that involves taking out fluid, putting it back in, you have a certain amount of loss in the volume of gallons when you do that because of the pumping equipment that you use, this has to be replaced.

Another area is when ycu

have broken seals of gaskets, there may be a loss. This may not show up for two or three years because the private area does not watch their equipment that closely as opposed to utilities.

So, I want to make sure you aren't underemphasizing the need for on-site repair and replacement of fluid that has been lost from maybe a period of ten years.

Have I made my point?

MR. BILES: The question on that is if we follow a process of getting the PCBs over the next several years to reclamation where do you reclaim your PCBs from? You obviously don't own transformers of your own?

MR. POWELL: No, we just are a service organization.

MR. BILES: So, where in the future would you get the PCBs to make up the difference you take out?

MR. POWELL: Where will we?

MR. BILES: Would you buy your transformers and drain them?

MR. POWELL: No. No. If we had a

customer and that customer had a transformer who is low fluid, I don't know where we would get it. That is going to be a problem.

MR. BILES: That is going to be a very critical issue if we try to project some way to maintain transformers.

I'm under the impression that people like NSP got their transformers repaired all the time. In fact, that was one of the responses that I think one of the transformer manufacturers who do perform that work gave.

MR. POWELL: One area that we are looking forward to or our hopes are in is retro fitting area. We are hoping that this becomes a viable solution.

MR. BILES: What would you do if there was a ban on the manufacture and import of liquids after a couple of years?

MR. POWELL: If we have a circumstance where a customer was low on fluid and we could not get replacement fluid the only thing we could do would be to advise the customer to replace the transformer.

MR. BILES: Okay.

MR. POWELL: But, just be aware of the fact that there are a lot of customers in the private sector who have this equipment and these are the customers that you are going to be careful of because they don't watch the equipment as the utilities do. And if you are very strict the customer may get themselves in a bind where he is going to say, "if I bring this up I am going to have a major expense and a large can of worms."

MR. BILES: Do you have a suggestion on what we should do in terms of dealing with that problem, in terms of allowing you or anybody else in your position to meet his needs?

MR. POWELL: Well, I'd like to see you work with the utilities or people who are pushing the retro fitting idea, that is our only real hope. And, possibly, if retro fitting may be viable if you had to take down a thousand parts per million instead of five hundred, something in that area.

MR. WIRTH: Okay.

Are there any other comments?

It is eight minutes to three. We will take a strict eight-minute break.

(WHEREUPON, a short recess was had.)

MR. WIRTH: Okay. We will reconvene.

The next witness is John Weizeorick, is that correct, from the Association of Home Appliance Manufacturers?

I will reiterate to spell your name and also the pronounciation.

MR. WEIZEORICK: All right, my name is John Weizeorick, W-e-i-z-e-o-r-i-c-k. I am Assistant General Manager for the Association of Home Appliance Manufacturers and I have with me Mr. William Beard, who is Director of Engineering of Room Air Conditioners Engineering for Whirlpool Corporation.

AHAM is a national trade association representing the appliance industry. The comments which we are presenting are the consensus viewpoints of the Association member-

ship and particularly those members who use small capacitors.

AHAM recognizes that the American public should be protected against unreasonable risks of injury associated with consumer products. In accordance with this, it is the policy and intent of every AHAM member to discontinue the use of PCBs in its products just as soon as adequate substitutes are available.

Section 6 (e) (3) (A) (ii) of the Toxic Substance Control Act states that after July 1st, 1979 no person may process or distribute in commerce any PCB. AHAM interprets this to mean that any product manufactured prior to that date and containing a PCB article is prohibited from being sold.

Even though the appliance industry will stop using PCB small capacitors in its products during 1978, some products manufactured during or prior to 1978 and containing PCB small capacitors are likely to be in inventories throughout the nation for a substantial period after the July 1st, 1979

cut-off date. It would be impossible to locate all products and prohibitively expensive to change even some of these PCB small capacitors to non-PCB capacitors.

When issuing rules concerning the phased ban of PCB, AHAM requests the EPA to consider an exemption for PCB small capacitors in the household appliances including room air conditioners and microwave ovens.

AHAM believes that the household appliance industry has made a good-faith effort to eliminate PCB small capacitor usage. Microwave oven manufacturers indicate that they will be fully changed over by July 1st, 1978. Room air conditioner manufacturers have been working diligently with capacitor manufacturers to develop replacements for the PCB small capacitors and present estimates indicate that sixty-seven percent of the 1978 model line will be equipped with non-PCB capacitors. The complete changeover will be accomplished during 1978 so that the 1979 model line will be non-PCB capacitors.

So, again, we urge that consideration of an exemption for small -- for PCB small capacitors used in household appliances be considered.

Mr. Chairman, that concludes the statement regarding the PCB ban.

However, AHAM does have some concern with the labelling requirements which were published under the proposed rules for regulation: would a statement on this be in order at this particular time?

MR. WIRTH: Mr. Weizenorick, the informal hearing has been concluded on the labelling and disposal regulations. The reply comment period to comment or to statements made in the hearing is in order to discuss.

Because that entire process was accelerated even over our own stated procedures EPA has stated that it would consider all comments basically relevant to that regulation done until the final close of the reply comment or the twenty-fifth of this month. I think under that general rule we would entertain a short statement on the labelling and disposal. The panel will not

comment nor ask any questions on that subject because the hearing is closed.

And we would also like to invite you to submit those comments in writing, identify it as a reply comment for the record before the twenty-fifth to ensure that they are given full consideration.

MR. WEIZEORICK: This comment was submitted in writing to the EPA at the time of the hearing. Our problem was was that we had so many conflicts that we couldn't shake anybody free to go there to present the information and thought it might appropriate at this time to reiterate this position so that it is on the record very definitely.

If that is appropriate, then, according to AHAM's interpretation --

MR. BILES: If you submitted written comments then it is on the record. You will not have any problem with that.

MR. WEIZEORICK: There is some additional information I have which was not contained in our comments which we gathered since that

point and I have here.

Would you like that?

MR. WIRTH: Well, I might say I think we will be happy to take that.

MR. WEIZIORICK: Or should I just file it with the authority? I can do that.

MR WIRTH: Yes, I think it would be better to submit it in writing because I do think it would be out of order for us to comment on this.

This is another transcript and we won't have it available probably for seven to ten days and today is the 19th; that makes it the 29th which is four days after the close of that period.

I think we would rather have it submitted, even if you have it available I will be happy to take it for that specific record if you will identify it as a reply comment for PCB labelling and disposal.

MR. WEIZIORICK: Okay.

We would be glad to answer any questions on the PCB ban.

MR. WIRTH: Thank you.

Gary, do you have any questions?

MR. BURIN: Have there been any technical problems that you are aware of that they had to change over to non-PCB-built capacitors?

MR. WEIZIORICK: I can answer that, yes. I think Bill might be able to provide additional detail if you'd like.

MR. BEARD: There have been a number of technical details and some of the capacitor manufacturers are here in this room and they know the problems of finding a substitute material.

But, from a user's standpoint air conditioners -- room air conditioners went through a period some years back of poor reliability on capacitors and the whole industry got stung pretty badly. So, we have a natural concern for going through that sort of thing again. So, reliability has been a primary consideration, so that the new materials that have been proposed and tried

in the capacitors have had to be tested.

And because of the accelerated nature of the program we have been trying to go as fast as we can and I have to say from my own experience that we have even moved probably a little bit too fast in some cases and started production on capacitors with a given material and run into reliability problems in our testing which was going on concurrently and had to back up.

And, so, I would say from that standpoint there has been a problem, we are continuing to work on it, we're moving as fast as we can in monitoring the results of those non-PCB capacitors that we put in the field during this past year. It has been an accelerated program.

MR. BURIN: What is it that you mean by "reliability"?

MR. BEARD: In this particular case we are talking about the capacitor performing its function. It is a loss of capacitance due to degradation of the fluid, it is not

a problem of rupture or failure of that nature, it is a failure of the thing electrically.

MR. BILES: In your industry is there any reason whatsoever to use any capacitors that are leaking other than disposing of them?

MR. WEIZEORICK: None whatsoever.

MR. BILES: Putting together the test, your statement along with what Mr. Rollins said this morning, I am understanding then that you saying that the fact that the capacitors -- the manufacturers of the small capacitors feel that they can be out of that business by the end of '78, you feel that that is adequate to meet your needs?

He this morning made a statement that they did not anticipate at least at this time that at that point they d need an extension beyond 1978 to manufacture capacitors?

MR. WEIZEORICK: Present plans of all of the members of AHAM are to be out of PCB type capacitors during model year 1978; that would

put them into a non-PCB capacitor about the fall of '78, August, September, October, and about that time when they start making their 1979 model line, totally.

MR. BILES: Okay.

So, then, you would be able to buy all your capacitors prior to the middle of '79.

Would there be any need for you after the middle of '79 to be selling any capacitors? Do you see any reason whatsoever to be selling any small capacitors as small capacitors, not just selling the air conditioners, but small capacitors?

MR. WEIZEORICK: Present indications are that even replacement capacitors in the field will be non-PCB, which would mean that we would have no use for PCB capacitors.

MR. BILES: Would you be able to have sold most of your air conditioners and microwave ovens prior to the middle of '79?

MR. WEIZEORICK: No.

MR. BILES: Or capacitor sales?

MR. WEIZEORICK: That is our problem.

MR. BILES: How long do you think that will take for you to complete your sales of what you manufactured prior to that date, what is the period --

MR. WEIZEORICK: Well, if the summer continues the way it has and we have another summer like this next year, it is likely to be no problem with room air conditioners. However, our past history indicates that we have products floating around for up to four years out in the field after they are manufactured at various locations.

This industry, as a matter of fact, is fairly unique in its handling of inventories. At the end of the season it buys back much of the dealer and distributor inventory, which is something that isn't normally done by other industries. Although it buys it back, it doesn't always take physical possession of that material, it is stored somewhere out in the field and some of it might even be shipped from the Northern states to the Southern states and re-financed and resold down there. And,

so, you do get models which are three, four years old to get mixed in with other units and end up getting stuck in a warehouse and get dug out somewhere three, four, or five years later.

So, it is likely to be around and it would be very difficult to get your hands on it.

MR. BILES: Maybe this is a question that goes to your supplier: do you have any idea of the percent of small capacitor market room air conditioners and microwave ovens cover?

MR. WEIZEORICK: No.

MR. BILES: I will ask that later.

The last question is; are you aware of any importation of PCB capacitors or air conditioners or microwave ovens that have PCB in them that are competing with your products?

MR. WEIZEORICK: No, I am not.

MR. BILES: That doesn't mean it doesn't exist, you are saying you are not aware of it?

MR. WEIZEORICK: I am not aware of any.

MR. WIRTH: Any questions from the audience?

MR. GOLDSTEIN: Do you anticipate any problems with your warranty procedure because of the change from PCB to some other type of material, an alteration of your warranty policy on your small appliances?

MR. WEIZEORICK: No, we wouldn't plan on it. That is one of the reasons we are very concerned with reliability of the capacitor. We are not changing the warranty and we want the new ones to last as long as the old ones did.

MR. WIRTH: Thank you very much.

The next witness is Mr. William Ward of the General Motors Corporation.

MR. WARD: In process -- excuse me, my name is William Ward. I am the Senior Project Engineer with General Motors Environmental Activities Staff based in Warren, Michigan.

In preface, I have given a copy of our formal comments to the hearing clerk, I do have a limited number of additional copies if anyone in the panel

would like to see them, otherwise in the interest of time I will just briefly summarize our formal comments.

The first issue --

MR. WIRTH: Excuse me, Mr. Ward. Are you going to read from your comments?

MR. WARD: I am going to read selected portions of them.

MR. WIRTH: Can we have a copy of this?

MR. WARD: Certainly.

I am sorry I only have three copies here, but I did give the original to the hearing clerk previously.

The first item I would like to address myself to is the issue of the totally enclosed manner.

GM does not manufacture or process PCBs. However, GM does use PCBs in electrical capacitors and transformers, which are closed and sealed units. We recommend that such units be designed as "totally enclosed" even though they are physically capable of being opened in some means. But are sealed during normal operation. Likewise, we

recommend that electrical devices which contain PCBs and are factory sealed at the time of manufacture also be classified as totally enclosed when used with their original seals intact.

An additional consideration in defining "totally enclosed" is the incidental contamination by PCBs of certain fluids used in heat transfer and hydraulic systems. Specifically, until 1972, PCBs were widely used as fire-resistant hydraulic fluids. When the environmental risks associated with PCBs became known, General Motors ceased purchasing PCB hydraulic fluids. Typically, PCB-containing hydraulic systems were drained, flushed, and refilled with non-PCB fluid. After nearly five years, we still find PCB contamination present in many hydraulic systems at the parts-per-million. Hydraulic systems are, by nature, not permanently sealed. However, they are sealed when in normal operation. The same is true of heat transfer systems used in some GM operations. Heat transfer systems are less susceptible to

leakage because they are not subject to the pressures present in hydraulic systems. Therefore, we request the EPA establish a PCB concentration of five hundred parts-per-million or less as being considered incidental contamination and exempt such situations from the "totally enclosed manner" limitation.

Speaking to the exemption provisions, an exemption should be granted for any type of incidentally contaminated system. The EPA has recognized, in the proposed PCB disposal regulations, those published on May 24, 1977, that incidental contamination of various systems has occurred. A cut-off of five hundred parts-per-million is proposed in the definition of "PCB mixture" for disposal purposes. This definition should also pertain to all exemptions authorized under Section 6E of the Act.

A hydraulic system containing residual PCB concentrations of less than five hundred parts-per-million does not pose an unreasonable risk to health or the environment. The system is enclosed,

and, therefore, workers are shielded. Waterborne discharges from the systems are controlled under the provisions of the NPDES permit program and other discharge regulations. We expect that systems which once held mixtures containing 60 percent to 90 percent PCBs will continue to show low levels of residual contamination for many years, even after being cleaned.

It is unreasonable, in our opinion, to require industry to re-clean hydraulic or other fluid systems presently containing less than five hundred parts-per-million PCB. The incremental reductions in PCB content gained by successive draining of a system below about one percent residual PCB are minimal.

The material costs of cleaning a system are about $2.45 per litre of fluid replaced. In a facility having say five hundred thousand litres of hydraulic fluid the material cost alone would be over one million dollars. I base this cost on a $2.00 per litre new hydraulic fluid cost, flushing fluid at $.30 per litre and a disposal

cost of $.15 per litre. Labor and part replacement would be an additional cost.

It is apparent that the costs of removing residual PCB concentrations are very high and the expected benefits are minimal. In our opinion, residually contaminated fluid systems containing less that five hundred parts-per-million PCB should be exempted from the provision of Section 6E.

As a general position, General Motors believes PCB should not be recycled. However, there should be a small stockpile of PCB Dielectric fluids available for routine maintenance of transformers. This would help avoid costly, premature scrapping of transformers due to the unavailability of Dielectric fluids.

Transformers require different types of scheduled maintenance. Some units require no maintenance at all, other units do require maintenance, some once a year, others may go as much as five years between scheduled maintenance or service

checks.

During the maintenance, as it has been pointed out, a small amount of Dielectric is removed, tested, and discarded. If the technician performing the test exercises normal precautions to prevent spillage, the risks of PCB loss are minimal. In our opinion, these precautions include: testing to be performed only by trained qualified individuals; use of an absorbant blanket to catch any drippage; and scrap fluids and the absorbent blanket to be placed in labelled containers for proper disposal.

The release of PCBs resulting from the transformer maintenance is negligible, if proper, common sense care is exercised during maintenance there is no reason to expect any uncontroiled release of PCBs. Consequently, the health and environmental impact of transformer maintenance are also negligible.

Turning now to locomotives -- GM produces diesel-electric locomotives.

There are several small capacitors used in locomotives which have contained PCBs. Those capacitors contain paper impregnated with approximately two kilograms, zero point two kilograms of liquid PCB. The capacitors are obtained from outside suppliers who are in the process of converting to non-PCB Dielectric materials.

GM has initiated a program to completely phase out all use of PCB-containing capacitors and diesel-electric locomotives by January 1st, 1979. Thus, there does not presently appear to be a need for GM to seek an exemption from the July 1, 1979, ban on distribution of PCBs.

At this time, GM sees no propelling need to use PCBs in diesel-electric locomotives, but neither do we see a compelling need to retrofit locomotives presently in service with non-PCB capacitors. Electrical gear in locomotives should be allowed to remain in use until the end of its normal service life and be replaced with non-PCB gear at that time.

The amount of PCBs in a diesel-electric locomotive is small, a total of about one kilogram PCB per locomotive and is well-protected by the body of the locomotive. Allowing continued use of PCB-containing electrical components in locomotives does not present any unreasonable risk to health or the environment. And by allowing conversion to non-PCB components on a scheduled maintenance basis rather than retrofit, unnecessary cost an rail service disruption can be avoided.

In closing we recommend that EPA allow existing PCB-containing electrical gear to remain in use for the remainder of its useful service life. We also recommend that EPA abide by its proposed definition of PCB mixture and specifically exempt any materials containing less than five hundred parts-per-million PCB as a result of incidental PCB contamination from the provisions of the Toxic Substances Control Act Section 6E.

I'd be happy to answer any question.

MR. BILES: Thank you, Mr. Ward. We will start at this end with any questions.

MR. SNYDER: Does GM make electric locomotives other than diesel electric?

MR. WARD: We are currently producing only diesel electric locomotives.

MR. SNYDER: So, you are not involved in transformer issues as far as locomotives are concerned? Do diesel electric locomotives have transformers?

MR. WARD: They do not have what you would normally consider a transformer.

MR. SNYDER: Okay.

Do you have any scientific basis for considering less than 500 parts per million to be insignificant?

MR. WARD: I don't believe I used 500 parts per million as insignificant. I believe I used the EPA definition of PCB mixtures in the lower cutoff as a basis for exempting secondary incidentally contaminated systems.

I am using the same rationale that the EPA used in establishing

p2 a 500 part per million cutoff.

MR. SNYDER: So, you are saying then you consider that to be reasonable exposure rather than classifying it as insignificant?

MR. WARD: I would say that a 500 part per million cutoff for secondarily or incidentally contaminated systems is a reasonable cutoff.

MR. BILES: You indicated in your written comments, I don't think you mentioned this, but you provided some comments on what is insignificant exposure?

MR. WARD: Yes.

MR. BILES: And a couple of the comments you made are that because most of the data is short-time high-dosage data it is hard to say with any kind of quantitative data to back up any conclusions as to what would be an appropriate level of significance. You also say it is impossible to state the specific exposure level that is insignificant. And further you conclude that an insignificant human exposure level might be in the lower parts per million range.

Is this based mostly on -- or exclusively I guess on your review of our criteria document?

MR. WARD: This is based on the lack of data at present.

MR. BILES: You state again in that discussion surveying the data, indicates of EPA criteria document; is that basically where you derived any of your comments from?

MR. WARD: That and bibliography are my main sources. There are other sources.

MR. BILES: In terms of hydraulic fluid and system it is unclear to me the position you are taking.

I understand you are saying that anything lower than 500 ppm should not require any flushing or cleaning besides possibly preforming them?

MR. WARD: Right. Right.

MR. BILES: Do you believe that above that figure we should prescribe some kind of flushing, cleaning or whatever requirements on systems that previously were using

p4 PCB hydraulics?

MR. WARD: Above about 500 parts per million of cleaning and flushing will give you -- one cleaning and flushing would give you some significant decreases. Below 500 parts per million, or actually the number is something like a thousand, but below this point there is a very definite cutoff, you no longer have good economics in terms of getting much PCB removal per flush.

To go from 500 to 100 requires much more extensive cleaning than going from 90 percent to 500 parts per million.

MR. BILES: Do you have any idea how those cost figures might vary depending on the size of the facility or the type of system the fluids were used in?

MR. WARD: It might be $2.45 per litre cost figure is based on $2.00 per litre as a current price for non-PCB fire-resistant hydraulic fluid; 30 cents per litre for a typical flushing fluid,

straight mineral oil; and 15 cents per litre for disposal. That would be -- those would be invariable constants.

MR. BILES: It appears that we have at least three options if we want to say anything about those kinds of systems; we can either -- we have a fourth option; we can do nothing; the three options if we want some kind of regulation is either to prescribe some kind of a process such as anybody using that previously flushing must go through the following procedure or we can prescribe a number of achieve such as 500 parts per million of above or below that, or we prescribe a foundation a combination, flush and in the event get down to 500 parts per million.

What is your feeling about EPA prescribing the process for cleaning or for saying that you have to do this if you haven't done it in the past rather than prescribing a number, but essentially saying to everybody, "You have to flush and clean your systems to a

p6 certain procedure and we are going to assume that it will get you to a certain level."

MR. WARD: I can envision a circumstance where there would be a system which would have contained a 90 percent PCB mixture or a 60 percent PCB mixture at one time which never would have been flushed but would still be below say a thousand or 500 parts per million, whatever the cutoff would happen to be, even though it had never been flushed, it would simply be a very leaky system; such systems are not unknown. In that case what is the use of flushing, you have already achieved a number.

MR. BILES: A couple of other questions, one is that EPA may dispute that 500 parts per million is an adequate number to achieve, and the other is I know that in your written comments you state one of the reasons for not requiring even below 500 parts per million is the NPDES permit program is handling that.

MR. WARD: No, the NPDES program will

handle any water-borne discharge from a facility which may at one time have contained PCB hydraulic fluids.

MR. BILES: Are you aware at any of your facilities is there an NPDES permit which does contain such a limitation?

MR. WARD: Yes, there are.

MR. BILES: Do you know how many facilities you have in which that permit would contain a PCB limitation?

MR. WARD: I could stop and count, one, two -- we have two definite, we have one monitor only and we have one proposed.

MR. BILES: Okay.

The last couple of questions deal with your transformer maintenance, because that is the subject we got in with the last couple of people.

Who performs your transformer maintenance; do you do this?

MR. WARD: No, we do not, we contract it.

MR. BILES: Do you contract back to the people who sold you the transformer or is it more the kind of people who have

p8 spoken this afternoon in terms of -- are you dealing with GE or Westinghouse or whoever you buy transformers from or are you going to local transformer repair operations?

MR. WARD: Yes to both.

MR. BILES: Do you have any idea which you use more?

MR. WARD: No. I couldn't tell you what the breakdown is on that, that is simply by local plant option and done on a contract basis on a purchase contract.

MR. BILES: You state in here that you should be allowed to maintain a stock-pile of PCBs for performing this maintenance. Do you have any suggestion on where this PCB should come from? We talked about reclamation, they said retrofilling would handle that problem, but some of us believe that we may find ourselves 10 years from now having a lot of people to maintain that but having no PCB to maintain it with, that is a possibility.

MR. WARD: That is a very definite

possibility.

MR. BILES: Do you have any thoughts on how we can deal with that now rather than 10 years from now and where those PCBs should come from?

I assume for a corporation of your size this is not an insignificant problem --

MR. WARD: No, it is not.

MR. BILES: -- saying you can't maintain stockpiles but EPA turning around and banning the manufacture and import of liquids; do you know where you are going to get them?

MR. WARD: We are going to find ourself pretty much in the same position as the service contractors.

Since we rely on service contractors to the greatest extent, we rely on service contractors we do not as a rule maintain and service our own transformers there will be transformers pulled out of service at the given Decatur rate on transformers you lose X number

p10 per year. The fluid in these transformers possibly could be reclaimed or reused by commercial entities specializing in transformer maintenance.

I am not saying that this is the preferable way to go. I don't intend or pretend to speak for the transformer service segment of industry.

MR. BILES: Does most of the service take place at your facilities?

MR. WARD: Yes.

MR. BILES: Almost all of it would.

Would you consider once that transformer leaves your facility that you are not going to get it back?

MR. WARD: Generally, yes. We would rarely send one out for rebuild.

MR. BILES: What do you do with them when they leave the facility, do they go to disposal or do you sell them to somebody else to rebuild?

MR. WARD: It depends on whether or not the transformer can be used by someone else, does it have any service life left.

MR. BILES: I am assuming that if it has service life you will want to use it?

MR. WARD: Not necessarily. In the case of electrical monitors where for example you had a plant that was using 4.8 kilovolt primary service and suddenly they find it more advantageous to use 14.2 kilovolt electrical service they would have to abandon their 4.8 transformers and replace them.

These units still may be perfectly good serviceable units for someone else in which case they would have some salvage value.

MR. BILES: I just want to make a comment that one of the problems we're having today is the future availability of the liquids for maintenance. And, if you, as well as anybody else have any thoughts in the future, particularly during the proposal as to where these should come from I think it would be very helpful to us in particular because I think you and some other industries,

p12 some other users of transformers represent industry that by and large have not been represented throughout the PCB hearing that the EPA has conducted over the past year and a half.

MR. WARD: This is very true. We have not heard from the smaller transformer repair shops and from the non-utility industrial users.

MR. WARD: We have been there. We have been listening and we have submitted comments from time to time.

MR. BILES: Thank you.

MR. SHYKIND: It occurred to me that you have the same hydraulic systems, same problems presented to us by the Outboard Marine Company that has 100 hydraulic die cast press type of thing where they grind and still have problems.

How much real leaking do you have out of these, are they real serious sources of contamination?

MR. WARD: Leakage from a hydraulic system is a function of many, many things.

It is a function of system design, system age, the cycle rate of the system, the maintenance that is performed on the system, the type of fluid used in the system, many, many things bear on the leak rate.

Within a single given location you can find hydraulic systems that are virtually leak-tight and you can find other systems that have very high leak rates. One of the most -- let's say that probably one of the major problems that you would have would be a hose rupture, this would cause you to lose the largest volume of fluid at a given time if you rupture a hydraulic hose.

MR. SHYKIND: So, you then collect it or do you have facilities in case of a rupture to pick it up?

MR. WARD: Basically the machines are -- do sit on pans so that normal leakage is collected.

If a machine breaks a hydraulic hose you have oil under several thousand pounds per square-inch

p14 pressure and it will go almost anyplace. Generally within a General Motors plant any drain within the facility which is opened to the plant floor to receive any type of drainage does go to a process or trade waste treatment system and any oils would be admitted to the sewer in that direction would be collected in the trade drain system and removed.

MR. PRATT: Just to continue that when you say they'd be removed do you have a specific disposal handling system in line now for that type of waste oil so that they would be separated out and disposed of?

MR. WARD: A typical manufacturing plant would have a waste treatment system which would be designed specifically for the type of waste that would be encountered in the plant. If it is a plating operation it would be designed to treat plating solutions. If it is a machining plant it would be designed specifically to treat

oily waste.

So, in a situation where you have a need for higher-resistant hydraulic fluids you would probably have a waste treatment system that would be compatible with oily waste.

MR. PRATT: No, the question was not how you remove them, but what you did with them once you removed them.

I would assume that in many of the General Motors operation you would have a lot of ordinary oily waste that these would become mixed with, and therefore these would be a combination, therefore you might end up with 1,000 gallons of oil and 10 gallons of PCBs.

If at General Motors practice now would you take those and have them shipped down to Monsanto or some other facility for proper incineration?

MR. WARD: First-off I don't think we can use Monsanto anymore since they're getting out of the incineration business too.

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Our practice is to collect waste oils, hold them and then have them removed by a person specializing in reclaiming waste oils if the waste oils do have a reclaim value.

MR. PRATT: Are they notified that these contain PCBs and that they may be hazardous?

MR. WARD: Generally in the waste oils there is not a sufficient concentration of PCBs. We are talking about a fraction of a percent of the waste oil stream being contaminated with a few parts per million of PCB. So, when we dilute the thing down in the waste treatment system we no longer have any significant quantity of PCB that is identifiable in the oil.

Now, there are -- there are commercial concerns that can take waste oils and convert them into fuel oil in which case the fuel oil would be burned, any trace of PCBs in the fuel oil would be incinerated along with the combustion process. Are you aware then

if GM has incinerated waste oil containing PCB that these materials are merely volatilized and not destroyed they are merely put into the air and come back down to the city nearby or into the Great Lakes?

MR. WARD: I don't believe that is true at all.

MR. PRATT: Do you have information that says during normal process as GM is employed there is significant destruction of PCBs?

MR. WARD: I don't think I am in a position to answer that question at the moment.

I can't say that we have applied to the proper state air pollution control agencies for permits to incinerate PCBs that may be contained and are contained in fuel oil.

MR. PRATT: That is not my understanding but I don't think I will go into it any further.

As far as going back to the original thing, you are saying that

p18 hydraulic systems are basically a "closed system". If they are a closed system how do you explain the discharge of hundreds of thousands of gallons of PCBs from General Motors' facilities in Michigan, Indiana, Wabash River, the Great Lakes? Isn't it sort of incongruous when you say that they are very tightly closed and yet there have been massive quantities of PCBs that have come out of General Motors' facilities via this source?

MR. WARD: I don't think I'd like to address that question in this forum. I would be more than happy to discuss that with you, at your convenience, outside this forum.

I simply do not have the type of information that you are alluding to at my command at this moment.

MR. PRATT: What type of testing procedures does GM have to check as far as -- you said that oftentimes PCBs or PCB materials would go down through the normal collection system and would be mixed with

the normal oil waste from that facility.

What type of a normal procedure do you have for checking these for PCB concentration before they would be incinerated or otherwise discharged?

MR. WARD: If we have reason to suspect that there are concentrations of PCBs in any given material we have in-house analytical capabilities to determine the concentration of PCBs in those materials.

If there is a concern over the material, the material may be contaminated to the point where it is not desirable to leave the material in service or to allow the material to remain in the environment the material will be disposed of.

MR. PRATT: What type of program does General Motors presently have for evaluating say landfills where PCB waste materials may have been disposed of to determine whether or not they would be making a long-term environmental affect as far as getting out into waterways?

MR. WARD: We currently do not own

or operate any landfill disposal facilities at all.

I believe that you would be speaking to landfill operators who are professionals in the field.

MR. PRATT: I am speaking of the normal municipal waste facilities.

MR. WARD: In most places industrial waste does not necessarily go to a municipal facility. There are places of course, where this is not true. There are our municipalities that will receive industrial waste.

If we have a waste which is a known hazard our procedures are to landfill it if it is -- if that is the proper disposal landfill, to have it landfilled at a properly permitted and licensed facility.

MR. PRATT: Thank you.

HEARING OFFICER WIRTH: Mr. Pearson, do you have any questions?

I have just one clarification on my part and I think another

question.

In the collection of your waste oils does GM itself burn any of those waste oils in any of its boilers or do any other heat process, and if you do not what do you do with them; do you sell them to waste oil collectors and in turn take them to burn?

MR. WARD: We burn some waste oils in our boilers.

HEARING OFFICER WIRTH: From your own collection system?

MR. WARD: Some from our own collection facilities, yes.

As Mr. Hesse pointed out earlier today the State of Michigan has found a massive concentration of approximately 25 parts per million PCB in waste oils. We find substantially the same level maximum in our testing.

HEARING OFFICER WIRTH: And you have burned some of these oils?

MR. WARD: We have burned some of those oils. When you get to a point where you

p22 have no more oil and you call the oil company and say, "We need oil" and they ship you a load and you have no idea where that load came from and it is not until you are burning it that someone says, "Did you ever stop to think there might be PCBs in it because it may contain waste oils" and you run out and grab a sample and you're halfway through the tank and you say, "Gees, it does contain PCBs." So, we do have to adjust our combustion temperatures for it.

HEARING OFFICER WIRTH: It is commercial oil you buy for fuel?

MR. WARD: Yes, we have found PCB contamination in commercially purchased oil.

HEARING OFFICER WIRTH: And that was in fact waste oil, blended waste oil?

MR. WARD: The only thing we can conclude is that it may have had some waste oil blended in it.

HEARING OFFICER WIRTH: That is a conclusion you have never been able to

verify whether you were receiving raw-data refinery product or whether it had been blended with waste oil?

MR. WARD: Let's say it is a strong possibility it probably contained waste oil.

HEARING OFFICER WIRTH: Do you ever have an oversupply of this that you sell to waste oil collectors?

MR. WARD: Wait a minute, would you clarify that?

HEARING OFFICER WIRTH: Well, on one hand you burn some of it, do you burn all of it, hold it until you can burn it, or do you essentially sell or transfer it to waste oil collectors of one type or another?

MR. WARD: In many locations we do transfer the oil to waste oil collectors.

HEARING OFFICER WIRTH: Are you aware of the fate of that? Do most of them sell it as waste fuel?

MR. WARD: Many of them re-refine the oil and sell it back to us as functionable

fluid, cutting oil, lubricating oil.

I should clarify one point here. I get the feeling from the panel that you're regarding us as having X number of manufacturing operations that are contaminating the walls with PCBs; this is hardly the case, this is not at all true.

We had very few facilities within the corporation that ever used PCB hydraulic fluids, very few locations. So, as a general rule we do not have PCB contamination coming from within the plants.

There are like I say a few shops that did at one time use PCBs.

MR. PRATT: But, I think it should be noted that there is 7 million pounds of PCBs. Just as we heard from OMC there is one facility there that has 106 million pounds, it doesn't take very much facility to have that massive loss.

MR. WARD: I'd like to know where you got your figures.

MR. BILES: One other question that

I have.

You have urged that we adopt a 500 parts per million cutoff below which we wouldn't require anything in terms of cleaning hydraulic systems, and it appears that you base that number on the fact that we proposed a definition of PCB mixture of 500 parts per million.

If we change our definition of mixture to 300 or so, 100 parts per million then should we do the same thing from this number. In other words, is this number tied to anything other than the proposed definition that we proposed?

MR. WARD: No, it is tied to your definition.

MR. BILES: For consistency only.

MR. WARD: For consistency only.

MR. BILES: Thank you.

HEARING OFFICER WIRTH: Any questions from the audience?

Thank you, Mr. Ward, we appreciate you coming in and explaining GM's use of PCBs. And it is important

p26 information for us as Mr. Biles pointed out that we have not heard from the industrial side in any great numbers.

Our apologies if we made this appear that it was any investigation specifically into GM's program. That is not our intent.

The next witness is William Page of Dow Corning Corporation.

MR. PAGE: I am Bill Page, from Midland, Michigan, and I want to introduce in the audience a gentleman in the third row, with the tan suit is Thor Orbeck; he is here with me and he is the manager of our dielectric liquid development program and I may call on Thor to help with some of the questions during the question and answer period.

Now, Dow Corning currently the major supplier of dimethylsilicone to the electrical industry as a replacement for askarel in small power transformers.

This material currently

has been utilized in two ways, by far the largest having been by transformer manufacturers for use in the manufacture of new transformers. The other way the material has been utilized has been in retrofill and this has been a process -- and I have a prepared text here which I am going to read, I have headings and I am going to read the headings and go through it.

Definition: In 1972 Dow Corning Corporation started using a process we call retrofill to gain operating experience on silicone transformer liquid in various electrical devices. In a retrofill the original dielectric coolant is drained, the device is solvent-flushed for additional cleaning, and then the unit is refilled with silicone transformer liquid. We have been involved in askarel-to-silicone retrofills and small power transformers, transformer rectifier units for smokestack precipitators, and electromagnets. We are not aware of any operating

p28 problems with any of these retrofilled units.

Second heading,

What is Accomplished: From an environmental point of view the most successful retrofill is one which reduces the PCB content to a low level. We have used thorough draining followed by solvent, usually trichlorobenzene, flushing to do this. A key element to low PCB level is complete draining of all materials from the bottom of the transformer tank after the askarel draining and after each subsequent solvent flushing.

With the text I have handed in there is an attached table. The attached table summarizes PCB levels attained in some retrofills. It also described the flushing technique used. I want to comment on two things this table points out:

Item 1: The PCB level in the silicone liquid increases for a period of time and then levels off. This is probably caused by migration of PCB into the silicone liquid from the paper, wood,

pressboard and other areas where it was held.

Item 2: My second comment to the data is optimizing the current flushing techniques should allow routine retrofilling to produce transformers with post migration PCB in silicone liquid levels of around two percent.

The next heading, Future Technology: The above-mentioned migration of PCB out of the core and coil into the silicone transformer liquid offers an opportunity to remove an additional quantity of PCB from a transformer that would otherwise be missed by simply draining and flushing the unit. We have been working on simple maintenance procedures that could be performed on retrofilled transformers after this migration has taken place. Very preliminary laboratory studies on contaminated quantities of silicone transformer liquid indicate filtering through absorbing media can be used to greatly reduce the PCB level. In one study we

were able to clean up 50-plus gallons of silicone liquid contaminated to 1.5 percent down below 500 parts per million.

This study was strictly experimental, but it is indicative of the significant retrofill improvements that will take place if this technology develops further.

The next heading I have is Toxic Substances Control Act Rules Relating to Retrofill: Rules: In the proposed rules you are considering allowing the disposal of transformers in a chemical waste landfill if no more than two percent of the original volume of dielectric liquid remains in the transformer. Please Refer to the Federal Register, Volume 42, Number 100, Tuesday, May 24, 1977, Page 26567 for the full text. If this provision is accepted, a person who owns a retrofilled transformer will probably be able to simply drain out the silicone transformer liquid and landfill the unit in an approved manner at the end of its lifetime. In addition to the relative

ease of disposal, the owner of that transformer will have greatly reduced the risk of releasing a large quantity of PCB into the environment during the operating life of his transformer. In many cases that lifetime will be 20 to 40 years.

A second consideration of the rules is to define mixtures that contain 0.05 percent or greater of PCB as "PCB mixtures." See Federal Register, Volume 42, Number 100, Tuesday, May 24, 1977, Page 26565 for the full text. We support your maintaining this 0.05 level but feel that an exemption should be made in the case of retrofilled transformers. In a retrofill you go from 60 to 100 percent PCB to begin with approximately down to two percent PCB. The environmental gains as we see them are as follows: I have five items:

Item 1: PCB that otherwise would be maintained for as many as 40 years will be properly disposed of.

Item 2: The potential of losing a large quantity of PCB into the environment is significantly reduced.

Item 3: Migration of PCB into the silicone will result in less total PCB going into landfill. The PCB that migrates will either be removed and destroyed as part of a maintenance plan like the one mentioned above, or it will be destroyed along with the silicone transformer liquid at the end of the transformer's operating life.

Item 4: Spills from a retrofilled transformer will float on waterways and thus should be easier to recover than spills of askarel which sink.

Item 5: No need to maintain a PCB top-off supply.

By exemption we do not mean total protection from all PCB liability but enough of a loosening to create some incentive to do retrofilling. We all stand to gain as pointed out in the five items above.

Additionally, the development of more sophisticated PCB handling and disposal techniques will go a long way toward solving some of the current PCB problems. Creating this incentive is one way to make development of this technology more attractive to the people who have the resources to do it.

The next heading is When to Retrofill: We do not support across-the-board retrofilling nor do we support legislating that retrofilling be done. However, there are some instances where it is justified. A good example is a repair job when the askarel will need replacement. In this situation when askarels are no longer available, that equipment can be kept in service by retrofilling with silicone transformer liquid. The other alternative would be to dispose of the equipment by cleaning up, flushing and landfill and then to purchase new equipment to replace it. A second justified situation is a transformer which creates a

special environmental risk due to its location. Examples of such units are ones located on ditches, docks, or streams where liquid loss would result in direct loss of PCB into a waterway.

The next heading, Cost of Retrofilling: We currently know of four service companies that are offering the retrofill service. Their prices vary considerably depending on the specific work to be done. Most job bids we are aware of have been in the $22 to $32 per gallon range. This includes the total job, all materials plus disposal of the PCB. This economic consideration alone eliminates some transformer candidates. In some older transformers the gallons of dielectric liquid per KVA is quite large. In many of these units it is less expensive to replace the old unit with a new transformer rather than retrofill. However, many newer units can be retrofilled far less expensively than replacing them with new, particularly when you also consider down time, delivery time, cost of disposing of the old unit

and many other factors.

Next heading,

Technical Efficacy: Numerous technical studies have been run substantiating the efficacy of using silicone transformer liquid to retrofill askarel-filled small power transformers. We feel the technology is sound and are in fact in a program to retrofill all of the askarel transformers in all of our plants worldwide. Written materials exist supporting our arguments regarding the efficacy of this application.

Summary: Retrofilling "change outs" from oil to askarel and from askarel to oil using well known methods has been used in the transformer maintenance industry for many years. Askarel-to-silicone retrofilling was first used as a silicone transformer liquid development tool in 1972 and since that time has grown to be readily available commercial service. This process offers many advantages to man and his environment. We request you strongly consider the effect

the rules you promulgate will have on retrofilling as it exists today and the effects they will have on the ultimate technique development of the future.

Now, that is the end of my comments. I do have a slide series on retrofill if you are interested in seeing specifics or if you prefer to go to questions that is fine.

HEARING OFFICER WIRTH: Panel, do you want to see the slides?

MR. BILES: Can we get copies of the slides?

HEARING OFFICER WIRTH: How many slides do you have?

MR. PAGE: I don't know, it would probably take seven to ten minutes to go through.

HEARING OFFICER WIRTH: They are basically explaining -- showing the retro-fill operation itself?

MR. PAGE: Just the mechanics of it.

HEARING OFFICER WIRTH: If we can have copies of that I'd appreciate that.

MR. PAGE: I will have to take those and make them, I cannot give them to you today.

HEARING OFFICER WIRTH: Okay.

Questions? Mr. Pearson, Mr. Pratt, Mr. Principe?

MR. PRINCIPE: The silicone fluid that is in the transformer once it has been retrofilled contains say two to three percent of PCBs. How can you dispose of that liquid, can it be incinerated?

MR. PAGE: The silicone liquid in our own plant we have occasion to dispose of some silicone material. And the in- silicone material we use incineration -- commercial incinerators in the area and they have no trouble burning silicone, it is a matter of burning a small amount with other materials just to lower the flash and fire point of the silicone where it burns readily.

And in talking with our waste disposal people they fill the silicone trim retrofill that would

have PCB in it that could very readily be burned in a PCB burning facility, in other words one with proper temperature and so on.

MR. BILES: Maybe it is in your slides so maybe you can tell us then.

You identified cost of being $22 to $33 a gallon. You indicate that may eliminate some of the transformer from application.

MR. PAGE: Yes.

MR. BILES: That strikes me that that may eliminate not some but most?

MR. PAGE: It eliminates a fair number but transformers used to -- you take a 15 or 20-year old transformer and it used to have oh, half to seven-tenths of a gallon per KVA, a number of them have been coming out lately with anywhere from .12 to .15 gallons KVA. If you figure that out on that basis it does come to the fact that with some newer ones it is an economic reality.

MR. BILES: I am sure you have cost analysis of comparing this to other alterna-

tives such as getting rid of transformers or, you know --

MR. PAGE: I think I just did by comparison with purchasing a new one.

MR. BILES: Where does retrofilling take place, would it take place in GM's operation or would they have to ship the transformer?

MR. PAGE: There are two types of retrofill. If you look at the table that I have given you there you can see the specifics, one is called a field job, this is where you would move in on a transformer in a field. And the other is called a shop job. And usually in a shop job the core and coil are pulled out because some other service is done on the unit. In that situation you do end up with lower PCB levels.

MR. BILES: Would you anticipate that this would lead to simplifying the retrofill operation or would it be more field operations like for GM's needs?

MR. PAGE: I don't know.

MR. BILES: If it's something that industry itself could perform or something again to be specialized like a couple of the other gentlemen representing that they themselves are local transformer repair operations. Do you see GM being able to take this over -- I am not trying to pick out GM.

Do you see American industry itself being able to do this or is it something that will become localized with a few operations?

MR. PAGE: Okay.

I have been involved in a fair number of retrofills and they have been done two ways, one by transformer service companies and the other is I have been involved in some private companies doing it in their own repair shops. And there are some companies that are quite sophisticated and capable of doing this, but I don't think it is something that most companies who own a transformer would want to do though, most of them would

contract it out.

MR. BILES: And then the solvent silicone liquid I would assume those would be disposed of?

MR. PAGE: Yes.

MR. BILES: Can the solvent -- is there any way solvent can be reused?

MR. PAGE: Yes. We have in fact -- usually we will use like three flushings on a transformer and you can take the last flush from one unit and use it as the first flush on the next unit.

This was very definitely maintained in the fact that that liquid was good, has no particle test or dielectric properties and so on.

The other thing we have looked into, the PCB and trichlorobenzene have a very different vapor pressures and it would be simple distillation, but this has not been done by anyone yet. And actually in the long range retrofill could be used as a PCB-making procedure -- not a PCB, as a trichlorobenzene-making

procedure by simple distillation of the askarels that come out, and at that economically would cut the cost of the solvent that is flushing and count the amount of material that would need to be burned also.

MR. BILES: Is there anybody else in addition to your company who is in the business and is advocating this kind of a program?

MR. PAGE: Okay.

The one thing I can say that is aware of that has been published is that -- is that Union Carbide -- Union Carbide, a man by the name of Bill Martin recently wrote a paper -- a technical paper, I can't even give you the reference on it, but in it it did describe doing some retrofilling in their own plant. And, he didn't call it retrofilling, but it was draining the askarel from the unit and putting silicone in, and he measured some of the performance values of the unit.

MR. BILES: But, you are the ones

that have the silicone product?

MR. PAGE: Yes.

MR. BILES: As far as you know, are you the only ones right now who are marketing that in this country?

MR. PAGE: There are four silicone suppliers in the U.S. and -- or four major ones, and of the four I would say we are most actively promoting, but two of the other three would be glad to sell to a retrofiller if he wanted to purchase from them.

MR. BILES: I am not sure I understand the intention of your request.

MR. PAGE: I can't say exactly what I'd like, but if a person does a retrofill he is doing the five things that I pointed out. And you have certain restrictions, you are considering a .05 percent PCB material as a -- what was it a PCB --

MR. BILES: A PCB mixture.

MR. PAGE: A PCB mixture.

No, I don't feel I can define it. I am just saying enough of a change in the regulation to where there would

be some incentive to do a retrofill.

If a person does a retrofill now I feel you gain the five things I listed but that person really gains nothing if he still is above the 500 part per million. The only thing he would gain would be the ease of waste disposal.

MR. BILES: Okay.

And you would want us to raise that 500 part per million number up to the two percent number, is that what I am to understand?

MR. PAGE: Not that -- can you elaborate on that, Thor?

MR. ORBECK: Basically the practicality of the whole method is dependent on the EPA's regulations.

Basically what we are saying is that you can over a period of time potentially reduce the amount of the PCB in the transformer by regular maintenance procedures.

I elaborated on this in

my last statement in previous hearings and the point is that we are basically saying that allowing this to take place over a natural process in certain select areas where people have exposed units you have to put some exemptions on the retrofill unit; you have to classify it differently than you classify a mixture or classify a PCB material.

MR. BILES: That is for disposal purposes?

MR. ORBECK: Simply for the purpose of giving that extension in accordance with what for example Michigan Rule Number 66 I believe it is, Public Act 60 has made an exemption so you can apply for an exemption for that particular retrofill unit.

I think that is the only thing we are asking.

MR. BILES: The exemption would be what you would do with the unit.

MR. ORBECK: No, that would -- no, that would be the way you classify it,

the certain systems -- you have PCB mixtures or PCB materials.

MR. BILES: It is conceivable that we could authorize use and maintenance of transformers and that is sort of one alternative to that, you are saying that in fact in exception there is going to be some traces of PCBs. We can authorize that anyway.

MR. ORBECK: You can authorize that, the problem is that you would gradually accomplish this reduction of PCBs by regular maintenance, and that means that you would at different time periods in the time of that transformer you would have different levels of PCBs in it. So, that the classification of that system would change.

For that, I simply suggest that you classify the retrofill transformer as a specific classification; do you see what --

MR. BILES: I am not sure I understand a need for that if we're authorizing

the continued use of the transformers anyway, that is what I am saying.

And the reason we won't need to keep the number at 500 parts per million is to cover the disposal of the transformer. I don't think even at this point that we have taken the point that you shouldn't be allowed to use the transformer with 100 percent PCB during its useful life. It is what you do with the liquid in the transformer once you're done with it.

All I can say is if you raise the number then you are going to let some of the liquid be exempt from the disposal requirement.

MR. ORBECK: I think it is just a matter of definition. What you are saying basically is that within the system you are allowed to operate the unit whether it is retrofilled or not retrofilled.

What we are saying is basically to provide the incentive to the industries that have the unit of a

large number and some of them on a small basis, that we would like to have the possibility of classifying that unit somewhat differently if it is retrofilled or not retrofilled because it allows in that what we call method as recommended by our department a way to gradually reduce that PCB level to the level that would be less than 500 parts per million or possibly five percent, that is what we are trying to do.

HEARING OFFICER WIRTH: If I understand what you are saying that is -- correct me if I am wrong, the labeling disposal regulation and transformer that contains PCBs is drained and goes to a chemical waste facility?

MR. ORBECK: Transformer?

HEARING OFFICER WIRTH: Now, you are saying if an individual drains his transformer, PCB or askarel-filled transformer he must incinerate that, if he retrofilled with silicone and it ends up with two percent PCBs in it after its useful life you must

also incinerate the silicone with two percent PCBs in it after its useful life; are you suggesting that there should be some relief provided for him on that second two percent PCB-contained silicone so that he essentially doesn't end up with two volumes of transformer fluid and incinerate over its lifetime?

MR. ORBECK: Basically I am saying that when you do retrofill you have in fact reduced from 90 percent PCB to 60 percent PCB, that Mr. Page had mentioned but, you are stuck with two percent, that by your definition is what they call a PCB mixture.

HEARING OFFICER WIRTH: That is correct.

MR. ORBECK: Okay.

So, this material now in effect has to be treated by the utility company or by the private industry in the same manner as the unit was filled with PCB, that means there is very little incentive whatsoever or any reason to do the retrofilling.

p50 However, we have already established a condition where we now over a six-month period leave a PCB leach a PCB out of the -- a substantial amount of PCB out of the -- before winding into the silicone and establishing equal limit at a point where you dispose of the thing you would get substantially less than the two percent that you established retrofilling for what you call landfill, that is one point.

The second point we are making is that our experience has shown that if you use activated charcoal at one point of the procedure and at that later point, six months after, you may be able to reduce that PCB contact at least permanently to less than 500 parts per million which would qualify the unit to be less than that level that you set for 500 parts per million.

Because we have not proved this we have not got enough time before you rule-setting is set so that

we don't even have an opportunity to continue that work because of the lack of economic incentive in the system, then, this will never take place. So, I am saying that no rule or regulation will all determine the go and no-go to the retrofill to those specific units. And the other alternative is to be faced with in disposed areas and to replace those units because the liability associated in having those units in those exposed places are too high. That means the economic impact is they have to go buy a new unit if they can.

That is why we don't support a massive retrofilling, we are trying to help some specific customers that have asked for them in this particular area.

MR. BILES: So, you do not advocate that we should require retrofilling?

MR. ORBECK: All we want is an exemption that on those few units that need to be taken care of and for that reason we want this to be under those type

of circumstances.

HEARING OFFICER WIRTH: Any more questions?

MR. SNYDER: Do I understand you correctly you indicate that silicone filled can be used to top off existing PCB transformers?

MR. PAGE: I did not say that.

MR. SNYDER: Good.

What is the effect when you -- the effect on a transformer when you retrofill with silicone in terms of the electrical capacity of the transformer, is it reduced in any way?

MR. PAGE: Okay.

Electrical capacity -- silicone -- if you take a liquid in a transformer there are two factors to determine how well that liquid cools that unit and one is the viscosity of the fluid, that gives you an idea of how fast the fluid flows through the orifice and so on; the other one is a coefficient of expansion of the liquid.

Why fluid flows in a

device like this is the difference in density between hot and cold, it is called thermofusion, it heats up and gets wider and bigger and so it flows, it is a difference.

Well, silicone is a considerably more viscous than askarel and as such this would be a negative, in other words this would cause it to flow slower through the openings. But, on the other hand silicone has a greater coefficient of expansion, it expands more when it's heated and so this is a plus; you have more push -- pushing the material through and when you balance these out if you throw it into a computer program it will come out saying that you can overheat your transformer tremendously -- and if you actually put it in a transformer and measure the values that you get, particularly instrument the transformer you will actually find some spots in the inside of a silicone unit that are cooler than an askarel unit and some spots vice versa.

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Overall the average temperature will be slightly higher with the silicone unit.

We have heard manufacturers make the claim -- in fact we have actually seen data where they have gone anywhere from no percent D rating to 10 percent D rating on the unit.

MR. SNYDER: Do silicone fluids have a lower prime point than PCBs?

MR. PAGE: Not much higher than askarels.

MR. SNYDER: So, what problems are you alluding to when you dispose of PCBs with -- or silicone contaminants?

MR. PAGE: Silicone has a high fire point. A fire point is a temperature that you heat a liquid to it, put a flame to it, take that flame off the liquid the liquid will continue to burn. With silicone it is 600 degrees Fahrenheit. And if you take silicone and throw it into an incinerator, straight silicone-type material sometimes you don't get good

ignition on the silicone material.

What waste disposal people that burn liquids will do is take the silicone and other materials that they're getting in from other companies and mix it until it has a particular BTU per pound ratio and they will mix it so that there is a percent of silicone with other material so that the total mixture has the lower flash and fire point so it will ignite more easily.

MR. BURIN: I'd like to direct my question both to Mr. Page and to Mr. Orbeck.

Does Dow Corning to your knowledge have any information concerning the toxicity or environmental persistence dimethylsilicone?

MR. PAGE: Thor -- we are going to pass the buck, neither of us want it.

Tremendous amounts of data and I guess rather than comment on it we would like to make a submission to you.

MR. ORBECK: May I make one comment.

We have made a submission to EPA of all the data that we have and what we do know about in the technical work and that has been submitted to EPA. That statement was provided by Mr. Swaurter (phonetic) and his viewpoint.

And there was some question with regard to the effect of silicone that has and these are in the investigation and interfaced in the silicone industry and have taken place and some of this has been resolved. Some of it has been resolved by an investigation. Basically we have tried to provide information that EPA has required and that should be available to you.

MR. BURIN: Okay, thank you.

MR. PAGE: Do you want us to make a submission to you?

MR. BURIN: Well, if you already made a submission -- okay.

MR. ORBECK: May I make one very short statement?

Dow Corning is not really commercially so interested right now. We are a main supplier of silicone to the manufacturers.

It has been at this point where we ship silicone liquid transformers in tankcars to the manufacturers using it in the transformers, to us it doesn't mean that tremendous in terms of from shift to electrofilled to setting new units.

But, basically we started this type of thing to gain experience in units because we were trying to learn how silicone was in transformers, to develop this technology to start our own life-testing in transformers.

Now, we have, I think Bill can verify, we have got 10 to 20 requests of this retrofill thing because of people that are in special places. What we are trying to do is find a way to communicate with you so that for these

particular people there is a way that they can go as an alternative to buying a unit, that's economics.

The only thing that I can say -- the only thing that I can see one way to go is to make some kind of exemption on these retrofill units for these particular cases that really check in accordance with regulations that there will be.

And there should be an additional clause, that is all I am going to ask for, to make it possible for these and not to make what you call regulations that require the retrofill. I think that is wrong. I think that this is too much of an economical impact but this had to be done because of -- to take care of it.

HEARING OFFICER WIRTH: Okay.

Are there any questions from the floor?

MR. AGIN: My name is Jim Agin. I just have one question perhaps for the

people from Dow Corning.

It is my understanding, this might be a simplistic understanding, that there are some transformers that cannot be filled with material other than askarel because -- or unless that material were as fire-resistant as askarel. In other words, it wouldn't mean some National Electrical Safety Code or something like this.

Now, you mentioned that Dow Corning was going to replace, I think you said all -- retrofill all of its transformers. Do you have instances like this where -- or maybe you don't, where there is a Code -- there is a Code problem or an insurance problem or something like this?

MR. PAGE: No.

MR. ORBECK: You will have to explain the Code change.

MR. AGIN: I mentioned the National Electric Safety Code. I am not familiar with the details of it or with whatever

other State Regulations there may be or whatever. But, it is just my basic understanding that there might be some instances, in fact the company I work for, United Power Associates has some transformers within a power plant, in the basement of a power plant that I understand couldn't be readily retrofitted with another liquid unless that liquid substantially met the same specifications of the askarel.

HEARING OFFICER WIRTH: I personally have that same understanding or came to acquire it somewhere along the way that the Electrical Code specifies askarel.

MR. PAGE: The NEC, National Electrical Code is written by the National Fire Protection Association every three years and in 1978 will be the next revision, the old one is the 1975 one. The NEC is a list of provisions which should give adequate safety to an electrical installation if it is followed.

And the NEC in May of this year in their National Convention

in Washington, D.C., approved -- voted on and approved a revision, I believe that was May I am not certain on that, rewriting a provision -- I think that is Article 450/23 and silicone will meet the new provision as defined in the National Electrical Code.

Now, what remains to be done is that in September of this year, the 1978 National Electric Code book will be printed.

Now, the Code itself is not law, but the federal government, OSHA namely adopted the Code as a concensus standard, meaning that the National Electric Code was federal law and such to put silicone in installation, because the old Code said you would have to use askarel inside of a building which would have then been against the federal law, but OSHA, the Department of Labor came out with a program directive allowing the use of silicone as a replacement for askarel on a one-for-one basis and that

some time ago.

Perhaps in the briefcase Thor can give us a reference on that.

We can send that to you later.

But, we have no trouble with insurance or Codes.

HEARING OFFICER WIRTH: This is in fact fait accompli other than to have it printed, is that correct?

MR. PAGE: Right.

HEARING OFFICER WIRTH: And it allows one-to-one replacement with no additional fire prevention?

MR. PAGE: It does not list the word silicone. The old Code listed askarel which was kind of statutorily illegal because it established a monopoly as such.

The new Code does list a list of provisions and silicone does meet those provisions. That are listed. It doesn't eliminate other liquids; it leaves it open to competition.

HEARING OFFICER WIRTH: So it does

list provisions?

MR. PAGE: Yes.

HEARING OFFICER WIRTH: What type, how are those provisions stated?

MR. PAGE: It lists a fire point, a propagation test and what is the third?

MR. ORBECK: The third test is signed by the fact of mutual insurance to try to verify the different aspects of high fire point, fire propagation, fire spread, but there is a difference -- these are words in the National Electric Code -- they are not authorized to be -- not authorized to be investigative tests, they are used temporarily unless such a classification system is established.

These three tests function in the way to make sure that these properties are not written into the Code as a temporary situation until they get it all.

HEARING OFFICER WIRTH: You say this is fire point, fire propagation, fire spread?

MR. PAGE: We can submit a copy of that text.

HEARING OFFICER WIRTH: Any other questions? Okay. Thank you very much.

That concludes the previously registered witnesses which brings us to the point to open the meeting for any questions, statement or anyone wishing to make any comment.

I would like to ask if there is anybody in the room that represents an environmental concern, organization or group. We have not heard from any such group today. Do they care to make a comment on the things they heard today or this proposed regulation?

If not the floor is open for anyone who wishes to make any sort of a statement.

Everybody is tired.

Okay, if there is nothing, no further statements then this meeting is adjourned. Thank you very much.

(WHICH WERE ALL THE PROCEEDINGS HAD.)

STATE OF ILLINOIS)
) SS
COUNTY OF C O O K)

SUSAN A. DIME, being first duly sworn, says that she is a court reporter doing business in the City of Chicago, and that she reported in shorthand the proceedings had at the hearing of said cause, and the foregoing is a true and correct transcript of her shorthand notes, so taken as aforesaid, and contains all the proceedings of said hearing.

Susan A. Dime

SUBSCRIBED AND SWORN TO
before me this 22nd day
of July, A.D., 1977.

Ramona E. Hromek
Notary Public