



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

December 22, 1975

MEMORANDUM

OFFICE OF ENFORCEMENT

TO: Regional Administrators
Regional Enforcement Directors
Regional Surveillance & Analysis Directors

FROM: Assistant Administrator for Enforcement

SUBJECT: Identification and Control of Environmental Sources of PCBs

As the Administrator enunciated in his statement to the press today, attached as Exhibit A, the elimination of the introduction of PCBs into the environment is a high Agency priority. His statement outlines several measures EPA is undertaking to accomplish this. He has asked the Office of Enforcement to coordinate the efforts of the Regional Offices to accomplish the first of these measures: the elimination of PCBs from discharges from facilities using PCBs, particularly those facilities manufacturing transformers and capacitors, and the elimination of PCBs, related wastes and by products from discharges from facilities manufacturing and formulating PCBs. The steps necessary to implement this task are set forth below and are summarized in the work schedule attached as Exhibit B.

1. By 12/31/75 each Regional Office should identify each manufacturer, formulator and user of PCBs within its jurisdiction, including the manufacturers of PCBs, capacitors and transformers listed on Exhibit C.

2. By 1/9/76 submit to the Office of Water Enforcement, to the attention of Blake Biles, a schedule to survey such facilities. All surveys of the facilities listed in Exhibit C should be completed by 2/28/76 and surveys of other facilities, as appropriate, should be completed as soon thereafter as is possible. The survey of the facilities listed in Exhibit C should follow the format outlined in Exhibit D to determine all points at which PCBs enter the environment from the subject facilities and to identify appropriate corrective measures. The surveys will develop information on PCB losses to water, air and land. The resulting water data will be used by the Regional Offices to accomplish steps 4 and 5, discussed below. The air and land data will be forwarded by the Office of Water Enforcement to other offices for the development of appropriate remedial measures. Since the land disposal data may ultimately be used by Regional solid waste personnel, in conjunction with state and local solid waste authorities, Regional solid waste personnel

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should accompany your survey teams. It will be impossible to survey all users of PCBs. As indicated above, all facilities listed on Exhibit C should be surveyed. Priority should be given to facilities concerning which little information is presently available. Surveys of other facilities should focus on larger users of PCBs and can be incorporated as priority items into routine compliance monitoring visits. A meeting will be held in Washington, D. C. on January 7, 1976, to discuss in detail the surveys and appropriate remedial controls. Your lead person on the surveys from the Surveillance and Analysis Division and your lead person on the permit effort from the Permit Branch should plan to attend this meeting. Further information on the meeting will be forthcoming from Carl Schafer, Acting Director of the Permit Division. Please contact Tom Gallagher, Director of the NEIC, immediately if you will require NEIC assistance to complete these surveys.

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not on

3. By 1/31/76 review the NPDES permit status of all known dischargers of PCBs and commence enforcement actions where appropriate. Check DMRs and other data on discharges to identify noncompliance with existing PCB effluent limitations. Determine whether enforcement actions should be taken for any failure to identify PCB discharges in permit applications. Immediately commence actions against any non-filers and expedite issuance of permits to any dischargers who have applications on file. Include a summary of all such activities in your February status report described in item 8 below.

4. By 3/31/76 issue a public notice of the proposed issuance of a permit to any facility listed on Exhibit C which has a direct discharge and which does not currently have a permit, and issue public notices of proposed modifications of permits previously issued to facilities listed on Exhibit C. All such proposed permits and modifications should contain conditions requiring the elimination of PCBs from the discharges as expeditiously as possible.

5. By 3/31/76 commence negotiations with all facilities listed on Exhibit C which discharge into municipal treatment systems to eliminate PCBs from their discharges, utilizing jawboning, public pressure, proposed zero PCB limitation in municipal permits, and possible section 504 actions. Since success in regard to these facilities may require municipal as well as Federal action, municipal facilities should be fully briefed and their active cooperation should be solicited. A municipal inspector should be invited to accompany surveys of these facilities. It should be noted that some states require permits for dischargers of industrial wastes into municipal treatment systems. Where this is the case, active state participation should also be sought to the end of modifying such state permits to require a final zero PCB limitation.

In regard to items 4 and 5, it should be noted that the Administrator will be meeting in January with the presidents of companies utilizing PCBs in the manufacture of transformers and capacitors. At the meeting he will outline the measures we expect them to undertake to eliminate PCB contamination. This should lay the groundwork for your subsequent contacts with these facilities. A range of measures designed to accomplish the elimination of PCB contamination is discussed in Exhibit D.

In regard to items 4 and 5 it should be further noted that some of the facilities discharging PCBs are located in states with NPDES authority. You should coordinate your activities with them to make sure that all actions called for are accomplished expeditiously. In this regard, attached as Exhibit E is a copy of a memorandum sent today to those states outlining the problem and the requested course of action. Please note that EPA may modify an outstanding EPA issued permit, unless the state wishes to use the occasion to issue a state NPDES permit with a zero final PCB discharge. Where a state wishes to issue its own NPDES permit incorporating a zero final PCB discharge, EPA should terminate its permit after the state permit is effective.

6. By 3/31/76 submit a schedule to accomplish the same actions, as appropriate, for all PCB dischargers not listed on Exhibit C.

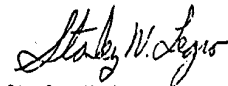
7. Some Power plants use capacitors and transformers which contain significant quantities of PCBs. You should assure that permits for all such power plants contain zero PCB limitations. For power plants with permits that presently contain no PCB limitations, the facility should be contacted by telephone to determine whether it has transformers or large capacitors that contain PCBs. If it does, its permit should be modified to contain a zero PCB limitation. As you know, the effluent guideline for the Steam Electric Power Generating Category contains a zero discharge PCB limitation.

8. The Administrator has expressed a strong desire to be kept completely informed of EPA's activities with regard to PCBs. My memorandum of August 29, 1975, attached as Exhibit F, was designed to initiate regional activities to control PCB discharges and provide appropriate feedback to the Administrator. In order to provide the Administrator with the information he needs, please provide, by the first Friday of each month, a detailed account of your activities during the previous month.

The first report is due on January 9, 1976, and should describe fully all of your activities to date in response to the August 29th memo together with the dates on which such actions were taken. Items to be covered in the January 9th report are:

- (a) The complete list of PCB manufacturers, formulators, users compiled pursuant to item 1. above;
- (b) A brief statement of what specific actions (if any) have been taken with regard to each facility on the list in item 1. above;
- (c) Where no action has taken place with regard to a facility on the list in item 1. above, a reason for the non-action and a schedule of what will be done;
- (d) Additional activities performed or to be performed in response to the August 29th memo; and
- (e) A full description of all activities that NPDES states have performed regarding PCBs.

Blake Biles and Murray Strier are the appropriate contact persons in the Office of Enforcement for these activities. In particular, all information and reports requested herein should be directed to Blake Biles (202-755-8731) and all questions relating to the technical aspects of PCBs and their control should be directed to Murray Strier (703-557-7420).


Stanley W. Legro

Enclosures

PCB WORK SCHEDULE

- 12/31/75 Identify each manufacturer, formulator and user of PCBs. (Item #1) Commence review of NPDES permit status of all known dischargers of PCBs.
- 1/7/76 Attend meeting in Washington, D.C. to discuss plant surveys and appropriate remedial controls. (Item #2)
- 1/9/76 Submit monthly activity report to Blake Biles, EN-338, Office of Water Enforcement. (Item #8) This report should cover the items described on page 4 of the attached cover memo.
- Submit (with monthly activity report) a schedule to survey all facilities listed in Exhibit C. (Item #2)
- 1/31/76 Complete review of NPDES permit status of all known dischargers of PCBs and commence appropriate enforcement actions. (Item #3)
- 2/6/76 Submit monthly report of January activities. (Item #8)
- 2/28/76 Complete surveys of all facilities listed in Exhibit C. (Item #2)
- 3/5/76 Submit monthly report of February activities. (Item #8)
- 3/21/76 No later than this date, issue public notices of proposed issuance or modification of NPDES permits to require the elimination of PCBs from the discharges from facilities listed in Exhibit C as expeditiously as possible. (Item #4)
- No later than this date, commence negotiations and other activities to eliminate PCBs from the discharges into municipal treatment systems from facilities listed in Exhibit C. (Item #5)
- Submit a schedule to accomplish plant surveys, permit issuances and modifications, elimination of discharges of PCBs by industrial contributors into municipal treatment systems, and similar activities for all PCB dischargers not listed in Exhibit C. (Item #6)
- 4/2/76 Submit monthly report of March activities. (Item #8)
- 5/7/76 Submit monthly report of April activities. (Item #8)

In addition to the items listed in the above work schedule, you should review the NPDES permit status of power plants as soon as possible, and act promptly to make any modifications and take necessary enforcement action. (Item #7) Furthermore, you should review the NPDES permit status of all PCB dischargers whose identity you learn after 1/31/76, and you should take appropriate enforcement actions for any discharges in violation of the NPDES permit program.

Region I - FCB Users

AEROVOX Industries, Inc.
740 Belleville Ave.
New Bedford, Mass. 02741
617-994-9661

contact - Norman Butterworth
Manager of Environmental Control

Cornell Dubilier Electric Corp.
1605 East Rodney French Blvd.
New Bedford, Mass. 02741

contact - Philip Murray, General Manager

Jard Company, Inc.
Bennington, Vermont 05201

contact - Richard L. Rollins

Sanders Associates, Inc.
95 Canal Street
Nashua, New Hampshire 03060

contact - E.J. Boutin

Sprague Electric Company
Brown Street
North Adams, Mass.

contact - Fred A. Windover

Tobe Deutschmann Laboratories
Canton, Mass. 02021

contact-Tobe Deutschmann

Universal Manufacturing Corp.
Capacitor Division
902 Crescent Ave.
Bridgeport, Conn. 06607

corporate offices:
Universal Manufacturing Corp.
29-51 East Sixth St.
Paterson, N.J. 07509

contact - N. Ray Clark

Region II - PCB Users

Axel Electronics, Inc.
134-20 Jamaica Avenue
Jamaica, New York 11418

contact - Robert H. Elkes, Data Manager

General Electric Corp.
570 Lexington Ave.
New York, N.Y. 10017

contact - Stu Richel 518-374-2211

Inductotherm Corp.
10 Indel Ave.
Rancocas, N.J. 08073

contact - Roy T. Ruble 609-267-9000

R.F. Interonics, Inc.
100 Pine Aire Drive
Bay Shore, Long Island N.Y. 11706

contact - Mervin H. First 516-231-6400

Niagra Transformer Corp.
1747 Dale Road
P.O. Box 233
Buffalo, New York 14225

contact: Herman E. Gabel, Jr. 716-896-6500

Research Cottrell, Inc.
Radel Ave.
Finderne, N.J. 08805
Bridgewater Township

corporate offices:
P.O. Box 750
Bound Brook, N.J. 08805

contact - Frank L. Armour
Associate Counsel

Universal Voltronics
27 Radio Circle Dr.
Mt. Kisco, N.Y. 10549

contact: Lewis Cohen

Region II - continued

York Electronics Corp.
104 South Fourth St.
Brooklyn N.Y. 11217

contact - H. Dubilier

Region III - PCB Users

Buell
Division of Envirotech Corp.
200 North Seventh St.
Lebanon, Pa. 17042

corporate offices:
253 North Fourth St.
Lebanon, Pa. 10742

contact: D.J. St. John

Energy Systems Company
Division of Aydin Corp.
960 River Road
Croydon, Pa. 19020

corporate offices:
Energy Systems Co.
Division of Aydin Corp.
401 Commerce Dr.
Fort Washington, Pa. 19034

contact: Nicholas J. Scafidi

H.K. Porter Company, Inc.
Transformer Manufacturing Plant
Lynchburg, Va. 24505

corporate offices:
H.K. Porter Company, Inc.
Porter Building
Pittsburgh, Pa. 15219

contact - F.M. Vignovitch 412-391-1800

R.E. Uptegraff Manufacturing Co.
P.O. Box 182
Scottsdale, Pa. 15683

contact - R.E. Uptegraff, Jr.
President

Westinghouse Electric Corp.
Power Systems
Transformer Division
469 Sharpsville Ave.
Sharon, Pa. 16146

Region III - continued

Westinghouse Electric Corp
Small Power Transformer Division
Box 920, Highway 58W
South Boston, Va. 24592

corporate offices:
Westinghouse Building
Gateway Center
Pittsburgh, Pa. 15222

contact - Roger Wills, Jr., Attorney

Western Electric
Baltimore Works
2500 Broening Highway
Baltimore, Maryland 21224

corporate offices:
Western Electric
222 Broadway
New York, New York 10038

Region IV - PCB Users

Carolina Capacitors, Inc.
Division of Baldour Electric Co.
P.O. Box 125
Ridgeville, South Carolina 29472

contact - E.J. Wershey

Helena Corp
Helena Industrial Park
P.O. Box 251
Helena, Alabama 35080

contact - K.A. Thallner
General Manager & Vice President

Sangamo Electric Co.
Capacitor Division
P.O. Box 128
Pickens, South Carolina 29671

contact - Jessie L. Butner
Manager, Manufacturing Services

McGraw Edison Power Systems Division
1520 Emerald Road
Greenwood, South Carolina 29646

corporate offices
McGraw Edison Power Systems Division
P.O. Box 440
Cannonsburg, Pa 15317

contact - F.P. Campeon
Buildings & Grounds Section

Hevi-Duty Electric
Division of Sola Basic Industries, Inc.
P.O. Box 268
Goldsboro, North Carolina 27530

corporate offices:
Hevi-Duty Electric
Marine Plaza
Suite 1934
Milwaukee, Wis. 53202

contact: Harry Eikenberry, President

Region IV - continued

Kuhlman Electric Co.
Division of Kuhlman Corp.
198 Porter St.
Crystal Springs, Miss. 39059

corporate offices:
Kuhlman Corp.
P.O. Box 288
Birmingham, Michigan 48012

contact: J.A. Smelko, Vice President

P.R. Mallory & Co., Inc.
Mallory Capacitor Co.
Waynesboro, Tennessee

corporate offices:
P.R. Mallory & Co., Inc.
3029 E. Washington, St.
Indianapolis, Ind. 46202

contact: S.P. Wolsky - Director, R&D

Middle South Transformer Co.
Highway 49W
Belzoni, Miss. 39038

corporate offices:
Standard Transformer Co.
212 Dana St., N.E.
Warren Ohio 44481

contact - O.M. Olivier, Vice President of Operations

Baldor Electric Co.
Carolina Capacitors, Inc.
P.O. Box 125
Ridgeville, South Carolina 29472

corporate offices:
Baldor Electric Co.
P.O. Box 2860
St. Louis, Missouri 63122

contact: E.J. Wershey 803-873-2481

Region V - PCB Users

Dings Company
4740 W. Electric Ave.
Milwaukee, Wisconsin 53246

contact - Dennis M. Pural

Electrical Utilities
2427 St. Vincent Ave.
La Salle, Ill. 61301

contact - Richard L. Hauser, President

Westinghouse Electric Corp.
Distribution Apparatus Division
Curry Pike
Bloomington, Ind. 47401

Westinghouse Electric Corp
Outdoor Lighting Division
1216 West 58th Str.
Cleveland, Ohio 44102

corporate offices:
Westinghouse Building
Gateway Center
Pittsburgh, Pa. 15222

contact - Roger Wills, Jr., Attorney

Cornell Dubilier Electric Corp.
Distribution Center
2070 Maple Ave.
Des Plaines, Illinois 60018

contact - Philip Murray
General Manager

McGraw Edison Power Systems Division
P.O. Box 300
11131 Adams Road
Franksville, Wis. 53126

corporate offices
McGraw Edison Power Systems Division
P.O. Box 440
Cannonsburg, Pa 15317

contact - F.P. Campeau
Buildings & Grounds Section

Region V - continued

Standard Transformer Co.
212 Dana St., N.E.
Warren, Ohio 44481

Elgin Transformer Co.
560 Chester St.
Elgin, Ill. 60120

Western Electric
Hawthorne Works
Hawthorne Station
Chicago, Ill. 60623

corporate offices:

Western Electric

222 Broadway
New York, N.Y. 10038

contact: J.R. Lauritzen 212-571-2345

Van Tran Electric Corp.
1505 Van Tran Ave.
Vandalia, Ill. 62471

contact - A.E. Bolin, Jr., President

Region VI - PCB Users

Van Tran Electric Corp.
7711 Imperial Dr.
Waco, Texas 76710

corporate offices:
Van Tran Electric Corp
1505 Van Tran Ave.
Vandalia, Ill. 62471

contact - A.E. Bolin, Jr., President

McGraw Edison Power Systems Division
P.O. Box 627
Nacogdoches, Texas 75961

corporate offices
McGraw Edison Power Systems Division
P.O. Box 440
Cannonsburg, Pa 15317

contact - F.P. Campeau
Buildings & Grounds Section

Region IX - PCB Users

Capacitor Specialists, Inc.
P.O. Box 2052
Del Dios Highway
Escondido, Calif. 92025

contact - C. Wayne White, Vice President, Engineering

Electro Engineering Works
401 Preda St.
San Leandro, Calif 94577

contact - Richard Maycock
Manufacturing Manager 415-569-3326

Electro Magnetic Filter Co.
4083 Transport St.
Palo Alto, Calif. 94303

corporate offices:
Cine-Chrome Laboratories, Inc.
4075 Transport St.
Palo Alto, Calif. 94303

contact - Harold E. Martin
Vice President - Cine-Chrome 415-321-5678

Federal Pacific Electric Co.
1200 Piper Dr.
Milpitas, Calif 95108

contact - Ralph H. Moore - Manager, Transformer Marketing

Glenn-Gibson Corp
205 Teal Court
Benicia, Calif 94510

contact - Robert G. Glenn 707-745-3100

H.K. Porter Company, Inc.
Transformer Manufacturing Plant
Belmont Works
1777 Industrial Way
Belmont, Calif. 94002

corporate offices:
Standard Transformer Co.
212 Dana St., N.E.
Warren Ohio 44461

contact - O.M. Olivier, Vice President of Operations

Region X - PCB Users

Pacific Standard Transformer Co.
8001 Table Rock Road
Medford, Oregon 97501

corporate offices:
Standard Transformer Co.
212 Dana St., N.E.
Warren Ohio 44481

contact - O.M. Olivier, Vice President of Operations

McGraw Edison Power Systems Division
7533 Ave. 304
Visalia, Calif. 93277

corporate offices
McGraw Edison Power Systems Division
P.O. Box 440
Cannonsburg, Pa 15317

contact - F.P. Campeau
Buildings & Grounds Section

MONS 031433

TRANSFORMER AND CAPACITOR PLANT DESCRIPTIONS

Introduction

The purpose of the inspection program for transformer and capacitor plants is to determine how filling fluid is lost and what can be done in each case to eliminate the losses so that the requirement of "zero" discharge of toxic fluid or any of its components can be met.

The filling fluid for transformers may be mineral oil or a mixture of polychlorinated biphenyls (PCBs). For capacitors, they will usually be a mixture of polychlorinated biphenyls (PCBs) or, in certain cases, other oily liquids such as castor oil. Polychlorinated biphenyls are sold under various trade names, but most commonly as Aroclor. Aroclors are manufactured by Monsanto Chemical Co. The PCB liquids are commonly called "Askarel" in the electrical equipment industry. A list of trade names under which PCBs are sold is provided herein.

The way our inspections will be oriented is to try to account for all the PCBs brought into the plant; this means to establish a weight balance of purchases, uses of products, and losses to air, water, and landfills.

Typical transformer and capacitor plant operations are described herein, including the important filling operations and specific ways that PCBs would be expected to be lost from the process. Thereby, it would be possible to make the necessary recommendations for loss control.

A check list is provided to assure that all key points of the plant have been adequately covered and for conveniently recording the values necessary for performing the weight balance for each plant in a uniform manner.

Inspection Details(A) General

Before a plant site visit is made, it is important to review the details of the section 308 letter response for that plant.

Pertinent areas of the plant include the following:

- (1) receipt, transfer, and storage;
- (2) process --
 - (a) electrode, insulator, and container fabrication and preparation,
 - (b) filling liquid purification, and
 - (c) vacuum filling;

- (3) laboratory;
- (4) process waste treatment; and
- (5) land disposal.

All parts of transformer and capacitor manufacture are performed under clean and sterile conditions, since performance is dependent on the absence of foreign matter, especially water.

(B) Plant Operation

The filling fluid is received by tank car, tank truck or 55-gallon drums. It is likely to be transferred into stainless storage containers under inert gas pressure. Transfer hoses, pipes and nozzles and, in fact, all transfer equipment and procedures must be scrupulously clean. The filling liquid may be stored under vacuum or inert gas pressure.

The filling liquid is purified prior to inclusion in transformer or capacitor by treatment with filter-aid clay-like material to effect removal of last traces of impurities. This is done while the liquid is heated. The spent clays may be reactivated by heating at elevated temperatures prior to reuse. Suitability of the liquid for capacitor or transformer filling is determined by electrical measurement.

Prior to filling with liquid, capacitors and transformers are assembled in the dry state, including electrodes and insulating material in appropriate inert containers. Last traces of moisture are removed by heating under vacuum. Filling with liquid is done under heat and vacuum (direct) for the larger devices. Smaller capacitors may be filled under flooding conditions (submersion under liquid) under vacuum. Then, the device is sealed and tested for leaks. The sealed capacitor or transformer is finally tested electrically for its appropriate circuitry.

Assembled capacitors and transformers failing to pass the sealing and electrical tests and which cannot be readily repaired are dismantled, with essential components salvaged and reused accordingly. When a liquid other than PCBs is used prior to PCBs for capacitor filling in the same manufacturing line, the line must be scrupulously cleansed of the other liquid.

The plant would have a laboratory for performing tests of a quality control nature on filling liquids such as dielectric constant and loss tangent and miscellaneous mechanical and electrical tests on solid component materials. The larger plants of 1000 employees or greater are likely to be performing research on filling liquid modification, advance purification, component modification, and advanced design prototype testing.

Waste treatment practices for handling PCBs in water by direct dischargers consist of oil-water separation at various degrees of sophistication from simple settling to dissolved air flotation. Included would be filtration by filter-aid, incineration of the oil phase, and use of activated carbon to achieve the most refined separation of organic phase from the water effluent. Process wastes and possibly storm runoff wastes will be treated here. Cooling water blowdown may be included as well.

Land disposal sites for the plant's solid wastes are likely to contain such items as discarded transformers and capacitors and solid components, spent filter-aid (clays), spent sorbents, miscellaneous solids removed during the oil-water separation in the waste treatment operations, and various solid residue, including slags from incineration. All of these solids could contain PCBs.

(C) Significant Points of PCB Losses

In general, it may be said that the principal cause for losses of filling liquid during plant operations will occur during various liquid transfer operations. These will now be highlighted.

Receiving and Storage: Transfer of filling liquid from the tank car or tank truck to the storage vessel is a likely area for leaks and spills. Joints, valves, pipes, and hoses are potential loss points. At this point samples of liquid would be taken for loss tangent (dissipation factor) measurement to assure quality of the liquid. The condition of the areas around joints, valves, and pumps would be indicative of the amount of care exercised in liquid transfer. Routine internal cleaning and disposal of rinsings, especially when other liquids have been used in advance, contribute to losses.

This area is likely to contribute most significantly to storm runoff owing to its openness and the nature of the operation. The general housekeeping condition will determine the contribution of storm runoff to filling liquid loss.

Purification of Filling Liquid: This is likely to be a source of filling liquid and its vapor. The loss would occur during filtration by means of clay-like filter-aid under heat and vacuum. Filling liquid vapors are exhausted through vents or hoods. Spent filter-aid is reactivated by furnace (dynamic gas draft) or oven heating without draft. Expelled vapors are exhausted through hoods, vents or vapor condensers. Unreactivated filter-aid destined for discard is likely to contain sorbed filling liquid. Overall, the purification of filling liquid and regeneration of filter-aid processes will be conducive to those losses associated with handling and

transfer operations involving vacuum, heating filtration, and regeneration of clay-like material at elevated temperatures. Drip pans, pumps, valves, pipes, filtration equipment, and miscellaneous chemicals are involved.

The purified filling liquid is sampled for electrical insulating quality prior to vacuum impregnation of capacitors or transformers.

The preparation and assembly of dry capacitors and transformers with associated heating and vacuum to attain an optimal moisture-free state is obviously free of any loss of filling liquid.

Capacitor Liquid Filling: This operation is performed under scrupulously clean conditions in order to minimize chances of any foreign matter entering the device. In this operation the filling is performed under heat and vacuum from a filling liquid tank. Once again, various connecting hoses, valves, and adapters are used. Direct vacuum filling is less likely to lead to liquid losses than flood filling. In the former operation, losses will occur around connecting points at the top. In the latter operation, the entire outside of the device container will be wet with filling liquid; therefore some losses will be expected during wash and cleaning procedures with organic solvent, i.e., trichlorethylene. Further filling liquid may be lost during seal testing for maintenance of vacuum, especially if a leak is detected and the seal or cover must be replaced. The techniques for vacuum seal testing and repair are likely to vary to different degrees of refineness. In the entire vacuum filling operation losses may be associated with transfer and filling operations, i.e., the manner by which this is generally being handled. Drip pans, hoses, mechanical pumps, steam ejectors, liquid condensers, vents and exhausts, and gas scrubbers (wet or dry), will be associated with lost filling liquid.

Transformer Filling: Same losses as for direct filling of capacitors.

Laboratory: In this area tests are performed on the filling liquid for quality control purposes. The most frequent test would be "loss tangent" or otherwise known as "dissipation factor," which is a measure of the impurity of the liquid. Although the amount of liquid required for the test may not be more than an ounce or so, there will be some losses due to cleaning of test equipment before each test. Disposal of test liquid may vary but it is likely to be returned for further purification. Other tests such as distillation, density (specific gravity), electrical breakdown, etc., would result in further losses. If the plant is large enough to perform its own R&D, then larger-scale uses and losses of filling liquid would occur.

LISTING OF NAMES AND MANUFACTURERS OF PCBs
IN CAPACITORS AND TRANSFORMERS

<u>Name</u>	<u>Manufacturer</u>	<u>Capacitor</u>	<u>Transformer</u>
Aroclor	Monsanto	X	X
Asbestol	--	--	X
Askarel	--	X	--
Asbestol	American Corporation	--	X
Chlorextol	Allis Chalmers	--	X
Diaclor	Sangamo Electric	--	--
Dykanol	Cornell Dubilier	--	--
Elemex	McGraw Edison	--	--
Hyvol	Aerovox	--	--
Inerteen	Westinghouse Electric	--	X
Fencior	Caffaro (Italy)	--	--
Clophen	Bayer (Germany)	--	--
Kennechlor	Kennechlor (Japan)	--	--
No-Flamol	Wagner Electric	--	X
Phenoclor	Prodelec (France)	--	--
Pyranol	General Electric	--	X
Pyrolene	Prodelec (France)	--	--
PK	Caffaro (Italy)	--	--
Saf-T-Kuhl	Kuhlman Electric	--	X
Santotherm	Mitsubishi (Japan)	--	--
Sova	--	--	X

Check List -- Capacitors

	Yes	No
Date of Inspection		
Company Identification		
Plant (name, address, telephone)		
Parent company or headquarters (name, address, telephone)		
Responsible Officials		
Plant (name, title)		
Parent company or headquarters (name, title)		
Inspection Team		
Federal (name, title, division, organization)		
State (name, title, division, organization)		
Municipal (name, title, division, organization)		
Other (name, title, division, organization)		
Disposition of Wastes		
Receiving waters (for direct discharge)		
Municipal treatment system (including receiving waters)		
Landfill (name, address)		
Incineration (name, address)		
Other (such as disposal)		
Filling or impregnating fluids used		
Receipt, Transfer, and Storage		
How received (tank cars, trucks, drums)		
Where received (how far from use area)		
How unloaded into storage tanks		
Are tank cars cleaned after unloading?		
How?		
What happens to flushings or contaminated cleaning solutions?		
Drip pans under hose or pipe connections to tank car or trucks?		
Transfer hose or pipes drained where?		
Unloading area paved and diked? Collection sump?		
How are sumps emptied and to where?		
Unloading area roofed?		
How are samples taken?		
Where is excess sample disposed of?		
What disposition is made of samples after testing?		
Storage tank area paved and diked? Collection sump?		

Receipt, Transfer, and Storage -- cont.

Yes No

Are raw filling fluids stored open to the atmosphere or under inert gas or under specially dried atmosphere or vacuum?

If vacuum, how is vacuum obtained?

Where does vacuum system exhaust to?

Is exhaust equipped with vapor condenser?

If so, where does condensate go?

Where is vacuum pump cooling water obtained?

Where does vacuum pump cooling water go?

Is vacuum pump equipped with drip pans?

How is contaminated vacuum pump oil disposed of?

If stored under special atmosphere:

What is it (nitrogen, dry air, etc.)?

What pressure maintained on tank?

Where does tank vent to?

Is vent equipped with vapor condensor?

If so, where does condensate go?

Are transfer pumps in the storage area provided with drip pans?

In all cases where drip pans are used, what disposition is made of accumulated drips?

General Observations

Workers handling of fluids

Housekeeping

Other

Filling or Impregnating Fluid Purification

Are pumps and filters equipped with drip pans or diked, with sumps?

If filter aid blending tank surrounded by paved, diked area?

How is spent filter aid taken off the filter?

How is spent filter aid packaged for disposal?

Is spent filter aid handled by employees? How?

What is disposition of spent filter aid?

If regenerated on site, where does regeneration process exhaust to?

Is exhaust equipped with vapor condensor?

If so, where does condensate go?

Purification -- cont.

Yes No

Is purified fluid sampled?
How are samples taken?
What is done with excess sample?
If fluid does not meet requirements, what happens?
What disposition is made of samples after testing?

How are miscellaneous floor spills of fluid cleaned up?
What happens to the sweepings?
What happens to rags, wiping cloths, etc.?
What happens to workers' clothing, gloves, etc.?

General Observations

Workers handling of PCBs
Housekeeping
Other

Capacitor Impregnation-Submersion or Flood Filling Process

Is impregnation tank cleaned before each filling?
What is done with any filling fluid removed from the tank in cleaning it?
What is done with any rags used in the cleaning?
What is done with workers' clothing worn in cleaning?

Are PCB vapors given off in preheating the tank prior to loading with capacitors?
Where is tank vented to during preheating?

How is vacuum obtained?
Where does vacuum system exhaust to?
Is exhaust equipped with vapor condensor?
If so, what happens to condensate?
Is vacuum pump equipped with drip pans?
What oil is used in vacuum pump and how much?
What happens to contaminated oil:

After capacitors have been flooded, where is impregnation tank drained to?
Are drainings sampled? How?
What happens to excess sample?
What happens to sample after testing?
What happens if drained fluid is defective:
 to the fluid?
 to the capacitors?
What happens if drained fluid is good?
Are pumps equipped with drip pans?

Yes No

Are tanks surrounded by paved, diked areas? With sumps?
What disposition is made of contents of sumps and drip pan?

After impregnation tank is drained, are capacitors allowed to drip in tank, or taken out?

If the capacitors are taken out for dripping, are drip pans provided?

What is done with the contents of the drip pans?

Is the area where newly filled capacitors allowed to drip adequately ventilated? How?

Where does ventilation system exhaust to?

Is the exhaust equipped with vapor condensor and, if so, what happens to the condensate?

How are capacitors transferred to the sealing area?

Are drip pans provided?

What disposition of contents?

How are spills or overflows of PCBs collected in the sealing area?

After sealing, how are capacitors cleaned of residual fluid on the outside?

If by solvent or vapor degreasing, how is solvent reclaimed?

How is filling fluid residue from the solvent recycle system collected?

How is it disposed of?

If by washing with water or detergent solution, how are contaminated washings disposed of?

Are capacitors rinsed after washing?

If so, is rinse water reused?

How is contaminated rinse water disposed of?

What happens to solid waste contaminated with filling fluid?

Especially, what happens to wiping rags and workers' clothing?

If solvent cleaned, how is filling fluid residue from the solvent system collected?

How is it disposed of?

General Observations

Use of protective clothing, gloves, etc.

Workers' handling of fluids

Housekeeping

Other

Note in particular whether walls and ceilings are coated with filling fluid in the vicinity of the impregnation tank and drip area.

Yes No

Observe workers who come in contact with filling fluid for chloroacene or pigment discoloration.

If oil-water separator is used to separate filling fluid from water, what is done with oil layer? With the water layer?

Large Capacitor Impregnation/Transformer filling -- Direct Filling process

Is area around filling operation paved and diked?

How are spills cleaned up?

What disposition is made of contaminated solid waste?

How is vacuum pulled on the capacitor or transformer?

If by vacuum pump; where does pump exhaust to?

Is exhaust equipped with vapor condenser?

Where does condensate go?

Where does pump cooling water go?

How is contaminated vacuum pump oil disposed of?

If by steam jet, how is steam condensed?

What disposition is made of condensate?

How is filling line drained?

Laboratory

No. of employees

Quality control

Types of test performed and amount of sample used

(a) dielectric constant and loss tangent

(b) electrical breakdown

(c) distillation range

(d) density (specific gravity)

(e) others

R&D

Types of equipment used, test performed and amount of samples used?

Samples to be taken:

Soil scrapings in tank car unloading area

Vacuum pump cooling water

Oil-water separators (water layer)

Spent detergent solutions

Contaminated rinse water, etc.

Plant effluent a) direct discharge

b) to municipality

Steam jet condensate

General

How are defective capacitors or transformers disposed of?

Is filling fluid recovered?

Is rejected unit storage area paved and diked?



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DEC 22 1975

Exhibit E

OFFICE OF ENFORCEMENT

MEMORANDUM

TO: State NPDES Directors

FROM: Assistant Administrator for Enforcement (EN-329)

SUBJECT: Identification and Control of Environmental Sources of PCBs

As you know, the discharge of PCBs into the environment represents a substantial national problem. Attached as Exhibit A is a copy of a press statement made today by the Administrator outlining the problem and EPA's response to it. Since the control of PCB discharges into the Nation's waters represents the most positive action the Agency has authority to undertake at the present time, the issuance and modification of NPDES permits to require the expeditious elimination of PCB discharges naturally assumes primary importance in our PCB program. Insofar as dischargers of PCBs are located in your states, your active cooperation and participation will be necessary to assure the success of this program.

Attached as Exhibit B is a memorandum that I am sending today to our Regional Offices outlining the steps we are requesting of them to implement. I am asking you, as partners in our national regulatory program, to cooperate fully in these efforts and to take any necessary implementing actions with regard to dischargers of PCBs subject to your jurisdiction within the same time frame outlined in my memorandum to the Regional Offices. Insofar as your efforts could be strengthened by field assistance in conducting appropriate surveys, please contact EPA's Regional Offices for assistance.

I am not asking you to report to me on your actions taken to implement this program, but do ask you to keep EPA's Regional Offices fully informed so that they can do so. Please feel free after contacting the Regional Offices to make specific inquiries of Murray Strier and Blake Biles of this office regarding any questions you have on these efforts. Murray Strier is the appropriate contact on technical matters regarding plant surveys and permit issuance and modification (703-557-7420).

MONS 031444

Blake Biles is the appropriate contact on the broad range of EPA's PCB efforts (202-755-8731). The attendance of your representatives at the technical meeting on PCBs on January 7, mentioned in my memorandum to the Regional Offices, is also invited.


Stanley W. Legro

Attachments



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

August 29, 1975

OFFICE OF ENFORCEMENT

MEMORANDUM

TO: All Regional Administrators

FROM: Assistant Administrator for Enforcement

SUBJECT: Enforcement Activities Concerning Discharges of
PCB Compounds and Mixtures

As a part of the Agency's efforts to limit discharges into the environment of Polychlorinated Biphenyls (PCBs) and comparable chemical substances, we must ensure that all known discharges of PCBs are in compliance with all applicable provisions of the FWPCA, particularly those concerning NPDES permits.

I am therefore requesting that you review the permits held by those companies in your Region which have been identified as possible users of PCBs. Such companies include those to whom EPA recently addressed Section 308 letters, plus any others which have been identified by personnel in your Region.

For permits which contain limitations or prohibitions upon the discharge of PCBs, you should in the near future determine whether the permittees are complying with such limitations or prohibitions. In any cases of noncompliance, appropriate enforcement actions should be taken immediately. Where no application is on file from a discharger of PCBs enforcement action should be undertaken immediately.

Enforcement actions should also be taken against any dischargers of PCBs whose permits contain no PCB limitations and who did not identify PCBs either directly or by a general term (e.g. chlorinated hydrocarbons) as present in their discharges in their Refuse Act or NPDES permit applications. In order to aid in the identification of such dischargers, your staff should review the responses to the recent 308 letters. Please inform Blake Biles of the Legal Branch at (202) 755-8731 of all such PCB users whose permits contain no limitations or prohibitions for the discharge of PCBs. You should also contact Blake regarding proposed modifications of limitations contained in permits which were previously issued by the Agency.

MONS 031446

If your Region is proposing to issue permits which will contain limitations upon PCBs, (other than through the application of effluent guidelines) or if permits with such limitations are the subject of adjudicatory hearings, please contact Bob Schaffer of the Permits Division at (703)557-7470 for assistance in developing the precise effluent limits which should be included in such permits.

Thank you for your prompt attention to this important matter.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Stanley W. Legro", written in a cursive style.

Stanley W. Legro