



INSTALLATION & SERVICE
ENGINEERING OPERATIONS

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ENGINEERING PROCEDURES

INSTALLATION & SERVICE ENGINEERING OPERATIONS

GENERAL  ELECTRIC

I&SE PROPRIETARY INFORMATION

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GENP 010287



ENGINEERING PROCEDURE test

TITLE	NUMBER	REV.	DATE
CONTROL OF ASKARELS (PYRANOL®)	EP-TEST-29.1	0	10/76
	ISSUED BY	AUTHORIZED BY	
	E&E ENGINEERING	E&E SERVICE DEPT.	
COMPANY PROPRIETARY INFORMATION	DISTRIBUTION:	POWER	COMP
		X	X
		D&C	MT
		X	X
		NUC	WAR
		X	X

GENERAL

The electrical industry uses askarels as an insulating medium in transformers, power capacitors and smaller capacitors. In the case of transformers the nonflammable characteristic is the sole factor for their use. In the case of capacitors, the primary reason is because of the askarel's high dielectric constant with reasonable electrical loss characteristics over the application temperature range desired. For capacitor applications, nonflammability is an added bonus, but really not needed except for a very few types of application. Askarels are made in the United States solely by the Monsanto Company. The General Electric trademark for askarel is PYRANOL® Insulating Liquid. See Appendix I for other electrical manufacturers' trademarks.

Askarel contains varying amounts of Polychlorinated Biphenyl - (PCB). The type and quantity of the PCB may vary depending on the application (capacitor vs. transformer) and the manufacturer's (GE - Westinghouse - Allis Chalmers - etc.) special requirements.

PCB's have been declared a serious pollutant by the Federal Government as well as most, if not all, of the State Governments. Since askarels contain some PCB, all askarels are considered to be a serious pollutant.

During 1976 the following states have passed laws governing the sale, distribution, and/or use of PCB and products containing PCB:

Connecticut
Indiana
Michigan
Minnesota

Bills in Illinois and in New York died in committees.

The general tenor of the various legislations is a scheduled prohibition of PCB use, for all except capacitors and transformers, but each contains varying reporting, labeling, and disposal requirements from which capacitors and transformers are not necessarily exempt. For instance, Michigan's draft regulations totally exempt products containing less than three (3) pounds of PCB.

The release of PCB into the environment has the full attention of the US Environmental Protective Agency -- (EPA), and nearly, if not all of the various State Environmental agencies. This is also true of many foreign governments, especially those in Europe and Japan.

The electrical industry, in an effort to reduce this environmental threat, generated and issued NEMA Pub No. CP-P1-1973/TR-P6-1973 in January 1973. This was a proposed American National Standards Institute (ANSI) Guideline for Handling and Disposal of Capacitor and Transformer Grade Askarels Containing Polychlorinated Biphenyls. This was accepted by ANSI and issued as ANSI-C107.1-1974. The original guideline is now under revision. This revision is a general update as well as more fully covering the situations related to transportation and in-service field conditions. The manager, Power Delivery Methods Engineering -- E&E Engineering -- I&SED is actively participating in this revision project. This PROCEDURE is a resume of ANSI C107.1-1974 revised.

This procedure is a "best judgment" of the situations that exist at the time of writing (June '76) and is intended to comply with the letter and spirit of the present regulations. It is very probable that Federal, State, and Local regulations will become more restrictive in the near future. It is imperative that each I&SE location keep current on legislation that will affect this procedure.

The Manager - Power Delivery Methods Engineering should be kept informed of any factual changes in regulations, except that of a purely local nature, that arise. This should be communicated via the Regional Manager of Engineering.

I&SED is primarily interested in three areas:

1. Spills in Transit
2. Leaks, Spills In-Service
3. Disposal of Test Samples

I&SED involvement in manufacturing and repair shops is minimal. Refer to the ANSI Standard for added information if questions arise in these areas.

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The greatest risk of releasing PCB into the environment is during transit. While the number of incidents is low, the volume of PCB is relatively large, and the nature and location of the spills are difficult and expensive to clean up. These spills have, in general, been due to transformers tipping off the vehicle, drain valves being opened, radiator leaks and breakage due to improper tying down of the unit on the vehicle, and radiator leakage due to weld breakage caused by vibration due to windage. No doubt there are other causes, both actual and potential.

While leaks and spills in-service could conceivably be as major as those in transit, they are usually at a slower rate and occur on private property (the user).

Test samples normally present a disposal problem only if accidentally spilled.

PREVENTIVE/CORRECTIVE ACTION

The preventive/corrective action in these areas of concern (Spills in Transit, Leaks, Spills In-Service, and Disposal of Test Samples), are essentially the same but vary in urgency. These actions should be based on a contingency plan for Containment, Notification and Removal and Disposal developed beforehand. There is no time after a spill to plan properly.

CONTAINMENT

Containment will reduce the consequence of any spill. While the steps to be taken seem obvious, they are extremely important and must be accentuated.

1. STOP LEAK at the source quickly. Makeshift means may be the only practical means available and can be successful. Each situation may have more than one fix but the intent is to stop the leak in the quickest way possible. Wooden plugs, rags, tape, rope ends, etc. may be used to restrict the leakage. Welding is not advisable unless under the supervision of a knowledgeable person.

2. CONTAIN THE SPILLED LIQUID
Sand or earthen dikes, buckets, barrels, oil drums, or any other containment material may be employed. Sheets of polyvinyl especially to cover storm drains and sewage inlets are useful. Imbiber Beads*, fuller's earth, saw dust and other absorbent materials are useful. These are

*See Experience Section

not normally available unless advance planning has taken place. Again, each situation may offer more than one solution, but the intent is to contain the liquid in the smallest confines as possible.

3. DO NOT "WASH DOWN" the spillage. This is a normal reaction by most Fire Departments. This will cause a relatively simple spill to escalate to a spill of an extremely serious nature.

Spills that occur on units in transit by a common carrier will be under the control of the carrier. The ANSI Standard C107.1 (Revised) covers this in its recommendations of a WARNING NAME-PLATE and information to be supplied the carrier on the manifest.

Situations that occur on units in transit by other than common carrier, such as hired truck or a customer's vehicle will depend on how well informed and equipped the people involved in the move are. When an askarel filled unit (transformer or capacitor) is to be transported, especially in the public domain, (off of private property) and the General Electric Company and/or I&SED is involved, contingency plans should be available and the crew assigned to the move be informed and equipped to handle a spill situation.

NOTIFICATION

As soon as the spill is under control, the proper authorities and concerned parties should be notified.

State and Federal authorities must be notified, depending on the regulations that apply. Presently A SPILL OF ONE POUND OF PCB THAT HAS THE POTENTIAL OF ENTERING THE WATER SYSTEM IS REPORTABLE. State and Local regulations may vary and be more stringent. It can be expected that Local, State and Federal Regulations will become more restrictive in the future.

The Federal Regulations are presently based on Section 204B(1) of the Solid Waste Disposal Act, and Sections 307(a), 307(b) and 311 of the Amendments to the Federal Water Pollution Control Act.

Each local I&SE office should stay current on the regulations that apply to their area. The penalties may be severe.

The basis for the spill notification and control plan relies on CHEMTREC to advise on the immediate actions needed to contain or restrain a liquid spill with the best means available, based on listed instructions. The National

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Response Center will notify all interested parties, i.e., Federal and State authorities and the manufacturer involved, as well as give guidance on actions to be taken.

CHEMTREC is the acronym for Chemical Transportation Emergency Center, a public service of the Manufacturing Chemist Association with offices in Washington, DC. CHEMTREC provides immediate advice for those at the scene of emergencies relating to any chemical, then promptly contacts the shipper of the chemicals involved for more detailed assistance and appropriate follow-up.

CHEMTREC operates around the clock -- 24 hours a day, seven days a week -- to receive direct-dial toll free calls from any point in the continental United States through a wide area telephone service (WATS) number:

800-424-9300
 483-7616 for calls originating within the District of Columbia and
 202-483-7616 for calls originating outside of the continental US

ANSI C-107.1 revised is making the recommendation that all past and present manufacturers of PCB and PCB containing equipment be listed with CHEMTREC.

NATIONAL RESPONSE CENTER is a Federal center located in the US Coast Guard Headquarters, Nassif Building, 400 - 7th Street, SW, Washington, DC 20590. Their function is to coordinate pollution emergencies when national involvement is required.

The basis of this network is a well-publicized toll-free telephone number:

800-424-8802

which anyone may use to call the National Response Center reporting pollution incidents or accidents which may result in pollution.

The center will relay the pollution reports to the local representatives of the Federal Agency responsible for action when a pollution discharge has occurred. When necessary, other specific local, regional, or national representatives for the various agencies will also be notified.

The manufacturer of the equipment, especially in transport from the factory, should be notified of any reportable spills. See Appendix 3 for GE locations and contacts.

In the majority of cases of spills in shipment from the factory, the carrier will take the immediate CONTAINMENT action and NOTIFY the factory per instructions on the shipping manifest. As a rule, the factory will notify I&SE and request assistance. The factory may have informed the various governmental authorities. This should be verified however and if reporting had not taken place, joint Product Department and I&SE action should be taken as required.

The reverse will usually be true in the case of spills, other than in transit from the factory, that have GE/I&SE involvement, such as a local move. In this case, I&SE should have taken the CONTAINMENT steps, NOTIFIED the governmental authorities and informed the concerned Product Department if only for informative purposes. Depending on location and other circumstances, the Product Department may be able to assist in both advice and manpower/tools.

When an "in-service" unit is to be moved, the unit should be properly labeled. ANSI recommends that manufacturers make available to users a suitable label to be installed on old transformers containing askarels that were built before the WARNING label was introduced. A suggested label includes the following:

CAUTION: The insulating liquid in this transformer contains Polychlorinated Biphenyl's (PCB). Care should be taken to prevent entry into the environment. In case of malfunction or leaks, consult the instruction manual and the manufacturer.

(See Experience Section for source of labels.)

SPILL REMOVAL AND DISPOSAL

The effort and expense of removal and disposal will depend largely on how well the specific spill was contained.

In general the removal will require that substantial amount of contaminated earth, etc. must be removed. If the spill has occurred on public land or right of way, the local authorities can approve the corrective action. Where the spill has occurred or entered private land such as parking lots, terminals, service stations, etc. or spilled over to third-party private land from a public right of way, PERMISSION to take the corrective action must be obtained. Since the EPA or local Environmental authorities have the force

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STANDARD THAT APPLIES

Current Federal Regulations -- Section 307(a), 307(b), and 311 of the 1972 Amendment to the Federal Water Pollution Control Act. (This is under review (1976) and the latest revisions will apply.)

State and municipal requirements

American National Standards Institute

ANSI C107.1 1974

(Revision under way and scheduled for 1976 issue.)

EXPERIENCE

Timely response is essential. There is not time available after a spill to make plans, locating the necessary material (drums, absorbents, etc.), equipment (earth movers, etc.) and labor. Basic contact sources of labor and equipment, and plans should be established in advance.

Incineration is preferable to using approved land fills.

PCB in the form of askarel penetrate the soil rapidly especially if the soil is sandy.

Concrete, asphalt and like solid materials can sometimes be cleaned with solvents and refinished instead of complete removal.

Steam cleaning combined with vacuum suction has worked in some cases in the past. This technique should be considered.

Do not overlook the vehicle transporting the equipment. Rail cars and flat bed trucks with wooden members require clean up or replacement and disposal of the contaminated wooden members.

Clothing must be disposed of in an approved manner (approved disposal facility) or pre-cleaned in a solvent before being commercially/house cleaned. The solvent can be reclaimed by distillation or disposed of as any other PCB contaminated waste.

Do not "wash up" after the body is contaminated with askarel directly with tap water that drains into a common drainage system. First remove the askarel from the body using a solvent such as kerosene. The kerosene must then be handled as PCB contaminated liquid. Then "wash up" in the normal manner.

An alternate is the use of waterless hand cleaners and disposable paper towels. The towels are then treated as burnable solids.

Dow Chemical Co., Midland, Michigan, market through GEDCOR, 1313 S. Newburgh Rd., Westland, Michigan 48185 (313/326-0600) a number of products utilizing IMBIBER BEADS. These beads have the ability to "drink up" hydrocarbons and askarels. They do not absorb in the normal sense. The fluid being "drank" penetrates the polymer network causing the size of the polymer particle to increase. Particles will drink 27 volumes of fluid per volume of bead. The fluid cannot be squeezed out or if the bead is cut in half no fluid will leak out.

GEDCOR markets a valve utilizing this principle of expansion. Water will flow freely through the valve until the water contains a liquid (petroleum based or askarel) that the bead will "drink". The IMBIBER BEADS then swell and close off the flow.

GEDCOR also will furnish a PCB Disposal Unit designed to minimize the problems related to the disposal of sample amounts of askarel. This consists of four plastic containers of 1-gallon size with sufficient IMBIBER BEADS. The gallon containers are in a carton. Samples are disposed of into the containers until full. The carton is then shipped freight prepaid to GEDCOR and they will dispose of it. The cost is \$40.00 total (plus freight back).

They also have a 1-cubic foot DISPOSABLE PACK to put up to 50 pounds of contaminated solid waste that utilizes the same approach as above. This currently is priced at \$29.00 total (plus freight back).

Labels

Labels are available from the transformer departments for labeling of older askarel transformers as to CAUTION on the PCB contents. It is advisable to have a stock of these to affix to any GE askarel transformer that I&SE works on. These CAUTION labels should especially be affixed to any in-service unit that is to be moved. The label GE number is NP 229A3316 and is a black on yellow plastic as well as the ANSI recommended yellow on black with an adhesive backing. They are approximately 5x3 inches in size. (These labels are manufactured by the W.H. Brady Co., Milwaukee, Wisconsin 53209.) See Figure 1. Medium Transformer - Rome, has an 8-1/2x11" plastic "Notice to Carrier" label. This is black on orange. This specific label is reproduced in Figure 2 for reference. The same general wording can be used for "in-service unit" movements with the necessary changes.

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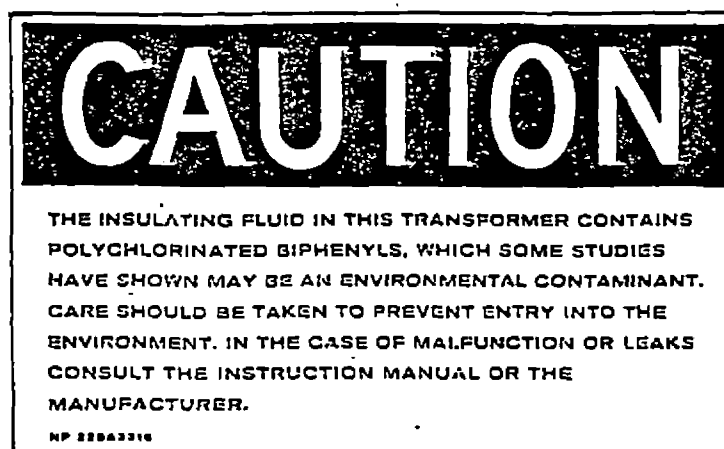


Figure 1

NOTICE TO CARRIER

YOU ARE HAULING A TRANSFORMER WHICH IS FILLED WITH AN INSULATING LIQUID. CARE SHOULD BE TAKEN TO PREVENT ANY ENTRY OF THIS MATERIAL INTO THE ENVIRONMENT THROUGH SPILLS OR LEAKAGE.

SHOULD ANY LIQUID LEAK BE DETECTED OR ANY SPILL BE NOTED ANYTIME DURING TRANSIT, PULL YOUR TRUCK OFF THE HIGHWAY OR PLACE CAR IN NEAREST RAIL SIDING AS SOON AS POSSIBLE. WHEN OFF THE HIGHWAY OR MAIN LINE, TRY TO STOP THE LEAK IF POSSIBLE. DO NOT WELD ON THE UNIT.

ANY LIQUID THAT IS SPILLED ON THE TRUCK OR CAR BED OR ROADWAY SHOULD BE CLEANED OR CONTAINED WITH RAGS, DRY-RITE AND/OR DRY SAND AS SOON AS POSSIBLE.

DO NOT MOVE THE TRANSFORMER IF THERE IS ANY DANGER OF THE LIQUID SPILLING OUT ON THE ROAD OR GROUND.

CALL COLLECT THE GENERAL ELECTRIC COMPANY, POME, GEORGIA, AREA CODE 404, PHONE 234-0211, SERVICE ENGINEERING UNIT, FOR FURTHER INSTRUCTIONS.

IF AFTER 5:00 P.M., OR ON WEEKENDS, PLEASE CALL THE ABOVE NUMBER, GIVE YOUR NAME, COMPANY NAME AND WHERE YOU CAN BE REACHED BY PHONE. SERVICE ENGINEERING WILL CALL YOU BACK WITHIN A FEW MINUTES.

Figure 2

APPENDIX 2 (Cont'd)

This organization provides containerization, transportation, and disposal services of all liquids and solids (including hardware). Disposal is in controlled chemical and scientific landfill area. Licensed by Atomic Energy Commission for radioactive waste disposal. The organization also has two West Coast locations, in the states of California and Washington.

8. Resource Recovery Inc.
5501 Airport Way South (206-767-0355)
Seattle, Washington 98108
9. Rollins Environmental Services, Inc.
P. O. Box 2349
Wilmington, Del. 19899
Phone: 320 658-8541

This organization has facilities and services capable of handling:

- (1) Liquids. Askarel alone or mixed with solvents or oils. Disposal is by high-temperature incineration.
- (2) Solids (software). Askarel-soaked compounds, rags, cartons, absorbing earths, etc. Disposal is by incineration at combustion temperatures up to 2500°F. Incineration gases are scrubbed, and entrained solids are removed before exhausting to air.

Rollins Environmental Services maintains disposal facilities in the following areas:

Philadelphia/Camden:

Rollins Environmental Services, Inc.
Route 322
Logan Township
Bridgeport, N.J. 08014

Baton Rouge:

Rollins Environmental Services, Inc.
Scenic Highway & West Cheatham Lane
Scotlandville
East Baton Rouge Parish, La. 70807

Houston:

Rollins Environmental Services, Inc.
Tidal Road & Highway 134
Deer Park, Texas 77536

10. Texas Ecologists, Inc.
Robstown, Texas (512-387-3518)

Disposal by landfill.

11. Wes Con, Inc.
Twin Falls, Idaho (208-733-0897)

Receive packaged materials for disposal in missile silos.

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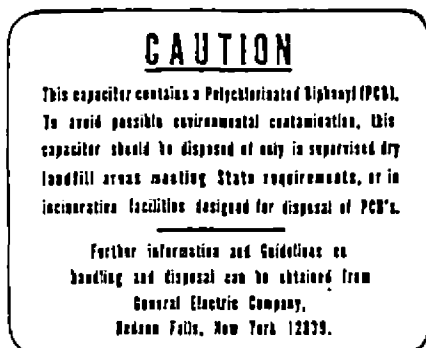


Figure 3

Figure 3 shows the CAUTION warning presently being used on capacitors. This is actually approximately 2-1/2x3", black on yellow metalized with an adhesive backing.

Containers

Some disposal service companies will accept burnable waste in 35 or 42 gallon heavy fiber drums. The entire drum is then incinerated. Heavy plastic liners (bags) must be used to prevent seepage of the PCB. This is the most practical method of disposing of used filter press paper, used filters and contaminated Fuller's earth. While the Fuller's earth is not a burnable material in the normal sense, many of the disposal services can incinerate this, thus removing the askarel, and the Fuller's earth remains as ash. This procedure is followed by Rollins Co. for an example (see Appendix 2). The GEDCOR one cubic foot package is ideal for smaller quantities.

When large volumes of earth, etc. are to be disposed of by burial in an approved supervised chemical land fill, it is usually cheaper to dispose of smaller amounts of Fuller's earth, filters, etc. along with the contaminated earth. This is a matter of economics and must be judged on a one-by-one basis.

Askarels and PCB's are not presently found on "The List of Hazardous Materials" in the Code of Federal Regulations -- Title 49 Section 1172.5 and therefore do not require strict labeling or special containers. Other considerations dictate that the containers of contaminated materials be

sound and leak free and properly labeled. From a practical standpoint, if large volumes of non-burnable waste is to be packed for shipment to a burial site, drums with removable covers with seals should be utilized. The "quick snap" retaining ring is preferable to a nut and bolt retainer ring locking device to reduce the time to close. If used containers with the nut and bolt device are used, new nuts and bolts will reduce the time element since older containers usually have rusted or damaged hardware.

If "used" containers are utilized, make sure that they do not have old labels such as "caustic", "explosive", etc. that could cause confusion.

The pre-planning to cope with askarel spills should include identifying sources of used as well as new drums for containment. The "used" container supplier is usually located in out-of-way places and experience has been poor when the "yellow page of the telephone book" has been resorted to at the last moment.

Unless containers especially built for askarel service are available, such as are used to supply askarel from the factory, which are 16 gage steel with special bungs and rims, it is not advisable to ship full containers of the liquid due to the spillage potential that exists in shipment. If large volumes of burnables or non-burnables are to be disposed of, surplus liquids can be mixed with these. The resultant semi-solid waste is easier to handle. This approach with regards to non-burnables should be limited since incineration of the liquid is the most desirable disposal method. When the liquid is incinerated, it no longer poses a potential problem to the environment.

Test Sample Disposal

Spent samples used for testing should not be mixed with other insulating liquids since this increases the volume of liquid to be disposed of. The GEDCOR approach mentioned earlier is one solution.

When the askarel is mixed with other agents due to the nature of the test, for example Karl Fischer reagents, the different materials should be separated and disposed of separately. In this case the askarel is easy to separate due to the difference in density. The askarel is then disposed of as mentioned above.

The Karl Fischer reagent should then be sent to a chemical disposal facility. This may be the same facility that disposes of askarels.

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Commercial or university laboratories can usually furnish the names of service organizations that offer this chemical disposal service.

RESPONSIBILITY

In the case of spills in transit from the factory to the user where the prime responsibility does not lie with I&SED, the working agreements between I&SED and the various product departments must be followed. The responsibility of Containment-Notification-Removal/Disposal may belong to a third party. Unauthorized action on the part of I&SED may expose a product department to obligations and expense that should have been borne by the third party.

REPORTING

When receiving or forwarding a report of a spill, the following information should be furnished/recorded:

1. Name, official title and function of the caller.
2. Information available concerning the spill.
 - a. Exact location -- in sufficient detail to locate the site on maps and on the ground.

- b. Date and time of occurrence.
- c. Amount of material spilled.
- d. Name and emergency telephone number of transportation company.
- e. Condition of transport equipment.
- f. Condition of equipment containing askarel.
- g. Who else has been informed.
- h. Disposition of casualties, if any.
- i. Names and addresses of witnesses.

3. How to contact the caller or a responsible party at or near the scene.

4. Whether Local, State and Federal pollution agencies have been informed. If yes, name and telephone numbers of individuals.

People at the scene should be informed that the material is fire resistant, protective clothing such as rubber boots and gloves of Neoprene or PVC should be worn when handling these materials to avoid possible skin irritation and PREVENT THE ASKAREL FROM ENTERING THE WATER SYSTEM -- DO NOT FLUSH.

APPENDIX 1

LISTING OF NAMES USED FOR PCB'S BY MANUFACTURERS

<u>Name</u>	<u>Manufacturer</u>
Aroclor	Monsanto
Asbestol	American Corp
Askarel	(1)
Chlorextol	Allis Chalmers
Diaclor	Sangamo Electric
Dykanol	Cornell Dubilier
Elemex	McGraw Edison
Hyvol	Aerovox
Inerteen	Westinghouse Electric
No-Flamol	Wagner Electric
Pyranol	General Electric
Saf-T-Kuhl	Kuhlman Electric
Clophen	Bayer (Germany)
DK	Caffaro (Italy)
Fencior	Caffaro (Italy)
Kennechlor	Mitsubishi (Japan)
Phenoclor	Prodelec (France)
Pyralene	Prodelec (France)
Santotherm	Mitsubishi (Japan)

¹Generic name used for insulating liquids in capacitors
and transformers; may contain PCB's.

Note: Does not include all capacitor manufacturers.
Will be updated later.

APPENDIX 2

Disposal Services -- See ANSI C107.1 latest revision Appendix A for additional details.

Call your regional Environmental Protective Agency Office for listing of other facilities. See Appendix 4.

The firms listed below (not all-inclusive) will accept PCB for treatment or disposal as noted.

1. California Class I Landfills

- (a) Casmalia Disposal Site
Santa Barbara, California (805-969-4703)
Bulk Liquids and drummed materials.
- (b) BKK Corporation
Wilmington, California (213-775-3607)
All forms.
- (c) Environmental Protection Corporation
Bakersfield, California
All forms.
- (d) County of Los Angeles
Whittier, California (213-699-7411)
Facilities: Palos Verdes
Calabasas
All forms.
- (e) Richmond Sanitary Service
Richmond, California (415-234-3304)
All forms.
- (f) San Diego County
San Diego, California (714-565-5703)
All forms.
- (g) Ventura County Dept. of Public Works
Ventura, California (805-648-2717)
All forms.

2. Chemical Waste Disposal Co.
Elizabeth, N.J. (201-351-5460)
Disposal by incineration.

3. Chem-Trol Pollution Services, Inc.
P.O. Box 200
1550 Balmer Road
Model City, N.Y. 14107
Phone: 716 754-8231

Can handle solids and liquids by incineration or land disposal.

This organization has facilities and services capable of handling:

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- (1) Liquids. Askarels alone or mixed with solvents or oils. Disposal by high-temperature incineration.
 - (2) Solids (software). Askarel-soaked compounds, rags, cartons, absorbing earths, etc. Disposal by incineration or scientific landfill.
 - (3) Solids (hardware). Capacitors, transformer tanks, cores, askarel-soaked metals. Disposal by scientific landfill. Has solvent extraction capability.
4. Crowley Maritime Corp.
1102 SW Massachusetts St. (206-682-0660)
Seattle, Washington 98106
 5. Hyon Waste Management Services, Inc.
Chicago, Ill. (312-646-0016)

Can handle solids and liquids by incineration.
 6. Monsanto Company
800 North Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: 314 694-3352

Handles only liquid askarels manufactured by Monsanto. Disposal is by incineration.

This organization has facilities and services capable of handling askarel liquids alone or mixed with other oils or solvents by high-temperature incineration. Liquid is pumped through a gun with atomizing steam into incinerator. Temperatures are maintained at 2000°F with auxiliary natural gas. Exit gases are quenched to 180°F by contact with water. Gas is then passed through a high-energy vanturi scrubber for removal of particulates. Before exhausting to air (110°F), gases are passed through a packed column scrubber to remove HCl. Askarel liquids containing more than 1 percent water, or any phosphate esters cannot be accepted.

7. Nuclear Engineering Co., Inc.
Louisville, Ky. (502-426-7160)

Facilities: Sheffield, Ill.
Beatty, Nev.

Disposal by landfill. Can handle drummed liquids and solids.

Nuclear Engineering Company
Eastern Division
P. O. Box 146
Morehead, Ky. 40351
Phone: 606 784-6611

Nuclear Engineering Company
Disposal Division
Sheffield, Ill. 61341
Phone: 815 454-2624

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APPENDIX 3

<u>GE Location & Product</u>	<u>Telephone</u>	<u>Contact</u>
Power Transformer Pittsfield, Mass.	(413)-494-1110))	These numbers are guarded 24 hours per day to provide assistance
Medium Transformer Rome, Georgia	(404)-234-0211))	
Distribution Transformer Pittsfield, Mass.	(413)-494-1110))	
Capacitor Department Hudson Falls, N.Y. Ft. Edward, N.Y.	8-232-8224	R. B. Hamell Product Service Home phone: (518)-638-8970
	8-232-8380	R. J. Marquis Mgr. Manufacturing Engineering Home phone: (518)-739-8091
	8-232-8412	R. H. Kimball Home phone: (518)-792-0142

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Environmental Protection Agency
Region I, Room 2303
John F. Kennedy Federal Building
Boston, Massachusetts 02203
Tel: (617) 223-7265

Environmental Protection Agency
Regional II, Room 908
26 Federal Plaza
New York, New York 10007
Tel: (201) 548-8730

Environmental Protection Agency
Region III
Curtis Bldg.
6th and Walnut Streets
Philadelphia, Pennsylvania 19108
Tel: (215) 597-9898

Environmental Protection Agency
Region IV
1421 Peachtree St., NE
Atlanta, Georgia 30309
Tel: (404) 526-5062

Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604
Tel: (312) 896-7591

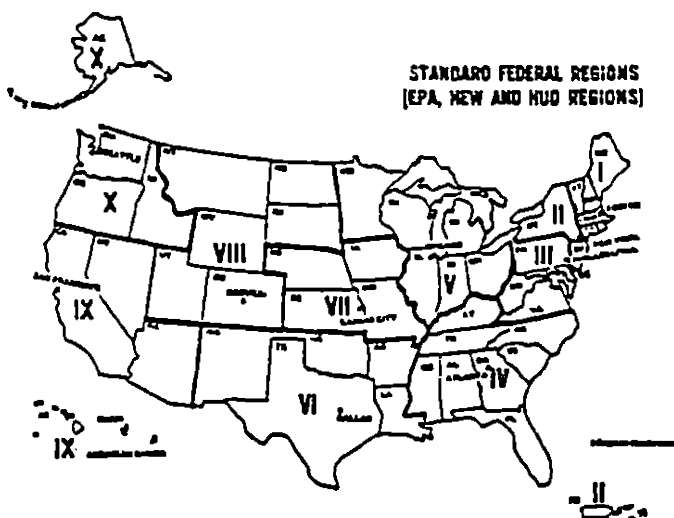
Environmental Protection Agency
Region VI, Suite 1600
1600 Patterson St.
Dallas, Texas 75201
Tel: (214) 749-3840

Environmental Protection Agency
Region VII
1735 Baltimore Ave.
Kansas City, Missouri 64108
Tel: (816) 374-3778

Environmental Protection Agency
Region VIII, Suite 900
1860 Lincoln Street
Denver, Colorado 80203
Tel: (303) 837-3880

Environmental Protection Agency
Region IX
100 California Street
San Francisco, California 94111
Tel: (415) 556-6254

Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101
Tel: (206) 442-4343



STANDARD FEDERAL REGIONS
(EPA, HEW AND HUD REGIONS)

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APPENDIX 5

ANALYTICAL PROCEDURES AND LABORATORY SERVICE ORGANIZATIONS

B1. General

Analysis for PCB in environmental samples is a tedious process due to the very low levels (ppb or ppt) which are of interest and due to the high sensitivity of the electron capture chromatographic procedure. It cannot be overemphasized that extreme care must be taken to ensure first that the sample is representative and second that sufficient numbers of blanks, and sample replicates are tested to define detectability limits and precision of the particular equipment and procedure being used. Cleanliness of sampling devices and containers and their extraction is also important. Analytical procedures for the determination of PCBs in air, water and sediments are given in Section B3.

B2. Laboratories

For a listing of laboratories offering services for PCB analysis refer to Directory of Testing Laboratories publication STP333A available from the American Society for Testing and Materials (ASTM) 1916 Race Street, Philadelphia, Pa. 19103. If an outside laboratory is used, a verification of capability is recommended.

B3. Analytical Procedures

(See ASTM D3304-74, "Analysis of Environmental Materials for Polychlorinated Biphenyls", reference.)

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