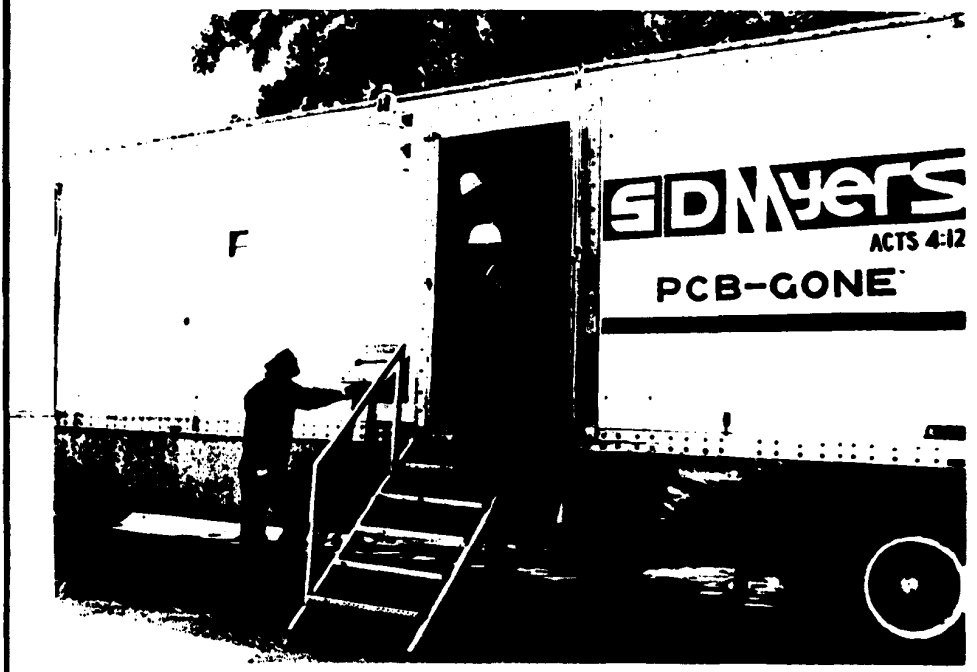
PCB-GONE™

Acts 4:12

DIVISION OF SD Myers TRANSFORMER CONSULTANTS

800-321-9580 • 216-929-2847

P.O. Box 3575 • Akron, Ohio 44310-0575



PCB-GONE™

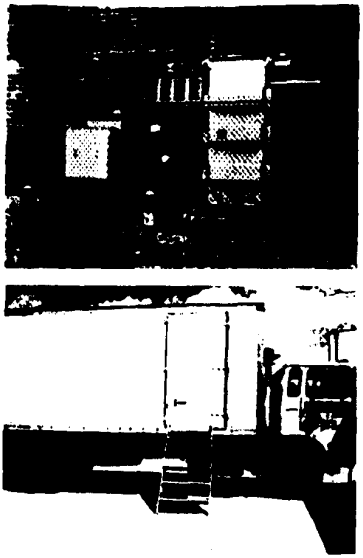
An exclusive chemical process
for the destruction of
Polychlorinated Biphenyls (PCBs).

Presented for public and commercial approval as regulated by the United States Environmental Protection Agency.

MONS 014776

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The mobile test laboratory is equipped with the electron capture gas chromatograph, supplies, and spill prevention and clean-up materials. The laboratory has complete climate control.



Inside the **PCB-Gone™** processor, the drip-proof skids with decking, insulated piping, and reactor can be seen. This unit is operated from a centralized control panel in the front of the trailer.

S. D. Myers, Inc. has developed their own system of chemically dechlorinating transformer oils contaminated with Polychlorinated Biphenyls (PCBs) and thereby destroying them. The process is housed in a mobile 40' semi-trailer specially designed to prevent exposure to humans and the environment and safely handle these liquids utilizing drip-proof skids, dikes, and a sophisticated automatic control system. The process has demonstrated its ability to destroy PCBs in contaminated oils at an efficiency of 99.9+ percent.

S. D. Myers, Inc., the pioneer in reclamation of oils in energized transformers, has been the leader in this field for the past seventeen years. In addition to servicing 50,000 energized transformers, S. D. Myers, Inc. has designed and manufactured over eighty pieces of oil handling equipment presently in service nationwide and abroad. Our continuous or batch treatment processing enables **PCB-Gone™** to operate on either energized or deenergized transformers. **PCB-Gone™** has been proven to be reliable, efficient, and safe to the environment.

S. D. Myers, Inc. with its central laboratory in Akron, Ohio, was the originator of "on-site" transformer oil testing with mobile laboratories that travel to the location (all of continental U.S.). The corporation has also established the criteria for evaluating "in-service" transformer oils that has gained nearly worldwide acceptance. Our laboratory is the leader in testing of PCBs in transformer oils as well as gas-in-oil analysis using gas chromatographic techniques.

The **PCB-Gone™** process results in a finished product (transformer oil free of PCBs) that has "like new" characteristics and is suitable for reuse as a dielectric insulating fluid in transformers and/or other electrical apparatus. Our in-house testing facilities as well as approved independent and EPA laboratories have confirmed that the **PCB-Gone™** process is effective in destroying PCBs in oil while yielding by-products that are environmentally safe and not harmful to humankind.

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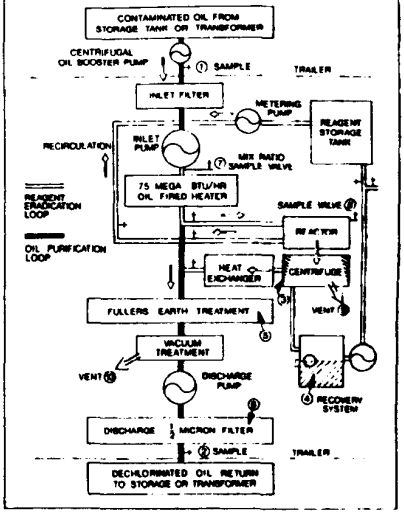
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BRIEF DESCRIPTION OF FLOW AND OPERATION

- Oil contaminated with PCB is drawn from a storage tank or transformer. The initial PCB contamination level (sample #1) is verified on-site using the portable electron capture gas chromatograph in the mobile support vehicle laboratory.
- The oil then passes through a special inlet filter to protect the inlet pump.
- Reagent is drawn from storage and injected into the oil on the suction side on the inlet pump. A flow meter gives the operator control over the predetermined mix ratio (sample #7) that is based mainly on contamination level.
- The inlet pump is a positive displacement rotary gear pump with pressure regulation, flow control, and recirculation for total variable flow.
- The reagent and oil are then heated in an oil fired heater. This heater is monitored by thermostatic control, flame sensor, differential pressure, and a flow switch.
- The oil/reagent mixture is then injected into the 300 gallon specially designed chemical reactor where the PCB is destroyed. Here the oil is checked for the pre-discharge PCB count (sample #8). Both mechanical and electrical overpressure and temperature devices monitor the reactor.
- Next, the dechlorinated oil and reagent are separated into pure streams by a centrifuge. A solid, innocuous by-product is periodically discharged (sample #3) that was proven to be environmentally safe. Vent gases from the centrifuge were extensively tested (sample #9) and also found to be safe (both gases and condensables).
- The used reagent is automatically returned to the storage tank for reuse, or tested (sample #4) and disposed of according to the scope of our approval. The reagent is PCB free and is not dangerous to handle.
- The dechlorinated oil is then cooled in a heat exchanger that provides both acceptable reclamation temperatures (~200°F) and heat to the reagent storage tank.
- The oil is then reclaimed in a S.D. Myers, Inc. oil purifier consisting of dual fullers earth filtering tanks (sample #5); a vacuum dehydrator (vent gas #10); and a final ½ micron filter with disposable paper cartridges (sample #6).
- The discharge pump, which returns the oil to the desired location, is also a variable flow positive displacement rotary gear pump with pressure regulation.
- The final oil sample (sample #2) is drawn for verification of performance. The PCB-Gone™ process has been demonstrated to perform as follows:

SIMPLIFIED DESCRIPTION OF FLOW



PCB destruction — 2100 to 0.5 ppm

Dielectric breakdown voltage	40 KV
Particle filtration	0.5 micron
Acidity	0.03 mgKOH/gram
Water content	10 ppm

EPA REGULATIONS AND QUALITY ASSURANCE PROCEDURES

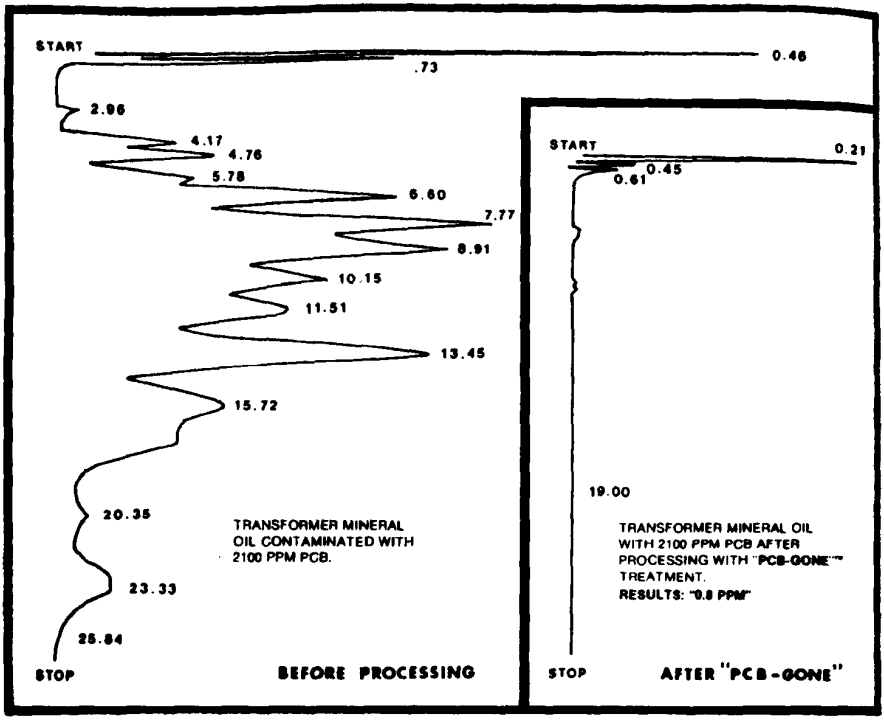
The waste volumes of the PCB-Gone™ process are all free of PCB. It is important to remember that all materials that have a limited life and must be eventually disposed, encounter the oil after the dechlorination process. The operators of the PCB-Gone™ process are all experienced in oil handling. Our records and on-site analysis along with detailed quality control sheets will verify the PCB levels in the ten sample locations.

S.D. Myers, Inc. is well aware that the written conditions of the U.S. E.P.A. approval require that PCB laden materials above the prescribed E.P.A. level must be disposed of in an Annex II landfill. The PCB-Gone™ reagent is also non-flammable and not water sensitive to minimize problems. The spill prevention and countermeasure procedures spelled out in the Federal Register are strictly adhered to with the clean-up equipment housed in the support vehicle laboratory.

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The **PCB-Gone™** research program was an in-house program by the Chemists and Engineers at S.D. Myers, Inc. with the following goals in mind:

1. Develop a chemical destruction process for PCBs in transformer oil and later for pure askarel itself.
2. Have this process as safe as possible, i.e. no danger to our operators or the environment.
3. Destroy the PCBs, yet yield a reusable mineral oil for electrical apparatus.
4. The process must be mobile in order to operate at the transformer site, rather than transport the fluid to the **PCB-Gone™** equipment.

The success we have witnessed on all four counts indeed make our process very unique.

The **PCB-Gone™** process utilizes a sodium-based reagent that when reacted with PCBs in transformer oil, yields by-products that have been determined safe. S.D. Myers, Inc. the U.S. E.P.A., and independent testing laboratories have confirmed these results with testing as follows:

- Extensive PCB testing in oils, by-products, air samples, and filter media.
- PCDF and PCDD testing on by-products.
- Skin Sensitization test on guinea pigs by TSCA Topical Patch method on by-products.
- Oil integrity testing by Doble Engineering Co. and S. D. Myers, Inc.
- Environmental Pollution Toxicity test.

The destruction process was demonstrated at a 99.96% efficiency on 2100 ppm.

The S.D. Myers, Inc. Manufacturing Division built and tested its first full scale unit with other units ready for production. We present this practical, effective, cost efficient, and environmentally safe method for Polychlorinated Biphenyl destruction in contaminated transformer oil.

MQNS 014779