

Versar inc.

PCB
Versar

May 16, 1978

Gentlemen:

For the past three years, Versar has been performing research on the environmental problems of PCBs for the U. S. Environmental Protection Agency. We have analyzed many different samples of PCBs and have looked closely at the problems associated with this chemical. We would like to pass along to you some information on ways that the new regulations on PCBs and the expected changes in these regulations will effect your transformer repair business.

SPECIAL LABELS AND DISPOSAL REQUIRED FOR ASKARELS

PCBs are the major component of askarel transformer liquids. These askarels have also been sold under the following trade names:

ASKAREL	CHLOREXTOL
PYRANOL	NOFLAMOL
INERTEEN	SAF-T-KUHL
ABESTOL	

In spite of the rather casual ways that askarels have been handled in the past, the vapor from hot askarel can be poisonous. Vaporized askarel recently poisoned some firefighters and utility workers in Toronto (see attached article from Electrical Week). High vapor levels can also result from baking out transformer cores or welding on transformer cases. The long-term health effects of PCB exposure are subtle, but even more serious. A recent study by the National Institute of Occupational Safety and Health reviewed the available information on the health effects of worker exposure to PCBs and concluded by recommending that the OSHA standard decrease the allowable air concentration of PCBs to one tenth the present limit. The NIOSH report is well worth reading if you are handling askarel. The citation is as follows: Criteria for a recommended standard . . . Occupational Exposure to Polychlorinated Biphenyls (PCBs), September, 1977. U. S. Government Printing Office, Washington, D. C. 20402. (\$4.00 per copy)

EPA has recently issued a set of regulations which have the intent of preventing PCBs from getting into the environment because of spills or improper disposal. The regulations apply to everyone who uses, services, repairs,

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transports, disposes of, or is otherwise involved with any PCBs, including askarel transformers. The regulations have the title: Polychlorinated Biphenyls (PCBs) — Disposal and Marking (Federal Register, February 17, 1978). You can get a free copy by calling the EPA Industry Assistance Office toll free (800) 424-9065.

The basic labeling and disposal requirements for askarel transformers are as follows (check the regulations for exact details):

Labels: Special labels must be applied to all askarel transformers by January 1, 1979. Labels must be applied to PCB containers and to PCB storage areas by July 1, 1978. Labels must be applied to trucks carrying askarel transformers of over 100 pounds (9 gallons) of PCBs as of October 1, 1978.

Disposal of liquid askarel and contaminated solvents: Special high temperature incineration required after April 18, 1978.

Note: The only incinerators known to be able to properly handle liquid PCBs are:

Rollins Environmental Services:

Bridgeport, N.J.	(609) 467-3100
Baton Rouge, LA	(504) 778-1234
Houston, TX	(713) 479-8001

ENSCO:

El Dorado, AK	(501) 863-7173
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Disposal of contaminated rags, fullers earth, etc. with PCB concentrations above 500 parts per million (one pound per ton): Special high temperature incineration (same as liquids) except disposal in approved chemical waste landfills approved until January 1, 1980.

Note: Check with your EPA Regional Office for information on the availability of approved chemical waste landfills.

Disposal of contaminated dirt and debris: High temperature incineration or chemical waste landfill per above.

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Disposal of askarel transformers: Drain transformer and flush with solvent (kerosene, etc.) for 18 hours. Drain solvent and seal transformer. Liquids require high temperature incineration per above. Transformers must then be disposed of in chemical waste landfills.

note: These regulations also apply to other equipment which contains PCBs. This includes certain electromagnets, electric motors, hydraulic systems, compressors and capacitors.

MANY OIL FILLED TRANSFORMERS ARE CONTAMINATED WITH PCBs

A substantial number of oil-filled transformers are contaminated with PCBs. This contamination may have occurred when the transformers were manufactured or during field servicing. The concentration of the PCBs in the 10-C transformer oil is less than 500 parts per million, but is probably above 50 parts per million in one half of the oil-filled transformers. There is no easy way to check transformer oil for the presence of low levels of PCBs. Use of contaminated transformer oil for oiling roads has resulted in actions being taken against repair shops by the EPA, and close attention from the EPA is expected in the future (see attached article from Chemical Week magazine). The EPA is expected to propose new regulations within the next few weeks that would require special high temperature incineration of any oil containing over 50 parts per million PCBs, and ban the further use of oil containing any PCBs as road oil.

The precautions necessary to protect the health of your workers and the cost of disposing of waste transformer oil and contaminated materials will both depend on the concentration of PCBs in the oil. PCBs are completely soluble in transformer oil, and there is no easy test based on color, smell, specific gravity, electrical characteristics or other physical property that can reveal the presence of small quantities of PCBs in oil.

Quantitative analysis for PCBs is complicated because the commercial PCB^x is actually a mixture of about thirty different, but similar, chemicals. Quantitative analysis for PCBs requires that these different chemicals be separated

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from each other and from other non-PCB chemicals such as trichlorobenzene and naturally occurring chlorine and sulfur compounds that interfere with the analysis for PCBs. The concentration of the different types of PCB chemicals must be determined separately, and the results added to determine total amount of PCBs in the oil.

Reliable analysis for PCBs requires the use of an electron capture gas chromatograph, experienced lab technicians, and considerable experience in analyzing for PCBs. Versar routinely performs analyses for PCBs, and we know how to get the information which you will need to make your plans for repairing oil-filled transformers. The attached price list is for the analysis of PCBs in 10-C transformer oil. The range of concentrations for quantitative results (10 - 1000 parts per million by weight) covers the cut-off points for the various regulations. The accuracy of $\pm 10\%$ is not the ultimate that we can achieve, but should be adequate for the information you need; it takes more work to get greater accuracy and the price goes up accordingly. Analysis for PCBs in other materials such as silicone fluid, dirt, river sediments, fish, etc., can also be done in our lab; the price depends on the work involved and the accuracy required. We will be glad to quote prices based on your specific problem.

PCBs are no longer being manufactured and askarel transformers are no longer being made. However, the PCB problem is going to remain with us for the next 20 to 30 years because of the large number of askarel and contaminated oil-filled transformers now in service that will require maintenance. EPA and OSHA actions to assure safe handling and disposal of PCBs are just starting and will continue for as long as there are PCBs in service. PCBs will be your problem to the extent that you don't know what is in the transformer that you are working on. Quantitative analysis for PCBs in the oil of transformers being repaired will be needed for a long time to come, and field sampling surveys to determine the concentration of PCBs in existing transformers may be required in some cases. Versar is in the business of furnishing analytical chemical services, and we would be glad to have the opportunity to help you live with the problem of PCBs.

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Sincerely yours,

Nancy Jean Gross
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Analytical Laboratory Services
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