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INFOBulletin #5

MAJOR APPLIANCES AND PCB SMALL CAPACITORS

A small number of major home appliances, primarily room air conditioners and microwave ovens, manufactured before 1979 contained capacitors made with PCBs (polychlorinated biphenyls). Most capacitors contained such small quantities of PCBs that they were not directly regulated by the U.S. Environmental Protection Agency (EPA). Due to age, most of these appliances have already passed through the waste stream. Very few major home appliances discarded now and in the future will contain PCB capacitors.

Appliance Capacitors: PCBs are oily fluids with thermal and dielectric properties which made them an ideal electrolytic substance. Small PCB capacitors were sometimes used as running capacitors, which help electric motors operate more smoothly by minimizing voltage fluctuations. Most pre-1979 PCB small capacitors have metal shells; no PCB capacitors were used in products manufactured after 1979.

Some home appliances also have starting capacitors, which create a high voltage charge to help start the electric motor. Starting capacitors contained only dry non-PCB electrolyte substances and usually have plastic shells.

PCB Ban: In 1979 EPA banned the manufacture and sale of PCBs. Large capacitors containing three pounds of PCBs or more were required to be replaced by 1988. However, small capacitors of the type used in household appliances were permitted to stay in service for their remaining useful life.

PCB capacitors are known to have been used in air conditioners and microwave ovens, and to a limited extent in refrigerators and freezers. A 1988 letter from EPA to state environmental agencies stated:

> "We have not uncovered any evidence that PCB small capacitors were used in household washers, clothes dryers, dishwashers, hot water heaters, garbage disposers, trash compactors, conventional ovens, ranges, or stoves."

Appliance Useful Life: Based on current average life expectancies, most of the pre-1979 household appliances that may contain PCB capacitors have already passed through the municipal solid waste stream. (See table on next page.)

Appliance Type	Average Life
Microwave Ovens	12
Refrigerators	20
Freezers	18
Room Air Conditioners	14

Source: Data from Sept 1996 *Appliance* magazine

A 1990 study of discarded home appliances by the Scott County, Iowa Sanitary Landfill Commission confirmed the EPA's analysis that very few major home appliances used PCB capacitors (see table below). The Scott County study also found that fluorescent tube ballasts removed from ranges were conventional core-and-coil type rated 15 watts or less, and that none contained PCBs.

Appliance Type	Appliances Collected	Number of PCB Capacitors
Air Conditioners	30	32
Microwave Ovens	37	14
Dryers	33	0
Clothes Washers	34	0
Ranges	41	0
Refrigerators	91	0
Freezers	17	0
Dishwashers	30	0
Dehumidifiers	3	0
Trash Compactors	3	0

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