INCIDENTAL PCBs

The Issue

The U.S. EPA's plan to regulate "incidental PCBs" at levels less than 50 parts per million (ppm) is totally unnecessary for the protection of public health and the environment. Such regulations would be a tragic waste of the Agency's PCB resources and would work a substantial economic hardship on the chemical industry, particularly small producers. Considering the universe of PCB issues with which EPA must wrestle, concern about incidental PCBs represents a "straining at gnats."

Hundreds of Pounds versus Hundreds of Millions of Pounds

"Incidental PCBs" are trace-level impurities unintentionally created during certain chemical processes, principally those involving a chlorine source such as chlorine or a chlorinated solvent, hydrocarbons and heat. Even such simple operations as treating sewage with chlorine at a municipal treatment facility can generate incidental PCBs at the ppm level. Incidental PCBs at levels above 50 ppm already are EPA regulated.

A recent Chemical Manufacturers Association (CMA) survey, demonstrates that incidental PCBs lower than 50 ppm constitute a non-problem, whose control is unnecessary and makes absolutely no sense from a risk/benefit viewpoint. The survey, conducted by the Regulatory Research Service and published in November 1981, queried about 200 CMA-member firms, of which 85 responded. These represent about a third of all chemical industry sales.

Twenty-six of these, believed to account for the bulk of incidental PCBs theoretically produced in the U.S., reported 135 processes that generate about 13,800 pounds per year of PCBs at levels less than 50 ppm. About 90 percent of these PCBs are of the non-commercial "monochloro" and "dichloro" variety whose half-life for environmental degradation is a matter of several weeks.

The survey also showed that about 95 percent of the 13,800 pounds is disposed of in an EPA-regulated manner through incineration, landfilling, and underground injection. The remaining five percent (660 pounds) exists either in chemical intermediates and industrial compounds or is encapsulated in commercial goods, such as polymers and paint films. None of these uses or products poses any significant exposure risk to the general public or workers.

Contrast this situation -- this 660 pounds of incidental PCBs -- with the roughly 800 million pounds of old PCBs still present in the environment. About 350 million of these pounds are still authorized by EPA for use in heavy-duty electrical equipment. Another 300 million pounds are in storage or have been disposed of, much of this in landfills. The remaining 150 million pounds is free and mobile in air, water and soil, according to a 1979 National Research Council study ("Polychlorinated Biphenyls," National Academy of Sciences, Washington, D.C.).

Again, to keep the incidental-PCB issue in perspective, it should be noted that the amount of incidental PCBs likely to be generated between now and the year 2000 would be less than 0.5 percent of the old, environmentally free PCBs expected to degrade during the same period.

How to control the existing 800 million pounds of PCBs is a question worthy of EPA's attention. It is an issue with which the agency has been grappling for the last several years. By comparison, the issue of 660 pounds of incidental PCBs at less than 50 ppm ranks as a genuine molehill, and rightfully so: the health or environmental risk posed by these incidental PCBs is next to non-existent. In fact, many of us are exposed everyday to considerably more vaporized PCBs from fluorescent light fixtures (a use excluded from EPA regulations) than we would ever experience from incidental PCBs.

Weight of Scientific Evidence

More than 5,000 additional scientific studies on the health effects and toxicity of PCBs have been published since these compounds were singled out for regulation in the 1976 Toxic Substances Control Act. Included among these are about two dozen epidemiological studies of exposed workers which indicate that the health hazards of PCBs have been greatly exaggerated.

These occupational studies, which include research on more than 2,500 electrical equipment manufacturing workers by the National Institute for Occupational Safety and Health, show that while exposure to PCBs can cause temporary skin problems, there are no clinically observable long-term health effects, including cancer.

Other studies of non-occupationally exposed populations have found neither dermatitis nor other clinical evidence of exposure-related effects.

The same 1979 National Research Council report cited earlier states that: "Although PCBs have been detected in the U.S. population, there have been no documented cases of PCB intoxication of humans other than those related to industrial exposure. Effects, when detectable, have been subtle rather than overt." (page 122)

Reviews by several independent bodies of PCB health effects tests involving animals demonstrate that PCBs are not "deadly toxins" as occasionally misrepresented in the new media.

In short, the scientific facts do not support the belief that any exposure of humans to PCBs is significant and may present an unreasonable risk.

Suppose CMA Survey Estimates are Incorrect

Suppose CMA's partial survey of incidental PCBs seriously underestimates their quantity, that in fact 100 times 13,800 pounds per year are being produced and that 66,000 -- not 660 -- pounds exist in intermediate chemicals or commercial goods.

Assuming the fate of this larger quantity is in essentially the same ratio found in the survey, even this amount of incidental PCBs still would not merit EPA's regulatory attention. The vast majority of it still would be subject to controlled disposal, and the remainder would pose no significant exposure risk to the general public or workers.

Shaky Measurements

If, despite convincing evidence to the contrary, EPA decides to proceed with regulating less-than-50 ppm incidental PCBs, it will confront some tough technical problems. Another CMA study, requested by the Agency in the EDF court action and submitted in August 1981, found that the ability of current analytical technology to accurately measure PCBs at levels less than 50 ppm varies considerably, depending upon the type of PCB involved

and the chemical stream being analyzed. Measurement limits can range from less than one ppm to no better than several hundred ppm. In addition, the precision and reproducibility of measurements on the same sample vary widely. Such a shaky analytical situation does not make for trouble-free industry compliance or agency enforcement action. It is, however, fertile ground for lawsuits and countersuits.

Compliance Problems and Costs

The chemical industry would find it difficult and very costly to attempt to comply with an EPA low-level incidental PCB control program. To date, the industry has had little success in reducing low concentrations of incidental PCBs above 50 ppm. This is attested to by the more than 400 chemical company requests now pending at EPA for exemptions from the current rules regulating incidental PCBs above 50 ppm.

Control of incidentally generated PCBs at trace levels, if technically possible, won't come cheaply. The industry estimates that developing a low-level PCB measurement protocol for an entire chemical process costs about $120,000. The necessary test equipment (gas chromatography/mass spectrometry) costs about $250,000 and another $12,000 per year to maintain.

Actual control of incidental PCB generation would be more expensive. Two case histories illustrate the point: One firm spent $800,000 to reduce PCBs in its process for manufacturing a specialty chemical intermediate; another firm spent $5.6 million to design and construct a new system for removing PCBs after their incidental generation.

Many small chemical companies cannot afford expenditures of this magnitude. They probably will respond to a new low-level regulatory program by simply dropping the process or material that contains the incidental PCBs. Product innovation will take a step backward, and jobs may be lost.

A Non-Problem

Administrator Gorsuch has said on many occasions that her aim is to concentrate the Agency's resources on real problems whose solutions will result in genuine environmental improvement. The low-level incidental PCB issue represents an excellent chance to put this philosophy into practice. Incidental PCBs at less than 50 ppm are a non-problem; the total amount in the environment from this source is insignificant; the health and environmental impact is nil. They are a PCB footnote and should not be allowed to divert the Agency's efforts and attention from the important PCB tasks it now faces.

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MONS 011559

3-17-82 [illegible]

PCB'S --
A PERSPECTIVE

PCB'S HAVE RECEIVED CONSIDERABLE ATTENTION OVER THE PAST DECADE BECAUSE OF INCREASING CONCERNS ~~OVER~~ about THEIR POSSIBLE EFFECTS ON HUMAN HEALTH AND THE ENVIRONMENT.

AS A CLASS OF CHEMICALS THEY ARE ONE OF THE MOST PERVASIVE, (MOST MISUNDERSTOOD,) MOST FEARED AND MOST MALIGNED GROUPS OF CHEMICALS KNOWN TO MAN. IN ADDITION, THEY ARE ONE OF THE MOST REGULATED CHEMICALS IN THE WORLD.

~~THIS~~ In my PRESENTATION, ~~WILL~~ I will ~~BROADLY~~ DISCUSS THE ~~MORE~~ SIGNIFICANT ~~PCB~~ CONCERNS AND ISSUES surrounding PCBs IN THE UNITED STATES. HOPEFULLY, IT WILL PUT PCB'S INTO PERSPECTIVE SO THAT YOU, AS INDIVIDUALS, CAN MAKE YOUR OWN INFORMED JUDGEMENTS ON THE~~SE~~ ISSUES.

FIRST, LET'S PUT THE HEALTH AND TOXICITY CONCERNS INTO PERSPECTIVE.

~~CONCLUSIONS FROM~~ THE MOST RECENT REVIEWS OF ~~THE AVAILABLE~~ HEALTH AND TOXICITY STUDIES, ~~WITH~~ which place A PARTICULAR EMPHASIS ON RECENT HUMAN EPIDEMIOLOGICAL DATA, ~~STATE~~ conclude THAT:

1. PCB'S DO NOT POSE ANY SERIOUS RISK OF INJURY TO HUMAN HEALTH.
2. PCB'S ARE NOT HUMAN CARCINOGENS.

3. PCB'S HAVE NOT BEEN SHOWN TO ADVERSELY AFFECT HUMAN REPRODUCTION OR CAUSE BIRTH DEFECTS. (SIMPLY STATED, PCB'S ARE NOT MUTAGENS OR TERATOGENS.) not Simple for lay person!

4. THE ONLY PROVEN ADVERSE HUMAN HEALTH EFFECTS RESULTING FROM PCB'S ~~IS~~ are two skin conditions, DERMATITIS AND CHLORACNE, WHICH ~~IS~~ are REVERSIBLE AFTER DISCONTINUANCE OF EXPOSURE.

Completed within the past few months,
THESE CONCLUSIONS ARE BASED UPON CRITICAL REVIEWS ~~WITHIN THE PAST FEW MONTHS OF~~ OF THE AVAILABLE WORLDWIDE SCIENTIFIC DATA.

I SHOULD ~~POINT OUT~~ emphasize THAT THESE CONCLUSIONS ~~IN THEMSELVES~~ ARE NOT NEW OR STARTLING TO SCIENTISTS WHO HAVE BEEN INVOLVED IN (STUDIES ~~OF~~ PCB'S) OVER THE PAST DECADE. ~~BUT THAT~~ However, THE WEIGHT OF the NEW EVIDENCE UPON WHICH THEY'RE BASED SHOULD REINFORCE THE BELIEVABILITY AND, HOPEFULLY, RESOLVE THE ISSUE OF PCB HEALTH CONCERNS.

THESE REVIEWS WERE CONDUCTED INDEPENDENTLY BY SEVERAL GROUPS OF SCIENTIFIC EXPERTS WHICH INCLUDED THE FIELDS OF CHEMISTRY, TOXICOLOGY, PATHOLOGY, EPIDEMIOLOGY, INDUSTRIAL HYGIENE AND MEDICINE, INCLUDING OCCUPATIONAL MEDICINE, TO NAME A FEW. THE DATA AND CONCLUSIONS FROM ~~THESE STUDIES~~ (AT LEAST HALF A DOZEN) ~~HAVE BEEN~~ studies were RECENTLY SUBMITTED TO THE U.S. EPA FOR THEIR USE IN DEVELOPING NEW PCB REGULATIONS, ~~ON A TECHNICALLY INFORMED BASIS.~~ NEWS RELEASES HAVE BEEN SENT TO THE MEDIA, BUT THERE IS LITTLE PUBLIC AWARENESS OF THESE SIGNIFICANT STUDIES AND Their IMPLICATIONS. MONS 011561

(I'LL DISCUSS HUMAN HEALTH EFFECTS STUDIES IN MORE DETAIL LATER.)

Since

~~IF~~ THESE CONCLUSIONS ARE ~~INDEED~~ TRUE ---- THAT:

1. PCB'S DO NOT REPRESENT AN UNREASONABLE RISK TO HUMAN HEALTH AND THE ENVIRONMENT,

2. THAT ANY EXPOSURE TO PCB'S IS NOT SIGNIFICANT.....

THEN HOW DID WE AS A NATION GET INTO THE MESS WE'RE IN TODAY REGARDING PCB'S? TODAY IT'S COMMON AND USUAL FOR ≥ PCBs to illicit

PUBLIC FEAR, ALARM AND OUTCRY AT THE MERE SUGGESTION OF PCB EXPOSURE; IN SOME CASES, APPROACHING MASS HYSTERIA.....

~~PUBLIC (GOVERNMENTAL)~~ AND ~~PRIVATE (INDUSTRY) EXPENDITURES ANNUALLY IN THE~~ BILLION ~~DOLLAR RANGE~~ TO SOLVE A NON-PROBLEM. THIS SAYS NOTHING ABOUT THE SIGNIFICANT ADDED COSTS PASSED ON TO YOU AS INDIVIDUALS AND CONSUMERS.

have spent

$

PCB'S ARE THE ONLY CHEMICAL SUBSTANCES WHICH CONGRESS SINGLED OUT AND SPECIFICALLY TARGETED FOR IMMEDIATE REGULATORY ACTION UNDER THE TOXIC SUBSTANCES CONTROL ACT OF 1976 (TSCA). ~~PCB BAN~~ REGULATIONS banning PCBs were ~~FINALLY~~ ENACTED IN 1979 and ARE ~~PREMISED~~ based UPON EPA'S BELIEF THAT (1) ANY EXPOSURE OF HUMANS TO PCB'S IS SIGNIFICANT AND (2) THIS EXPOSURE MAY PRESENT AN UNREASONABLE RISK TO HEALTH.

What did EPA base its decision on?

THE DATA UPON WHICH TSCA WAS BASED IN 1976 WAS GATHERED GENERALLY PRIOR TO 1974-75. IN THE 10-YEAR PERIOD, 1965 TO (DECEMBER 31) 1975 (WHEN COMPUTER RECORDS ARE AVAILABLE),

-ABOUT 2,800 SCIENTIFIC ARTICLES RELATING TO PCB HEALTH AND TOXICITY STUDIES WERE PUBLISHED AND AVAILABLE ~~TO EPA TO BASE ITS DECISION ON.~~ ONLY ONE HUMAN EXPOSURE INCIDENT (~~THE YUSHO INCIDENT~~) -- WAS AVAILABLE AT THIS TIME.

(not going to be [illegible] of Yusho

HOWEVER, ~~MUCH NEW INFORMATION HAS BEEN PUBLISHED~~ SINCE 1976, new information has been published BASED UPON AN EVEN LARGER NUMBER OF PCB HEALTH AND TOXICITY STUDIES. A RECENT SEARCH OF THE MEDICAL AND SCIENTIFIC LITERATURE SHOWS THAT OVER 5,000 SCIENTIFIC AND TECHNICAL PAPERS ON PCB'S WERE PUBLISHED FROM 1976 TO SEPTEMBER, 1981 ~~(WHEN THE REVIEW WAS DONE).~~ THESE STUDIES INCLUDE ABOUT TWO DOZEN HUMAN EPIDEMIOLOGY (HUMAN EXPOSURE) STUDIES, MOST OF WHICH HAVE BEEN PUBLISHED IN THE LAST 12 TO 18 MONTHS.

THIS ~~IS THE~~ DATA STUDIED HUMAN OCCUPATIONAL AND COMMUNITY EXPOSURE OF ~~SEVERAL~~ THOUSANDS OF PEOPLE OVER THE 50-YEAR TIME PERIOD PCB'S HAVE BEEN IN USE. THIS ~~IS THE~~ DATA ~~THAT~~ SHOWS NO CHRONIC HUMAN HEALTH EFFECTS DUE TO PCB USE ~~AND~~ or EXPOSURE.

IF GOOD SCIENCE COULD PREVAIL IN AN UNEMOTIONAL, UNPOLITICAL CLIMATE, I AND OTHER SCIENTISTS BELIEVE THAT PCB'S WOULD BE CLEARED IN AN OBJECTIVE RE-EVALUATION OF THE KNOWN FACTS. MONSANTO AND SEVERAL OTHER INDUSTRY GROUPS, INCLUDING THE CMA, EEI (UTILITY) AND NUMEROUS OTHERS HAVE ASKED THE FEDERAL EPA FOR SUCH A REVIEW OF THE FACTS. I HOPE WE GET IT -- IN A FAIR AND OBJECTIVE ~~FASHION~~ forum SUCH AS A SCIENCE COURT.

I'D LIKE TO NEXT REVIEW WITH YOU, BRIEFLY, THE CHEMISTRY AND HISTORY OF PCB'S, INCLUDING COMMERCIAL USES, RISKS, BENEFITS AND EARLY ENVIRONMENTAL CONCERNS.

Suitable for non-technical audience?

CHEMISTRY AND STRUCTURE

WHAT ARE PCB'S? THE TERM "POLYCHLORINATED BIPHENYLS", OR "PCB'S", REFERS TO A CLASS OF ORGANIC CHEMICALS KNOWN AS CHLORINATED AROMATIC HYDROCARBONS, INTRODUCED INTO UNITED STATES INDUSTRY IN 1929. CHEMICALLY, THE COMPOUNDS ARE MADE UP OF CARBON, HYDROGEN AND CHLORINE ATOMS.

BECAUSE OF THE POSSIBLE VARIATIONS THAT CAN OCCUR IN SUBSTITUTION AND ARRANGEMENT OF THE 10 AVAILABLE SITES FOR H ATOMS AND/OR CL ATOMS, I.E., COMBINATIONS AND PERMUTATIONS, IT IS THEORETICALLY POSSIBLE TO FORM 209 DIFFERENT CHLORO-BIPHENYL MOLECULES.

COMMERCIALLY PRODUCED PCB'S CONSISTED OF MIXTURES OF THESE 209 POSSIBLE INDIVIDUAL PCB MOLECULES; HOWEVER, ONLY ½ OF THE THEORETICALLY POSSIBLE 209 ISOMERS ARE FORMED DURING COMMERCIAL PCB MANUFACTURE. COMMERCIAL PCB MIXTURES CONTAINED FROM 21% TO 60% CHLORINE (AN AVERAGE OF 3 TO 5 CHLORINE ATOMS PER MOLECULE).

COMMERCIAL PCB MIXTURES TYPICALLY COULD CONTAIN VARIOUS CONTAMINANTS DEPENDING UPON THE PARTICULAR PROCESS USED FOR

MANUFACTURE. THESE IMPURITIES INCLUDED VARIOUS POLYCHLORINATED DIBENZOFURANS (PCDF'S) AND CHLORINATED NAPHTHALENES, WHICH HAVE BEEN IMPLICATED AS BEING AT LEAST PARTLY RESPONSIBLE FOR SOME OF THE TOXICITY REPORTED FOR PCB'S. I'LL HAVE MORE TO SAY ABOUT THESE IMPURITIES LATER.

PROPERTIES AND USES

THE CHEMICAL AND PHYSICAL PROPERTIES OF PCB'S ARE VERY UNIQUE AND IT IS THESE UNIQUE PROPERTIES THAT HAVE LED TO ITS WIDESPREAD USE.

PCB'S ARE CHEMICALLY INERT, STABLE AND FIRE RESISTANT. THEY HAVE A VERY LOW VAPOR PRESSURE (BP RANGES 275°-425°C). THESE COMPOUNDS FUNCTION UNIQUELY AS DIELECTRIC INSULATORS TO ACT AS NON-CONDUCTORS OF DIRECT ELECTRIC CURRENT. THESE PARTICULAR PROPERTIES MADE THEM IDEALLY SUITED FOR ELECTRICAL APPLICATIONS WHERE HIGH-VOLTAGE ARCING COULD OCCUR, AND RESULT IN FIRES AND/OR EXPLOSIONS, DAMAGE TO EQUIPMENT AND CREATE SIGNIFICANT HAZARDS TO HEALTH AND LIFE.

AS THE UNIQUE PROPERTIES OF THIS MATERIAL BECAME MORE FULLY UNDERSTOOD, MANY ADDITIONAL USES WERE FOUND. THEIR FIRE-RESISTANT NATURE MADE THEM AN EXCELLENT CHOICE FOR USE IN HYDRAULIC AND HEAT TRANSFER FLUIDS. THEIR INERTNESS IMPARTED LONG-LASTING QUALITIES TO LUBRICANTS. THEY ALSO IMPROVED THE WATERPROOFING CHARACTERISTICS OF SURFACE COATINGS AND OFFERED SIMILAR AND OTHER BENEFITS TO THE MANUFACTURERS OF CARBONLESS COPY PAPER, PRINTING INKS, PLASTICIZERS AND SPECIAL ADHESIVES.

DISTRIBUTION

OVER FOUR DECADES, PCB'S EVOLVED AS A TRULY UNIQUE CLASS OF CHEMICALS WHICH MET BOTH IMPORTANT SOCIETAL AND INDUSTRY NEEDS. IT WAS WITHIN THIS FRAMEWORK THAT MONSANTO AND OTHER PRODUCERS DEVELOPED A GROWING, WORLDWIDE BUSINESS FOR THESE VERSATILE PRODUCTS. FROM 1930 TO 1977, WHEN PCB MANUFACTURE CEASED IN THE U.S., ABOUT 1.4 BILLION POUNDS OF PCB'S WERE PRODUCED. IT IS ESTIMATED BY VARIOUS SOURCES THAT OVER HALF OF THOSE ARE STILL IN USE TODAY IN ELECTRICAL TRANSFORMERS AND CAPACITORS.

A 1979 REPORT BY THE NATIONAL ACADEMY OF SCIENCES LISTED MONSANTO INDUSTRIAL CHEMICALS COMPANY AS HISTORICALLY THE ONLY IMPORTANT U.S. PRODUCER OF PCB'S. MONSANTO'S PLANTS WERE LOCATED AT ANNISTON, ALABAMA, AND SAUGET, ILLINOIS, WHERE PRODUCTION OF PCB'S ENDED IN 1970 AND 1977, RESPECTIVELY.

PCB'S HAVE ALSO BEEN PRODUCED, IMPORTED OR EXPORTED BY A NUMBER OF OTHER COUNTRIES. OTHER PRODUCING COUNTRIES WERE ITALY, FRANCE, JAPAN, GREAT BRITAIN, AUSTRIA, CZECHOSLOVAKIA, WEST GERMANY, SPAIN AND THE U.S.S.R.

ACCORDING TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY, PCB'S WERE IMPORTED FOR USE BY FINLAND, NEW ZEALAND, CANADA, FRANCE, ITALY, NORWAY, SWEDEN AND GREAT BRITAIN. COUNTRIES WHICH HAVE EXPORTED PCB'S INCLUDE FRANCE, ITALY AND GREAT BRITAIN.

MANY EUROPEAN COUNTRIES STILL ALLOW, AND IN SOME CASES, REQUIRE USE OF PCB EQUIPMENT FOR CERTAIN APPLICATIONS. THESE REQUIREMENTS ARE BASED UPON THEIR OWN RISK/BENEFIT ASSESSMENTS OF THESE COMPOUNDS.

RISK/BENEFIT

THE RISK/BENEFIT ISSUE WITH RESPECT TO PCB'S IS THE KEY TO THE WHOLE PCB PROBLEM. MUCH SOUL-SEARCHING IS BEING DONE TO DEFINE THESE PARAMETERS FOR PCB'S. THE BENEFIT SIDE OF THE EQUATION IS PERHAPS THE EASIER OF THE TWO TO DEFINE.

WE KNOW THE BENEFITS OF USING NON-FLAMMABLE PCB'S IN CERTAIN KEY AND ESSENTIAL INDUSTRIES WHERE TECHNICALLY SUITABLE REPLACEMENTS ARE NOT READILY AVAILABLE. WE CAN CALCULATE THE BENEFIT OF PREVENTING FIRES AND SAVING LIVES IN:

HIGH-RISE BUILDINGS, HOSPITALS, SCHOOLS

UNDERGROUND UTILITY TUNNELS

UNDERGROUND TRANSPORTATION FACILITIES, E.G., SUBWAYS, TRAINS, RIVER TUNNELS, PARKING GARAGES

HYDRAULIC SYSTEMS OF AIRPLANES AND OTHER PUBLIC TRANSPORTATION

UTILITY POWER TRANSMISSION AND DISTRIBUTION CENTERS

HOW DO WE QUANTITATIVELY MEASURE RISK --

THE RISK OF HUMAN HEALTH HAZARD OR

THE RISK OF ENVIRONMENTAL DAMAGE, ETC.,

AND, COMPARE THEM WITH BENEFITS?

THIS RISK/BENEFIT PROBLEM IS NOT UNIQUE TO PCB'S, BUT CONFRONTS US WITH MANY CHEMICALS AND MANY ASPECTS OF LIFE, WHETHER IT'S A NEW MEDICAL/SURGICAL PROCEDURE, A NEW (OR OLD) CHEMICAL, A NEW TOY OR AUTOMOBILE OR A NEW GADGET OR WORK-SAVING APPLIANCE.

ENVIRONMENTAL AND HEALTH CONCERNS

IN THE LATE 1960'S, SOME 40 YEARS AFTER PCB'S WERE INTRODUCED, THE FIRST SIGNS OF POTENTIAL ENVIRONMENTAL PROBLEMS TURNED UP IN TWO SEPARATE EVENTS -- ONE IN JAPAN, THE OTHER IN SWEDEN.

SWEDISH FINDINGS

THE FIRST SIGN OF TROUBLE WAS REPORTED BY A SWEDISH BIOLOGIST. WHILE USING A NEW AND THEN TOTALLY UNIQUE TECHNIQUE, (CHLORINATED PESTICIDE ~~ANALYSIS~~) HE FOR THE FIRST TIME IDENTIFIED PCB'S IN THE BODIES OF FISH. MONSANTO AND OTHERS BEGAN IMMEDIATELY TO STUDY THE SWEDISH WORK. BUT, BEFORE THESE FINDINGS COULD BE CONFIRMED OR DUPLICATED IN THE U.S., ANALYTICAL METHODS HAD TO BE REFINED IN ORDER TO SEPARATE PCB'S FROM THE OTHER CHLORINATED HYDROCARBONS (LIKE DDT) THAT WERE KNOWN TO BE PRESENT IN THE ENVIRONMENT. NEW TECHNIQUES ALSO HAD TO BE DEVELOPED TO ENABLE RESEARCHERS TO IDENTIFY THE CHEMICALS IN THE LOW PARTS PER BILLION RANGES BEING REPORTED.

YUSHO INCIDENT

IN 1968, ABOUT 1,000 PEOPLE IN JAPAN BECAME ILL FROM EATING RICE OIL HEAVILY CONTAMINATED WITH JAPANESE PRODUCED PCB'S AS A RESULT OF AN UNFORTUNATE INDUSTRIAL ACCIDENT. THIS HAS COME TO BE KNOWN AS THE "YUSHO INCIDENT." THE LEVEL OF PCB CONTAMINATION IN THE RICE OIL WAS 2,000-3,000 PARTS PER MILLION, EXTREMELY HIGH CONCENTRATIONS. (FOR COMPARISON, LEVELS BEING REPORTED TODAY IN FISH AND WILDLIFE ARE IN THE LOW PPM AND PPB RANGE.) (PPB EXAMPLE)

SOME NEWS ACCOUNTS LINKED THIS INCIDENT WITH DEATHS, STILL-BIRTHS AND MISCARRIAGES; ~~WHILE~~ BUT IN FACT, NO SUCH CASES WERE ACTUALLY ATTRIBUTED TO THE INCIDENT. PERSONS EXPOSED TO PCB CONTAMINATED RICE OIL DID EXPERIENCE DIZZINESS, NAUSEA, LOSS OF APPETITE, WEAKNESS AND DERMATOLOGICAL SIDE EFFECTS. INFANTS, BORN TO MOTHERS WHO HAD BEEN EXPOSED DURING PREGNANCY, EXHIBITED DARKENED SKIN AT BIRTH; HOWEVER, IN EVERY CASE, THIS CONDITION CLEARED WITHIN THREE WEEKS.

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THE VICTIMS OF THE YUSHO INCIDENT HAVE BEEN SUBJECTED TO EXTENSIVE FOLLOW-UP MEDICAL STUDIES SINCE THE EVENT TO EVALUATE POSSIBLE LONG-TERM OR CHRONIC EFFECTS OF THE EXPOSURE. SOME LONG-TERM CHRONIC HEALTH EFFECTS WERE OBSERVED IN THE YUSHO PATIENTS, INCLUDING CANCER. HOWEVER, RESULTS OF THESE INVESTIGATIONS INDICATE THAT PCB'S PER SE WERE NOT THE CULPRIT IN THE YUSHO INCIDENT. OTHER ORGANIC CONTAMINANTS KNOWN TO BE SIGNIFICANTLY MORE TOXIC THAN PCB'S HAVE BEEN FOUND IN PATIENTS AT HIGH CONCENTRATIONS AND IN JAPANESE MANUFACTURED PCB'S. MEDICAL RESEARCHERS AND SCIENTISTS ARE NOW UNWILLING TO BLAME PCB'S FOR CHRONIC EFFECTS OBSERVED IN THE YUSHO INCIDENT, ESPECIALLY IN LIGHT OF SEVERAL HUMAN EPIDEMIOLOGY STUDIES NOW AVAILABLE RELATED TO PCB EXPOSURE, AS RECENTLY AS AUGUST OF 1981, ~~AT A SCIENTIFIC SYMPOSIUM ON PCB EPIDEMIOLOGY IN NEW YORK CITY,~~ RESEARCHERS AT MT. SINAI HOSPITAL CONCLUDED THAT YUSHO DISEASE WAS NOT CAUSED BY PCB PER SE.

ALTHOUGH CONCLUSIONS ABOUT THAT INCIDENT ~~HAVE BEEN~~ were CLOUDED BY THE UNKNOWN IMPACT OF IMPURITIES IN JAPANESE MADE PCB'S, THE INCIDENT SOUNDED A CAUTIONARY SIGNAL.

U.S. CONCERNS

However, back

IN 1970, WHEN ~~THESE~~ SCIENTIFIC INVESTIGATIONS FIRST CONFIRMED THE PRESENCE OF PCB'S IN THE U.S. ENVIRONMENT ~~IN THE U.S.~~ AND LONG BEFORE INFORMATION REGARDING THE POTENTIAL IMPACT OF THIS CONTAMINATION WAS DETERMINED, MONSANTO, WORKING WITH VARIOUS AFFECTED INDUSTRY SEGMENTS AND GOVERNMENT AGENCIES, VOLUNTARILY BEGAN ITS PROGRAM OF TERMINATING SALES OF PCB'S FOR OPEN APPLICATIONS -- THOSE WHICH COULD LIKELY RESULT IN UNCONTROLLABLE ENTRY INTO THE ENVIRONMENT.

HOWEVER, TERMINATION OF SALES FOR DIELECTRIC USES WOULD HAVE RESULTED IN SEVERE ECONOMIC AND SOCIAL PROBLEMS FOR THE NATION. THIS WAS RECOGNIZED BY THE FEDERAL INTERDEPARTMENTAL TASK FORCE ON PCB'S WHICH CONCLUDED IN 1972 THAT:

"THEIR CONTINUED USE FOR TRANSFORMERS AND CAPACITORS IN THE NEAR FUTURE IS CONSIDERED NECESSARY BECAUSE OF THE SIGNIFICANTLY INCREASED RISK OF FIRE AND EXPLOSION AND THE DISRUPTION OF ELECTRICAL SERVICE WHICH WOULD RESULT FROM A BAN ON PCB USE."

AT THIS TIME, MONSANTO MADE THE CONSCIOUS DECISION TO CONTINUE SUPPLYING PCB'S ONLY TO THE ELECTRICAL POWER DISTRIBUTION INDUSTRY WHERE THEY WERE MARKETED AS DIELECTRIC FLUIDS IN "CLOSED" OR SEALED SYSTEMS SUCH AS TRANSFORMERS AND CAPACITORS. IN CONTINUING THESE SALES, MONSANTO REQUIRED CUSTOMER ASSURANCES THAT THE MATERIALS WOULD BE SAFELY HANDLED AND PROPERLY DISPOSED.

MONSANTO, THE GOVERNMENT AND THE ELECTRICAL INDUSTRY TOGETHER CONCLUDED THAT THE BENEFITS TO SOCIETY OF CONTINUED PCB DIELECTRIC USE IN ENCLOSED ELECTRICAL UNITS FAR OUTWEIGHED THE RISKS. THE KEY TO MANAGING THE RISK WAS SOUND MAINTENANCE PRACTICE AND DISPOSAL CONTROL.

IN 1977, MONSANTO VOLUNTARILY CEASED ALL PRODUCTION OF PCB'S ONCE WE HAD BEEN ASSURED BY THE ELECTRICAL POWER INDUSTRY THAT SUITABLE SUBSTITUTES WERE AVAILABLE.

ENVIRONMENTAL EFFECTS

PCB'S ARE STABLE; THEY RESIST DEGRADATION IN THE ENVIRONMENT AND PERSIST FOR LONG PERIODS OF TIME. AS THEY PERSIST, THEY TEND TO ACCUMULATE IN ANIMALS AS THEY MOVE UP THE FOOD CHAIN. LOWER ANIMAL FORMS CONSUME THEM AND IN TURN ARE CONSUMED BY HIGHER FORMS AND, IN SOME CASES, PCB'S MAY ULTIMATELY REACH HUMANS VIA THE FOOD CHAIN. To date no known human health effects have resulted from food chain sources of PCBs.

THE IMPACT OF PCB CONTAMINATION ON ECOLOGICAL SYSTEMS IS NOT FULLY UNDERSTOOD. HOWEVER, THERE HAVE BEEN A NUMBER OF ATTEMPTS TO SUMMARIZE APPARENT EFFECTS AND TO ESTIMATE POSSIBLE FUTURE IMPACTS.

PCB'S HAVE BECOME WIDESPREAD THROUGH CERTAIN NATURAL AND MAN-MADE MECHANISMS AND ARE OFTEN FOUND AT VARIOUS LEVELS AND LOCATIONS IN THE SOIL, AIR AND WATER.

PCB CONTAMINATION IN URBAN AIR HAS BEEN REPORTED. ALSO, SOME U.S. WATERS AND SEDIMENTS SHOW PCB CONTAMINATION.

PCB'S ARE FOUND AT VARIOUS LEVELS IN ANIMAL AND AQUATIC SPECIES. ONE STUDY CONDUCTED BETWEEN 1970 AND 1974 BY THE U.S. FISH AND WILDLIFE COMMISSION SHOWED PCB RESIDUES IN VARIOUS FRESHWATER FISH, WATERFOWL AND STARLINGS. A 1972-1974 STUDY OF THREE LAKE MICHIGAN FISH SPECIES TAKEN IN THE EASTERN PART OF THE LAKE SHOWED MEAN WHOLE FISH CONCENTRATIONS RANGING FROM 5.24 TO 22.9 PPM IN BLOATERS, SALMON AND LAKE TROUT.

MORE RECENT STUDIES IN THE GREAT LAKES (1979-1980) INDICATE THAT PCB LEVELS IN FISH ARE NOW DECREASING. SIMILAR REPORTS HAVE BEEN MADE FOR FISH IN OTHER PARTS OF THE COUNTRY.

PCB'S HAVE BEEN FOUND IN THE GENERAL U.S. POPULATION. SAMPLES OF HUMAN ADIPOSE TISSUE AND MILK, COLLECTED IN 1973 AND 1974 ~~IN A NATIONAL SURVEY,~~ SHOWED THAT 35.1% AND 40.3% OF THE SAMPLES, RESPECTIVELY, CONTAINED 1 PPM OR MORE PCB'S ON A WETWEIGHT BASIS; ABOUT 5.0% OF EACH STUDY SHOWED GREATER THAN 2 PPM PCB'S.

HEALTH CONCERNS

QUESTIONS HAVE BEEN RAISED IN FOUR AREAS OF POSSIBLE HEALTH EFFECTS OF PCB'S:

(A) SKIN (REDDENING, RASHES, CHLORACNE)
(B) SYSTEMIC EFFECTS (LIVER DAMAGE, RESPIRATORY EFFECTS)
(C) WORKER EXPOSURE
(D) CARCINOGENICITY

IN THE CLASSICAL SHORT-TERM EXPOSURE OR ACUTE TOXICITY SENSE, PCB'S ARE CLASSIFIED AS "SLIGHTLY TOXIC" BY ORAL INGESTION, [LD_{50} 8,000-12,000 MG/KG (SIMILAR TO NaCl-SALT). FOR INHALATION, OSHA HAS ESTABLISHED SAFE EXPOSURE LEVELS FOR WORKERS EXPOSED TO PCB'S. (THE EIGHT-HOUR TIME-WEIGHTED AVERAGE THRESHOLD LIMIT VALUES (TLV) FOR WORKER EXPOSURE ARE 1.0 (42% CHLORINE) TO 0.5 (54% CHLORINE) MG/M^3.)]

SKIN

LONGER-TERM STUDIES ON SKIN EFFECTS USING LABORATORY ANIMALS HAVE SHOWN THE FOLLOWING:

(A) REPEATED AND PROLONGED SKIN CONTACT WITH THE HIGHER CHLORINATED BIPHENYLS CAN PRODUCE SKIN IRRITATION.

(B) HARMFUL AMOUNTS CAN BE ABSORBED UNDER REPEATED, PROLONGED CONDITIONS, SUCH AS BY WEARING LEATHER GOODS THAT HAVE BECOME SATURATED WITH PCB'S.

(C) A SAFE EXPOSURE LEVEL DOES EXIST FOR EACH PCB MATERIAL (I.E., A NO-EFFECT LEVEL).

IN ADDITION, STUDIES IN 218 HUMAN VOLUNTEERS USING THE PATCH TEST TECHNIQUE OF THE U.S. PUBLIC HEALTH SERVICE CONCLUDED THAT (AROCLOR) (PCB) "...HAS NO PRIMARY IRRITANT EFFECT NOR IS IT A SENSITIZER OF HIGH POTENCY...." (MONSANTO RECORDS SHOW THAT THIS STUDY USED AROCLOR 1254.)

HUMAN EXPOSURE STUDIES ALSO INDICATE THAT SKIN EFFECTS ARE REVERSIBLE ONCE THE SOURCE IS REMOVED.

INHALATION/RESPIRATORY STUDIES

SEVERAL ANIMAL TESTS HAVE BEEN PERFORMED TO STUDY THE EFFECTS OF LONG-TERM INHALATION EXPOSURE TO PCB'S. IN SOME CASES IT WAS NECESSARY TO HEAT THE PCB'S IN ORDER TO OBTAIN THE HIGHER CONCENTRATIONS NECESSARY TO CONDUCT THE EXPERIMENTS.

VARIOUS PCB'S WERE STUDIED AT TEST CHAMBER CONCENTRATIONS OF ABOUT 1-6 PPM. NO INJURY WAS OBSERVED AFTER PROLONGED INTERMITTENT EXPOSURE OF SEVERAL ANIMAL SPECIES AT THESE CHAMBER CONCENTRATIONS USING THE LOWER CHLORINATED PCB'S (I.E., 42% CL). AT COMPARABLE TEST CHAMBER CONCENTRATIONS OF THE HIGHER CHLORINATED PCB'S (E.G., 54% CL) SIGNS OF REVERSIBLE LIVER CELL INJURY WERE APPARENT.

PARTLY, AS A RESULT OF THESE STUDIES THE AMERICAN CONGRESS OF GOVERNMENT INDUSTRIAL HYGIENISTS (ACGIH) TLV STANDARDS WERE ESTABLISHED AND WERE SUBSEQUENTLY INCORPORATED INTO CURRENT OSHA STANDARDS (1.0 AND 0.5 MG/M^3).

Again, are #'s too technical for audience.

WORKER EXPOSURE/EPIDEMIOLOGY

THE HEALTH EFFECTS OF LONG-TERM HUMAN EXPOSURE TO PCB'S HAVE BEEN CAREFULLY REVIEWED BY SEVERAL RESEARCH GROUPS. MONSANTO IS AWARE OF MORE THAN TWO DOZEN PCB EPIDEMIOLOGICAL STUDIES DONE IN THE U.S. AND ABROAD WHICH HAVE BEEN PERFORMED BY individual SCIENTISTS, ~~VARYING~~ FEDERAL AND STATE GOVERNMENTAL AGENCIES, UNIVERSITIES AND MEDICAL SCHOOLS, AS WELL AS PRIVATE CONSULTANTS AND INDUSTRY. THESE INCLUDE PERSONS who have had occupational & during environmental exposure ~~WITH OCCUPATIONAL, AS WELL AS (COMMUNITY,) EXPOSURE.~~ THE POTENTIAL HEALTH EFFECTS STUDIES INCLUDED DEVIATIONS IN BIOLOGICAL PARAMETERS (SUCH AS BLOOD AND TISSUE LEVELS) AND REPORTED SYMPTOMS AND ILLNESSES. IN ADDITION, THE CAUSES OF ANY DEATHS OF ANY PERSONS FROM THE SAMPLE POPULATION WERE INVESTIGATED TO STUDY THE CAUSE.

THE MOST RECENT STUDIES CONSTITUTE THE MOST EXTENSIVE EPIDEMIOLOGICAL WORK YET DONE ON PCB'S. THESE STUDIES INCLUDE DATA ON LARGE NUMBERS OF INDUSTRIAL WORKERS WHO, OVER MANY YEARS, WERE OCCUPATIONALLY EXPOSED TO PCB'S. THESE OCCUPATIONAL EXPOSURES, IN MOST CASES, INVOLVED long term ~~CHRONIC~~ PCB EXPOSURE LEVELS WHICH WERE ORDERS OF MAGNITUDE GREATER THAN ANY WHICH CAN REASONABLY BE FORESEEN UNDER EXISTING REGULATIONS. A COMPARATIVE REVIEW OF THESE OCCUPATIONAL-EXPOSURE STUDIES REVEALS THAT, LIKE OTHER CHEMICALS, PCB'S CAN CAUSE ADVERSE HEALTH EFFECTS, BUT IN MOST RESPECTS THESE EFFECTS HAVE BEEN MINIMAL. WHILE DERMATITIS AND CHLORACNE HAVE BEEN NOTED, THESE SKIN DISORDERS WERE REVERSIBLE AFTER

DISCONTINUING THE EXPOSURE. IN SPITE OF OVER 50 YEARS OF USE, NO CAUSAL RELATIONSHIP HAS BEEN ESTABLISHED FOR ANY SPECIFIC TYPE OF CANCER, NOR HAS IT BEEN PROVED THAT THE INCIDENCE OF CANCER MORTALITY HAS INCREASED FROM PCB EXPOSURE.

THE NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH) RECENTLY COMPLETED A STUDY OF OVER 2,500 ELECTRICAL EQUIPMENT MANUFACTURING WORKERS. OVER HALF OF THE (COHORT) - workers WAS OCCUPATIONALLY EXPOSED IN EXCESS OF 20 YEARS. SOME OF THE ~~WORKERS~~ people WERE EXPOSED TO PCB'S FOR AS LONG AS 40 YEARS. THE STUDY FOUND NO EXCESS IN TOTAL MORTALITY, NOR IN MORTALITY DUE TO CANCER, CARDIOVASCULAR DISEASE OR NEUROLOGICAL DISORDERS. THIS STUDY FAILED TO DEMONSTRATE AN EXCESS CANCER RATE IN A HIGH EXPOSURE POPULATION; IT PROVIDES SOME REASSURANCE THAT IT IS UNLIKELY THAT FUTURE STUDIES WILL SHOW ANY INCREASED RISK OF CANCER FROM PCB'S.

IN TOTAL, THE HUMAN EPIDEMIOLOGY EXPERIENCE INDICATES AN ABSENCE OF MORBIDITY (ILL HEALTH) ASSOCIATED WITH SIGNIFICANT EXPOSURE TO PCB'S. MORE IMPORTANTLY, NONE OF THESE STUDIES FOUND PCB'S TO CAUSE CANCER IN HUMANS.

POTENTIAL CARCINOGENICITY - ANIMAL STUDIES

WHAT ABOUT CANCER IN ANIMALS? IN 1975, DR. RENATE KIMBROUGH REPORTED THE INDUCTION OF LIVER CARCINOMAS IN FEMALE RATS FED AROCLOR 1260, A PCB, FOR TWO YEARS IN ONE STUDY.

MONSANTO COMPANY HAD SPONSORED PREVIOUSLY THREE 2-YEAR FEEDING STUDIES USING THREE DIFFERENT AROCLOR MIXTURES, INCLUDING THE SAME LOT OF AROCLOR 1260 USED BY DR. KIMBROUGH. THE RESULTS FROM THE MONSANTO STUDIES SHOWED THAT THE TEST COMPOUNDS PRODUCED LIVER INJURY BUT NO CANCER.

AN EXTENSIVE RE-EVALUATION BY INDEPENDENT CONSULTANTS WAS MADE OF THE LIVER TISSUE SPECIMENS FROM THE MONSANTO SPONSORED STUDIES. IN ADDITION, SPECIMENS OF LIVER TISSUE FROM DR. KIMBROUGH'S STUDY WERE ALSO EVALUATED BY INDEPENDENT CANCER RESEARCH EXPERTS. THAT REVIEW FAILED TO CONFIRM THE KIMBROUGH FINDINGS. IN OTHER WORDS, IT SHOWED NO OCCURRENCE OF LIVER CANCER IN ANY OF THE FOUR STUDIES.

IN 1977, THE NATIONAL CANCER INSTITUTE REPORTED THEIR RESULTS OF YET ANOTHER INDEPENDENT STUDY FOR POSSIBLE CARCINOGENICITY OF PCB'S (AROCLOR 1254) USING RATS IN A 2-YEAR FEEDING STUDY. THE NCI REPORT STATED THAT AROCLOR 1254 WAS NOT A CARCINOGEN UNDER THE TEST CONDITIONS.

COST -- THE BOTTOM LINE

IT'S DIFFICULT TO PLACE AN ABSOLUTE COST ON REGULATION OF PCB'S; BUT TO ILLUSTRATE THE POINT, I'D LIKE TO PRESENT SEVERAL EXAMPLES OF ASSOCIATED COSTS THAT HAVE BEEN PUBLISHED RECENTLY.

IN CALIFORNIA, PACIFIC GAS & ELECTRIC COMPANY, THE PUBLIC UTILITY, HAS LITERALLY BEEN UNDER SIEGE BY ENVIRONMENTALISTS AND STATE REGULATORY AGENCIES BECAUSE OF PCB'S. REPORTEDLY, PG&E AGREED TO "VOLUNTARILY" REMOVE ALL PCB CAPACITORS FROM POLES IN THEIR SYSTEM OVER A 3-YEAR PERIOD AT A COST IN EXCESS OF $50M.

THE TRANSFORMER MAINTENANCE INSTITUTE HAS ESTIMATED, BASED UPON EPA DATA, THAT 750 MILLION POUNDS OF PCB LIQUIDS MAY BE CONTAINED IN 140,000 TRANSFORMERS AND 10 MILLION CAPACITORS IN THE U.S. UTILITY DISTRIBUTION SYSTEM.

BUT -- OIL-FILLED TRANSFORMERS CONTAINING A FEW PPM OF PCB'S MAY BE REGULATED BY EPA UNDER NEW RULES. THESE "CONTAMINATED" PIECES OF EQUIPMENT CONTAIN OVER 1.4 BILLION GALLONS OF TRANSFORMER OIL IN 28 MILLION TRANSFORMERS, BUT ONLY ACCOUNT FOR 140,000-400,000 POUNDS OF PCB'S. TO DESTROY THIS 400,000 POUNDS OF PCB'S WOULD COST OVER $1.2 TRILLION DOLLARS IN 1981 DOLLARS.

ADD THAT COST TO YOUR ELECTRIC BILL!!

OTHER THAN THESE UTTERLY RIDICULOUS COST EXAMPLES, BUSINESS ROUTINELY SPENDS HUNDREDS OF MILLIONS OF DOLLARS COMPLYING WITH PCB REGULATIONS THAT EXIST NOW.

ANYBODY USING ELECTRICITY PAYS THE PRICE, WHETHER FOR STORAGE, DISPOSAL, ENFORCEMENT, NEWER EQUIPMENT, HIGHER INSURANCE COSTS, LOSS IN EFFICIENCY, HIGHER ENERGY COSTS AND SO ON.

THIS IS WHERE THE PUBLIC SHOULD DEMAND A VALID RISK/BENEFIT ASSESSMENT. IF THE RISKS WERE REAL, WE'D ALL AGREE THAT IT'S THE PROPER WAY TO GO.

IT'S LIKE SHARK CONTROL ON THE MISSISSIPPI RIVER. IF WE'RE EXPOSED AND IN DANGER, $10 A PERSON OR SEVERAL MILLION DOLLARS A YEAR IS A SMALL PRICE TO PAY FOR HUMAN SAFETY --TO SAVE LIVES. WE CAN SPEND $1 OR $10 OR $100 MILLION A YEAR AND SHOW OUR PROGRAM WAS SUCCESSFUL -- NO LIVES LOST. OUR GOVERNMENT BUREAU AND FLEETS OF SHIPS AND AIRCRAFT DID THE JOB. BUT DID ANYONE EVER LOOK TO SEE IF WE REALLY HAD SHARKS TO START WITH IN THE MISSISSIPPI RIVER? AND, EVEN IF WE SAW A SHARK SAY NEAR NEW ORLEANS (IN THE SALTY REGION), WAS ANYONE HARMED, EVER OR ANY LIFE LOST?

SUMMARY/CONCLUSIONS

PCB'S HAVE BECOME AN INTENSELY EMOTIONAL ISSUE. IMPORTANT DECISIONS AFFECTING THEIR USE, STORAGE AND ULTIMATE DISPOSAL ARE BEING MADE WITHOUT BENEFIT OF PROPER SCIENTIFIC ASSESSMENT.

PCB'S WERE USED AS THE SYMBOLIC EXAMPLE OF WHY THIS NATION NEEDED TOUGH, NEW REGULATIONS TO CONTROL TOXIC SUBSTANCES. IN THE PROCESS, THE HAZARDS OF PCB'S WERE GREATLY EXAGGERATED.

IN SOME CASES, THESE COMPOUNDS HAVE BEEN LABELLED BY REGULATORY AGENCIES, LEGISLATIVE BODIES, THE POPULACE AND THE MEDIA AS HUMAN "CANCER-CAUSING AGENTS" AND "DEADLY TOXINS." HOWEVER, THE SCIENTIFIC EVIDENCE DOES NOT SUPPORT THESE CLAIMS.

THERE HAS NEVER BEEN A SINGLE DOCUMENTED CASE IN THIS COUNTRY WHERE PCB'S HAVE BEEN SHOWN TO CAUSE CANCER OR ANY OTHER SERIOUS HUMAN HEALTH PROBLEMS.

THE COSTS TO THE COUNTRY OF OVER-REACTING AND OVER-REGULATING THIS ONE CHEMICAL FAMILY CAN REACH ASTRONOMICAL SUMS, IN THE RANGE OF BILLIONS OF DOLLARS. IT SETS A DANGEROUS PRECEDENT FOR THE FUTURE.

IN NO WAY DO I WISH TO MINIMIZE THE VERY REAL ENVIRONMENTAL CONCERNS ASSOCIATED WITH IRRESPONSIBLE DISPOSAL OF WASTES CONTAINING PCB'S. PCB'S ARE PERSISTENT. THEY BIOACCUMULATE IN LIVING ORGANISMS -- THAT IS, THEY BUILD UP IN THE FATTY TISSUE, EACH NEW DOSE ADDS TO WHAT IS ALREADY THERE.

However,
AS COMPANIES, INDIVIDUALS AND AS A NATION, WE SHOULD MAKE PROPER ASSESSMENTS OF PCB'S AS WELL AS OTHER WASTES AND TAKE STEPS TO SEE THAT PROPER HANDLING, STORAGE AND ULTIMATE DISPOSAL OCCURS. THERE ARE ENOUGH LEGITIMATE CONCERNS ABOUT POTENTIAL ENVIRONMENTAL HARM FROM PCB'S (AND OTHER CHEMICALS FOR THAT MATTER) WITHOUT USING SCARE-MONGER LABELS SUCH AS "CANCER-CAUSING" AND "DEADLY TOXIN" TO UNNECESSARILY ALARM THE PUBLIC.