PACIFIC ENVIRONMENTAL SOLUTIONS, INC.

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Pacific Environmental Solutions, Inc. (PES) is a growing company concerned with contemporary environmental problems. We aim to continuously develop new avenues to provide our planet and population with worthwhile and necessary services.

PES offers a multidisciplinary consulting service to individuals, industry, private organizations and public agencies on problems of environmental health and safety. In situations where an individual has been exposed to a toxic substance, we offer a comprehensive case evaluation and review. Where indicated, referrals are made for services needed, be they technical, scientific, legal, medical or governmental. We identify and secure scientific materials and expert witnesses. We prepare and present these witnesses for courtroom trials and legislative hearings, and are capable of providing legal solutions to a host of environmental problems. In addition to the above, we perform a variety of consulting functions including experiment design, literature review, and workshops.

Call Bishop about this

In an effort to eliminate one of the most toxic chemicals in existence, PES has acquired the rights to ownership of a unique polychlorinated biphenyl (PCB) destruction process. Unlike other PCB destroyers, our system can process PCBs in both liquid and solid forms, without toxic emissions.

We at PES await the opening of our clinical, analytical, cytogenic and pathology laboratories. These specialized facilities will provide environmental, industrial, medical, and veterinary scientists with the most updated equipment available.

In order to make the information we uncover through our research meaningful and accessible to those who need it, we develop programs and training materials designed for particular sectors of the population. We prepare lectures, seminars and discussion sessions for schools, professionals, government agencies and the general public. And PES designs slide presentations, films and video tapes for use in industry.

We invite inquiry into any aspect of our services.

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WHAT SHOULD YOU DO IF YOU ARE EXPOSED TO PCBs?

by James R. Allen, D.V.M., PhD.

1. Immediately contact your physician.
   Tell him about your exposure.
   Request physical examination.
   Request analysis of blood for material.
   It may be necessary to be firm in these requests.

2. Notify Public Health authorities.
   Request information about "clean-up" procedures.
   Request information on health procedures to be followed.

3. Make sure samples of soil, vegetation etc. are collected for analysis. You may have to do it yourself.
   Get a clean pint jar (glass) and some aluminum foil. Rinse all these in alcohol or acetone. Put the material inside. Cover the jar with tin foil, and screw the lid down tight to prevent changes in the material. Tape the jar closed. Label the jar for date, contents and location. These materials are usually stable and can be stored for an indefinite period without changing. If you cannot get the analysis done immediately, store them for safe keeping. Conduct similar procedure after cleaning.

4. If the spill is inside make sure you do wipe tests on the exposed areas before and after cleaning.
   If the material is obvious, use a cotton cloth or piece of cotton. If it is not obvious it would be desirable to moisten the cotton with alcohol, acetone or some fat solvent before the wipe test. Also get a second sample that is devoid of the solvent. After collection, send samples for analysis or place them in storage. Conduct similar procedure after cleaning.

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WHAT SHOULD YOU DO IF YOU ARE EXPOSED TO PCBs?

5. If the cleaning of the contaminated surfaces is done by yourself, make sure you use water-proof gloves.
   Do not get your skin in contact with material. If you can smell the material, you should best wear a mask while collecting samples and cleaning up. Masks can be purchased at the local drug store.

6. Thorough scrubbing of exposed surfaces with a good detergent will usually get rid of the majority of the PCBs. They are fat soluble and should be removed with substances that will dissolve fats.

7. After cleaning exposed surfaces, do not dump the cleaning water in sink or toilet.
   Put all contaminated materials in a closed container and call the local health authority about disposal.

8. If you have a positive blood analysis for the material in question, have a second test done within one to two months.

9. If symptoms develop, consider asking your physician to refer you to someone that has specilized in environmental medicine.

10. Do not sign any "release forms". Symptoms may develop weeks or months following exposure.

11. Be sure to document everything that happened. You may need it sometime in the future.

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BEWARE--YOUR HEALTH IS AT STAKE
ENVIRONMENTAL CHEMICALS: Polychlorinated Biphenyls (PCBs)

A brief exploration of the problem by
James R. Allen, D.V.M., Ph.D.

One evening last week I was listening to the news. It was reported that a transformer had ruptured, and its contents, large quantities of PCBs, had spilled on the street. Children played in the spill for two or three days before it was even reported. The people in the neighborhood did not know the transformer was filled with one of the 65 priority toxic pollutants. This is just one of thousands of similar reports that come in daily on such occurances.

I have been doing research on PCBs and related compounds for over twenty-five years. I know what they are capable of doing to people that are exposed. I therefore feel it is my obligation to once again spell out what could happen to an individual, a group of individuals or a community that has been exposed to PCBs.

WHAT ARE PCBs?

Polychlorinated Biphenyls (PCBs) are a group of man-made biphenyl compounds to which varying amounts of chlorine are attached. The amount of chlorine affects texture, causing it to vary from liquid to semi-solid. These apparently innocent compounds have been manufactured in huge quantities over the past forty years. They are extrememly stable, can withstand high temperatures, are fire resistant, do not conduct electricity, and have good insulating qualities.

In addition to their use in transformers, they have been used in capacitors for fluorescent lights, sealants for wood and cement surfaces, coatings for furniture, additives to paints, varnishes, printing ink, carbonless copy paper, putty, and as general extenders. Their stability and low vapor pressure made them suitable for use in lubricants, hydraulic fluids, liquid seals, cutting oil and vacuum diffusion pumps. Look on the label of your industrial product: until 10 years ago, where the last entry stated "Inert Ingredients: 55%", that "Inert Ingredient" was likely to be a PCB. In 1971 federal law forbade use of PCBs in anything but closed systems. But this prohibition did not solve the problem. PCBs do not break down. They persist in the environment for hundreds of years - and in our bodies as well.

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WHAT DO PCBs DO TO UNBORN AND NEWBORN INFANTS?

Most of us are more ready to accept injuries to ourselves than to our children. Where we may take responsibility for our own ignorance or folly or even bad luck, children are the true innocent victims. What happens to children who are exposed to PCBs simply by eating the food on the table? or drinking the milk of a mother who ate the food on the table? or by being in the body of a mother who ate the food on the table? or wore the clothing bought at the local store? or lived in the house next to the power line whose transformer ruptured?

If an infant or young child is exposed to any appreciable amount of PCB, there may be long lasting effects. Experimental work on non-human primates indicate that death, reduced learning capabilities, altered behavior and reduced growth rate are common with exposure. Although not all experimental animals showed these effects, the overwhelming majority showed both these and other effects in direct proportion to exposure.

Is your child hyperactive and a slow learner? It may be his genetic makeup or it may be due to his or her direct or indirect exposure to compounds such as PCBs.

There are three major routes by which infants may be exposed to PCBs. Perhaps the most serious one is indirect exposure by way of their mother. Mothers who have been exposed to PCBs have these toxic substances in their fatty tissues. If and when she becomes pregnant these substances have a tendency to become mobilized and get back into her blood stream. Since her blood and that of her baby are one and the same, the baby becomes exposed to PCBs. In fact, it is not uncommon that the baby at birth may have about as much PCBs in its tissues on a weight basis as its mother.

It is known that if the mother has any appreciable PCB in her tissues when she is pregnant, there is a likelihood of the baby being smaller than normal due to toxicity. In addition, the mother will likely experience an increased frequency of abortions and stillbirths, due to the injurious effects that these compounds have on the mother as well as the baby.

Of even greater importance is the exposure to PCBs as a result of breast feeding. Much of the PCBs that are in the body of the mother invariably becomes localized in her breast milk. Thus, when her baby nurses, considerable amounts of PCBs are transferred from the mother. Under experimental conditions, I have observed tiny baby monkeys die from PCB intoxication as a result of nursing from exposed mothers. This was true even when the mothers were showing no ill effects from the exposure. In addition, the

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babies which survived did not learn as rapidly, and were hyperactive. These effects persisted for years following the PCB exposure. Indications are that these effects may be permanent.

WHAT ABOUT OLDER CHILDERN AND ADULTS?

We have talked about what may occur in the unborn child, and the infant that are exposed to PCBs. What about older children and adults? Do they suffer ill effects from PCB exposure? The answer is definitely yes. One of the first things that may occur following exposure to any appreciable amount of PCB is the development of acne. This acne is similar to that seen in adolescent childern except that it is pigmented. The pimples have a brownish-gray appearance. Other manifestations of PCB exposure are less specific. Those exposed will likely develop headaches, nausea, vomiting, reddened eyes, cough and possible fever. There may also be joint pain and peripheral numbness, irregular menstrual cycles, decreased sperm counts and decreased libido. The major, most common complaint is that "they don't feel well." The acne, the respiratory problems, the gastro-intestinal problems, the peripheral numbness and menstrual irregularities have persisted for years following exposure.

PCBs have also been known to be a carcinogenic agent in experimental animals. A recent epidemiological study in Japan of people exposed to PCBs in 1968 has indicated the possibility of increased incidence of cancer ten years later. Another survey of factory workers in New Jersey suggests that workers in PCB plants have an increased frequency of tumors and melanomas of the pancreas.

It has been thought previously that chloracne was the diagnostic feature of PCB intoxication. However, this does not necessarily hold true in all cases. Experimentally, there may be none of the common signs of PCB exposure when the level of exposure is low. However, the female will show irregular menstrual cycles and alterations in her sex hormone levels. In addition, levels of PCB exposure insufficient to produce these reproductive changes will be sufficient to cause the modification in the fetus and neonate that was mentioned previously. Thus, it does not require too much PCBs in our system to cause effects!

HOW ARE WE EXPOSED TO PCBs?

In addition to the indirect exposure from the mother's milk or bloodstream, we are directly exposed to PCBs primarily through the food chain and through chemical spills or dumping.

the food chain: Large quantities of PCBs have been disposed of in our lakes and streams. Fish caught in these waters invariably contain high levels of PCBs. This is true in ocean waters near cities that have dumped their wast PCBs into streams that drain directly into the ocean. The fish population has become so contaminated with PCB that the Environmental Protection Agency has set standards of maximum levels for fish containing these compounds. Fish containing over 5 ppm (parts per million) are prohibited from interstate commerce. Thus, anyone eating any appreciable amount of contaminated fish will invariably collect it in his body, and may in turn suffer ill effects from its presence.

Fish is not the only means by which PCBs can get into the food chain. Food packaged in PCB-containing recycled paper has been a source of contaminated eggs, cereals and other products that require paper packaging. The contact of the food with the PCB-containing paper has been markedly reduced by placing a second non-contaminated paper barrier in the container.

dumping and spills: There are specific regulations on how old and damaged transformers should be handled. Unfortunately, these guidelines are frequently not followed. In one instance, a whole truck load of waste PCB material was dumped along a road right-of-way. People driving by were exposed to the fumes; persons walking along the road were exposed; the water run-off was contaminated, the lakes and streams into which the contaminated water flowed became adulterated; of course the fish in these streams eventually also became contaminated. It is unfortunate that people are concerned so little about the health of their fellow citizens as to let these things occur.

WHAT ARE WE DOING ABOUT IT?

PCBs are no longer produced in the United States because of their extreme toxicity. However, due to their widespread use since the 1930's and their extremely slow breakdown, over 75% of all that has ever been produced still persists in the environment. We are not going to rid ourselves of it within the foreseeable future.

Even though the government has curtailed its use, PCBs are still found in commercial products. The majority of transformers across the country, for example, are filled with PCBs. They will not be replaced until they become non-functional. The average life of a transformer may be 40 years. In addition, there are many other products containing PCBs that are still in use both from manufactured products originating in foreign countries and products made prior to the discontinuation of its manufacture in this country.

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We have created a major health problem through the use and improper disposal of synthetic chemicals such as PCBs. In order that this situation not become a greater problem than it is at the present time, proper precautions must be exercised at all levels to make sure that this material that is in our environment does not produce further injury to the health of our citizens.

A NOTE ABOUT THE AUTHOR: Dr. James R. Allen is an internationally recognized scientist in the fields of environmental toxicology and pathology, and has published over 200 articles on the toxicological effects of environmental pollutants. He was a professor of Pathology at the University of Wisconsin for 20 years.