Common Questions About Health Effects

FactPack – P005

Center for Health, Environment & Justice
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Mentoring a Movement

Empowering People

Preventing Harm

About the Center for Health, Environment & Justice

CHEJ mentors the movement to build healthier communities by empowering people to prevent the harm caused by chemical and toxic threats. We accomplish our work by connecting local community groups to national initiatives and corporate campaigns. CHEJ works with communities to empower groups by providing the tools, strategic vision, and encouragement they need to advocate for human health and the prevention of harm.

Following her successful effort to prevent further harm for families living in contaminated Love Canal, Lois Gibbs founded CHEJ in 1981 to continue the journey. To date, CHEJ has assisted over 10,000 groups nationwide. Details on CHEJ's efforts to help families and communities prevent harm can be found on www.chej.org.

Table of Contents

Center for Health, Environment & Justice | Mentoring a Movement, Empowering People, Preventing Harm
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Chapter 1
Introduction

Never think that people who are not health professionals aren't entitled to medical information. We all have a right to know what dangers are in our environment and what the symptoms of exposure to them are. Until recently, government and industry had a monopoly on information about pollution of the environment. If we had suspicions, we had to wait for the scientist to take their measurements and tell us if we were safe or not. They rarely talked about specific symptoms or diseases. It seemed like they had a rule against informing the public about the possible health effects of hazardous chemicals – it might have caused 'hysteria', which was to be avoided at all costs!

Ask yourself, "Do I feel more hysterical when I know there's some serious unknown problem, or when I find out what it is? Who has the right to decide that for me?"

This guidebook contains questions frequently asked by people who feel that they should be the ones deciding whether to be hysterical. You may feel that some of the answers aren't good enough and that there's a lot of uncertainty. Hard as this may be to accept, it's the truth. Very little is known about what happens to people who are exposed to toxic chemicals.

Public officials don't like to admit uncertainty, especially publicly. They're afraid they'll look stupid. Their easiest defense, then, is to make you and your questions seem stupid! This response is of course very wrong and can cause a lot of confusion and hard feelings in a community. You must always be ready to challenge them when they get rude and patronizing.

Public and industry officials have become more sophisticated in how to deal with people. They are being trained in how to communicate risks, and in the limits of what is known about toxic chemicals.

Unfortunately, most medical schools are still not training physicians to understand health problems associated with the environment. Physicians may not have any better information than anyone who reads the newspaper. Some are interested enough to do some extra studying, but it's not their job to be an environmental detective – it's only to treat your illness, and toxic chemicals are only one of the possible causes they must consider. So don't be surprised when your doctor ignores that possibility - we know of many people who have experienced this.

The following set of questions and answers may help you in dealing with the confusion, the uncertainty, and the decisions you have to make when you and your neighbors are confronted with a threat to your home and community. The questions come from communities, which have had similar experiences. People in Love Canal, Times Beach, Three Mile Island and many others often couldn't get their questions answers, or could only get answers they didn't understand. Hopefully their experience can show us how to prevent some of the problems they had to deal with.

Chapter 2
Questions & Answers

Why Can't We Just Stop Using Toxic Chemicals?

It would be a big help if we did, even though it would mean a big adjustment in lifestyle for many of us. Unfortunately though, a lot of poisonous chemicals are now contaminating our dumps and water supplies even though they're not used any more. Many chemicals like DDT were used in large amounts for a long time before much attention was paid to the damage they caused. We may never be able to clean up completely from the past, but we can stop present contaminations and prevent more in the future.

Some chemicals, like oil and gasoline, we depend upon heavily. Others may only contribute a little to our improved standard of living, but we still prefer to have them around. We like the beautiful, perfect fruit in the market and having a bug free cookout. This doesn't mean we must "accept" contamination. It means we must take extra care for safety in manufacture, use, and disposal at the end of the line when we have to deal with the empty containers, the leftovers, and the byproducts.

One big problem is to identify the most dangerous toxic chemicals to make sure they are the ones to be clean up first. The people who clean up the mess and who live in the area have to be protected. A train or tractor-trailer wreck may be in an inhabited area. How do we decide who should be evacuated and for how long? If a very poisonous substance that which causes severe lung problems was released into the air, everyone would have to leave who was not wearing protective clothing and using a breathing mask. A chemical like ammonia, with only an annoying effect, would be dangerous for a short time, and probably wouldn't cause any long-term problems.

Laboratory studies can help us decide which chemicals are the worst and what dose levels cause health problems, especially those chemicals whose effects on human beings aren't known. Thousands of new chemicals come into the market place every year and we hope that accidents involving people are not the way we find out how poisonous they are.

How Do Chemicals Get Into Our Bodies? What Do They Do To Us?

Chemicals can enter our bodies by swallowing, breathing, and absorption through the skin and eyes.

There are often immediate symptoms if there's an overdose, like vomiting and diarrhea, which are general responses to something the body doesn't want. The eyes and nose may water and the breath may come in wheezes. There may be cramps or muscle weakness. But many chemicals don't cause such dramatic symptoms, but very slow changes, and no symptoms for years. Cancer, for example, may take twenty to thirty years to develop.

When chemicals are inhaled as dust or smoke they may gradually cause the lungs to lose their ability to breathe, resulting in diseases like emphysema and chronic bronchitis. If you grow up in a coal mining area you may remember the men whose breathing became more and more difficult because of black lung - a result of the coal dust inhaled in the mines. The chemicals in cigarette smoke cause a similar loss of strength in the lungs.

Lead and mercury have had many uses over the years and have poisoned people through contaminated food. They both become a gas at high temperatures and can be inhaled. Many people have been killed by fumes from burning batteries. When lead salt is dissolved in water (an old pottery method) it can be absorbed through the skin. This resulted in a lot of birth defects in pottery workers' children. Many people were affected in this way for generations in Europe and some parts of the United States.

The chemicals in some pesticides (parathion, for example) can kill a person quickly if they're spilled on the body or if work clothes get soaked. Some chemicals damage the eyes, with long term after effects – the misfortune for the people at Bhopal, India when the Union Carbide plant spread fumes over their city.

There's a lot of concern about toxic chemicals, but there's more concern about radiation, which is often less dangerous. This may be because of the dramatic events like Hiroshima, the nuclear arms race, Three Mile Island and Chernobyl, that have kept the dangers of radiation in the public eye, while the less dramatic, long–term effects of widespread toxic contamination have gotten less attention. So restrictions on radiation aren't nearly as lax as they are for benzene for example, which causes many of the same medical problems, including cancer.

Are We Safe As Long As We Don't Drink The Contaminated Water? What About Bathing or Washing Clothes?

When a water supply is contaminated people may be advised by the public health authorities (local, state or federal) to drink and cook with water from other sources. However, bathing in the water can be worse than drinking it. A study in Hardemann County, Tennessee where carbon tetrachloride, trichloroethylene, and other volatiles (chemicals that evaporate easily) were found in the drinking water showed that a fifteen-minute shower caused more exposure than drinking two liters of the water. You should avoid any activity that brings you into direct contact with the water for an extended time.

What About Radon? How Dangerous Is It?

Radon is a radioactive gas that comes from the earth's crust. Some areas of the country have higher levels than others, but even in one area the level can vary a lot from neighborhood to neighborhood. If radon is in the air in your house, it's most likely entering through cracks in the basement and spreading from there. But if your water comes from an artesian well, radon can enter through faucets, the toilet, and especially the shower, because it dissolves in water underground and gets released when the water meets the air.

Studies done on miners who work in high levels of radon in the air underground have shown that it significantly increases the risk of lung cancer. Scientists are certain of this, but are less sure about the risks of low levels of exposure. This is because the miner studies show that the risk is low when the radon levels are low. In any case, it's a fact that the longer you're exposed, the greater risk; and combining risks, like radon and smoking, makes the risk worse.

Radon is a problem you have some control over. You can test radon levels with a special charcoal canister you can find at hardware stores. After setting it in your basement for a few days, you mail it to the laboratory shown on the label. The results are mailed back to you. If the level has reached 4 picocuries per liter, you may want to have a private company do more detailed measurements. You can find these companies in the classified ads or yellow pages, especially if you live in an area with high radon levels.

The answer is to change the ventilation to allow the radon to escape before a high level can accumulate. It is fairly simple to do. But you may still be concerned about the past, and the possibility of long-term health effects. It's nobody's fault that radon is in our houses. It is our fault if we don't spend the money to test and fix the ventilation if necessary. There's no way to predict what house will have high levels - old, new, well or poorly insulated have all been high. Two neighboring houses may have completely different levels – the only way to be sure is to have it checked. The CHEJ publication, *Radon: Problems and Solutions*, may help.

How Do I Find Information I Can Understand?

You may notice that some scientific words and terms are often used as you explore chemical hazards. You may hear scientists, engineers, or doctors use them or you may read them in scientific articles or the newspaper. The ordinary dictionary is a good place to start if you get stuck. Public libraries also have more specific dictionaries and encyclopedias that may help.

The reference librarians at your public library can be your best friend, especially if you are even a little knowledgeable about your problem. Reference librarians are specially trained to answer questions about how to find information. Although they are usually busy, you have just as much right to their time as anyone else. You will often find them to be the most sympathetic and understanding teacher you've ever had. So go looking for information expecting to find it.

As you start out you may think, "All this is too complicated and timeconsuming for me to struggle through. Why can't someone just tell me the answer?" It may be quicker, but it's just as important for you to figure out how to do research, as it is to find what you're looking for. It's fun becoming familiar with words and meanings you didn't know existed before the crisis hit your community. You may be surprised at how quickly you learn to use complicated information resources when you work with a good librarian (and most of them are good). Regional library systems are linked to large libraries to get specialized information. Many people in the grassroots environmental movement have found that the most exciting part of the experience has been finding new information and becoming an expert. And you don't need a high school or college education to learn new things.

Another good source of information is the nearest college. Some universities particularly land grant universities like Massachusetts Institute of Technology and Penn State University are Federal Depository Libraries (FDL). This means that they receive reports and documents written and published by the federal government. These can be incredible sources of vital information. More importantly FDL's must allow the public access to these reports and documents whether you belong to the university or not. You can check at the nearest university or public library to find where the closest FDL to your community is.

Why Do I Keep Hearing That Places Like Love Canal Were Blown Out Of Proportion And That There Were No Health Damages?

When you hear those kinds of comments you should look behind the words. Ask yourself what "blown out of proportion" means, rather than to someone who's talking about it after the fact. The events at Love Canal were truly frightening for the people living there, and also for the public officials involved – it was completely different from their past experience. Fear of the unknown can't be judged in the same way as a flood or fire or an oil spill, where the problems are in full view and can be dealt with from day to day. At Love Canal nobody knew how serious the problem was – whether the residents' past illnesses were due to the toxic chemicals in the area, and whether they would develop more illnesses.

The second part deals with the meaning of "no proven health damages." This also means "no proof that Love Canal was a safe place to live." Does proof mean legal proof? Or medical proof? Illness and discomfort caused by a toxic environment can't be proven the way you can prove that a particular virus causes chickenpox. It is just as difficult to prove that a particular poison did cause illness, as it is to prove that it didn't. So when the "no proven health damages" claim is made, you can say "what about proof that it was safe, during those years before the toxic mess was discovered, when barrels of toxic stuff were popping out of the ground?" It can't be proven that chronic liver disease, cancer, or serious allergy in the past or future has not been caused or made worse by living at Love Canal. So the question remains – who decides what is blown out of proportion: the news media, the residents, the city officials, the state, or federal government? We call these "hot air" comments, usually made by people who haven't had their shallow assumptions challenged. So they make these wise –sounding but meaningless comments to impress the talk show host interviewer or reporter.

What Is Toxicology?

Toxicology is the study of poisons and how they affect the body. It usually refers to animal studies done to test the toxic effects of a chemical. These studies can be designed to find out if a chemical is poisonous at low doses, or high doses, whether it only has bad effects if given over a long period of time, whether it irritates the eyes or the skin, affects the nervous system, or causes cancer, liver disease or birth defects. The animals used may be mice, rats, guinea pigs, ducks, rabbits, cats, or dogs, of different ages and sexes. Sometimes an unexpected result is found. For example, young animals may not gain weight normally even though it was the mother who received the dose of chemical. So studies done by toxicologist are searches for any poisonous effects that a chemical might have.

For nearly all chemicals there isn't enough information on what happens when we are exposed. This is because there are too many chemicals and not enough time or money to test them all. Tragically over the years, the workers who manufacture these toxic chemicals have been the guinea pigs. From their experience we found that dusty air can cause lung disease, benzene causes leukemia, radioactive paint causes bone cancer and certain pesticides cause muscle weakness and paralysis. Obviously we can't rely on workers to provide more information, and their protection from hazardous working conditions has now become a more serious issue. If we want to use a new chemical we're required to test its effects on lab animals first.

What's The Difference Between Toxicity, Carinogencity and All Those Other 'Icity's'?

Toxicity is a fairly general word and refers to how poisonous a substance is, whether it's natural or man–made. It covers the whole range of symptoms and illnesses that can affect human beings or animals (in the laboratory or otherwise).

Carcinogenicity is a very specific sort of toxicity. A carcinogenic chemical causes cancer. Usually one of many kinds of cancer can be traced to one kind of chemical. For example, asbestos causes one kind of lung cancer. Benzidine, a chemical once used in dyes, causes bladder cancer. Sometimes there must be a combination of chemicals or other conditions to cause cancer. Cigarette smoke is made up of many different chemicals, which together cause another kind of lung cancer. Once again, in these examples the evidence came from the deaths of many people and not from laboratory test on animals.

These days a lot of effort goes into laboratory testing of chemicals, particularly new ones, to find out if they cause cancer. Usually, a "first level" screening is done using animals cells. If the chemical causes certain changes (mutations) in the cells, which have been developed to respond to carcinogens, it then goes to the live animal testing level.

Mutagenicity means that the chemical has mutated the genetic make-up of the cells. Theoretically, this means the chemical can cause cancer – which means more testing is required.

Mutagenicity also means that the reproductive cells may be vulnerable - the egg in the female and the sperm in the male. If those cells are affected, the mutations could be passed on to the next generation, possibly causing miscarriages or birth defects.

Teratogenicity refers to the damage that can be done to a baby before it's born. During the first three months (trimester) of a woman's pregnancy, when the baby's body is still developing, certain chemicals or radiation can damage it enough to cause a miscarriage, or defects if the baby is born alive. During the 2nd and 3rd trimester some chemicals (lead, for example) can stunt the baby's growth or damage its brain.

There are big differences between animal and human reproduction, so tests in animals often don't match up with what happens in humans. For example, a toxic chemical that causes a birth defect in a rat may cause a miscarriage in a woman. So the possibility that damage before birth can occur is reason enough to prevent exposure of pregnant women to suspicious chemicals.

What Do Those Letters and Numbers Mean? LD50, LC50, mg/ kg, ppm?

LD50 stands for the Lethal dose that will kill 50% or half of the animals in an experiment. LC50 stands for the Lethal Concentration in the air they breathe that would kill 50%. The dose can be measured directly in the animal's water or food, but the animal doesn't breathe all the air so the concentration is the best substitute measurement.

LD50 and LC50 are followed by a number and more letters. For example, an LD50 of 200 mg/kg in dogs means that half of the dog would die from exposure to 200 mg for every kilogram of their body weight. 200 mg is about a pinch of salt. A kilogram is 2.2 pounds. (Most other countries use metric measurements so scientists find it easier to think metric.) If half of the dogs die from only 200 mg for each kilogram of their weight the chemical would be very toxic, but if it took 5 grams, (which is the same as 5000 mg) to kill half of the animals it wouldn't be nearly as poisonous.

The death in these animal studies is not from cancer. The animals die from damage to their digestive system, lungs, kidneys or some other part of the body, and usually die much quicker than with cancer, which takes at least a year to develop and longer for the animal to die from it. So animal studies for cancer take years and are very expensive.

Of course, a 1 kg rabbit is a lot different than your average human (about 70 kg). If a 1-gram dose killed half the rabbits in a study, would half of a group of people die if they ate and drank enough to be dosed with 70 grams per person? Every question like this has many possible answers, with no one, whether they're a scientist, physician, or public official, knowing the right one. They can make a guess based on their knowledge and experience, but every one of them will likely have a different opinion.

Don't let yourself be intimidated by the letters and numbers (units). It usually isn't necessary to know beforehand exactly what they mean. There should be a note somewhere saying what the units stand for. The thing to remember is that you only compare a number with another number that has the same units - for example, parts per million in your water with the "safe" level in ppm not ug/l. If it looks like they're comparing two numbers with different units, you must find out how to make the units the same. If there's no one around who can help you, you can call or write CHEJ's Science Department in Falls Church, VA.

What Is Epidemiology?

It's not only the study of epidemics. Whenever there's an outbreak of disease such as German measles or AIDS, public health authorities are responsible for tracking the disease - who gets it, when, how many die. But the epidemiologists study any group or "cluster" that has been diagnosed with a particular condition, for example miscarriages in chemical plant workers.

It's hard to get complete information on health effects in a community. People go to different doctors and hospitals, and individual records aren't combined to show trends unless there's a reason. For example, the aids epidemic was well on its way before enough cases were reported to make health officials pay attention. In contrast, the government for years has followed the health of newborn babies. Infant death information is collected from all over the country; state agencies and the federal Public Health Services monitor increases and decrease. Cancer statistics, kidney diseases, occupational diseases, and lead poisoning in children are also monitored. The information comes from hospital records, labor department files, and welfare records and is maintained by the Centers for Disease Control and National Center for Health Statistics.

In the case of lead, we only have statistics for families on welfare. We don't know how many children whose families are not on welfare have lead poisoning. We have a pretty disorganized system for maintaining records for some diseases and no records at all for others. For example, there are no central records to tell us how many people have headaches, stomachaches, joint pains, allergies, dizziness, etc. These symptoms could have a variety of causes, be they environmental, occupational, or personal. It's almost impossible to attach a number to symptoms like these – you can't measure a headache, however bad it feels.

How Accurate Are All These Figures?

It's important to realize that laboratory and "real-life" experiments are both hard to do accurately. We should look at the statistics as ballpark figures. They provide as accurate a result as we can get to decide what precautions to take. When the scientists throw these numbers at you, ask for an explanation of their accuracy. Testing methods tend to improve over time, making future results more reliable (and past ones less!).

When you are reading tables that are showing values for a certain chemical it may say "N.D." instead of a number. That means it was not detectable below a certain level, usually because the test wasn't sensitive enough. There may be "detectable limit" given somewhere, say, 0.002 ug/g. You are being told that there may be some of the chemical there, but if there's less than 0.002 micrograms per gram it can't be detected.

What is Risk Assessment?

Risk Assessment is an attempt to put hard-to-define risks into numerical form in order to be able to compare different hazards. The Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) have used it increasingly in the last ten years. It was originally used to measure the long-term effects of radiation, but it is used now for toxic chemicals as well, with limited success. When they set "safe" levels of exposure, risk assessors tend to assume an ideal situation – no foul-ups or lax safety precautions, as little as possible of the chemical is used, etc. Of course, this often isn't the case.

Risk assessments are really just educated guesses, though the people using them don't often admit it. If you know how much of a chemical can cause cancer in a lab animal, you begin to get an idea of how serious a problem it is for humans. When the amount of the chemical in the environment is accurately known, the information becomes a little more useful. For example, we know that aflatoxin, which comes from a fungus that grows mostly on peanuts, is very carcinogenic in animals. It is a serious contaminant in some foods, including peanut butter. You might've noticed a peanut butter label that says it was tested for aflatoxin, but NOT how much was found. This is because no one knows what amount causes cancer in humans. The ideal approach would be to inspect the peanuts and make sure that they're not used when the aflatoxin is above a certain level set by the FDA. Since the FDA doesn't know, they've guessed. Right now they've saying that the levels of aflatoxin in peanut butter are so low that the risk is "minimal", and that even if it does cause cancer in humans, it's so rare that would be impossible to know which cases of cancer it did cause. Some people may feel comfortable with that reasoning and some may not. Some people have never heard of aflatoxin and may be shocked to find out that a known carcinogen could be in our food supply at all.

How Important are Risk Assessments?

Not as much as we might think at first. The risk itself is always important, but from what we have already seen, it's nearly impossible to do a risk assessment that is objective and accurate. There are just too many hard-to-measure factors affecting the chance that any one chemical will harm us and if so, how and to what extent, and too many ways for personal bias to change the results. For example, there's been a long argument about whether arsenic causes cancer. We do know that it's poisonous. It probably does cause cancer, but many people seen to be immune. So we're not sure how many cases might occur, and what amount of arsenic might cause cancer. Also it doesn't seem to cause cancer in animals, so there's no way to put the information together. When there are information gaps, the only thing we can do is build in an extra safely factor, by making the allowable level a certain amount less than what we think the "safe" level is.

So what are you supposed to think when you hear a government official say that the risk of drinking the water is no worse than eating a peanut butter sandwich or taking an airplane ride across the country? Do you take that seriously or not? You already know from what you've read that with toxic chemicals there's no certainty, and risk assessments aren't necessarily reliable. You can challenge comparisons like this, and ask for or look for the information they're based on. These statements are made to stop your questions and concerns, but remember that you're entitled to be informed and decide for yourself. Our lives are filled with standards that are partly based on risk assessment, like the 55 mph limit. If we choose to drive fast and increase our risk, we've only ourselves to blame if we crash. But we don't have a real choice about drinking our water, living in our homes, and breathing the air. We're entitled to these things without increased risk.

Risk assessment is used for cancer because it's easy for scientists to find out the number of cancer deaths. You may not be satisfied if you find that toxic chemical damages the nervous system, but doesn't cause cancer. Because it's so hard to get good information on things like numbness, forgetfulness and loss of taste or smell, risk assessments for these serious and life threatening illnesses are often useless, and so aren't done very often.

Recently there have been risk assessments done for things like infant death, miscarriages, and birth defects, but so far they haven't been as reliable as for cancer. Scientists may say that this is the best we can do for this chemical right now, based on the information we have. But the scientists only recommend what the standard should be; officials that are under the thumb of the politicians make the decisions. So there are unfortunately a lot more than just health reasons that decide the final standard.

If you're trying to figure out if a chemical is safe or not, start by finding out the allowable level. It won't be as easy to find out if the rules are being followed, but if enough people ask questions you can often get some action. In the case of the pesticide, ALAR, a consumer organization found that ALAR was present in apples even though growers had claimed they no longer used it. The public responded by buying fewer apples products. You can be sure that the growers learned a lesson. If there are enough people paying attention and willing to do some footwork, fraud like this can be stopped before it becomes a problem.

How Do We Do A Health Study?

A health study can be a simple questionnaire about your family's health history or a large scale physical examination of many people, including blood tests, X-rays, etc. The most important question is whether a health study should be done at all. If you're considering doing one, the CHEJ guidebook "Community Health Surveys" will help. Whatever study is done, the full cooperation of the community is very important. The people who are being studied must be involved in the planning and must know what the results will mean for them. You should have an agreement ahead of time with local and state officials and possibly the company involved about what to do once the study is finished.

- What will be done if results show levels that are abdominal?
- Will more detailed studies be done?
- Who will be pay for them?
- Will there be a program for counseling and treatment of those with health problems or high values of the contaminant in their blood or body tissues?
- When will remedial action (cleanup) start and who'll pay for it? Local and state health departments are notoriously short of funds for anything beyond the original plan, so "what ifs" need to be built into the agreement.

What Problems Can We Expect?

Whatever health problems are being studied, you should agree on what's considered normal before the study begins. You'll hear "the range of normal values" time and time again. But scientists rarely agree on what "normal" is. This uncertainty is often the most serious problem for scientists to explain, and if it's not dealt with ahead of time, officials can use it as an excuse to ignore important results. Also, normal values can "change" over time. Blood lead levels in the U.S. have been rising for generations, because of air pollution from more than one hundred years of industrialization, and lead used in gasoline, paint, water pipes, and many other sources. So if we compare people's lead levels today with those living in the same place a hundred years ago, we can hardly call today's levels normal.

Another problem occurs when tests are done on a group of people with similar exposure. They may all live in the same area, eat fish from the same river, or use the same well. Even so, the levels will vary a lot. Usually at least one person will show a level that is much higher than everyone else's.

The problem comes in trying to explain this. First, they try to identify any previous exposure at work, at home, or at play. This means over a whole lifetime, not just the recent past. You will hear that levels like this can be expected in any study just by chance, like a throw of the dice. It's very hard for the people involved to accept this, and hard also for the community to consider this level accidental. In most situations, you can't get cleanup based on a few unexplained high levels, but enough high levels will raise the community's average significantly.

What Do The Results Tell Us?

For example, what can blood tests show? Few laboratories do testing for anything besides lead. Metals are much easier to measure accurately than the organic chemicals such as pesticides and plastics. Some chemicals, like dioxin, are very difficult and expensive to measure. If the exposure comes from sources like water or soil, the level may be barely detectable. Recent improvements in the sensitivity of tests and detecting equipment have helped, but have also caused more problems. When a small amount is found using more sensitive methods, we have to realize that small amounts may have been there all along but weren't noticed. Then we wonder whether this explains some of the problems we've experienced in the past, or if it only shows that nothing serious has been caused by the contaminant being there.

The worst situation is when the levels of a contaminant in the environment are high enough to cause harm. The longest known history of poisoning has been lead. It is easily measured in the blood, and levels can be very high in children or adults. People with high levels eventually show obvious symptoms. Testing is routine for many communities and work places. Lead cleanup technology is also well developed and readily available. So you might wonder why lead poisoning is still so widespread.

When very low levels of a toxic chemical are detected, it may be impossible to know what symptoms it's causing. Most people still have DDT in their bodies for example, but even though it's known to be very harmful, no specific illness has ever been proven to be caused by it. The official reason it was banned was the loss of birds – the DDT in their bodies caused the shells of their eggs to be too thin for the chicks to survive.

When you become concerned about your own or our family's health, it won't be easy to get help. You may be told outright or indirectly that you are a hypochondriac, or that your symptoms are not serious. If you are concerned enough and are willing to pay, you can have routine tests done. You will have a hard time convincing any public official to order tests, even if there's an obvious reason, like a leaking landfill next to your house.

Even with an understanding and sympathetic physician it won't be easy. Anyone who has a rare disease can tell you how long it took for a diagnosis to be made, even when serious identifiable symptoms appeared. Like science, clinical medicine has limits. Physicians can't diagnose all illnesses any more than chemists can accurately measure all the chemicals in the world.

We can suggest the following plan for you if you are concerned for yourself and your family where you are living or have lived:

- If no one is sick at the moment but you are concerned, try to find out as much as you can about your environment and the potential hazards in it, and how you can protect yourselves. Most people only find out about contamination after problems show up and by then it's too late to avoid a whole lot of trouble.

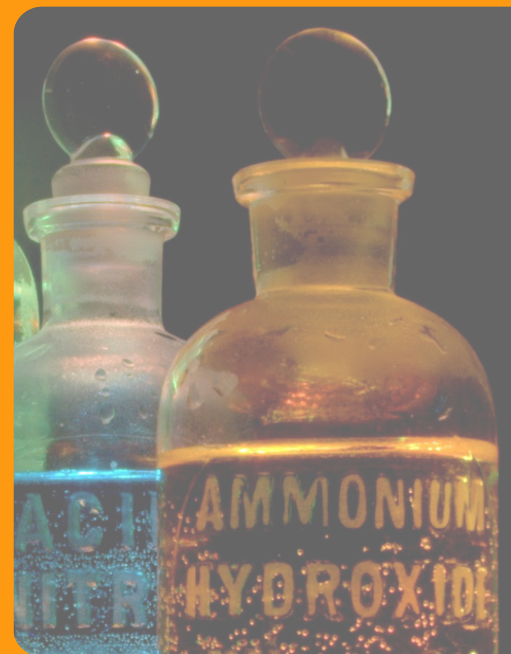
- If there are general symptoms like headaches, fatigue, and rashes, get a medical checkup right away. If no likely cause is found you may be very frustrated. You may not be sure that there is something in your environment that is harmful. Even if you go somewhere else for awhile and find that you feel better as long as you stay away from home, you won't convince some people that it is not "all in your mind." There are lots of people who find themselves in this situation, and they sometimes find each other. Together they can often find a solution, and help each other get through the tough times.

- When some medical problem is identified, there may be a more serious investigation, especially, if there's evidence of contamination of your environment as you've suspected. Whatever the cause, your environmental condition must be changed.

- When you're the victim of contamination it's very important to plan ahead. Recent research on cancer shows that most have more than one cause, which gradually adds up until cancer develops, usually many years later. Make sure you don't suffer any more exposures, if possible. Remember that smoking adds another cause. Avoiding jobs that involve working with dangerous chemicals is good idea, as is checking your house for radon. Toxic exposure doesn't have to haunt you for the rest of your life, but reducing your carcinogens is sensible at any time.

"CHEJ is the strongest environmental organization today – the one that is making the greatest impact on changing the way our society does business."

Ralph Nader



"CHEJ has been a pioneer nationally in alerting parents to the environmental hazards that can affect the health of their children."

New York, New York

"Again, thank you for all that you do for us out here. I would have given up a long time ago if I had not connected with CHEJ!"

Claremont, New Hampshire

CHEJ

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