

SOURCES AND AVOIDANCE OF BASIC CHEMICALS

Many of the items in common use at home, school, and place of work are the most frequent offenders for many chemically sensitive patients. Many of these products are often mixtures of multiple chemicals. Commonly, many of the chemicals in such products are not listed as these are considered trade secrets. Therefore, after the testing, when the sensitivities are pinpointed precisely to the basic chemicals such as phenol, glycerin (Kosher, hydrocarbon, Colgate-Palmolive), hydrocarbon alcohol, formaldehyde, and many other chemicals, it becomes impossible to hand over a list of products containing such chemicals and just tell the patient "go ahead and avoid such and such products". Moreover, multiple chemical sensitivities is the rule rather than the exception. As time passes by, the sensitivities tend to spread to related, as well as to the unrelated, groups of chemicals.

These chemicals are so widespread that 100% elimination is almost impossible. Therefore, the practical way to treat chemical sensitivities is to reduce exposure to the specific chemical to a level well below your tolerance level and then also to limit the use of other chemicals in general and find alternate substitutes which are, rather, derived from natural sources and are better tolerated. Remember -- no product is safe for you unless tested by you and found to be safe.

The following considerations will help you to arrive at what products you should or should not use. As you read these lists of substances and suggestions, it will probably occur to you that many of the suggestions are based on common sense and a simplification of lifestyle to eliminate contact with potential environmental offenders.

1. Read the labels. Do not use if you can identify a given chemical on the product label.
2. A general knowledge of the fact that what kind of properties or uses a chemical has and possibly what kind of products may contain it. For example, phenol is an antiseptic, so it may be found in mouthwashes. It also has an anesthetic effect, so it may be found in throat sprays intended for sore throats. Formaldehyde has a slight anesthetic effect also, so this and phenol may be found in air deodorizers. Insecticides and pesticides are not water soluble, so these are often dispensed in some sort of petro-chemical base.
3. Related chemicals may also be avoided. For example, a patient sensitive to Kosher glycerin is likely to be sensitive to coconut oil or to coconut from where both are derived. Hydrocarbon alcohol and hydrocarbon glycerin are petroleum derived; so are many other chemicals, including utility gas. So avoid them.
4. Test the product yourself and see if it bothers you. Make good use of your nose. Besides serving as an organ of smell and adding to the personal looks, the nose has another vital function. It serves as an extremely reliable chemical sensitivity testing box.

The more severe the chemical sensitivity becomes, the more sensitive the nose gets. Despite all the advances in chemical technology, no chemical testing method or machine is a match at all to the ability of an extremely sensitive nose to detect the presence of extremely low levels of offending chemicals in the air. However, in advanced cases, olfactory nerve fatigue may set in and one may lose sense of smell. A chemically sensitive patient with a poor sense of smell is at a serious disadvantage because he cannot find out when some chemicals bother him so that he should be able to get away from them in time, in order not to get sick from them. There is a word of optimism for such patients. If they avoid most of the common chemical exposures, their sense of smell will come back and even will get much sharper and they will now be able to detect many chemicals that bothered them but they were unable to sense before. An unwary patient may remark, "since I have been on the treatment, it seems like I am getting worse. So many chemicals around me never bothered me before but they do now." The matter of the fact is that they did bother him before, but he was not aware. The delayed hidden sensitivity reactions have not been converted into immediate and obvious reactions. His lost sense is coming back and, in fact, he is getting better.

5. Try to avoid a product if it has a distinct odor to it.
6. If you have a less toxic substance, use it.
7. If you have to use a chemical, use it outdoors. Face in the direction of the wind, so that the chemical fumes fly away from you.
8. If an offending chemical must be used indoors, a sufficient amount of time must be given for it to fume out before the patient can return home.
9. Try to find substitutes that are natural and well tolerated by you.
10. Remember the general principle:

"IF YOU CANNOT EAT IT, DO NOT BREATHE IT"

Keeping each of these principles in mind, let us see how various basic chemicals can be avoided and what you can use instead.

I. PHENOL

Phenol is contained in coal tar, tar-containing soaps, shampoos, ointments, asphalt, paints, creosote, all liquid laundry detergents, and the golden brown linings of tin cans, especially those for commercial food products. This lining prevents the metal from bleaching the can contents. Only such foods as the manufacturer desires to bleach (asparagus, grapefruit, pineapple, artichoke, and some citrus juices) are apt to be packed in unlined tins. It is also contained in some skin care products such as Noxema and is used in the manufacturing of aspirin, nylon, polyurethane, explosives, epoxy, glue, herbicides, pesticides, gasoline, dyes, phenolic resins, Lysol, mouth washes and sprays or lozenges for sore throats.

AVOID:

1. Fresh paints: Paints should be tested before using. Paints usually consist of several substances -- vehicle, pigment, drying agent, pesticides, and fungicides.

Rubber-based paints must not be used. Casein and alkyd based paints are the most satisfactory, but the highly susceptible individuals cannot expect a null effect from the use of so-called non-odorous paints in closed quarters. Although the odor at the time of application may not be extreme, the persistence of this odor for many months may be responsible for perpetuating chronic effects.

The following paints are usually well tolerated:

- a. DuPont Lucite without teflon or hyxylate. This is water based latex.
- b. Kelly-Moore Super Flat. It is water based latex. From Texas, telephone 214-358-2488.
- c. Sears -- 2nd best latex (wall and ceiling paint). Their least expensive outdoor latex contains no fungicide.
- d. Benjamin Moore - it is an outdoor latex.

Indoor painting is best done in summer months, but irrespective of the time of the year, the susceptible individual may have to evacuate the premises during, and for several days following, any type of painting.

DuPont Lucite without teflon is usually best tolerated. Some highly susceptible individuals have found that they can enter a house 4-8 days after it has been painted, if DuPont Lucite without teflon has been used. Some people have found that they even respond better if they mix approximately one pound of baking soda to one gallon of the paint. Keep adding baking soda to the paint until the bubbling action stops. Avoid premix paint because it has teflon in it. The manufacturer does not put teflon in tint base. We do not believe in using tints, for the dyes will have fixatives that are toxic. Walls should either be off-white or white, but not stark white. A little pigment is needed to keep tint base from being so white it almost hurts your eyes.

Testing for paints, varnishes, shellacs, and other finishing materials:

Despite above considerations, it is always desirable that the paints, varnishes, shellacs, and other finishing materials should be tested before they are used. The following guidelines are suggested:

- a. Secure a small quantity of finishing product desired. Cover a scrap of plasterboard, or a piece of lumber with it, and allow ample drying time for the fumes to out-gas.

b. Perform the sniff test by smelling the test piece for several minutes at frequent intervals, until you are satisfied that the product is acceptable or unacceptable to the chemically susceptible individual.

2. Canned Foods

3. Herbicides and Pesticides: For avoidance, refer to page number _____.

4. Bakelite Molded Articles: Especially Bakelite handles and pots and pans which significantly out-gas on heating. Also avoid Bakelite toys.

5. Detergents: Especially liquid detergents.

6. Perfumes: Especially used in soaps and other inexpensive perfumes that come from coal tar or petro-chemicals. Refer to chemical substitute number 36.

7. Gasoline: for avoidance, refer to _____.

8. Photography solutions

9. Coal-tar containing soaps and shampoos: Such as Packer's Pine Tar Soap, Grandpa's Pine Tar Soap, Poly-Tar Soap, Poly-Tar Shampoo, Packer's Pine Tar Shampoo, Sebutone, etc.

10. Asphalt: Such as used for tarring of roofs and in road construction. Encountering a fuming tar trailer used in roofing and road construction or a recently tarred road are major sources of such exposure. Highly susceptible individuals should request advance notification of such treatment by the neighbors or the municipalities, so as to be able to protect themselves in their own home or flee from the area for a week. When the roof, alley, road, or parking lot near one's home is being tarred, the highly susceptible individuals are advised to flee for a week or more. But upon returning and for at least a year following, during direct sun exposure, these areas remain a major source of both outdoor and indoor air contamination. While driving, you may suddenly encounter road tarring. One should close the car windows and breathe through an activated charcoal mask or bag.

11. Food coloring dyes: These are derived from coal tar. For avoidance, refer to _____.

12. Creosote: Rarely enters home except occasionally it is contained in skin ointments or creams.

13. Phenol: Is used in the manufacturing of the following:

a. Aspirin: Phenol sensitive patients should avoid aspirin and use another analgesic, such as Tylenol.

b. Polyurethane: This is contained in pillows, mattresses and used for stuffing of furniture, building insulation and insulation on cold appliances. For pillows and mattresses, refer to "Coping With Your Allergies", pages 251-252.

c. Epoxies: These are adhesives or plastics, electrical and electronic equipment. These heat up and cause epoxy to outgas. Prolonged use of TV, radios, microwave ovens, and home computers may foul the air in the vicinity of such devices.

d. Nylon: This is usually well tolerated unless it has been treated.

e. Saccharin: Saccharin is a coal tar derivatives, so this should be used as a sweetening agent. This may be contained in certain low-cal desserts, sodas, and other foods.

f. Glue: Such as used in laying tile floors. Some adhesives may require several weeks to evaporate fully. Adhesives containing _____ are especially troublesome -- a hazard that is increased in the presence of heating units in the floor or in the ceilings of downstairs rooms.

14. Lysol: Contains phenol. It should be avoided. For substitutes, refer to _____.
15. Throat Sprays and Lozenges: May contain phenol. Non-toxic remedy for sore throat is: Mix apple juice and honey. Heat and sip. Or gargle with salt and warm water, 1/2 tsp. of sea salt without iodine to a glass of water or according to your taste.
16. Medicines: Phenol is widely used as a preservative in many injectable medicines including allergy extracts. If you are receiving allergy injections, we have already taken phenol out of your extract. You must inquire of your physician before he gives you any kind of injectable medicines if the medicine contains phenol as a preservative. Usually, the preservatives are printed on the label.

Sometimes a patient may give a history of reactions to one or more injectable medicines whereas the same medicines may well have been tolerated in the oral form. This could be because of phenol or other preservatives in the drug. Remember, the reactions to drugs are not necessarily from the active ingredients. These could be from preservatives, coloring dyes, and other excipients.

II. GLYCERIN

Glycerin is derived from many sources. The three most common types of glycerin are:

1. Kosher Glycerin: This comes from coconut. A patient sensitive to Kosher glycerin may have to avoid coconut and coconut oil.
2. Hydrocarbon Glycerin: This is a petro-chemical by-product and its sensitivity represents sensitivity to other petro-chemical products.
3. Colgate-Palmolive Glycerin: This is either made from beef or pork. Patients sensitive to Colgate-Palmolive glycerin should be tested for sensitivities to beef and pork.

The source of glycerin in a product is often not mentioned. Therefore, all products containing glycerin should be avoided. Glycerin may be labeled as glycerol or mono-glycerides or di-glycerides.

Glycerin is used as a preservative, softener, or sweetener in such things as candies, beverages, chewing gum, marshmallows, breads, buns, baked goods, shortening, margarines, ice cream, whipping cream, cheese, gelatin desserts, and dry cereals. Read the labels. Do not consume the product unless you are sure of its contents.

Other sources of glycerin include;

1. Many skin creams and lotions -- use tolerated oils as lubricants.
2. Some bar soaps:
 - * Rokeach Kosher soap -- coconut oil
 - * Neutrogena
 - * Physician and surgeon's cocoa butter soap

* Tom's (all purpose) cocoa orange soap

The following soaps do not have glycerin:

* AR-EX (no glycerin nor coconut oil)

* Liquid soap (no glycerin nor fragrance), write to:

Community Soap Factory
P.O. Box 32057
Washington, DC 20007

3. Shampoos: Refer to chemical substitute # 35.

4. Cleaners: Cleaners such as LOC (Amway) is coconut oil based. Basic H (Shaklee) has soybean base.

5. Deodorants: Refer to chemical substitute # 38.

6. Toothpaste: Refer to chemical substitute # 41.

7. Many cosmetics and make-ups: Refer to chemical substitute # 41.

8. Suppositories and medicines: Discuss your present medicines with your physician.

9. Some industrial products: Products such as inks, glues, cements, road oil, and vaseline.

III. FORMALDEHYDE

Formaldehyde is one of the most important chemicals and is widely spread in our environment. Following are the major sources:

SOURCES	SUBSTITUTES
1. Germicidal-Detergent Soaps	Refer to chemical substitute # 3.
2. Air deodorants. It numbs the sense of smell.	Refer to chemical substitute # 5.
3. Disinfectants	Refer to chemical substitute # 6.
4. Mouthwashes	Refer to chemical substitute # 33.
5. Shampoos	Refer to chemical substitute # 35.
6. Antiperspirants	Refer to chemical substitute # 39.
7. Bakelite pots and pans with bakelite handles or bakelite toys	Use pots and pans without bakelite. Refer to chemical substitute # 2. Use wooden or metal toys.
8. Hair setting lotions	To 1/2 cup warm water, add 6 tsp. of super-fine sugar -- beet or cane if tolerated. Apply while warm to set curls.

SOURCES	SUBSTITUTES
<p>9.Ureaformaldehyde -- insulation especially used in mobile homes</p>	<p>Such homes must be abandoned or insulation replaced with yellow fiberglass with aluminum paper shield (not red fiberglass). Do not use urethane foam. Place insulation on outside of ducts, not inside. Reinforced aluminum instead of plastic sheets can be placed over insulation behind plastic board. Fiberglass without the vapor barrier may be the best solution if it is covered with heavy-duty aluminum foil.</p>
<p>10.New fabrics, fabric and clothing stores. Natural as well as synthetic fibers that are wrinkle-resistant, shrink proof, moth proof, water repellent, dye-fast, flame resistant, and more elastic</p>	<p>a.Avoid new fabrics and fabric and clothing stores. Washing the material thoroughly may render it more tolerable but other types of finishes such as plasticized starch, especially from bed linens, cannot be removed by laundering.</p> <p>b.Shop through catalogs.</p>
<p>11.Paper products, especially the ones with increased wet strength such as paper towels, toilet tissue, facial tissue, paper cups and plates</p>	<p>a.Use pure white unscented paper products such as paper towels, toilet tissue, facial tissue, or stationery. White paper products are still treated with formaldehyde but in lesser concentrations. If you discover a brand of paper products that does not affect you and your family, you will be wise to use that brand rather than shopping for bargains. White, unscented "Scottissue", "soft Weave", and "store brands" are generally okay. If you cannot find paper towels that you can tolerate, use cotton toweling instead.</p> <p>b.Instead of using paper cups and plates, use china, glass, Corelle, stoneware, or Corning Ware.</p>
<p>12.Insecticide solutions to kill flies, mosquitoes, moths, and rodent poisons</p>	<p>Refer to "Coping With Your Allergies", chapter 25 - "Pest Control: Insects and Rodents".</p>

SOURCES	SUBSTITUTES
13. Gasoline and diesel fumes	Refer to page _____.
14. Auto exhaust - gasoline and diesel	Refer to page _____.

Other Sources of Formaldehyde:

1. Photographic developing solutions.
2. As a resin in nail polish.
3. As an additive in concrete, plaster and related products.
4. Wall board.
5. Wood veneer and wood preservatives.
6. Plywood.
7. Synthetic resins.
8. Incineration of waste.
9. Smog - formaldehyde is the major agent in smog responsible for eye-burning.

IV. PERFUMES

The composition of a perfume depends upon its usage. Perfume contains:

1. Actual perfume oil
2. Alcohol
3. Water

There are three basic types of perfumes:

1. Extracts of essences: 10% to 20% perfume oil in alcohol
2. Colognes: 3% to 5% perfume oil in 80% to 90% alcohol with water making up the balance
3. Toilet water: 2% perfume oil in 60% to 80% alcohol with water making up the balance

Most perfume oils come from flowers, animal substances, or man-made chemicals, especially petro-chemicals or coal tar.

Examples of animal source perfumes are:

1. Castor -- from beaver
2. Civet - from civet
3. Musk - from male musk deer
4. Ambergris - from sperm whale

The most expensive body perfumes contain rare flower oils. Perfumes in soap and inexpensive perfumes come from man-made materials.

Products that may contain perfumes are many, the most common ones being:

SOURCES	SUBSTITUTES
1. Soaps, shampoos & baths	Refer to chemical substitutes # 3, 27, 31, 35, and 40.
2. Room deodorizers	Refer to chemical substitute # 5.
3. Detergents	Refer to chemical substitute # 7.
4. Fabric softeners	Refer to chemical substitute # 8.
5. Furniture polish	Refer to chemical substitute # 11.
6. Candles	Refer to chemical substitute # 21.
7. After shave lotions	Refer to chemical substitute # 32.
8. Mouthwashes	Refer to chemical substitute # 33.
9. Perfumes and many cosmetics, including hand and body creams, fingernail polish and removers, lipsticks, etc.	Refer to chemical substitute # 36.
10. Hair sprays	Refer to chemical substitute # 37.
11. Body deodorants	Refer to chemical substitute # 38.
12. Paper products such as toilet paper, tissue paper, etc.	Use pure white, unscented paper products, "Scottissue", Soft Weave", or store brands.

V. CHLORINE

Chlorine is found in:

1. Clorox and chlorine-containing scouring powders, bleaches, and automatic dish washing detergents.
2. Chlorinated drinking water.
3. Swimming pools.
4. Antiseptics and disinfectants.

For testing and substitutes for Clorox and chlorine-containing scouring powders and dishwasher detergents, refer to instructions # 9, 4, and 28.

For testing and substitutes for chlorinated water, refer to instruction # 14.

As antiseptics and disinfectants, us Zephiran 1:750. Refer to chemical substitute # 22.

Generally, the use of chlorinated water for washing foods does not cause symptoms even in the most highly susceptible, but permitting foods to stand in this water prior to cooking has been incriminated in several cases. Also inhalation of steam of boiling, chlorinated water in cooking or from running a hot tub in a closed bathroom or from steam radiators has been demonstrated as a cause of symptoms in certain highly susceptible persons.

VI. HYDROCARBON ALCOHOL

Ethyl alcohol or ethanol (C₂ H₅ oH) is derived from various sources. It is formed as wine or hard cider by fermentation of sweet fruit juice. Industrial alcohol may be made from molasses, potatoes, grain (especially corn), or organic substances such as shellac and oil. If you are sensitive to a chemical, then you are likely to be sensitive to its base source from where it is derived. For example, a wine drinker is likely to be sensitive to grapes and a beer drinker is likely to be sensitive to various grains from where beer is derived. A patient sensitive to wine may very well be able to drink beer without any problems. Hydrocarbon alcohol is derived from ethane, which is a petro-chemical product and so are utility gas, gasoline, and many other man-made chemicals. If you are sensitive to hydrocarbon alcohol, it means that you are likely to be sensitive to various petro-chemical products, too. This does not mean that you cannot drink alcohol. Alcohol for drinking purposes is all derived from various grains and other food sources. Since petro-chemicals are so widespread and so much in common use, hydrocarbon alcohol becomes an overall representative for many such chemicals around us. Therefore, sensitivity to hydrocarbon alcohol represents a widespread chemical susceptibility problem. This, in turn, means that a person sensitive to hydrocarbon alcohol should avoid chemicals in general with special emphasis on chemicals closely related to petro-chemicals.

Following are the sources of alcohol:

1. Tinctures.
2. Toilet preparations.
3. Drugs - check with your physician to make sure that the drugs prescribed do not contain alcohol.
4. Used as solvent for shellac, varnishes, paints, and brush cleaning preparations. For testing and avoidance of such products, refer to section _____ on paints, page _____.
5. Used in making rubber and ether.
6. Used in sterilizing surgical instruments.
7. Rubbing alcohol is, in fact, ethyl alcohol - instead of rubbing alcohol, use Zepharin 1:750 dilution by adding 1 part of 17% Zepharin to 127 parts of water = 1 cc to 127 cc or 4-1/2 ounce of water. Inhalation of rubbing alcohol is frequently a cause of acute reactions in the home as well as in the physician's office. Sometimes the history is dramatic: "Each time I get an injection or have blood drawn, I pass out." Such patients are probably reacting to alcohol rather than to a fear of needles (a frequently sought explanation).

8. Alcohol heaters and lamps.
9. Flavoring extracts for foods also contains alcohol. These should be avoided.
10. Amyl alcohol is made from ethyl alcohol and is used as solvent.
11. Isopropyl alcohol is used in the manufacture of antifreeze and solvents. At home, it is commonly used as rubbing alcohol. Use Zepharin 1:750 instead.
12. Perfumes - it is used as a diluent in perfumes.
13. Methyl alcohol is also called surgical spirit or wood alcohol. It is very toxic and should be avoided. No attempts should be made to test with methyl alcohol. It can cause blindness.

As hydrocarbon alcohol is an overall representative of petro-chemicals and their by-products, here is a partial list of various petro-chemicals that should be avoided:

1. Engine exhaust.
2. Gasoline and diesel.
3. Utility gas and its combustion products.
4. Other fuels (oil and coal) and their combustion products.
5. Waxes and paraffins.
6. Mineral oils.
7. Engine oils.
8. Kerosene.
9. Paints.
10. Vaseline.

In order to avoid various petro-chemicals, keep these general rules in mind:

1. Do not store any of such products in the house.
2. Do not use these products inside the house.
3. Find substitutes that are more tolerable.
4. You should not breathe what you cannot eat.
5. If absolutely necessary to use, use them outdoors, facing the direction of the wind so that the fumes fly away from you.
6. Avoid unnecessary exposures.

The extent of avoidance for each chemical will depend upon the degree of sensitivity to a specific chemical.

ENGINE EXHAUSTS

General Consideration: Most immediate and acute reactions to engine exhausts result from diesel trucks, busses, tractors, trains, and boat exhausts. These exhausts become more noxious when such exhausts are more odorous and/or bluish colored. Such exhausts arise from diesel engines all the time and arise from gasoline engines when these are in poor mechanical condition. The exhausts also become more noxious when any vehicle is decelerating or when first started in cold weather.

1.For Testing Auto Exhaust:

- a.Sit in your driveway 20 feet behind your car with the motor running for a few minutes.
- b.Stand near a bus stop or traffic light for 5-10 minutes.

2.For Avoiding Engine Exhaust:

- a.Do not follow busses, trucks, and other automobiles too closely and especially try to stay away from those emitting offensive fumes.
- b.Try to stay at least four car lengths behind other vehicles when stopping for lights or crossings.
- c.Close your car windows and turn on inside air when passing diesel trucks or busses, or when driving through excessively contaminated areas.
- d.Driving to the windward side of multi-lane traffic is helpful.
- e.Avoid heavily traveled routes and find alternate, less contaminated routes.
- f.Try to avoid travel during peak rush hours.
- g.Sit in the front seat. Ordinarily, one is less exposed to the fumes of his own vehicle when riding in the front seat and keeping rear and rear side windows closed.
- h.Have an expert motor mechanic check your automobile. The vehicles having defective exhaust or brake systems, improper carburetor adjustments, or using an excessive amount of oil, should be repaired or discarded.
- i.Since contamination extends peripherally along roads and railroads, such persons profit by living at least three blocks from expressways and railroads and avoiding areas of decelerating traffic, such as bus stops, stop lights, and houses on the corners of the streets, especially corners having stop signs. In general, one may assume that if one is able to hear the roar of automotive traffic that he may also be exposed to the fumes of it, irrespective of whether he may be able to detect their odors. Conversely, the less the roar, the less the odor, since both tend to be carried by the same air movement.
- j.If these measures do not suffice, some additional measures may need to be taken.

- 1.Ask your automobile dealer to install a valve so that air intake can be closed when needed. The fan will keep indoor air in circulation, or instead, you can take some non-allergic tape - 2 inches wide - and close the air intake and seal it well. This will help to reduce the air intake from outside. Air intake is usually located under the hood. Ask motor mechanic if not sure.
- 2.Carry a charcoal mask or activated charcoal bag or a cotton handkerchief and in case of unexpected or heavy pollution, this can be used to filter the air. Charcoal masks can be obtained from Human Ecology Research Foundation/SW, 12110 Webbs Chapel Road, Suite 305, Dallas, Texas 75234, (214) 620-0620 (Mon., Wed., and Fri. 9:00 - 4:00 p.m.). Charcoal

bags can be obtained from Air Conditioning Engineers, P.O. Box 616, Decatur, Illinois 62525, (217) 422-0311.

3. You may buy a charcoal electric air filter which can be plugged into the cigarette lighter of your car. It is portable and also runs on 110 volts so you can carry it with you and use it in hotels and motels. This can be obtained from Air Conditioning Engineers (see address above).

For Avoiding Auto Exhaust At Home:

- a. If your garage is attached to the house, you may have to start parking your cars outside. The worst thing is when the garage is underneath the house or part of the living quarters are on top of the attached garage. The fumes from the attached garage can enter through the common attic or if the air intakes of the house are located too close to the garage or merely can seep through the door attaching the garage and the house.
- b. If you live in a high-rise apartment complex and the garage is located in the basement, the fumes can travel through the elevator door conveniently located in-between the garage and the apartment complex and then up the elevator shaft to foul the air of the hallway of the upper stories. The fumes can also enter through the entrance door between the garage and the apartment complex and foul the air in a similar fashion. These exposures will only be reduced if it is assured that such doors will be kept closed all the time when not in use.

GASOLINE AND DIESEL:

1. Use unleaded gasoline.
2. Either keep your windows closed and remain inside or step away from the car as the tank is filled.
3. Face the car in the windward direction so that the gasoline fumes fly away from the car.
4. Do not pump gas yourself. Avoid self-service pumps.
5. Be sure to tell the attendant to stop at the first click of automatic pump. (Additional pumping by hand results in spillage, wastes gas, and causes toxic fumes.)

UTILITY GAS AND ITS COMBUSTION PRODUCTS

Utility gas and fumes from various gas appliances, especially gas range, gas dryer, gas space heaters, gas refrigerators, and BBQ grills constitute major sources of indoor air pollution. Gas water heater and gas furnace are usually well tolerated unless the patient is very sensitive or these are defective and discharge fumes inside rather than outside, whereas other appliances are the worst offenders.

If you are sensitive to petro-chemical products, no treatment can be successful unless gas range, gas dryer, gas space heaters, and gas refrigerator are taken care of. For a patient who is sensitive to

petro-chemicals, the leaking utility gas and its combustion products constitute the single most important chemical load. This must be brought under control; otherwise, no treatment program is likely to be successful. It seems to make little difference whether artificial or natural gas is used, although the relatively high pressures under which natural gas is currently delivered may increase this hazard, especially if home installations have been designed for lower pressures. As a consequence, every joint and turn in a utility gas line is a potential and, oftentimes, an actual point of slight leakage. Utility gas, being lighter than air, tends to rise from the basement or kitchen through the remainder of the house. The greater the amount of piping and number of outlets and the more pilots and other automatic devices on gas utilities, the greater the potentiality and probability of leakage.

Chronic symptoms may be maintained in the highly susceptible patient living in a gas utility home. This is due to leakage of unburned gas, even though all pilots are turned off, no gas is burned, and despite the report of the utility company that gas leaks cannot be detected. Devices for detecting gas leaks are relatively unsatisfactory and are no match for the extreme susceptibility of certain individuals. Acute reactions have been induced in such persons when returning to such a home after a period of absence during which time the patient in question had not been exposed to utility gas and related chemical exposures, and when relatively symptoms-free at the time of such a re-exposure.

For the petro-chemically sensitive patient, it means that the use of gas range, dryer, space heaters, and all other appliances where the combustion products are discharged directly into the living quarters should be stopped and electrical replacements sought. All the pilot flames should be put off and the burners on the range be wrapped in aluminum foil with ends fastened with freezer tape. This may not be sufficient and the gas may need to be shut off at the meter. Cook exclusively with electric appliances such as hot plates, electric frying pans (not Teflon lined), electric broilers and the like for the rest of the family as well as the affected person. Later, an electric range may be purchased.

The use of exhaust fans or attic fans to remove the fumes of gas appliances acts no better than a toy. There is no compromise short of stopping their use and turning off the pilot flames for good. It may take a couple of days for the fumes from these appliances to escape completely even if these are used for a few minutes.

OTHER FUELS AND THEIR COMBUSTION PRODUCTS

Storage of fuels in the basement of homes constitutes a potential hazard for chemically susceptible patients. Storage of coal and oil in the basement is hazardous.

- 1.Coal: Kerosene is used to wet down coal to control dust in delivery. This slowly vaporizes and contaminates the air of the basement.
- 2.Oil storage tanks: There is also a troublesome odor arising from oil storage tanks located in the basement, as well as the additional hazard that they may be overflowed in filling. Once a

basement floor has been flooded with fuel oil, this odor tends to remain for several months or even years. This may necessitate abandonment of such a home for a highly sensitive person. Also, most fuel oil installations, whether furnaces or space heaters, impart a characteristic odor. Although more odorous when operating, there may be sufficient odor when not operating to cause symptoms in a highly susceptible person.

The combustion products of these fuels also add to the air pollution. For example:

- 1.Coal burning stoker furnaces - sometimes burn back into the coil stoking mechanism and contaminate basement air.
- 2.Coal burning in open fireplace - apt to puff discharging gas and smoke into living quarters.
- 3.Double chimney used for both fireplace and furnace flue - combustion products from the furnace may be pushed into the living quarters by a down draft. This can be prevented by keeping fire in fireplace when an adjacent flue is being used under atmospheric conditions favoring such down drafts.
- 4.Fuel oil space heaters are among the worst polluters - these must be stopped and electric heaters sought.

Highly sensitive patients may have to make major changes in their heating systems. However, the following considerations will help you cope with the situation if you are not very highly sensitive to the gas fumes.

Overall Evaluation of the Heating System: The type of furnace fuel which is used is relatively unimportant as each has disadvantages. These have already been discussed.

However, indoor air pollution arising from combustion of furnace fuels seems to depend more on the type and location of the furnace than the type of fuel used.

- 1.Warm Air Furnaces: These are more troublesome than other types, even though they may be in good mechanical repair.
- 2.Hot Water or Steam Heat: This is much better tolerated than a warm air furnace.

The disadvantages of warm air furnaces are:

- 1."Puffing": The warm air systems may pollute the air of basements by the emission of combustion products through draft apertures as a result of "puffing" each time the gas-fired furnace turns on.
- 2.Leaks: Major leaks between the combustion and warm air chambers of the furnace are not uncommon.
- 3.Turbulence of Dust: Warm air furnaces result in more turbulence and dust disposal as compared with other systems.
- 4.Toxicity of Fried Dust: The dust itself is a good absorbent for various petro-chemicals and other fumes in the house. As this "chemically loaded" dust-laden air passes over the extremely

hot furnace alone, it produced toxic fumes. This explains why many chemically susceptible patients seem to react to the first blast of warm air when such furnaces turn on automatically.

The Role of the Location of Furnace

The air contamination of the home, resulting either from fuels or their combustion products, is relatively increased in basement apartments or living quarters directly over furnace rooms. Indeed, the location of the furnace, irrespective of its type or fuel used is of utmost importance.

The worst location is in the center of the main floor of a ranch type home or in an open utility room on the same floor of the living quarters.

Recommendation:

1. Have your house thoroughly checked for any obvious gas leaks and if found, should be corrected. This measure is not sufficient for a highly sensitive person because our present gas-leaking detection devices are too insensitive for the highly sensitive patients.
2. If you have gas hot air heat, let it be checked by your heating and air conditioning repairman to make sure that the furnace is in good condition and there are no leaks between the combustion and warm air chambers.
3. Find a heating and air conditioning company who will vacuum clean your hot air ducts once or twice a year. This will help reduce the toxic effect of "fried" dust.
4. Do not use open fireplaces.
5. If you have a common chimney for both the fireplace and the furnace flue, you may use the fireplace when the atmospheric conditions exist for a down draft pushing the furnace combustion products into the living quarters.
6. When using the fireplace, avoid pine or other odorous wood.
7. Those living in apartments should avoid living adjacent to or directly above the furnace room or the garage, but even upper floors may be contaminated as a result of motor exhausts of basement garages entering elevator shafts. In general, those highly susceptible to chemical additives and contaminants are more comfortable living in an all-electric apartment building rather than those containing both gas and electric utilities.

NOTE: For highly sensitive patients, these measures may not suffice. They may have to change their heating system to all electric, hot water, or steam with the furnace to be located in the garage or another room not connected to the house. These are major changes and are best discussed on an individual basis.

WAXES AND PARAFFIN

Waxes in all forms should be avoided. Floor and furniture waxes and polishes should be stopped. Avoid using candles in the house. For substitutes, refer to Chemical Substitute #21.

Waxed vegetables and fruits should be avoided in general. Certain foods waxed with a heavy coating of paraffin such as rutabagas and parsnips can cause reactions in highly sensitive patients even when skins are peeled off. Wax particles adhere to cut surfaces in the ordinary process of peeling such waxed vegetables. This may be demonstrated by immersing a previously waxed and peeled root in boiling water. Under such circumstances, wax droplets rise to the top of the water as contrasted to similar immersion of the same unwaxed, peeled vegetable used as a control.

Cucumbers, bell peppers, green peppers, and certain fruits are commonly waxed more lightly and polished. After peeling, cucumber may be tolerated, but peeling of green pepper is less feasible. Similarly, peeled apples may be tolerated. Other waxed foods include turnip, orange, grapefruit, tangerine, lemon, and eggplant.

MINERAL OIL

Mineral oil should be avoided. It is commonly used as a laxative or is contained in hand lotions and certain medication. Milk of magnesia (unflavored) is a good laxative which is tolerated well by most allergy patients. However, you should consult your physician for recommending a laxative. Tolerated vegetable oils can be substituted for hand lotions. Mineral oil is also used in the treatment of bedding, furniture, and rugs to allay dust in motels or hotels.

ENGINE OILS

For relatively odor-free automobile oil, use RMP or Quaker State.

KEROSENE

Kerosene is used to wet down coal, to control dust in delivery. If stored in the basement, it slowly volatilizes and contaminates the air of the basement. Indoor coal storage should be stopped. This also includes charcoal used for BBQ grills. It is also used as a carrier for the propellants in the spray cans and as a solvent for the inks as in fresh newsprint and felt-tipped pens. For this and other reasons, the use of spray cans should be abandoned. If the fresh newspaper bothers you, it can be made more tolerable either by letting someone else read it first to air it out or by baking the newspaper in the oven at 200° for about 20 minutes.

Odors from felt-tipped pens and magic markers and ballpoint pens may be bothersome for some. If so, alternatives should be sought such as Cross, Parker, and Schaeffer. We find that Cross ballpoint pens are less offensive.

VASELINE OR PETROLEUM JELLY

This is either used as such, as a lubricant for the skin, or may be contained in hand and body care lotions, hair oils or creams, and in medicated ointments or creams. Tolerated oils can be used instead.

PAINTS

Please refer to page # _____.

PINE OIL

Pine oil, pine scented cleaners, furniture polish, toilet articles, Christmas trees and other evergreen decorations, turpentine, mineral spirits and various solvents. Many petro-chemically sensitive patients often react to pine odors, so it seems appropriate to include these in this section. Pine oil and pine scented cleaners, furniture polish, and toilet articles should be avoided. For alternates, refer to _____. Turpentine and mineral spirits and other solvents may be used in paints and varnishes. Oil paints for art painting also contains turpentine. There seems to be little difference between the effects of turpentine and mineral spirits except that some individuals may be more susceptible to one.

Christmas tree odor (pine oil) may be responsible for worsening of symptoms during Christmas season. Similarly, other evergreen odors may be contributing to the chronic illness.

Some sensitive people can tolerate a Southern Hemisphere evergreen, the Norfolk Island Pine. Available at nurseries and some florists, these make beautiful year-round potted plants which can be decorated for christmas. Other people have created their own trees of papier-mache, using coat hangers or umbrella stands.