THE NON-TOXIC HOUSE

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Making your home and work environment pollutant-free

LOUISE SAMWAYS

green press

Acknowledgements

With thanks to my husband for his continuing patience in typing my manuscripts and to my children for putting up with a distracted mother!

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Author's note

THIS HANDBOOK has been written in response to readers of my first book 'The Chemical Connection' (to be re-released 1991 by McCulloch Publishing/Green Press) who wanted more details on how they could create a safer personal environment free of modern day chemicals and the problems they can cause.

These modern chemicals, particularly those derived from petrochemicals, are insidious in that they can now be found in virtually all household furnishings and surfaces, in clothes and bedding, toiletries and cleaners, food and water. They crop up where you least expect to find them, e.g. formaldehyde in teabags and mattresses!

Our world of course is made up of chemicals but what we are concerned about here are synthetic man-made chemicals and natural chemicals used at concentrations which our bodies were never designed to experience.

The problem is now so serious that American researchers have suggested that indoor air pollution alone could rank among the top ten causes of death! Apart from the physical burden, these chemicals can cause subtle but profound changes in behaviour and mood affecting how we feel about ourselves and each other. But this is a problem with solutions.

It has been extremely heartening to see the response of ordinary people to environmental issues generally and how this grassroots power is now affecting professionals, industry and governments. It is with great pleasure that in this book I share what I have learned on how to protect

ourselves and our environment, and how individuals can minimise the effects of chemicals on themselves and their families.

Louise Samways 1991

Introduction

MY CLINICAL experience as a psychologist over the last twelve years as well as recent research has shown that our homes can be the reason for a whole range of physical and psychological symptoms. Professionals from a wide range of disciplines are becoming involved in the issue of 'sick building syndrome' which is now recognised as a potential killer wherever people live in modern housing.

Research by the E.P.A. in America has found that the indoor air of the average home has up to five times more chemical pollution than a typical industrial area. Concentrations of some carcinogenic and mutagenic substances were found to be 100 times greater indoors than outdoors! Even more worrying is that children , breathing the same air as adults, absorb about six times more of these chemicals and have a much greater vulnerability to chemicals because their immune and central nervous systems are still developing. We can no longer assume that our homes are a safe haven from the world.

Chemical pollution in the home is particularly insidious as we are now learning that chemicals can affect people at much lower levels of exposure than previously suspected. Toxic levels of exposure that occur in industry usually give obvious acute physical symptoms soon after exposure causing observable physical damage. But it is now apparent that at very low concentrations these chemicals can cause changes in the *way* different body systems work together as the body tries to cope and adapt

to the chemical — hence the symptoms can be very subtle physical and emotional functional changes rather than obvious physical symptoms.

This may explain why increasing numbers of people are complaining to health professionals that they 'feel unwell', 'ache all over', 'feel like they are getting the flu - all the time!', 'feel spaced out', are tearful or moody and are suffering a multitude of subclinical physical symptoms such as headaches, digestive disturbances and so on. These symptoms are often dismissed as neuroses, a virus or stress. But we must ask ourselves whether the stress is emotional or physical. We can no longer ignore the onslaught of environmental pollutants on our bodies and our minds. It is ludicrous to think that pollution can eliminate whole animal species but have no effect on us physically and mentally.

Our behaviour is determined by a complex interaction between many systems in the body aiming for a constant state of equilibrium. If one system is 'stressed' others try to compensate so the body may suffer a great deal of physical stress before symptoms become apparent.

The cocktail of chemicals in the average home affects all of us to some degree — it is not a matter of *who* is sensitive but *how* sensitive each person is to these chemicals.

SYMPTOMS

Behavioural

The first symptoms will be changes in behaviour or minor physical changes.

You could become depressed, tired, irritable or confused. Sleep pattern and dreams, memory and concentration could be affected as could tolerance to frustration and mood generally. One of the most worrying symptoms is increased aggression in children and adults making responses to even minor frustration unpredictable and in severe cases quite dangerous. One young girl with pronounced chemical sensitivities attacked her younger siblings repeatedly causing serious injuries until

the problem was properly diagnosed as being primarily due to a sensitivity to formaldehyde - an extremely common carcinogenic chemical widespread in most modern homes.

Sensitivities can also increase overactivity and give a 'hyped up' feeling or alternatively lower the level of arousal so you feel half drugged, dazed and 'dopey'. Much notice is usually taken of overactive adults and children as they are so difficult to live with or teach but the underactive child tends to be ignored or 'picked on'. They become increasingly passive and timid, growing up to be shy introverted adults who never seem quite 'with it'. The effects on concentration and memory can cause serious learning difficulties and educational retardation.

These psychological symptoms are often the first sign

Physical

Sensitivities can also cause a multitude of physical symptoms ranging from digestive problems, rashes and headaches through to serious allergies, hallucinations, asthma and arthritis. Many people with unexplained physical and psychological symptoms which have been blamed on 'stress' find that chemical sensitivity is really the problem. For example a man who had been told that his repeated giddy spells, panic attacks and 'tingling' fingers were due to 'stress' discovered they were actually being caused by wearing polyester clothing.

Emotional

Chemical sensitivities can affect mood and emotions and alter anyone's view of the world. Relationships can become distorted causing over reactions to situations and bad communication. Often those showing these symptoms are called 'touchy','prickly' or defensive. As children and adults they often have very poor social skills and consequently few friends. Often they have disastrous relationships with their parents and siblings and may become scapegoats for other problems within the family.

Many couples I've seen contemplating divorce (from each other or their children!) have found a chemical 'clean-up' in their lives can have a profound effect on their ability to work out their problems without expensive counselling or the extreme measure of divorce.
Parents who have sensitivities themselves or who have children with sensitivities can very easily find themselves with the screaming 'heeby-jeebies' trying to cope and can be at real risk of abusing their children.

DIAGNOSIS

It is essential that if there are significant sensitivities they are diagnosed accurately and as soon as possible. Unfortunately a whole range of health professionals have hopped on the bandwagon and there is now a problem of overdiagnosis as well as misdiagnosis. If you suspect a serious sensitivity problem then question the health professional you are proposing to see as to their qualifications and expertise in the area of chemical sensitivity and ask about the reliability of any testing methods they may use. Because many tests commonly used are far from reliable if chemical sensitivity is suspected it is much more sensible to minimise overall chemical exposure particularly in your own home. Testing which results in large lists of 'passed' or 'failed' chemicals can be extremely misleading and miss the point that *all* chemical exposure should be reduced by everyone.

RANGE OF CHEMICALS

It is not just the obvious chemicals like flyspray and oven cleaner which may affect us, but an enormous range of petro and other chemical products and medications. These have crept into our homes and become an accepted part of modern living.

Since the Second World War there have been dramatic developments in industrial chemistry and particularly in

the development of all sorts of byproducts from petrol refining. There are now over five thousand new chemicals being added to our environment each year and over 60,000 chemicals in commercial production.

The question is - do we really need them? Amazingly there has been almost no research into how these chemicals react with each other to affect the human body. The research that has been done has usually only looked at chemicals individually and rarely even considers the possible effects on behaviour.

As consumers and parents we have been indoctrinated by manufacturers. Their marketing strategies have led to a dramatic change in the way we clean our homes and our bodies. Manufacturers of household cleaners suggest that our homes need to be as clean as hospitals - but unless you are going to perform surgery on your kitchen floor you do not need hospital strength cleaners! We've also been convinced by all sorts of manufacturers that 'white is right'. The only way to achieve pure white in anything from toilet paper, babies nappies and tampons is to use very strong bleaches (even white flour is bleached). It is not only the environment that is affected by bleaches and their waste products but people too! A preliminary survey in New Zealand has suggested an alarming association between cot death and the use of chemical cleaning solutions for baby clothes. The chemical residues on the clothes are vaporised by the baby's warm body to envelop the baby in a chemical vapour particularly while sleeping in relatively still air.

Technology has also often completely changed the products we use to build, paint and furnish our homes and even the clothes we wear. It is quite extraordinary the way in which governments have failed to regulate these products and have allowed them to creep into our homes without extensive research as to their safety particularly when they are combined together and heated in the home. Everyday examples include detergent mixed with hot chlorinated tap water producing a cloud of carcinogenic chloroform and the microwaving of breast milk which changes its structure to produce substances that

can cause brain damage in babies. It is up to manufacturers to prove these products are safe physically and behaviourally it is not up to consumers to have to prove they are unsafe! It is only recently that drug interactions and the way they can interact to produce dangerous substances with certain foods has been considered. As consumers we have been brainwashed into thinking that a bacterially sterile home means a healthy home. In fact a home that is bacterially sterile will probably be chemically filthy and a distinct health hazard!

One of the biggest causes of health problems in the modern home is formaldehyde, a carcinogenic chemical which if dissolved in water (and our bodies are eighty percent water!) makes formalin which is a preservative used to preserve dead animals (and human bodies) for scientific study. Formaldehyde is found as a finish on non-iron and synthetic clothing and furnishings (causing many people to feel light headed or 'buzzy' when shopping for clothes), in toiletries such as soaps, shampoo, deodorants, nail polishes, hair setting lotions etc. It is also found in tea-bags and tissues and in most household cleaners. It 'gases off' from non water-resistant chipboards, some types of foam insulation and foams used for padding in upholstery.

Even so called 'natural' substances can cause symptoms. Moulds are often a serious problem even in new homes particularly in the tropics but also in colder climates where wet conditions are combined with home heating and poor ventilation. Moulds can cause very serious physical health problems particularly for asthmatics and can also cause serious psychological symptoms varying from severe depression and mood changes and disturbances in appetite to hallucinations and sleep problems.

REDUCING CHEMICALS IN THE HOME

Fortunately unlike many other environmental problems pollution in the home is something we as individuals and concerned parents can definitely do something about.

This book shows in detail how chemical exposure can be drastically reduced in the ordinary home. You can control what chemicals you use and allow into your home.

Although the list of natural and synthetic chemicals brought into, ingested and used around the home is daunting, satisfactory alternatives are available. Using these alternatives and generally 'cleaning up' the home chemically can have a dramatic effect on symptoms. One mother brought her daughter to see me because of problems with her concentration and general overactivity. She also mentioned that both she and her husband took medication for sleep problems, felt 'tired all the time' and thought that perhaps I could look at their diet. Although a few suggestions to their diet were perhaps warranted the biggest factor was that the husband worked for a manufacturer of household and industrial cleaners and they regularly used every conceivable type of spray, polish, deodoriser, carpet shampoo etc. available. After switching to petro-chemical free alternatives and generally cleaning up the house chemically including steam cleaning the carpets with *steam only* to get rid of chemical residues the family found they all had more energy than they'd had for years, could throw away the sleeping pills and even their dog's chronic skin problem cleared up immediately!

Apart from obvious chemicals like pesticides and those in cleaners, toiletries and cosmetics some of the main causes of problems in the home are water, dusts, cigarette smoke, clothing and bedding, heating and cooling systems. (It should be stressed that the main problem in the home where there is serious environmental illness may be highly individual and due to a number of inter-relating factors that need to be assessed by an expert on indoor air).

The *Non-Toxic House* gives a simple but comprehensive guide for homemakers to make their homes not just environmentally friendly but *people* friendly as well. As consumers and parents we cannot afford to assume that what is available for our homes and prescribed for our bodies is necessarily safe.

That both behavioural and physical symptoms can be caused by chemical pollution in our homes is an insidious warning sign that the human body like the wider environment is just not coping with the chemical onslaught.

The chemical pollution in your home can be reduced dramatically — *you can do something about it.* Satisfactory precautions and alternatives are available. It is up to each one of us for our own and our children's sake to choose to use them.

Louise Samways, 1991

PART A THE HOUSE

1 The site

SITING OF houses is extremely important. Before buying land or a house and land package find out what the land was used for before subdivision. If you can't get good information from the council ask neighbours or elderly residents who've lived in the area for many years.

Some housing estates are actually landfilled or drained swamps and wetlands prone to flooding, subsiding and generally poor drainage. You could be as unlucky as one of my patients who picked a block that used to be the site of a dam. Low lying land is a particular problem near busy roads or freeways as car exhausts tend to be heavier than air and settle on low lying land.

One new house I visited was built on very low poorly drained land and every wall in the house inside and outside was covered in mould.

Mould can cause very serious physical and behavioural symptoms including asthma, headaches, night terrors, hallucinations, aggression and extreme mood changes. The child who lived in the house mentioned was constantly being hospitalised for asthma and had serious depression and aggressive behaviour. The mould problems were due to both the site and structural damage to the slab floor. The mother was forced to allow the child to live with relatives as they could not sell the house. Her asthma and behaviour problems disappeared within two weeks.

Make sure that the land (or land in the vicinity) had not been used by a hazardous industry or as a store-place for chemicals or chemical wastes. As the residents of a

northern Melbourne suburb found out, you cannot assume that the councils would not approve subdivision on such sites. In that case homes were built on the site of a lead battery recycling plant and the council knew about it! Lead even in trace amounts only can cause severe neurological damage, brain damage and death. Its effects are irreversible. Once absorbed by the body it is extremely difficult to remove.

If the land was agricultural land find out if it was condemned due to accumulation of herbicides and pesticides. This can be a particular problem with land that was previously used for market gardening, flower growing, orchards or vineyards.

If you are unsure or suspect contamination have a number of samples from around the site tested before you buy. Contact the Australian Government Analytical Labs, 11 William Street, Melbourne, Ph: (03) 617 0220 for information about testing of soil, dusts or water.

Make sure land on steep hill sites or in dense bush receives sufficient sun *all* year. Many sites are in permanent shadow during winter. Insufficient light promotes mould growth and makes a house cold, damp and very costly to heat. A lack of natural light can also affect your health causing physical and behavioural symptoms (See section on Light).

You should also avoid being too near a busy road or freeway.

DAMPNESS

Look at the vegetation on the block. Mosses and lichens suggest damp areas. Shrubs indigenous to wet areas rather than tall trees in the area can also suggest permanent dampness and poor drainage.

A good time to inspect and buy land is in the winter or tropical wet season.

DRAINAGE

Make sure land slopes away from the house with a fall of at least four centimetres in three metres. Put in drainage pipes and gutters if necessary.

ELECTROMAGNETIC RADIATION

Avoid land that is near high voltage transmission lines or near electricity substations. Research overseas shows that even soil structure and productivity can be affected by E.M.R. changes to earthworm activity in the soil.

People have developed insidious illnesses, such as leukaemia and brain tumours.

Over 300 metres away from the power lines the effects are negligible. (Also see E.M.R. sources inside the house).

GENERAL LOCATION

Consider the general location of the site. Are there hazardous industries operating or planned to operate nearby? Are householders able to use incinerators and where are they located? Incinerators can cause appalling pollution in otherwise ideal locations. In Melbourne 45% of the smoke and haze is caused by domestic fires. So stop using your incinerator! Compost your vegetable matter, recycle your glass, plastic and paper and you will be surprised how much you can reduce your overall household waste.

RADON

This is a colourless, odourless gas produced by the radioactive decay of natural uranium in plants and soils. As it filters up through the soil it seeps into homes. Radon particularly affects the lungs and in America and England is the second biggest cause of lung cancer after smoking.

High levels of radon are found where the ground is high in uranium e.g. shales, granite and phosphate rocks. It is not thought to be a significant problem in Australia as geologically Australia is so old. In Europe, U.K. and U.S.A., however, it is a serious health hazard.

Radon exposure even in highly contaminated areas can be minimised by having a well ventilated sub-floor space and well sealed floors. (You don't find slabs on ground construction except in Australia!)

2 Building structure and design

AIR CIRCULATION AND VENTILATION

IT IS most important that good air circulation is allowed around the outside of the house and that the garage, if not actually separate from the house, is down wind of opening windows. Many garages attached to houses are positioned so that when windows (especially top hung windows) are open car fumes are sucked into the house. Similarly make sure wall furnaces, gas heaters and hot water services are not where gas fumes will be drawn into the house through open windows or wall vents. Try to arrange for the flow of air through a house to be toward the road — i.e. air flowing in the back where car exhaust pollutants are least and out of the front. Good ventilation is essential inside the house. As fewer people now spend time at home during the day it becomes even more important to have ways of passively ventilating the home while you are away. Otherwise indoor air pollutants can accumulate with no way of escaping. Many homes are effectively sealed for the whole of winter! Passive air vents should be to the outside air not into the roof or wall space where chemical dust may be collected and drawn into the house itself. In areas of high outside pollution levels, passive vents need to be able to be closed off, particularly on high outside pollution days. Similarly,

rangehoods over stoves and exhaust fans in bathrooms should carry polluted air out of the house entirely not into roof spaces.

Design the house so that air flow inside the house is not restricted by blind dog-leg passageways.

Windows provide much better ventilation if sliding, double-hung or casement. Top hung windows severely restrict air movement.

If mould is a serious problem in a house and you feel ventilation and light are adequate then check for dampness in and around the house. Check the ground around the outside walls of the house, the subfloor (if not contaminated with sprays), check under all carpets (particularly edges and corners), check other floor coverings (sheet vinyl, vinyl tiles, cork etc. for lifting edges or corners) and check the insides of cupboards especially at floor level.

Look for water or damp patches (damp areas in a house usually smell), pay particular attention to areas where plumbing fixtures are situated in the house i.e. under sinks and troughs, walls and floor around shower recesses, basins, baths, toilets etc.

Damp or wet areas in the house may be caused by leaking pipes (hot or cold water pipes, soil or stormwater drains, under house, under concrete, in walls or ceiling or outside in garden), leaking shower recesses (very common), leaking roof (water drips through ceiling or runs down inside of walls), leaks around windows (faulty flashings, rotten wood etc.), watering the walls of the house instead of the garden, earth outside the house being too high (over the dampcourse, above the concrete slab). Ensure that all ground water flows *away* from the house when it rains. This is especially important in heavy soils where houses have been set into hills.

The water service pipes in the house may be checked fairly easily. Turn off all the hot and cold taps and *ensure that no taps are dripping* even out in the garden. Ensure that the toilet cisterns are not overflowing. Read the water meter and then don't use any water for twenty-four hours. Read the water meter again to see how many litres

of water have leaked out. Hopefully none!

If you suspect that you might have any of the above problems then seek professional advice from a reputable and suitable tradesperson.

CEILINGS AND WALLS

The simplest and cheapest materials are often the best. Painted stone, brick or natural gypsum plaster board or old fashioned fibrous plaster are the most inert and dust free. Use natural paints. (See Paints and Stains). Beware of plasterboard made from phosphogypsum which may contain formaldehyde and high levels of radon.

When sealing floors or painting, vacate the house if at all possible or at least seal off the area being worked on from the rest of the house. Insulation tape or similar can be used to seal off doors and windows very effectively. (Check first to make sure tape does not pull off paint etc.) Strategically placed fans can be used to force air away from living areas or to draw fresh air in from outside. In wet weather close up the area being painted and put some heat on until completely dry. Open up and ventilate the area very well before moving back in.

Avoid painting if you are pregnant.

If using the non-toxic paints and stains available (See Paints and Stains) you probably will not need to use a mask unless you have a particular sensitivity. If needed masks are available from the Allergy Aid Centre (see Resource section at back of book) C.I.G. outlets and some plumbers supplies.

LIGHT

Site the house to maximum advantage on the block and look for designs that encourage the use of natural light and those which use passive heating and cooling. Designing your own home can be lots of fun but in the long run it can be much more cost effective and advisable to show

your plan to an architect whose work you like to make suggestions and to inspect the site. There are a number of builders and design firms specialising in energy and light efficient housing which consider sun angles throughout the year.

Choose trees and shrubs appropriate to the climate and position them around the house to modify climatic conditions — e.g. in cool districts deciduous trees to the north provide shade in summer but allow plenty of light and good ventilation around the house in winter. In the hot areas it would be better to have evergreen trees shading the house to cool it.

Australian natives are beautiful trees but in cold climates choose the small varieties with white trunks and light canopy to provide filtered light even in winter.

The importance of natural daylight has only just become apparent. Natural light is crucial to the functioning of the pineal gland and neurotransmitter production in the brain. Insufficient light of the right type can cause serious depression and disturbances in circadian rhythms. It can also cause disturbances in immune function with increases in susceptibility to infections. Available light can be improved dramatically even in old houses by carefully positioned skylights, taller (rather than wider) windows and painting walls ceilings and window frames in light colours. A white painted window frame admits 30% more light than a dark painted frame!

Plenty of light also discourages mould growth.

MATERIALS

There is a general misconception that if a material or substance is naturally occurring then it is also safe. Unfortunately when we take natural materials out of their usual context and use them to build houses this is not necessarily so. For instance pine and cedar are beautiful timbers but if you make a box (house) out of them and then put yourself inside and seal it, the effects can be disastrous. Just as camphor wood chests were

made to store linen because the camphor coming out of the timber killed silverfish and moths so pine and particularly cedar contain natural resins which can be highly toxic.

With many natural materials there is also the problem of rather unnatural chemicals that may be used to preserve them. One of these, penta-chloro-phenol or PCP has been banned in many European countries and in America but is still used freely in Australia as a fungicide in paints and timbers.

There is also the problem of what paints and finishes you use on materials. One patient and her young son became extremely ill when they moved into their completely pine timber lined home. The way the timber had been used was extremely creative and quite beautiful but either the PCP impregnated in the timber at the mill or the resins in the wood itself created a terrible health problem for the family.

Even without professional advice they realised it was the unsealed wood causing problems and quickly set out to seal it — but not liking the colour of the finish they diluted it with turps. In total it took 100 litres of turps to complete the job as well as the wood stain. The family's health became much worse. This illustrates another point which is that total surface areas in homes on walls, ceilings and floors can run into thousands of square metres. Whatever you build or finish these surfaces with can 'gas off' extremely large amounts of chemicals.

Choose materials very carefully. In general, the greater the smell given off by a material or finish the more it is gassing off.

FLOORS

Slate, cork, hard ceramics, quarry tiles, parquetry or hard wood sealed with high gloss polyurethane (low gloss polyurethanes are softer and break down more easily) are usually acceptable although people with significant chemical sensitivity would do better to avoid all urethanes

and use beeswax instead. Beeswax also has anti-static properties making the atmosphere of rooms generally more comfortable. Avoid mixing polishes and waxes with turps as turpene sensitivity is very common.

To soften the appearance of hard floors use cotton or wool rugs which can be easily aired outside and washed.

Carpets harbour chemical dusts as well as dust mite. These days they may also contain formaldehydes, phenols in glues, moth proofing chemicals and chemical soiling inhibitors. Carpets are a worse problem if underfloor heating is used as the heat causes these chemicals to vaporise.

If you must have carpet then use the old felt type underlay (still available), do not put it on heated floors and buy a pure wool carpet which has not been treated with soiling inhibitors. There are carpets available (contact the Allergy Aid Centre Melbourne) which do not use the modern petrochemical based glues or treatments.

PAINTS AND STAINS

There are now a number of natural paints and woodstains available that give beautiful finishes and do not contain petrochemicals or synthetic fungicides.

- *Paints* are available from: Bio Products, 25 Aldgate Terrace, Bridgewater, S.A.
- *Stains* are available from: Grimes and Sons., 1/30 Peel Street, Eltham, Vic. 3095

PESTICIDE SPRAYING

Many Australian councils have insisted in the past on subfloors being sprayed with very dangerous pesticides for termites before building inspections were passed. Fortunately many are now realising this is often not only unnecessary but dangerous.

Concrete stumps, metal ant cappings and localised treatments of ant's nests themselves can be just as

effective. Well ventilated, dry conditions discourage ants. Inspect underfloor areas every six months for signs of termites and if present treat the nest itself.

Depending on soil type some of these sprays can stay in the soil for 30 years or more. Flat clay soils tend to retain the chemicals longest but if this is restricted with no overspray under a good concrete slab it is unlikely to be a problem. Spraying can cause problems on sloping sandy soils as rain can leach the chemicals down hill into the soil surrounding the house. For gardeners and young children this can be a real hazard.

If a house has been sprayed, paving immediately around the house and having fixed garden beds that require little attention can be a good precaution. If serious overspraying has occurred and tests reveal significant contamination some residues can be burnt off the surface of paths and top soil — but wear a proper mask and protective clothing. If serious contamination has occurred you may need to actually replace the soil.

Note: If your house is raised above the ground and the subfloor has been sprayed then under no circumstances allow children to play in the subfloor area. Warn tradespeople who may have to go under the house so that they can take appropriate precautions. For serious contamination problems contact the Total Environment Centre, Sydney for advice (see Resource section).

3 Inside the building

CIGARETTE SMOKE

THE BIGGEST single air pollutant in many homes is cigarette smoke. Cigarette smoke is particularly insidious as it adheres to furnishings, painted surfaces, glass and carpets. It not only increases the incidence of asthma and tonsillitis in children but recent evidence suggests it can actually interfere with the D.N.A. (genetic material) of unborn children making them more susceptible to cancers. Ionizers can be of limited use in taking cigarette smoke out of the air and depositing it on surfaces. If you simply can't stop smoking use one very well ventilated room only (away from children) to smoke in or only smoke outside.

CLOTHING AND BEDDING

Since warm bodies heat the fabrics used in clothing and bedding, chemical finishes or residues can be vaporised from this surface and envelop the wearer or sleeper. If you doubt this then notice the smell coming from garments when you iron them. One of the most common chemicals added is formaldehyde (a known carcinogen).

Chemicals are added to fabrics in dying, weaving and to give special non-iron or flame retardant finishes. Strong pesticides can be added to mothproof woollen garments or are used in growing cotton and linen.

Far fewer chemicals tend to be used on natural fibres like cotton, silk and wool (unless specially treated as mentioned above). The chemicals on natural fibres can be largely neutralised and removed by adding half a cup of bicarb. soda to the first rinse cycle. To remove traces of previous laundry detergents rinse with half a cup of borax and half a cup of white vinegar.

Special care should be taken to wash new baby's and children's clothes before they are worn. Try as far as possible to use untreated cotton or quilted cotton. (Although quilted cotton may be padded with synthetic fibre, the fibre filling used is in the raw unwoven state and is therefore reasonably inert. Similarly even people who cannot tolerate woven polyester which is heavily treated with chemicals can usually tolerate raw polyester fibre which is used in pillows, doonas and sleeping bags.)

If using wool, wash very well before use to remove as much mothproofing as possible. If clothes are well ventilated and not stored when soiled then moths are rarely a problem. If storing woollens undisturbed for any length of time see 'Moth Control' in the Household Pest section.

Use cotton sheets (not the non-iron variety) and cotton underlays over mattresses. If dustmite is a problem use raw polyester fibre filled pillows and doonas.

When washing cotton clothes and linen stretch and smooth into shape while wet on the line. Hang cotton clothing on plastic clothes hangers to dry. When dry, a quick fold and taking the complete garment on its hanger off the line will eliminate nearly all ironing.

Avoid waterbeds as the heater causes the plastic liner to 'gas off' continuously enveloping the sleeper in a chemical vapour all night every night.

Electric blankets create electromagnetic fields very close to the body. The effects of these fields appear to be cumulative. Long term insidious health problems are now being recognised overseas (see later section on Electromagnetic Radiation).

For those with special sensitivities beds are available from the Allergy Aid Centre which are completely non synthetic.

COOKING

Since cooking food necessitates using a source of heat and often creates high humidity it is very important that the cooking area is well ventilated to remove bi-products (e.g. gas fumes, water vapour, cooking smells). Kitchen areas that are poorly ventilated can become very unpleasant to work in. Install a fan over the stove ducted to the outside of the building.

Electricity is the cleanest source of fuel in the home in terms of biproducts and is the best alternative for particularly chemically sensitive people. Microwave ovens really are an unknown as only minimal research has really been done as to the effects on people and food long term. After being assured they were perfectly safe we now find that care must be taken to check them for 'leaks'. Also contrary to early assurances that they have no detrimental effect on food we are now told that milk for babies should not be heated in microwave ovens as changes can occur which produce substances that cause neurological damage. Frankly I think that this is one appliance that we can easily do without. Gas stoves produce carbon dioxide, carbon monoxide and nitrogen dioxide as well as other harmful gases.

If you must use gas then make sure that there are no leaks and that the gas burns as efficiently as possible. There should be no 'gas' smell.

Wood can be a very inefficient fuel for cooking so make sure that if you do use wood that it is of high quality. *Never burn offcuts of building materials* as they can contain extremely toxic chemicals.

DUST

Many people do not realise that in the modern home much of the dust is now chemical dust shed from the synthetic materials used to build, decorate and furnish the home. Because dust particles are very fine they usually pass straight through the filters on vacuum

cleaners and accumulate in the air to irritate eyes, noses and particularly the lungs.

For this reason dust with a soft moistened cloth rather than flicking a feather duster around. Ducted vacuum systems are excellent as all the material is taken outside the house.

To minimise chemical dusts don't use fabrics, furnishings, paints and flooring made from petrochemical products so that chemical dusts are minimised.

DOMESTIC PETS

A pet is one of the best general physical and mental therapies there is for both children and adults! Unfortunately they can also cause a number of physical problems especially for asthmatics or those people who tend to have allergies.

To minimise the effects of animal dander (any dust, dead skin, hair etc. from the animal's skin or fur) make sure that if dogs and cats come inside they have their own basket and bedding which can be washed regularly. Put some freshly crushed pennyroyal or eau de cologne mint under the bedding to repel fleas and brush the pet's fur regularly — outside!

Make sure your pet is properly housetrained and keep it to hard floor areas of the home. It is virtually impossible to stop a build up of dander in carpets or soft upholstered furniture.

If you have severe allergies but would love a pet, try a chihuahua. My son who has severe allergies very much wanted a puppy (but one that wouldn't grow up!). A wonderful vet friend appeared one day with a chihuahua puppy which are known to be virtually non-allergenic. Despite my initial reservations 'Joe' has turned into the most wonderful pet if not a rather unorthodox chihuahua who tackles horses, cows and geese with a frightening over confidence for his size. A chihuahua would be perfect for flat dwellers as you don't need any trees — Joe is very particular about which blade of grass he lifts his

leg on! Never use flea collars on animals. They are almost always unnecessary in a well cared for animal and the chemicals used in them can be a real hazard for people (especially children). If fleas must be treated use an oral remedy available in some supermarkets or from your vet. (See Pest Control — Fleas).

ELECTROMAGNETIC RADIATION

There is increasing and rather frightening research from overseas which suggests that one of the most insidious forms of environmental pollution may turn out to be electromagnetic field radiation from electrical equipment and high voltage transmission lines.

More worrying is that the effects of this radiation appear to be cumulative i.e. exposures add up over years to cause problems.

When one considers that man has evolved in the natural electromagnetic field of the earth, moon and sun and that the electrical properties of an organism determine whether it is alive or dead (hence the use of ECG's and EEG's to measure electrical impulses from the brain and heart to determine death) it is rather extraordinary that for decades 'experts' have made the massive assumption that introducing artificial electromagnetic fields (EMF's) into our environment has no effect on human beings.

In fact we now know that man has the ability to sense changes in electromagnetic fields. Birds use them for migration, sharks use them to detect their prey, even oysters use them to determine when they open and shut. In humans it appears that we detect changes in electromagnetic fields via the pineal gland at the base of the brain. This gland plays a crucial role in the appropriate production of neurotransmitters. Neurotransmitters are chemical messengers controlling sleep, mood, memory and other 'mind' function as well as circadian rhythm. Circadian rhythms in turn determine hormone secretion, digestive enzyme production and other general

metabolism functions. Changes in circadian rhythm can cause psychiatric illness, changes in performance and disturbances in the sleep/wake cycle.

Magnetic fields have been shown to quite definitely affect cell division and enzyme activity in cells. They also affect the endogenous opiate system and endorphin production. The endogenous opiate system is a chemical system of the body which is involved in a wide range of functions such as pain control, mood, concentration and attention. It also plays a crucial role in the communication between the immune system and the brain. Therefore when its functioning is disturbed, changes in behaviour and immune functioning can be expected.

This explains the pattern of symptoms in people exposed to EMF's and how changes in our environmental electromagnetic field exposure have the potential to cause insidious changes in both our bodies and our minds. Even more worrying is that research has shown direct effects on the production of serotonin and dopamine (neurotransmitters) which continued even after exposure to EMF's was stopped.

Research has now shown quite clearly that there are both immediate behavioural changes occurring in people exposed to these fields as well as the development of long term health problems such as various cancers, and alterations in immune function such as multiple chemical and food sensitivities. This occurs especially in children.

Initially the most common symptoms are behavioural such as sleepiness and uncontrollable yawning, mood changes (particularly depression), tearfulness 'fuzzy head' or 'zombie' feeling, irrational fears, general restlessness, difficulty concentrating and problems with memory. Later, mild to severe physical symptoms may occur. These could include unusual 'sensations inside the head', headaches, eye pain, sensitivity to heat and cold, trembling, vertigo, hypersensitive sense of smell, changes in respiration and heart rate, numbness and muscle weakness, nausea, ear pain, tinnitus, convulsions,

digestive disturbance, chest pain, blocked sinuses, supersensitive hearing, changes in appetite, blurred vision and slurred speech.

Long term there is an increased incidence of many types of cancer such as leukaemia and brain tumours in those chronically exposed to EMF's. Children appear to be even more susceptible. One study showed that children whose mothers used electric blankets during pregnancy had higher risks of brain tumours (an increase of 250%) and leukaemia (an increase of 70%). Experiments with rats showed that exposure *in utero* could have effects which do not show up until they are adults.

A contemporary European case history demonstrates the potential effects of EMF's.

Two of four quadruplet boys were suffering developmental delays compared to the other two until it was discovered a strong magnetic field was passing through their bunk beds. When the beds were moved the boys' development caught up with their brothers. Analysts at the United States Environmental Protection Authority have classified EMF's as 'possible human carcinogens' which puts them in the same class as PCB's, DDT and formaldehyde. In Sweden research has shown that EMF exposure from VDU's is leaching mercury from the amalgam of people's teeth and causing health problems. They have also found that VDU exposure appears to induce electric currents between the fillings of the teeth producing bizarre symptoms. One of the most common symptoms being a tingling, burning sensation on the skin of the hands and face which later becomes a painful red rash. Others have found a drastic increase in their sensitivity to ultraviolet light from the VDU's and have been able to reduce symptoms by using 15+ sun screen while working with VDU's. One has to wonder if this may be another factor in the increased incidence of skin cancers. As UV light also has an effect on neurotransmitter production via the pineal gland any increase in sensitivity to UV light may have important consequences for the functioning of the central nervous system and the immune system.

For many years it has been known that sterility and birth deformities are increased in animals grazing under high voltage power lines. Even the productivity of soil has been altered due to changes EMF's have caused in earth worm activity.

From studies in England it appears people vary greatly in their sensitivity to EMF's. There appears to be strong association between exposure to chemicals and increased sensitivity to EMF's. Also many of the very sensitive patients have the ability to send electrical equipment haywire, especially remote controls for videos and TV sets.

From reading the literature it would appear that our present standards for EMF exposure are a joke. For instance, the general population standard is a total exposure of 1000 milligauss over twenty-four hours and not more than 10,000 milligauss for two hours a day. But the research showing increased incidence of cancer was acquired at only 1.5-3 milligaus! No long term research into behavioural and physical effects appears to have ever been done in order to determine these standards. One can't help suspecting that they were dressed up more for the convenience of industry and power distribution than the safety of people.

Hopefully this is not a problem that means doing away with electricity!

The primary problem and greatest danger is from chronic exposure due to the fields created by power distribution itself that is the wires themselves. This has to be tackled by the appropriate authorities and industry in a variety of ways — no housing in easements along high voltage power lines, extending the no human zone either side of these power lines to at least 300 and preferably 500 metres, redesigning of the spacing of the conductors, shielding appliances and equipment appropriately, redesigning appliances and how houses are wired, looking at induced currents resulting from wiring and plumbing. It can be done, people just need to hassle authorities to do it! And before all the wires are stuck underground, out of sight, out of mind, perhaps we should investigate

whether it creates other problems.

On a personal level, it makes sense to work out how much electrical equipment and general appliances you really need. Consider the electrical equipment our homes are now filled with wiring, T.V., VDU's, radio, video, microwave ovens, stoves, refrigerators, freezers, dishwashers, hair dryers, clothes dryers, fans, computers, mobile phones. It makes sense to perhaps start saying to ourselves how many of these things do we actually NEED as opposed to WANT! Before purchasing (and paying for the power to run it) any more equipment ask yourself whether you can do without it. I was stunned to visit an office where even the stapler was electric! If something breaks down does it really have to be replaced?

Reducing usage is not only good for the EMF environment we live in but also for the ozone layer.

If using a VDU, select models where the screen can be placed further away from the keyboard so that you are not less than 80cm from the front and other people are not less than 120cm from the side or back of your screen. (This also means that open plan office spaces may need to be replanned.)

For those who suspect they may have unreasonable exposure to EMF's at home or at work a service is available through EMRase Electromagnetic Consultants (see Resource section at back of book). They can measure your exposure very accurately over a period of between a few hours to many days using an extremely sensitive instrument small and light enough for even children to wear. This personal dosimeter collects the information which is then transferred to a computer for analysis. A comprehensive report is provided with the results showing the sources of exposures and how they can be reduced. EMRase have also developed ways of effectively shielding electromagnetic radiation and their service is available throughout Australia.

The actual sources of high exposure can be quite different to those initially expected. For instance John, a young man who ran a business from home suspected that

his major exposure would be coming from a variety of electrical equipment he used daily but intermittently. However the dosimeter he wore for a day showed that while some of this equipment caused occasional high exposure levels, by far the biggest contribution to the high readings came from the electrical power lines running outside his second floor office. When working in his room, his readings were high, even when all the equipment was switched off.

The results also showed that John was being exposed in a typical day to a level of EMF greater than that known to cause cancer 57 percent of the time.

Jane who worked in an office beside an electron microscope laboratory spent most of her time at her computer or photocopying. Her highest exposure occurred when she was photocopying. On the day recorded, 39 per cent of her time was spent being exposed to EMF's higher than the level known to cause cancer.

These cases illustrate how the most significant exposures can be unexpected. I strongly suggest that anyone who suspects they are being affected by EMF's first establish if this is so and what are the real sources of exposure by getting an independent assessment using appropriate equipment.

FOOD STORAGE

For the sake of a healthy environment and healthy people consider carefully when you shop the amount and type of packaging in which you buy food and then store it at home.

Take your own bags to the supermarket and the fruit shop. Do your apples and pears actually need to go in plastic bags?

Deliberately avoid foods (especially fatty foods) packaged in plastics or on foam trays. Apart from the risk of contamination of the food there is the problem of disposing of the packaging in the wider environment.

Where possible choose fresh foods or if this is not possible those packaged in cellophane, glass or cans which apart from being more inert when in contact with the food are also recyclable.

At home store food in glass or ceramic. Plastic cling wrap and aluminium foil are totally unnecessary if a little thought is used. Use the sealed glass jar and tightly lidded tins for storage. Pack school lunches in grease-proof paper or cellophane bags.

Store foods in appropriate section of fridges. Manufacturers design fridges with meat, dairy and vegetable crispers in the most appropriate temperature zone.

Certain precautions need to be taken to ensure that fridges and freezers continue to work efficiently and don't cost you any more to run than they need. Ensure that door seals are intact and that fridges and freezers are regularly defrosted. Make sure that auto-defrost models are working correctly. Every few months pull the fridge or freezer out from the wall (unplug it first) and vacuum the condenser coils at the back and the floor underneath.

In some areas gas fridges and freezers must be used. Check these are working efficiently with no residual 'gas' smell. If necessary vent to the outside. One patient who had extreme chemical sensitivity, which seemed surprising since she lived in the pristine air of an island in the middle of Bass Strait, found her problem to be the gas from the fridge and freezer.

SOFT FURNISHINGS

When you are on a chair your body heats up both the fabric and whatever has been used for the padding. If you find yourself yawning constantly at work or in certain chairs it may well be vaporising foam padding or soiling inhibitors in the fabric.

Sun shining through windows onto synthetic linings and fabrics can also cause vaporisation resulting in high levels of rubber or other synthetic vapours in the room.

For upholstered furniture use cotton or wool (leather

is treated with many chemicals including formaldehyde) for covers and raw cotton, wool or raw polyester fibre for padding.

For windows use shutters, wooden blinds, cotton, silk or wool. To improve insulation use double glazing.

HEATING AND COOLING

The need to heat and cool a house even in extreme climatic conditions can be *dramatically* reduced by good design and use of materials. If you are going to build contact the building companies specialising in this type of housing for a home that is cheap to run and a joy to live in.

In old cold houses these firms can still be worth consulting for ideas on renovations and suitable insulating materials. Ceiling insulation alone can have a dramatic effect on the comfort of a home - warmer in winter and cooler in summer as well as reducing the costs of heating and cooling.

Electric

This is the cleanest type of heating for the average home in terms of combustion byproducts, however it tends to be very expensive to run. Off-peak types of electric heating such as electric floor heating in the concrete slab or heat-banks are still moderately expensive to run.

Older type heat-banks contained asbestos which should be professionally removed.

Heated floor slabs

Wires in electrically heated slabs create electromagnetic fields which you will be exposed to whenever the heat is on.

Any heated slab, electric or hot water, will heat up floor coverings so that they 'gas off' into the room. Ideally heated slabs should only be used with ceramic tiles, quarry tiles, slate or some other hard flooring. Also soft

coverings such as carpet, cork and soft cushioned vinyls will insulate the floor and make it harder for the heat to get into the room. Instead you may end up heating the ground under the house.

Unvented gas and kerosene heaters

These heaters are usually portable and therefore unvented to the outside. Hence all the products of combustion pour into the room. There have been many cases of carbon monoxide poisoning with these heaters and it is best not to use them under any circumstances - particularly around children. In America there are 200 deaths a year associated with these heaters.

Gas and oil heating

Realistically in Australia natural gas is probably the cheapest fuel if it is available. However the same comments apply to heaters using L.P.G. and oil.

Room heaters should be properly installed, ensuring that the flues are taken outside the building and away from any windows, wall vents etc. Flues should be checked regularly to ensure they are not damaged, rusted through etc. Old metal flues should be replaced with stainless steel when required.

Most domestic outside furnaces and hot water units do not now have external flues and great care must be taken to ensure that the flue gases are not carried inside by prevailing winds through doors, windows, wall vents etc. (This is a very common problem).

Ducted systems

Make sure ducted heating and cooling systems are well made and maintained. Dusts, debri and water in ducts can cause growths of moulds, other fungi and bacteria which will be circulated throughout the house.

If you work at home, use toxic materials or are a smoker then make sure you have adequate ventilation so that the pollutants are taken outside and are not circulated around through the ducting.

Ducted systems can be either gas, oil or electric. Usually the air is heated directly in a heat exchanger to a high temperature which takes most of the moisture out of the air. This problem is reduced in more elaborate systems which use the fuel to heat water and the water to heat the air at a much lower temperature.

Circulated water

This system uses a furnace (gas, oil, wood, electric) to heat water which is then circulated around the house through a network of pipes which are connected to panel or skirting radiators in the various rooms. This system provides a pleasant heat but is fairly expensive to install. Also the radiators themselves can take up a significant amount of wall space.

Hot water can also be used to directly heat a concrete slab. (See heated floor slabs).

Wood fires and wood stoves

Open fireplaces are extremely inefficient and poor chimney design can result in a lot of combustion products being forced back into the house.

If *good* quality wood is used in the new "Triple Burn" heaters (the wood and gases are burnt much more efficiently) the problems can be minimal. However the chimney or flue *must work properly* without downdraughts and be well clear of any openings (windows, vents etc.) so that the combustion products do not end up in the house.

Low humidity

Artificial heating of the home can lead to unpleasantly low humidity. This is particularly a problem if there is synthetic flooring as static electricity tends to build up making the home most uncomfortable.

Humidity can be checked with an ordinary weather thermometer. Placing it inside in a draught free location for five minutes and record the temperature. Moisten a very small piece of cotton gauze with water and wrap around the thermometer bulb (no more than two layers

thick). Wait ten minutes and record the temperature. Ideally the drop should be about five degrees centigrade.

To increase humidity place a bowl of water or a fish tank in rooms.

Cooling

Air conditioners can be a real hazard if they are not maintained properly. Unless you live in the tropics and just can't function without them try to avoid using them at all costs.

Again good design and insulation can eliminate the need for any active cooling.

On very hot days close curtains and windows early in the morning. Use fans to move still stifling air. At night open up windows, doors and curtains. Use fans to draw cooler air from outside by placing the fan in a doorway facing *inwards*.

If you have an air conditioner make sure it is appropriate in size and design for what you expect it to do and clean the filters regularly.

WATER

Unfortunately tap water is by no means pure. In America the E.P.A. has identified seven hundred pollutants in drinking water and at least twenty of these are known carcinogens. In Australia surveys have found that at least half of the water in metropolitan Melbourne does not meet World Health Organisation standards. More alarming still is research that suggests there is greater absorbtion of pollutants through the skin in washing and bathing than by actual drinking. Considering our bodies are about eighty percent water it is easy to see why water 'sensitivity' is such a common and serious problem.

To keep water bacterially safe it is necessary in large distribution networks to add a variety of antibacterial agents e.g. chlorine. I for one don't want it taken out if it means an increase in gastroenteritis and typhoid fever. However the same cannot be said for fluoride. The

current scientific opinion is that any good that it might have on a person's teeth (recent studies have suggested that it might not help anyway) is far outweighed by the toxic effects on the rest of the body. Many countries (not Australia) have now stopped adding fluoride to the water. While improved distribution and storage can reduce the number of chemicals needed, they are still necessary to some degree. The best solution is to either filter the tap water or to catch your own rainwater and filter that. Even rainwater needs filtering before use as storage containers and the catchment material (gutters, roofs etc) can add contaminants as well as algae growth-.There are basically three ways of purifying water:

Distillation

This produces the 'purest' water, is very expensive and only necessary for extremely chemically sensitive people. It works on the principle of boiling and evaporating the water (preferably in glass) and then cooling it again for collection. This leaves impurities behind so that only pure water vapour is collected.

Reverse osmosis

This is also very expensive and can use enormous quantities of water to achieve a small amount of filtered water. These are installed under the sink and have three stages — a pre-filter to remove solids, a semi-permeable membrane that lets water through but not pollutants and a carbon filter to remove organic chemicals.

Activated charcoal

This can be permanently connected under the sink (to supply kitchen tap only) or in the main supply to the house. Portable filters are also available which fit on the tap, or sit on the bench. The water is usually filtered through a screen to remove large solids and then activated carbon granules. They slowly 'clog up' with use depending on how much water you use and how dirty it is. (A patient suffering migraine headaches from tapwater always knew when the filter needed changing because his migraines would come back).

In practice I find the portable Mayrei Silver or the 'Mineral Pot' are sufficient for most people's needs.

A wide range of filters are available from the Allergy Aid Centre or some health food stores or plumbers suppliers. Local stores should be able to recommend tradesmen for those models that need to be 'plumbed in'.

CHILDREN'S PLAY MATERIALS AND TOYS

Choose these carefully. Avoid synthetics and smelly plastics. Very hard plastics with no odour (e.g. Lego) are quite safe. Be *very* careful with paints, glues and play-dough.

Wooden toys are also good but it can be very difficult to find completely non-toxic paints, especially if the toys will end up being chewed in little mouths! Some imported toys from Asia use quite toxic paints.

Below are some cheap, safe homemade versions. Avoid commercial versions of these materials as the ingredients are not usually listed, besides its much cheaper and easy to make them at home.

Playdough

In a saucepan place:
1/2 cup salt
1 cup plain white flour
2 tablespoons cream of tartar
Stir and then add:
1 cup of water
1 tablespoon vegetable oil
Food colouring to make desired colour.

Cook over medium heat *stirring all the time* until the dough is pliable (about 4 mins.) and store in an airtight container.

Paste

In a saucepan blend together 6 tablespoons of water with 1/2 cup cold water to make a smooth paste.

Stir in 2 cups of boiling water and continue stirring as you boil on the stove until clear (about 60 secs). Add more

boiling water if necessary to get right consistency.

Stir in 2 drops of eucalyptus oil and allow to cool before using.

Bubble pipe mixture

Young children should be supervised closely when playing with bubble pipes as they are inclined to breathe in the mixture rather than blowing bubbles out.

Mix together:

2 tablespoons of Puren dishwashing liquid
(or 1 tablespoon laundry soap solution)
1/2 cup glycerine
1 cup warm water

Finger Paints

You will need:

12 cups of cornflour
Eucalyptus oil
1 cup of grated soap
8 cups water
4 hot water dyes of desired colours
4 containers

Mix together cornflour with 1 cup of cold water until a smooth paste.

Boil 7 cups of water in a saucepan and then stir in cornflour mixture slowly.

Continue to stir as you add 1 cup of grated plain soap and a few drops of eucalyptus oil.

Take off stove when soap is melted and well mixed.

In four separate containers dissolve a teaspoon of each dye with a teaspoon of cold water. Mix in 4 teaspoons of very hot water with each colour.

Stir in some cornflour and soap mixture with each colour until completely mixed. Cool before use.

PART B
CLEANERS, TOILETRIES & PEST CONTROL

4 Cleaners

EVEN IF you don't own your own home you do have control over whether you use harsh chemicals or safer alternatives.

There are many manufacturers of cleaners and toiletries who are starting to hop on to the environmental bandwagon and using very misleading advertising about their products.

To be really environmentally and people friendly, products need to be free of phosphates, formaldehyde, chlorine and petrochemicals. One manufacturer has been developing products for ten years in conjunction with the Australian Allergy Association and specialists in the field of environmental medicine. To my knowledge theirs are the only products free of formaldehyde, chlorine, petrochemicals, synthetic fragrances and phosphates. They include a range of household cleaners and toiletries and are available under the brand name 'Herbon' in health food stores and pharmacies and as 'Puren' in Coles/New World Supermarkets. I have successfully recommended these products to patients with extreme chemical sensitivities for some years. 'Aware' soap powder is also said to be free from these chemicals. Kordels cleaners (health food stores) are free from formaldehyde, chlorine and phosphates but not petrochemicals. Their toiletries are free of all these chemicals.

But to save money and still do the job you need look no further than the pantry and herb garden to find the basic ingredients needed to clean yourself and your home.

The most obvious chemicals in the home are located under the sink in your kitchen, the laundry cupboard and in the bathroom. If you are serious about ridding yourself of unnecessary chemicals clear out these cupboards completely and start again.

TO CLEAN THE HOUSE YOU REALLY ONLY NEED:

Vinegar (white and apple cider)
Bicarb. soda (Baking-Soda)
Eucalyptus oil and/or Tea Tree oil

These are natural antiseptics and pesticides. Use sparingly in well ventilated areas. Don't use in the garden as they are harmful to many important garden micro organisms. Do not use if you have a turpene sensitivity.
Washing soda (Lectric Soda)
Plain soap (Velvet, Preservene etc.)

Borax

Borax can be absorbed through the skin so use gloves. It is an effective disinfectant and insecticide. Only slightly toxic, but keep out of reach of children.

Elbow grease

This is a byproduct of the very good aerobic exercise activity known as 'cleaning the house without chemicals'.

Note: All cleaning is hard work and to protect your hands use thick gloves. Although the ingredients used in this book are relatively safe they can still be hard on skin with repeated use.

KITCHEN

Benchtops

Warm borax or bicarb. soda solution on a soft cloth.
(One tablespoon of powder in half a litre of warm water).

Dishwashing

Scrape food particularly fat from plates and dishes well. Use an old soap shaker (still available in many camping stores) and Velvet soap. Shake vigorously in hot water to form suds.
A dessertspoon of bicarb. soda added to the water helps dissolve grease. Rinse dishes well. Lemon juice added to rinse water will leave dishes 'squeaky' clean.

Or use Puren Dishwashing Liquid.

Dishwashers

Due to the different types of water in different areas soap based solutions for dishwashers can be most unsatisfactory for both the dishes and the dishwasher.
Puren have a dishwashing powder which must be used with
Puren rinse-aid.

Drains

Tea leaves tipped down the sink occasionally will help prevent blockages. For minor blockages put half a cup of bicarb. soda down drain and then half a cup of vinegar. Wait then rinse through.

Fridges and freezers

Wash inside with bicarb. soda solution — 2 tspns. to 600ml. of water.

If there is a particularly strong or unpleasant odour in the fridge either wipe out with vanilla essence or leave a packet of opened bicarb. soda in the fridge or freezer. Oranges also absorb odours, so keep your oranges in the fridge.

Sinks

Borax and/or bicarb. soda dabbed on a scourer.

Stoves — ovens

For oven cooking make sure the bottom of the oven is

lined with foil and wipe out the warm oven after each use with bicarb. solution or straight bicarb. on a cloth. If the oven is quickly wiped out after each use then cleaning the oven becomes much easier.

If you haven't done this and the oven has built up grime and stains the least harmful way to clean it is to use Puren dishwashing powder.

Preheat oven to 150 C. Turn off oven.

Add 2 tbspns of Puren Dishwashing Powder to half a bucket of hot water.

Wipe out the oven, glass and racks.

Particularly difficult spots can be cleaned by rubbing with straight dishwasher powder on a cloth or scourer.

Some people use cloudy ammonia to clean ovens but while ammonia may be safe to the environment it is highly irritating to the eyes, nose and lungs of people. Cloudy ammonia should never be used by people with respiratory problems. Only use in *very* well ventilated areas and wear thick gloves and a suitable face mask. Never use with children present and store the ammonia well out of their reach. If you wipe your oven over after each use this method should never be needed.

To clean an oven with cloudy ammonia mix one cup of water with one cup of cloudy ammonia in a bowl. Place the bowl (kept especially for this purpose) in a previously warmed oven for 15-20 minutes. Remove the bowl and discard contents immediately. Wipe oven, glass door and racks with bicarb. soda solution. On tough spots use a scourer and straight bicarb. soda.

Stove — tops

Bicarb. soda solution
Dab borax powder on a scourer.

Tiles

Wipe with undiluted vinegar (white) on a cloth or for greasy areas use vinegar in a container with a pump spray to lightly spray on tiles first. Leave for a few minutes and wipe off with warm water.

Waste disposal units

Are they *really* necessary? There are other ways of disposing of rubbish that don't require electricity. What about a compost bin for the garden? These units can become very smelly.

Use either bicarb. solution or lemon and orange peel or vanilla essence to reduce odours.

Stains in the kitchen

Cups and saucers and teapots
Rub with cooking salt or grapefruit skins! Or bicarb. soda or borax. Rinse well.

Glassware
Rinse glasses in water and a squeeze of lemon to make them sparkle.

For stained glass vases, decanters, coffee pots, etc. clean with a solution of salt and vinegar (one dessertspoon cooking salt moistened with vinegar).

Marble
Dip a cut lemon into a paste of borax and water and rub onto the marble. For bad stains leave the lemon cut side down on the area for some hours if necessary.

For old marble that is very discoloured scrub with Puren dishwashing powder mixed to a paste with water or a mixture of salt and water.

Pie-Dishes
Rub with a cloth dipped in salt or fire-ash.

Saucepans — burnt
Do *not* fill aluminium saucepans with soda water, bicarb. soda or washing soda as it will clean them but they are more likely to burn again. For aluminium, cover burnt area with water, let soak overnight or a couple of days, then use steel wool and soap.

Other saucepans
Either coat burnt area with bicarb. soda and leave

overnight, rinse off. Or cover burnt area with cooking salt and vinegar or water. Leave overnight. Boil and simmer for 5-10 minutes. Let cool and wash.
Note: Do not use vinegar on stainless steel.

Thermos flasks
To clean and remove odours fill with bicarb. soda solution and leave standing for 24 hours, wash and rinse well. Store with lids off.

Household odours

Odours and unpleasant smells can be largely avoided by good ventilation and regular cleaning.

Air fresheners
Air house thoroughly and regularly with all windows and doors open. Use bags of pot pourri or pomanders hung in toilets, bathroom and cupboards. (See recipes at end of this section.)
Use plant oils e.g. eucalyptus or lavender in porous pottery containers at the bottom of laundry baskets.

With plant oils make sure you get 100% plant extracts and not synthetic fragrances added to oil or alcohol.

Cigarette Smoke
Air room well and place pomanders in room. Or place a bowl of cider vinegar boiled with a few cloves and half a teaspoon of cinnamon in the room and leave overnight.
Or use:
Citrus Mixture
Wet: Pour boiling water over a bowl of lemon verbena leaves, orange or mandarin peel, and lemon peel (or used squeezed oranges and lemons). Let stand in room overnight.
Dry: Mix equal parts lemon verbena leaves, citrus peels (without pith) (orange, lemon, mandarin, grapefruit) with orris root powder and a few cloves in a brown paper bag. Seal top of bag and store in a dry dark cupboard.

Shake bag daily for two weeks then put in a shallow bowl.

Fish
Boil old tea leaves in utensils in which fish has been cooked to remove the smell. Cook fish with a piece of apple in the pan. This absorbs cooking odour.

Meat
After buying chickens remove from the plastic bag and rinse well. Pat dry inside and out and wrap in a teatowel to store in fridge. If meat is a little smelly then wash thoroughly in bicarb. soda solution and pat dry. If it is still smelly then don't eat the meat.

Paint fumes
In freshly painted rooms get the paint dry as quickly as possible. In cold wet weather vacate the room, seal the room and heat until the paint is well 'cooked'. Then air the room extremely well. Any residual smell can be got rid of by putting a bucket of water containing three or four sliced onions in the room for 24 hours.

This also works well in painted wardrobes or cupboards.

Alternatively place oranges and lemons in cupboards for several days.

Shoes
Canvas shoes and sneakers should be washed regularly in the washing machine with a few drops of eucalyptus oil. For leather and vinyl shoes sprinkle inside with bicarb. soda or use 'pot pourri' shoe fillers when shoes are not being worn.

These are small cotton bags made into the shape of the front of the shoe and filled with pot pourri (see pot pourri recipe following.)

Toilets
For adults burn a couple of matches after using the toilet. A couple of drops of eucalyptus oil or lavender oil in toilet bowl. Porous clay pot of natural plant oil on floor behind the toilet (lavender or rose). Wipe surfaces with a herb vinegar which is a natural disinfectant e.g. rosemary vinegar.

Urine
Soak articles in cider or white vinegar. Wash well and dry in the sun. For urine stain rub with a cut lemon.

RECIPES

Citrus pomander

1 orange, lemon or lime
4 tbspns orris-root powder (available at health food stores or chemists).
About 30 g whole cloves (much cheaper if bought in bulk from a health food store.
Choose perfect fruit. Push cloves into surface all over fruit so that cloves are touching. Use a needle or skewer to poke holes first if fingers become sore.

Once fruit is covered place in bowl and repeatedly sift orris-root powder over until completely covered and quite white.

Place in brown paper bag in the dark to mature and dry out. (Depending on weather 3-4 weeks.) Remove from bag and place where needed. These also make wonderful presents and are great fun for children to make.

Lavender pot pourri

1 cup dried blue flowers e.g. salvia, delphinium, violets (for colour)
2 cups dried lavender flowers
4 tbspns orris-root powder
4 tbspns dried peppermint leaves
2 tbspns dried sweet basil
2 tbspns dried rosemary
6 drops oil of lavender
Combine dry ingredients. Mix in oil one drop at a time. Seal and store in dark, warm dry cupboard for six weeks. Shake daily.

Spiced vinegars

These were used traditionally as antiseptics and can be

used to wipe bathroom areas as well as to make wonderful salad dressings! The best herb to be used as antiseptics are rosemary, lavender, garlic and shallot.

1 litre of vinegar
125gm of herb

Bruise the herb to be used (peel garlic and shallots first) and place in wide necked glass container. Cover with vinegar and seal (ground glass stoppered jars are excellent). Leave in a dark dry cupboard for 14 days (garlic and shallots) or 8 weeks for rosemary and lavender. Shake jar daily to keep herbs well covered. Drain off vinegar and discard herbs. Store vinegar for use as needed.

BATHROOM

Bathrooms need to be very well lit and ventilated. If possible have an exhaust fan to the outside or fixed wall vents to the outside.

Good ventilation and good light will totally prevent mould which is the biggest problem in a bathroom. Keep colours *very* light and bright. Install a skylight if necessary.

Train yourself and other household members to wipe down basins, baths and showers after use. It only takes a few seconds. This is not only good manners toward the next person using the bathroom but *dramatically* reduces cleaning time and the need to scrub surfaces or use strong commercial cleaners.

Keep a spray bottle containing vinegar and a scourer cloth handy in the bathroom with a small container of bicarb. soda.

If renovating or designing a new home try an open shower recess with no glass cage. Glass and soap are not a happy combination and with adequate tiling are unnecessary.

In a well designed bathroom you should never need to use more than vinegar, bicarb. soda and perhaps a little eucalyptus oil around the toilet.

Basins, baths and showers

Use bicarb. soda on a scourer for stains and wipe over with vinegar.

Hard floors

Two thirds cup vinegar in half a bucket of warm water.

Mirrors and glass screens

First clean off any soap splashes with a weak borax or bicarb. solution. Polish with a soft cloth dampened with a solution made by boiling old tea leaves and straining.

A final polish with a few drops of eucalyptus oil will stop the mirror fogging with steam.

Mould

In a well designed bathroom mould should not be a problem. If you have significant mould problems look at ways of preventing the problem as moulds can cause insidious and serious health problems. Mould can be safely removed with neat white vinegar or a strong solution of epsom salts.
(See air circulation and ventilation)

Plastic shower screens

Once a week soak in vinegar for half an hour and scrub if necessary. Hang out in the sun and fresh air to dry. If screen has mildew stains: A mixture of equal parts grated soap, starch, salt and the juice of a lemon mixed to a paste and spread out over the stains on *both* sides of the fabric. Leave in the sun all day then scrub off. Can be repeated if necessary.

(This mixture may effect some plastics, so try a small area first).

Tiles

Vinegar on a damp cloth.

Toilet

Normally hot water or a herb vinegar (e.g. rosemary) is all that is necessary to clean inside and outside toilets.

If there have been gastric upsets in the family use a *little* eucalyptus oil to clean the toilet and surrounding area for a few days.

LAUNDRY

The laundry is another area where good passive ventilation and light are essential. If you have a clothes drier you may also need an exhaust fan vented to the outside.

Hard Floor

Two thirds cup vinegar in half a bucket of water.

Laundry Baskets

Hang pot pourri sachets or place a porous clay pot of plant oil inside the laundry basket.

Tiles

If soap splashed use neat vinegar on a cloth.

Washing Machine, Driers and Steel Troughs

Bicarb. soda or borax and damp cloth or scourer for trough.

Clothes washing

Puren laundry liquid and laundry powder in hot or cold water. For heavily soiled clothes there is a prewash soaker. Short soaking (half hour) even lightly soiled clothes (as long as this is not against the garment manufacturer's instructions) can make a big difference to the amount of washing powder you need and to the ultimate result.

Very dirty clothes should always be soaked overnight if possible. Scrub very dirty areas with a hard nail brush

by laying the clothes on an old fashioned washboard. For oily or greasy clothes add half a cup of borax to the wash or a few drops of eucalyptus oil.

Soap recipe

To save money a general purpose clothes washing soap can be made from soap and washing soda:
1 cake of pure soap grated coarsely e.g. Velvet, Preservene.
1 cup washing soda dissolved in 1 litre of very hot water in a bucket
2 buckets of water
Boil the soap and one and a half litres of water together in an old saucepan. Mash evenly with a potato masher.

Strain soap solution into bucket of soda and water. (Keep soap bits over for another time). Mix evenly.

Divide soap and soda mixture evenly between the two buckets.
Fill each bucket slowly with cold water and mix.

Let set to a jelly. Use two cups of jelly for each large wash.

Soapwort

This is a herb which grows easily almost anywhere. Put handfuls in a saucepan and cover with water. Boil and simmer for 10 minutes, strain and store in well labelled bottles. Use a cupful of the liquid as a gentle washing detergent for both hand and machine washing of clothes. It is ideal for general washing without producing a lot of suds.

Stains — clothes

With all stains the best results are obtained by treating the stain as quickly as possible.

Bleaching
An effective bleach is half a cup of borax added to the wash or for stains half a cup in half a bucket of warm water to soak clothes. Or one cup of lemon juice in half a bucket of water.

Blood
Soak immediately in cold water with a little salt.

Coffee and tea
For older stains use a paste of borax and glycerine to cover the stain. Scrub then wash very thoroughly.

Egg
Cover with salt. Scrub with cold water.

Grass
Rub over with glycerine and leave for at least an hour before washing. Fresh stains can be removed easily with plenty of boiling water poured through the fabric.

Grease
Rub with baking soda. Or sprinkle with Fuller's earth (aluminium silicate) available from pharmacies. Rub in gently and let dry. Brush off excess. Wash with warm soapy water or a *little* ammonia solution.

Mildew stains
A paste of lemon juice mixed with equal parts of salt, starch and grated soap. Spread onto both sides of the fabric. Leave in the sun all day before washing.

Mud
When dry brush off as much mud as possible with a *dry* brush.
Scrub with water used to boil potatoes. Scrub with soap mixture.

Perspiration
Soak in warm vinegar or lemon juice or rub with bicarb. soda.

Wine
Cover with soda water. Or cover with salt. Wait two minutes and pour boiling water through the material.

Particular articles of clothing

Handkerchiefs
Soak in cold salty water before washing.

Nappies
Flush and soak in a solution of half cup borax to nine litres of warm water overnight or Puren Prewash Soaker. Wash in hot water and rinse with a few drops of eucalyptus oil.
Hang in the sun to dry as the sun naturally sterilises the nappies.

Tea-towels
Soak in one and a half litres of water containing three tablespoons of cream of tartar or a few drops of eucalyptus oil.

Electric irons
While warm wipe with a soft cloth and vinegar.
If stained rub gently with baking powder or salt or lemon juice.

(If you have a special coating other than stainless steel on the iron then follow manufacturer's instructions).

LIVING AREAS

Floors

Hard
(Slate, cork, tiles, lino, marble, terrazzo, quarry tiles)

Use hot plain water alone or with a dash of white vinegar.

Grease stains: use a paste of borax and water. Cover stain and then wipe off or use Fullers Earth rubbed into the stain and washed off. Stains on terrazzo and marble can be treated with a cut lemon dipped in salt or salt alone.

Polished floors
Use beeswax or 50/50 linseed oil and vinegar.

Carpets

Deodoriser
Sprinkle bicarb. soda on carpet and leave overnight. Vacuum.

Steam cleaning
If having the carpets steam cleaned ask them to use *steam only*. This is really the only way of effectively removing accumulated chemical dusts, cigarette smoke, animal danders and dust mite.

Use a company with the powerful motor outside in a truck rather than the hand held cleaners available on hire.

Stains and spills on carpet

Mop up spill immediately without rubbing.

Cover with either soda water *or* salt *or* bicarb. and then wipe

Vacuum salt or bicarb when it has absorbed the stain and it is dry.

Grease
Sprinkle with bicarb. soda or Fullers Earth. Leave and then vacuum or brush.

If this doesn't work well enough dab on equal parts cloudy ammonia and water. Wash off.

Ink
Old fashioned inks should be washed immediately with plenty of skim milk and rubbed vigorously. Rinse.

If necessary rub over with cut lemon and salt.

Biro needs to be rubbed with methylated spirit and then washed.

Carpet shampoo

Alternative 1:
(For people with severe allergies).
To a cake of pure soap grated into a bucket of warm water add -

2 litres of boiling water mixed with 30 gm. of Cream of Tartar.

Alternative 2:

Half a cup of grated pure soap boiled until dissolved (1-2 min.) with five cups of water. Take off heat. Stir in three tablespoons of cloudy ammonia and washing soda. Store in sealed containers (well labelled).

Alternative 3:

Use Puren liquid for dishwashing.

Either shampoo can be used to wash small stains. Use very little with a minimum of water.

GENERAL CLEANING

Cane

Vacuum and wipe over with warm weak salt solution.

Furniture Polish

Use olive oil or some other vegetable oil for polishing.

To restore furniture occasionally use a mixture of equal parts vinegar and linseed oil (or olive oil).

Oak furniture responds beautifully to a polish made from boiling one litre of beer with one tablespoon of sugar and two tablespoons of beeswax. When cool apply to the wood and polish when dry.

Upholstery

Check manufacturer's instructions carefully. For fabrics use warm carpet shampoo (No.2 ammonia mixture), sponge carefully and do not over wet. A small blow heater or hair dryer can be used for drying. When buying upholstered furniture look for patterned cotton loose covered furniture. This type of furniture makes cleaning easy and cheap and you don't have to spend your life worrying about spills.

Windows, frames and doors

Painted surfaces
Warm soapy water or bicarb. soda or vinegar on a dampened cloth.

Aluminium surfaces
For raw aluminium use steel wool and warm soapy water. Rub in one direction only.
For anodised or painted aluminium use warm soapy water.

Stained wood
Use warm soapy water and a little bicarb. if necessary.

Windows, glass and mirrors

A weak solution of vinegar in water (1 tablespoon vinegar to 1 litre of water). Used tea leaves left for a few days then reboiled and strained makes an excellent polish for glass top tables and mirrors.

Puren dishwashing liquid. A few drops in a spray top bottle filled with warm water.

METALS

A totally non-toxic (apparently made from herbs and plant extracts) product which is extremely effective for all metal surfaces is 'Biotique' or 'Perfect Polish' available in health food stores. This product is also very easy to use. Alternatively:

Aluminium

Warm soapy water and scourer only. Do not use scourers on anodised aluminium.

Copper and brass

A paste of bicarb. soda or salt and cider vinegar or lemon juice rubbed into the surface. Leave to dry then polish off.

Pewter

Fine steel wool and olive oil. Polish with a soft cloth. Note: When using steel wool on metals be very gentle and rub in one direction only.

Silver

For badly tarnished silver the most effective non toxic way is to use 'Biotique' or 'Perfect Polish'. Use a toothbrush to get to difficult areas.

For silver that only needs a light clean make up a solution of one dessertspoon bicarb. soda and one dessertspoon salt to one litre of water. Place in a very large container (a jam making kettle is ideal) on the stove together with an eight inch square of aluminium foil. Bring to the boil and use tongs to place a few articles in at a time for about two minutes.

Remove, cool and rinse. Polish with a soft cloth.

Stainless steel

Warm soapy water. A *little* bicarb. soda.

MISCELLANEOUS

Dried leather

Restore with a mixture of one part vinegar to two parts linseed oil. Shake in a bottle until creamy. Rub into leather and polish with a soft cloth. (See note about heating under shoe polish).

Jewellery

Silver (See kitchen)
Copper (See kitchen)
Gold and diamonds — Warm water and a few drops of cloudy ammonia. Apply to crevices with a toothbrush. Rinse in warm water and lemon juice.

Leather bags and belts

Dark colours can be rubbed well with the inside of a

banana skin and then buffed with a soft cloth.

Patent leather
Apply vaseline or milk with a soft cloth.

Shoes

Vinyl
Scrub with a soft nail brush or cloth dipped in bicarb. soda.

Leather
Wash with warm soapy water on a cloth pad. Remove scuffs carefully with a little bicarb. Polish with shoe polish (see below).

Shoe polish
Equal parts of vinegar and linseed oil mixed together and stored in an airtight jar or bottle. Shake before using. (*Note*: the two ingredients will mix together more easily if the linseed oil is heated first in a double boiler. DO NOT USE DIRECT HEAT AS LINSEED OIL IS FLAMMABLE.

Confesssion

When all else fails I use a little 'Wonder Soap'! But considering I still have nearly the same full cake after three years you can see it is rarely necessary!

5 Toiletries

THERE ARE many environment and people friendly toiletries and cosmetic articles you can make yourself at very little cost.
Note: If you have food allergies you will probably have problems with preparations containing these foods even if used externally.

BODY

Baths

Lavender bath

A handful of shredded lavender flowers or four drops of lavender oil. Run a bath and either pour in oil or soak cheesecloth bag of the flowers.

Very good for stress or tiredness, soak for as long as you can.

Mixed herb bath

Half a handful of dried mint, rose petals, thyme, rosemary and the peal of one orange and one lemon (no pith). Put in the toe of a stocking and soak in the bath with you.

Dusting powder

Arrowroot or tapioca powder

Moisturiser

1/2 cup almond or apricot kernal oil
2 tbspns rosewater
2 tbspsn glycerine
2 drops lavender oil
Shake vigorously and massage all over your body — much nicer if someone else does the massage! Alternatively use plain almond or apricot kernal oil.

Nails

To harden nails massage cuticles and nails daily with one egg yolk beaten with three teaspoons sea salt and one teaspoon olive oil.

Alternatively rub brittle nails with onion juice.

Rough skin

Blend one carton of natural yogurt with avocado or cucumber and one teaspoon of vinegar.

Breath fresheners

After garlic eat a banana or drink parsley and cucumber juice.

Chronic bad breath can be due to bad teeth or bad digestion.

Bowel supplements such as lactobacillus, lactobifida and lactobulgaricum may help (available as Nutren brand in health food stores).

Deodorant

Mix together
1 tbspn alum
1/4 cup boric acid powder (both available at pharmacy)
1/2 cup baby powder
or mix up 1/2 cup bicarb. soda
1/2 cup baby powder or arrowroot.

Eyes

Swollen and puffy eyes can be relieved by smoothing

warm olive oil around the eye before relaxing for ten minutes with two cooled teabags on the eyes. Alternatively use slices of potato. Dark rings under the eyes can be reduced by using cooled peppermint teabags on the dark area and leaving for five to ten minutes.

FACE CARE

Astringent
After using cleansers or masks use cool (not cold) water to close pores or one of the following:

- Diluted lemon juice
- Cucumber slices wiped over skin
- Lettuce or celery juice.

Cleansers

Before applying cleansers rinse face in warm water or steam with warm face cloth.

Almond cleanser

Two teaspoons almond meal mixed to a paste with yogurt or a little milk.

Deep pore cleanser

Mash a peeled potato with almond meal or oat flour to form a paste. Leave on skin for fifteen minutes. Rinse off with warm then cool water.

Oatmeal cleanser

Finely ground oats (or oat flour) mixed to a paste with a little water or olive oil (almond or apricot oil is even better).

Massage into the skin and rinse with warm water then cool water.

Make-up

As make-up is to be left on the face all day and is close

to the delicate eye areas I do not recommend making your own, as it can too easily become bacterially contaminated.

Choose instead animal friendly as well as people friendly brands such as Nutrimetics, Blackmores, Nature's Way.

Masks

Before applying masks remove make-up and rinse face in warm water.

Almond mask

This is a good mask to exfoliate dead skin cells.

Blend 60g almonds with a *little* water in a food processor.

Massage onto face and leave for fifteen minutes before rinsing.

Freshening mask

Combine three tablespoons of honey with the juice of one orange. Massage into skin gently (even around eyes and lips).
Leave five minutes and rinse with warm water.
Freshen with cool water.

Oatmeal mask

Very good for blotchy reddened skin.

Blend a little warm water with one cup of raw oats in a food processor to form a paste.

Massage gently into the skin and leave for fifteen minutes before rinsing off in warm water.

Toning mask

Avoid eyes and lips. Do not leave on longer than five minutes. Beat one egg with two tablespoons skimmed milk powder.

Yeast mask

If you have been ill and are not allergic to yeast this can

do wonders for tired looking skin.

Mix one tablespoon of brewers yeast with three tablespoons of milk or natural yogurt.

Allow to dry on skin then steam off gently with a warm face cloth.

Moisturiser

One tablespoon yogurt mixed with one teaspoon of honey.

Massage into face then wipe off.

Skin treatments

Puree a fresh peach and beat with one egg white.

Apply to face and leave for five minutes before rinsing off and washing face gently.

Or beat one eggwhite until stiff, add one teaspoon honey and one teaspoon of lemon juice. Mix well, apply to face and remove when hardened. Rinse face well with cool water.

For oily skin

Wash face and then wipe with either cucumber, orange or tomato slices. Or rinse face with a strained solution made from boiling 1/4 cup fresh parsley and 1/4 cup fresh mint in 1 cup of water. Steep for an hour. Cool and bottle. Keep in the fridge.

Soap

Use a pure soap like Velvet, Puren or Preservene.

For sensitive skins use oatmeal paste. Mix a few tablespoons of raw oats or oat flour with an equal quantity of hot water. Let cool. It will keep in a jar in the fridge for a few days. Wet face and massage paste gently into skin. Rinse in warm then cool water.

HAIR

Conditioner

Beat one egg yolk and half a cup of natural yogurt together very well. After shampooing massage into hair well and comb.

Wait thirty minutes before rinsing.

Conditioner for dry hair

Blend 1/3 cup mayonnaise and 1/3 ripe peeled avocado. Massage into scalp and wait fifteen minutes.

Rinse and shampoo hair.

Hair spray

Chop one lemon and cover with water in a saucepan. Boil down to half. Cool and squeeze through cheesecloth. Refrigerate in a pump dispenser.

Setting lotion

Mix six teaspoons castor sugar and half a cup of warm water.

Dip comb in mixture and apply to hair while still warm. Alternatively use stale beer.

For limp hair dip combs and brushes in beer before blow drying.

Shampoo

Undiluted soap gel from laundry is a great shampoo but you will need to rinse hair extremely well. Use lemon juice or chamomile in warm water to rinse. For oily hair rinse in vinegar or lemon juice diluted with water.

SUNSCREENS

Many people are allergic or sensitive to the synthetic vitamin PABA which is used in most sunscreens. Puren

have now developed a herbal sunscreen rated 15 + which should be in the shops soon.

Vary if possible the sunscreens you use as the chemicals vary with the brands. In this way you may be able to avoid developing a sensitivity.

TEETH

Dentures

Soak in a mixture of half water and half vinegar overnight. Using a herbal vinegar can give the dentures a pleasant taste in the mouth.

Stained teeth

Rub with lemon peel or sage leaves.

Toothpaste

Use one of the herbal toothpastes without fluoride e.g. Red Seal, Blackmores or plain bicarb. soda mixed with salt and a drop of peppermint oil.

6 Household pests

Ants and cockroaches

Do not tempt them by leaving *any* food unsealed or uncovered. Good hygiene is the best defense but sometimes in bad weather this is not enough.

Use baits made from borax and honey mixed in equal parts but put the baits in places inaccessible to children and pets.

Cockroaches are persistent little beasties and they eat paper and soap as well as food. So even the cleanest home can attract them! *Tightly* seal all crevices and gaps under and around doors. Make sure flyscreens fit closely and that flyscreen doors are self closing. The ends of cucumbers left in cupboards until they shrivel repels them as does tea-tree oil wiped on shelves. Sticky traps available in hardware stores are also a good non-toxic alternative.

Bees

Local councils have the names of apiarists who will gladly take your bees to a more productive location.

Borers

Select timbers that are resistant to attack e.g. cyprus pine for floors, cedar for doors and windows. Take furniture outside wrap and seal in black plastic and leave in the sun all day. Rub furniture over with undiluted eucalyptus oil.

Carpet beetles and moths

Vacuum walls as well as carpets regularly. Eggs and larvae may be laid on the walls then drop to the floor and on to the carpet where they eat wool. Good vacuuming regularly is the best protection and make sure you vacuum *under* all heavy furniture where moths and beetles find it particularly easy to eat carpets because they are undisturbed.

Dust mite

Dust mites feed on dead human skin. It is quite amazing the amount of dead skin we shed daily which accumulates in furniture, bedding and carpets. Dust mite is not something you can eliminate from the home, you can only control it. For people with asthma, hayfever or eczema adequate dust mite control can make a big difference. Some people find their symptoms are eliminated entirely or may find their need for medication is reduced considerably. (Check with your doctor before changing medication).

Be particularly careful if you have any old upholstered furniture or mattresses. Even with steam cleaning it can be impossible to eliminate accumulated dust mite and other allergenic dusts from such furniture.

Hard flooring throughout the house (including bedrooms) with washable scatter rugs makes dust mite control much easier. Bedding should be synthetic raw fibre filled doonas and pillows with cotton covers and sheets.

Bedrooms including mattresses need a complete vacuum at least once a week. Also air bedding outside in the sun weekly (if not daily) as U.V. light kills dust mite. Hard floors washed with filtered cold tea solution will deter dust mites as they do not like tannic acid. Use cold tea solution to dust surfaces as well.

Fleas

If you have a serious infestation of fleas inside the house

you may have to resort to a synthetic pyrethroid like permethrin to treat carpets and upholstered furniture. Wash all bedding and vacuum thoroughly (including beds). Empty contents of vacuum cleaner outside immediately and put contents in a sealed bag.

For normal control of fleas wash the dog and his bedding weekly (also brushes and combs) in dog shampoo with crushed pennyroyal added (a herb which grows easily). Rub pennyroyal over the dog's fur and place in his kennel or basket. Plant pennyroyal or eau de cologne mint by doors and windows and around the dog kennel.

In some situations where fleas are particularly bad see your vet. There are now preparations that pets can take internally to kill fleas and pests when they bite. *Avoid flea collars*

Flies and mosquitoes

First buy a fly swat! Fit *close* fitting fly screens on all windows and doors. Although I live on a farm with cows and horses and a dam in front of the house I have never had to buy any kind of insecticide. If you have a garden pond stock it with fish to eat any mosquito larvae. In bad mosquito areas you may still need to use nets over the beds at night particularly for children.

Lice

There is no need to use highly toxic malathion shampoos suggested by the councils. They rarely remove all the nits at once anyway. The following method is completely safe and effective.

Wash hair in plenty of soap and hot water. Rinse. Work in sassafras or olive oil and massage scalp well. Put a showercap over the hair and leave on for an hour. Wash hair well and rinse. Use a lice comb to comb hair.

When hair is dry use a torch shone in the hair to find the residual nits attached to hairs and cut off hair with nail scissors.

Go through the hair daily cutting off hairs with nits

attached as you find them. Look particularly around ears, nape of neck and over forehead.

PUT ALL HAIR CLIPPINGS IN A SEALED BAG IN THE BIN IMMEDIATELY. Wash all bedding and towels in hot water and put a few drops of eucalyptus oil in the rinse water.

Vacuum beds, upholstered furniture and carpets thoroughly
and discard contents of vacuum cleaner in a sealed bag immediately afterwards.

Mice and rats

Make sure there are no holes (check around water pipes particularly) allowing entry to your home. Keep food covered and benches well wiped of food crumbs.

Use traps or if you can see the mouse a vacuum cleaner! (Unless there is a mice plague I prefer to use the traps that don't actually kill the mice or rats).

Moths and silverfish

Good ventilation and good hygiene are the best protection. Do not put soiled clothes away but wash them as soon as possible. If you must store clothes for some time wash and rinse in 500gm Alum mixed with five litres of water and wrap with either cloves, lavender or tobacco leaves. (If using tobacco leaves clothes must be washed in bicarb. soda solution before wearing). Alternatively when rinsing clothes add a few drops of eucalyptus or lavender oil.

Wardrobes, drawers and chests can be wiped with diluted lavender or eucalyptus oil. Put sachets of lavender pot pourri in cupboards and drawers.

Hang clothes, wrapped in plastic and sealed, on the clothes line in the sun to kill moths and larvae.

The best and easiest control of silverfish is to have huntsmen spiders in residence as well. However if you are spider phobic then vacuum book shelves and furniture regularly and well. Wipe shelves with lavender oil or place fresh bay leaves behind books.

Rotten wood and funghi

Improve subfloor ventilation and check for leaks (see Air Circulation and Ventilation) in plumbing and in roof. Maintain gutters. Replace affected areas.

Spiders

The really dangerous spiders tend to keep away from people and like dark undisturbed places.

Toxic sprays only kill spiders in residence and are not a long term deterrent. But the toxic chemical residues can be a real hazard to people (particularly those that are allergic and children).

Many spiders are controlled by other spiders — for example black spiders eat redback spiders! As well they eat many other annoying household insects.

To discourage spiders seal all crevices (especially between floorboards) and have close fitting screens on doors and windows.

If you are getting regular visits from known and properly identified poisonous spiders (some areas are definitely more prone than others) use a pyrthethrum spray throughout the house: vacate humans and pests first, close all doors and windows, spray house well (wear a mask and overalls) and leave house for at least twenty-four hours *(follow manufacturers instructions)* before opening all windows and doors, air well before returning.

Note: Although pyrethrum is a natural insecticide derived from the pyrethrum daisy it is advisable to still treat it with caution. Some people are very sensitive to pyrethrum.

Termites

Use concrete stumps and ant capping. Make sure there is good ventilation and no dampness. If there is a termite problem treat the nests themselves not the whole house. (Contact the Total Environment Centre in Sydney, see Resource Section at back of book)

Wasps

These can be highly dangerous and often put themselves into very inaccessible places. One non toxic method that works quite well is to set up a vacuum cleaner with the hose next to where the wasps are entering and leaving the house. Run the cleaner for some hours during the day for a couple of days and nights when you are home (e.g. a weekend). Spray a pyrethroid insecticide up the hose to kill the collected wasps. Once the nest has been reduced to a small number it can be sprayed directly at night when the wasps are asleep. Use a torch with red cellophane over the end, don't turn on the lights or they won't stay asleep.

PART C THE GARDEN

7 Planning & improving soil & moisture

NOWHERE IS modern man's ruthless determination to rule and control his environment more apparent than in the average back yard. The 'garden' often symbolises an extraordinary ability to fool ourselves that we don't need to consider our land or the wider environment.

For generations in Australia 'We're clearing the block' has been a national obsession proclaimed by farmers, newlyweds and retirees as they describe the 'lovely new estate' or (previously) picturesque holiday spot they have chosen for their new home. Flattening and stripping the 'block', plonking a house in the middle, surrounding it with a concrete path and a rotary clothes line has been the fulfilment of the 'Australian Dream'. Are we ordinary people so short sighted? — or are we being brainwashed by developers, councils and government regulations that this is what we want.

There is no better place to start a rethink on our relationship with the environment and land in particular than in *our own backyard.*

Look carefully at your back yard and work out how you can work *with* its natural vegetation and features. In a brilliant stroke of forward planning the Melbourne suburbs have ended up sprawled over the most fertile land for growing food.

If you don't want or don't feel like doing more than pouring concrete over your quarter acre plot ask around and see if someone else, particularly those living in flats,

may dearly love to have the opportunity to work a vegetable plot or have a garden.

Many people hate gardening and that's perfectly O.K. but let's recognise the fact and start offering choices of accommodation with and without quarter acre garden plots. We must rethink our values regarding land and housing — economically it makes sense and environmentally it's our only hope.

Whether you have the usual quarter acre plot found in Australia, a small courtyard, just a balcony or only room for what can survive inside give some serious thought to what gardening and living green things can do for you physically and mentally.

Many ancient civilisations and religions as well as modern indigenous peoples like the Australian Aborigine and the American Red Indian saw themselves as part of their natural environment, not dominant to it. They believed that good physical and mental health could only be maintained by working in with the natural world and not against it. Modern western man is only now starting to properly realise how important plants are — not just a source of food and oxygen but also as general air purifiers and 'soul' food as well.

Gardening has been shown to lower blood pressure and anxiety as well as improve mood and lower aggression. Indoor plants can purify the air and absorb many chemical pollutants. (If you have *serious* sensitivities to moulds you may need to restrict indoor plants due to the moulds in the soil.)

The common spider plant absorbs formaldehyde which is one of the most serious indoor air pollutants. The micro-organisms found in soils absorb gases like carbon monoxide from fuel combustion and cigarettes. Running water not only cools the air but helps filter it as well. Even still water will improve humidity. Your garden whether inside or outside, large or small can significantly help to balance the chemical load on your body and the environment generally. Even *one* beech tree can absorb the carbon dioxide from eight hundred homes!

The secret of enjoying gardening rather than it

becoming a burden is to decide how much and what type of gardening you can cope with. In large gardens it is less time consuming and water conserving to have most of the garden 'wild' with indigenous species. Labour intensive and water intensive gardening can perhaps be restricted to one area for vegetables and fruit trees or perhaps a particular plant hobby like orchids.

Gardens like children are only beneficial if they are enjoyed not endured! Always keep in mind what you garden is used for and design for these needs — e.g. car parking, children's play area, outside eating, sitting etc.

All the books say to design your garden on paper first but for me that's hopeless. I like to 'design' out in the garden itself so I can 'feel' what an area is best suited to using all my senses. It's very difficult to pick areas of shelter or sun traps from a piece of paper.

Look at your garden out of windows from inside to site a tree or shrub where you will enjoy it most. It can be rather annoying to find you have planted a magnificent tree or shrub which attracts all the birds just to one side of a window rather than in the middle where you could see it!

I tend to subscribe to the overcrowded philosophy of gardening because I am so impatient for results but choose an approach to suit you. Be very careful of the types of trees you plant near drains or foundations to avoid *very* costly repairs or an irate neighbour. (Get advice from your local nursery as species differ on their robustness of growth depending on soil type and area).

If you have a large area that is difficult to manage consider fencing off areas and abandoning to wilderness or animals or both. Psychologically it helps enormously to see your boundaries of responsibility dramatically reduced and makes a clear definition between 'wild' and 'cultivated' areas.

In the city, courtyards either need to be extremely formal or very informal with lots of greenery. Either style once established is very easy to maintain if mainly green foliage plants are planted. Labour demand tends

to rise in direct proportion to the number of flowers planted. Personally I'd rather *own* a 'green' garden I can relax in rather than one with formal time consuming borders — but I'd rather visit gardens with lots of flowers and colour where somebody else has done the work!

In a 'green' garden colour can be added with deciduous plants and pots of bulbs and annuals requiring minimal effort. Naturalised bulbs are another way of adding colour without work.

Before planting a lawn decide whether you really need one and whether it's the best use of space and energy. The combined cutting of lawns throughout suburbia must use up an extraordinary amount of petrol each Sunday morning and the noise can be the last straw if you are trying to get a much needed sleep-in!

To really enjoy your garden no matter how small try to regularly experience it using *all* your senses: sight, smell, taste, hearing, touch and that other sense that we have almost lost — 'the sense or feeling of atmosphere' be it peaceful, calm or whatever. Walk in your garden barefoot and notice how incredibly different the garden seems to all your senses. One man reported a strange illness he developed where he was dramatically loosing weight, constantly giddy and felt 'spaced-out' all the time. Extensive medical tests had revealed nothing but he was becoming weaker and weaker. When he could work no longer and was very weak he would visit his roses early each morning as was his habit but as he found putting his shoes on incredibly difficult he went in bare feet. To his surprise he found himself improving daily but when he felt better and started wearing his shoes again he became sick again! His wife jokingly told him he just needed to 'earth' himself properly each morning and this led to tests overseas which showed him to be very electromagnetically sensitive. By 'earthing' himself each day he was able to rid his body of accumulated electrical charge and so remained well.

I suspect we all need to walk barefoot on earth regularly — try it each day and see how you feel!

IMPROVING THE SOIL

Many pests in the garden are the result of weakened plants which become that way due to:

- poor drainage
- poor ventilation
- erratic moisture to roots
- poor siting of plants
- being in an inappropriate location for their type e.g. too wet, too windy, insufficient light or direct sun etc.
- poor nutrition due to poor soil or competing smothering weeds.
- — intensive gardening in one small area of pest attracting plants e.g. vegetable gardens
- over use of chemicals causing an imbalance in birdlife and natural predators.

Before resorting to sprays (even natural sprays can harm many good insects and foliage) look at the overall ecology of your garden in terms of the above factors. Move plants that are inappropriately sited, improve drainage, test soil for acidity/alkalinity (soil test kits are available from nurseries) and try to plant according to your soil types. There may be quite different soil conditions in different parts of your garden. Work *with* your land not against it by designing your garden to suit your natural conditions. For example if you really want to have roses in pure sand conditions then plant them in containers where you have greater control over the micro-environment.

By working with your local climate and soil type and not against it you will grow healthier plants and more plants that support insects and birds appropriate to the conditions.

On a suburban block it can be better to have the 'skeleton' of the garden and perhaps outer perimeters composed of local native species of shrubs, small trees and grasses and leave appropriate and desired exotics closer to the house in designated areas especially set aside. This saves dramatically on watering, as all plants needing more water are close together. In cooler climates

choose small very light canopy natives with light white trunks to allow filtered light even in winter and perhaps deciduous trees and shrubs to the north to allow full winter sun into the house.

Personally I am a great fan of cottage gardens but my wind and soil conditions combined with a lack of water means that my cottage garden is restricted to a small area immediately surrounding the house.

I have found that these methods of working with my site have reduced pests like mildew, blackspot and aphids dramatically to an acceptable level. These plagued my garden when I first started.

TO IMPROVE NUTRITION

Compost

It is inexcusable if you live in a house or unit not to have a compost bin. Place in the bin all food scraps, tea leaves, coffee grounds and chopped up old cotton or wool clothing. Because of the dyes and inks I do not put printed paper or cardboard into the compost bin for the vegetable garden but put chopped and torn paper and cardboard products together with leaf litter layered with manure, ash and soil into a separate compost bin for the garden generally.

Comfrey leaves put in the compost bin improves the rate of decomposition and the quality of the compost generally. Ten large comfrey leaves are sufficient for a large compost bin.

Fertilizers

I have never had to use chemical fertilizers. Instead I use homemade seaweed fertilizer or green manure.

Green liquid manure

Suspend in a large container or drum of water a stocking or bag containing cow pats, horse manure or chicken manure and leave for several weeks. Use a watering can

to water roots of the plants and top up drum with water to continue process.

Seaweed fertilizer

There is no need to wash the salt (also a mild fungicide) from the seaweed if using it as a mulch. However to make this fertilizer spray, wash the seaweed thoroughly and cover with water for at least three weeks. Strain off the amount of fertilizer required and dilute it to a week tea color. (Top up the remaining seaweed with water to continue the process). In hot weather spray plants at night or water around plant roots.

TO IMPROVE MOISTURE

Mulch, mulch and more mulch! Mulch can be anything organic that will break down into the soil and do no harm. (i.e. don't use old newspapers and printed material in vegetable gardens). Water the garden well before mulching and lay a thick (8-16cm) layer of moistened mulch.

On the general garden use:

- Cardboard and paper products
- Old wool carpet or felt underlay
- Wood shavings (not cedar) mixed with well rotted manure.
- Leaf litter mixed with well rotted manure.
- Grass clippings mixed with well rotted manure.
- Compost
- Seaweed
- Stones and pebbles.

In the vegetable garden:

- *Old* straw or lucerne (to avoid sprouting seeds)
- Compost
- Seaweed
- Leaf litter mixed with well rotted animal manure.
- Grass clippings mixed with well rotted manure.

8 To control pests

Baits

(Warn children not to touch!)
Beer in dishes made of plastic drink bottles cut in half and semi-submerged in the ground to stop them falling over.

Borax and sugar (poisonous to pets and children). Cut a small hole big enough for the pests to crawl through in a plastic juice bottle containing some mixture.

Birds

Encourage birds into your garden by not using sprays and providing a water bowl and feeder. Depending on the birds in your area give them wild seed mix, meat scraps, bread scraps or water and honey mixture. Birds that eat lard blocks placed in trees will also eat insects.

Chive spray

Blend a bunch of chives and cover with boiling water. Stand for at least an hour. Dilute one part mixture to two parts water for scab and mildew.

Chooks and ducks

The best control for vegetable garden pests and pests generally. Two ducks are sufficient for a suburban backyard and do not scratch or disturb the plants. Some ducks are partial to some plants but this seems to be a

very individual fancy. They simply 'vacuum' the insects and snails off plants and around the roots. If having two chooks then make a low portable wire run along fence lines in the back yard in a 'U' shape thereby surrounding the vegetable garden in the middle.They will eat all bugs in sight and stop them getting into the vegetable garden in the first place.

Make sure you have a little dog proof house for them to be locked in at night.

Codling moth

Spray trees with one part white oil to fifty parts water weekly for one month from leaf fall.

Companion planting

Planting plants close together in particular combinations grows better plants with improved resistance to disease and insect attack. The exact reasons for this are not known. It is suspected that in some cases the reason is chemical and in others may be related to the electro-magnetic fields associated with each plant.

Negative association:

- Beans dislike onions, garlic, potatoes, fennel.
- Chives dislike legumes (peas, beans etc.)
- Garlic dislikes peas and beans, sweet basil and rue
- Peas and beans dislike onions.
- Potatoes dislike sunflowers, tomatoes and pumpkin.
- Radish dislikes hyssop.
- Strawberries dislike cabbage
- Tomatoes dislike fennel, and potatoes
- Do not plant gladioli within 15 metres of vegetable garden (particularly peas and beans).
- Don't store apples near carrots or potatoes.

Positive association:

- Apple and other fruit trees — chives deter scale. Nasturtiums repel woolly aphids. Climb nasturtiums through foliage. Garlic, particularly giant Russian garlic, tansy, marigolds, stinging nettles.

- Asparagus — tomatoes, parsley
- Beans — plant as a border around cucumbers.
- Carrots — cucumbers, cauliflower, strawberries.
- Cabbage — interplant with dill and oregano.
- Cabbage worm deterred by sage, rosemary, thyme and mint.
- Carrots — sage, rosemary, onions, leeks, peas, lettuce and chives.
- Red radishes — celery
- Climbing beans — leeks, tomatoes.
- Chives — fruit trees, carrots; deter aphids from roses; stop powdery mildew on cucumbers.
- Corn — beans, peas, melons, squash, pumpkins, cucumber, potatoes.
- Cucumber — surround with peas and beans, radishes, chives, oregano, marjoram
- Grapes — marigolds, nasturtiums, hyssop, mulberry.
- Lettuce — cabbage, broccoli, brussels sprouts, radish, carrots, strawberries
- Peas — radish, turnips, beans, sweetcorn, cucumbers, carrots.
- Potatoes — beans and peas, corn, eggplant, cabbage, nasturtiums.
- Roses — garlic, chives, parsley.
- Strawberries — beans, lettuce, spinach, borage, pyrethrin daisies.
- Tomatoes — asparagus, parsley, basil, nasturtiums, stinging nettles,
- Marigolds — turnips, peas.

Hand methods

Many insects are easily controlled by removing them by hand e.g. snails collected at night with a torch. Aphids squashed off the growing tips of plants (use gloves to avoid the green stain).

Herbs

A herb garden on its own is very pretty but far more beneficial are herbs planted throughout the garden and

under fruit trees particularly the very strong scented lavenders, chives, garlic, rosemary, rue, pennyroyal and the various mints and geraniums. Marigolds discourage nematodes which eat and damage roots particularly in sandy soil. Tansy deters ants. You only need one blue-tongue lizard in the garden to control nematodes (but don't go pinching them out of the bush!)

Ladybirds

By not using natural or synthetic pesticide sprays you will encourage a population of ladybirds which are an extraordinarily efficient and natural control of garden pests. A small pond of water (particularly running water) will encourage their breeding.

Personal insect repellant

Rub skin with dilute eucalyptus or lavender oil. Blend citronella or pennyroyal in a blender and rub on skin.

Rotate crops

In vegetable gardens do not grow the same vegetables in the same plot year after year. This discourages pests associated with particular vegetables from setting up permanent home and can break the breeding cycle. This also improves the structure and nutritional availability of the soil.

In general rotate root crops with leaf crops.

Scale

Soap and warm water spray on trunks not leaves. Ants spread scale so deter ants by mixing borax and sugar in equal parts and sprinkling on top of nests or make a bait (see above).

Soap and garlic spray

Crush 125gm. garlic cloves. Cover with vegetable oil in a glass container for a week. Mix in two tablespoons of soap mixture and dilute one part mixture to ten parts water.

This is a general purpose insecticide but use with care only on affected plants as a last resort.

9 Weed control

WEEDS ARE not pests in themselves, merely misplaced plants. They are plants that we don't want in a particular place! Weeds self seed and spread into areas of bare and cultivated ground as a natural way of regrowth to protect the soil. This ability to self sow quickly in difficult conditions means they are tough and invasive.

Without using chemicals you have the choice between removing weeds entirely or killing them by smothering. The trick is to use ways that don't break your back in the process.

Grazing

Rather than remove weeds yourself let some animals do it for you! Two chooks in a backyard can clear a lot of ground. Use temporary wire mesh to fence the area you want cleared and move it around as desired.

In the country goats make *very* short work of blackberries. Once the blackberries have been grazed down the main roots are easy to identify and dig out.

Mulching

This not only covers bare soil preventing invasion by weeds but encourages the growth of the desirable plants it surrounds.

The principle of working *with* your land rather than against it can be extremely useful for weed control. In

vegetable gardens although it looks nice to have weed free rows, weeds only significantly affect vegetables in the first half of their growth cycle. Plants can be protected in their early life by heavy mulching and very close planting. Later in the growth cycle weeds growing through mulch can be left and then dug back into the soil when the crop has finished.

Smothering

Digging soil is mostly unnecessary to control weeds. Firstly cover the area with black plastic and seal down the edges by burying in a shallow trench. Heating by the sun will kill all weeds in three to four weeks (depending on weather). Plant desired plants, mulch thickly and also plant fast growing creepers to inhibit further weed growth.

Plant vegetables in combinations that complement each other e.g. tall growing varieties of corn, peas, beans, tomatoes etc. underplanted with crops like carrots melons, pumpkins, potatoes (check Companion Planting section for beneficial combinations).

Vegetables can be grown in no dig beds. First kill all the weeds with plastic as described above. Then put layers of old lucerne hay, straw, compost and well rotted manure directly on to the soil. Finish the top layer with straw or lucerne. Poke holes into the layers and plant seedlings in a handful of compost. To hold small beds together box the sides. This method works extremely well in containers like old barrels or milk containers.

Starving weeds of moisture

If possible either trickle irrigate directly onto the plants or when watering with a hose localise water onto the plant roots as much as possible.

PART D RESOURCES

10 Further reading & resources

USING ENVIRONMENTALLY safe products is no longer a matter of choice. Rather it is a matter of vital necessity if we are to have any hope of not just surviving on this planet but enjoying it as well.

As you have read the alternatives in this book you will have realised the incredible array of environmental hazards now present in our homes. These are hazards that affect *us all* — it's not just a matter of *whether* you are affected but by *how much*! Children are affected most of all. It is a mistake to assume that an absence of physical symptoms means you are unaffected — behavioural changes and symptoms always occur *first.*

We must learn like the ancients to live in tune *with* our environment and not work against it. We must realise that we are part of our environment and not somehow separate from it. This means we must use the environmentally and people friendly alternatives or as the conservation slogan says 'Think global but act local' — there's nowhere more local than your own home!

FURTHER READING

Pearson D. *The Natural House Book* Collins, 1989
Rousseau D, Rea W.J., Enwright J. *Your House, Your Health and Wellbeing.* 1988
Samways L. *The Chemical Connection* Greenhouse/ Penguin, 1989 (to be re-released, McCulloch/Green

Press, 1991)
Smith C. & Best S. *Electromagnetic Man*, Dent, 1989

USEFUL CONTACTS

Allergy Aid Centre (Extremely comprehensive range of products. Available on mail order). Shop 57, 1st. Floor Pran Central, 325 Chapel Street, Prahran, Vic. 3181. Phone: (03) 529 7348
Allergy Association of Australia, P.O. Box 298, Ringwood, Vic. 3134
Allergy Research Organisation of Australia, P.O. Box 4022, University of Melbourne, Parkville, Vic. 3052
Australian Government Analytical Labs, 11 William St, Melbourne. Phone (03) 617 0220
EMRase, PO Box 90, Olinda, Vic 3788. Phone (03) 648 0391. Fax (03) 416 2562
Total Environment Centre, 18 Argyle Street, Sydney, NSW. 2000. Phone: (02) 27 8476 or 27 4714

PRODUCTS

Safer alternative products are available from:
Bio Products, (Paints) 25 Aldgate Terrace, Bridgewater, S.A.
Grimes and Sons, (Stains) 1/30 Peel Street, Eltham, Vic. 3095
Allergy Aid Centre (See above)
Coles/New World supermarkets throughout Australia stock the Puren range of toiletries and cleaners.
Health Food Stores stock a wide range of foodstuffs for people suffering chemical sensitivities, water filters and the Herbon range of toiletries and cleaners.

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The Author

Louise Samways has been a practising psychologist for the last 15 years.

Specialising in environmental health and mind-body healing, as well as her private practice she conducts frequent seminars and lectures on the subjects to professional colleagues and the general public.

A past president of the Allergy Research Organisation and a consultant with the Allergy Association of Australia she is frequently asked to advise on medico-legal questions.

She is continually researching the area of environmental health, both in Australia and overseas and has been invited to conduct seminars in the UK and Sweden.

Her previous book **The Chemical Connection** (Greenhouse/Penguin 1988 re-issued 1991 by McCulloch/Green Press) was a best-seller and she is currently writing several other books on related subjects.

Louise Samways' practice is based in a southern bayside Melbourne suburb where she lives with her family.