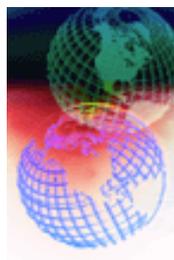
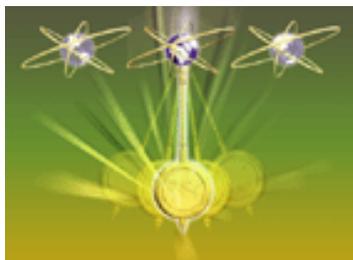
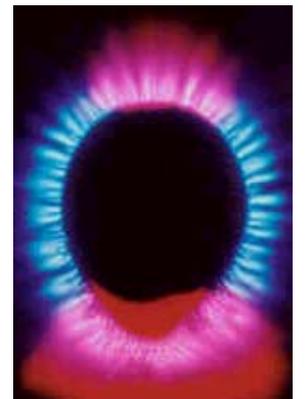


PASCAS CARE

HEALTHY BUILDINGS

for

HEALING PEOPLE



“Peace And Spirit Creating Alternative Solutions”

PASCAS FOUNDATION (Aust) Ltd
ABN 23 133 271 593

Queensland, Australia

Pascas Foundation is a not for profit organisation

Em: info@pascasworldcare.com

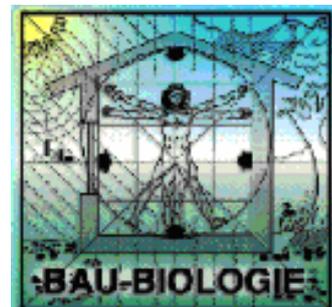
Em: info@pascashealth.com

www.pascasworldcare.com www.pascashealth.com

HEALTHY BUILDINGS for HEALING PEOPLE:

Wise use of healthcare resources to improve patient health and well-being, promote efficiency, reduce employee turnover, and avoid wasteful spending dictates a careful examination of the ways in which such an encompassing factor as the built environment can affect patients' health outcomes.

Bau-biologie™, a term coined in Germany, is a word used to describe a movement promoting the use of healthy building principles as a means to improve living and work spaces and the health of people who occupy them. Bau-biologie literally means, "building biology." Both terms are now used interchangeably and both have exactly the same definition –



"how buildings impact life and the living environment."

The 25 Principles of Bau – biologie, by Anton Schneider Ph.D.

1. A building site shall be geologically undisturbed.
2. Residential homes are best located away from industrial centres and main traffic routes.
3. Housing shall be developed in a decentralized and loose manner interlaced with sufficient green space.
4. Housing and developments shall be personalized, in harmony with nature, fit for human habitation and family oriented.
5. Natural and unadulterated building materials shall be used.
6. Walls, floors and ceilings shall be diffusible and hygroscopic.
7. Indoor air humidity shall be regulated naturally.
8. Air pollutants need to be filtered and neutralized.
9. An appropriate balance of thermal insulation and heat retention is needed.
10. The air and surface temperatures of a given room need to be optimized.
11. A heating system shall feature radiant heat using as much (passive) solar heat as possible.
12. The total moisture content of a new building shall be low and dry out quickly.
13. A building shall have a pleasant or neutral smell. No toxins shall outgas.
14. Light, lighting and colour shall be in accord with natural conditions.
15. Protective measures against noise pollution as well as infrasonic and ultrasonic vibrations need to be human oriented.
16. Only building materials with little or preferably no radioactivity shall be used.
17. The natural balance of atmospheric electricity and ion concentration shall be maintained.
18. The Earth's natural magnetic field shall not be altered or distorted.
19. Man-made electromagnetic radiation shall be eliminated (or reduced as much as possible).
20. Cosmic and terrestrial radiation is essential and shall be interfered with as little as possible.
21. Interior and furniture design shall be based on physiological findings.
22. Harmonic measures, proportions and shapes need to be taken into consideration.
23. The production, installation and disposal of building materials shall not contribute to environmental pollution and high energy costs.
24. Building activities shall not contribute to the exploitation of non-renewable and rare resources.
25. Building activities shall not cause a rise in social and medical costs.

The Building Biology Philosophy

Building Biology....

- Is not a look back on a seemingly ideal past, but the vision of a future worth living.
- Is not primitive improvisation, but outstanding and responsible innovation based on aesthetic principles.
- Is not formalism, but takes nature as its role model. (Nature also features an abundance of shapes and colours.)
- Does not limit itself to advantages of individual occupants, but also shows consideration for fellow humans and the environment as a whole.
- Is not just about reducing the toxicity of individual building materials, but calls for a total approach to a healthy living environment.
- Is not an additional luxury item for only a few, but will form the foundation of future building activities worldwide.
- Is not too expensive, but includes the real costs up front, which in conventional building methods are passed on to the general public, the next generation and the environment.



Indoor Climate

It is no secret anymore that buildings – especially modern housing – can and do make people sick. This phenomenon has been studied for at least 20 years. The list of potential indoor pollutants and effects of low-level electromagnetic radiation is growing longer each year. The symptoms caused by “sick homes” are classified as Sick Building Syndrome (SBS), Building Related Illness (BRI) and Environmental Illness (EI).



What is causing an indoor air problem?

First of all it is the quality of the outside air. If you live in a big city or near an industrial area, your starting point is much worse compared to living in a rural setting, or even better near a beach or a waterfall.

Secondly, from testing we know the inside air is worse than the air outside because airtight buildings that often have insufficient ventilation are combined with building materials that outgas toxic chemicals. Mould growth as a result of moisture damage is also a factor in indoor air quality. All this causes a multitude of body problems such as headaches, asthma, allergies, hormone disorders and even cancer. The symptoms can be much more pronounced in small children, sick people and the elderly.

What is the answer?

- Use natural building materials as much as possible.
- Avoid products that have strong fragrances (cleaning and personal care products).
- Be careful with carpets and plastic building materials, paints and glues.
- Provide plenty of natural ventilation by having windows that can be opened – just to name a few.

Building Biology promotes the “breathing outer skin” which allows the diffusion of water and air molecules through a solid wall. This process helps the air to detoxify.

Advice is to take preventive action rather than waiting until these toxic substances affect your health.

Electromagnetic Pollution

EMR or electromagnetic radiation is not a new concept in our life. Actually it is a very integral part of our lives because without this electromagnetic energy life would not be possible.

What is the problem we seem to have with electromagnetic radiation?

Well, since time began until about hundred years ago life had to deal with naturally occurring radiation, which somehow was balanced or life was shielded from detrimental parts of that radiation such as certain cosmic radiation. When people started to harness electricity and began to generate and transport it over long distances a different kind of energy was introduced to our life: AC electric, AC magnetic fields and radiofrequency radiation.



Over time, industry found newer and more exciting usage of that energy. It started with simple motors, refrigerators, doorbells, electric blankets, etc., via electric heating systems, communication systems such as radio and television, and is now engaged in sophisticated electronic devices, including military weapon systems, satellites, computers and cell phone technology.

These manmade energies have become part of our lives and as such are superimposed to our subtle body energies. The result of this development seems to be an increase in certain illnesses that have been unknown or at least rare before the electricity age. Research into the long-term effects of an exposure to EMRs is in the beginning stage and hampered and stopped by vested interests.

Building Biology recognizes the potential health problems and provide measures to eliminate or at least minimize the negative impact of electromagnetic radiation.

“Never can one man do more for another man than by making it known of the availability of the Feeling Healing process and Divine Love.” JD

NOT SO HEALTHY BUILDING:

The Straw that Breaks the Camels Back

The human immune system is efficient, strong, and resilient. However, sooner or later the toxic stresses of our environment accumulate, and like the straw that breaks the camels back, something will trigger it and our bodies will get sick. We cannot hope to get or stay healthy for long if we are exposed to indoor environmental stress with every breath we take.

Our Health

Symptoms & Illnesses

HAY FEVER
 CANCER / ALLERGIES
 NAUSEA / DIZZINESS
 INSOMNIA / HEADACHES
 FIBROMYALGIA
 IRRITABILITY/BED-WETTING
 IMMUNE DYSFUNCTION
 HEART IRREGULARITIES
 LEARNING DISABILITIES
 ENVIRONMENTAL ILLNESS
 ENDOCRINE DYSFUNCTION
 CHRONIC FATIGUE SYNDROME
 LIVER, KIDNEY, BRAIN DAMAGE
 ATTENTION DEFICIT DISORDERS
 EYE, NOSE, THROAT IRRITATION
 MULTIPLE CHEMICAL SENSITIVITIES

Toxins

Indoor Pollutants

DUST
 MOULD
 RADON
 POLLEN
 MILDEW
 TOLUENE
 DUST MITES
 FORMALDEHYDE
 CARBON DIOXIDE
 TOXIC CHEMICALS
 CARBON MONOXIDE
 ELECTRO MAGNETIC FIELDS
 VOLATILE ORGANIC COMPOUND

INDOOR AIR POLLUTION can be 10 times worse than L.A. on a bad day!

The average person is exposed to over 1,500 chemicals a day. Even worse, there are no studies on the long term effects of the 50,000 most common chemicals we are exposed to. In fact there is no toxicity data for 4 of every 5 chemicals we use. There is no federal standard for indoor air quality in buildings. No testing or safe levels exist for low level continuous exposure to children, women, and the elderly. For the past 25 years the public has focused on outdoor air quality, while we are being exposed to a greater concentration and larger number of toxic chemicals inside conventional buildings. The E.P.A estimates that pollutant levels indoors are 2-5, sometimes 100 times, more concentrated than outdoor levels.



TOXIC BUILDINGS:

Poor Indoor Air Quality (I.A.Q.) perhaps has the singular most detrimental effect on our health.

The E.P.A. has ranked Indoor Air Pollution as the most prominent environmental problem costing US\$130 billion per year in health care, sick leave and productivity losses. Toxic Chemicals, Mould, Dust and Pollen, and Electro-Magnetic Fields are all found in typical buildings at levels that can cause severe illness. Since the 1970's two trends have converged to create a silent health crisis...the creation of airtight buildings to save energy and the introduction of thousands of untested chemicals with unknown health impacts. The prevalence of plastic finishes and vapour barriers in wall systems have created the perfect environment for mould. Nearly every building material has been adulterated with potentially toxic chemical additives. These are compounded by reliance on badly designed and difficult to control mechanical systems for heating and cooling that devitalize the air while distributing dust, pollen, and microbes throughout the living environment.



- According to Theron Randolph, MD, the founder of the American Academy of Environmental Medicine, “indoor air pollution is 8 to 10 times more important as a source of chronic illness than (outdoor) air pollution.”
- An EPA report states that 30% of new or renovated buildings have serious I.A.Q. problems and 60% of all buildings are “sick”.
- We spend on average 90% of our time indoors in buildings that are promoting sickness, not health. Research has linked the doubling of asthma rates since 1980 to indoor air pollution.
- According to the New England Journal of Medicine it is estimated that environmental factors account for 72% of cancers. The American College of Allergies estimates that 50% of all illness is aggravated or caused by indoor air pollution.

Chemical

- Paints, stains and finishes, cabinets, carpets, glues and indoor furnishings contain toxic chemicals. Many of these chemicals are probable human carcinogens; others are narcotics that effect the central nervous system and could lead to liver, kidney and brain damage.

Mould

- Humidity and vapour condensation inside of walls leads to the growth of moulds, which can cause allergy like symptoms, eye, nose and throat irritation, headaches and fatigue. Some moulds are toxic enough to cause permanent damage to the immune system or even death.

Dust & Pollen

- Dust caused by and trapped in carpets, pollution, and pollen are continually circulated in the air by forced air systems. These systems are difficult to filter and harder to clean, cause allergies and can even trigger asthma.

Electro- Magnetic Fields

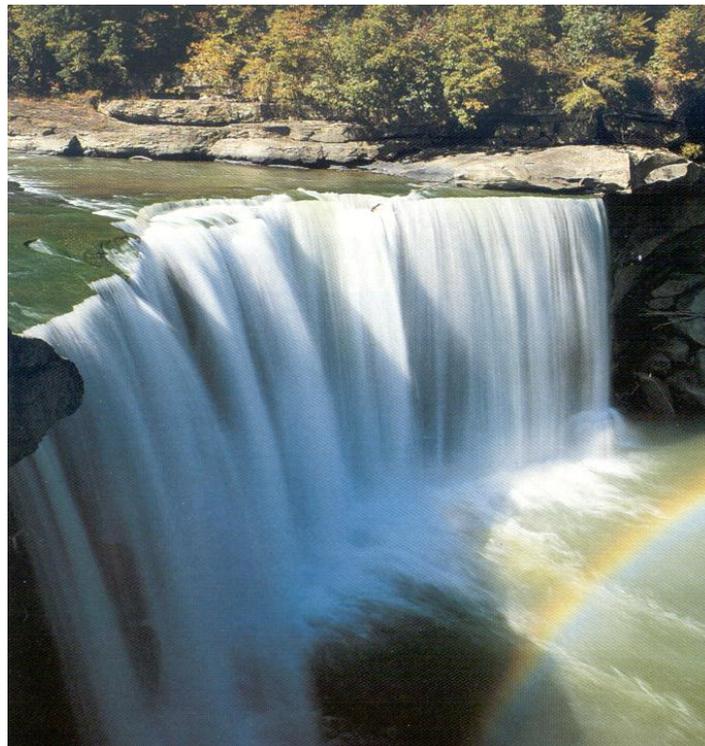
- Extensive random wiring without proper grounding can cause high magnetic fields. These strong electric fields have been linked to cancers, and can affect the brain, immune system and hormone productions.

These serious problems are caused by the very way conventional buildings are designed and built. Adding air filters, humidifiers, and water proofing to toxic buildings is a "band-aid approach". They address the symptoms and not the cause. They either do not work or fail over time, and typically create more problems at a greater cost. To reclaim our health, we must change the way we design, build, and live in our buildings from the ground up!

Health is not everything, but without health, everything is nothing. Schopenhauer



**PASCAS
HEALTH**



**Feeling
Healing with
Divine Love is
the key!**



From GREY to GREEN: CREATING HEALTHY BUILDINGS:

Emeritus Professor of Architecture, University of Queensland, Australia

<http://www.fengshuiseminars.com/articles/healthybuildings.html>

There is increasing evidence that the destruction of the natural environment, the increase in industrialisation and urbanisation and the corresponding increase in pollution levels have begun to affect our health. When we deny ourselves the essential sources of life-force energy, we decrease vitality and effectively weaken our immune systems which, in turn, leads to reduction in our ability to withstand the effects of pollution and infectious viruses and parasites. With all these forces operating against us, it is important that we give the utmost priority to the task of restoring the balance between development and the natural world and preserving our environment.

Creating Healthy Buildings

Our health and wellbeing is essentially affected by three factors: our diet and nutrition, the state of our mind, and finally, the quality of the environment in which we live and work.

Buildings are important when we realise we spend well over 95% of our lifetime indoors. Where did you spend the last 24 hours? It is most likely to be inside the home, place of work, or a car, bus or train.

As we move into the 21st century, we take it for granted that technology has made our lives easier. Household appliances, transportation and communication are just three areas where our daily chores have become easier as a result of technological advances.

But we also know that our planet is becoming dangerously polluted. Technology has brought enormous benefits and has made our lives more comfortable in many ways but it has also brought pollution and degraded our environment.

We all know there is pollution in the air, but we can't even rely on basics like pure food and water anymore.

Water was once natural and pure. Now it is polluted, so we add chemicals such as chlorine to make it drinkable. We feel good when we are told that chlorine kills germs. What we are not told is the harm chlorine can do to us. What we are not told is that there is a co-relation between the amount of chlorine we put into our municipal water supplies and the increase in the incidence of bladder cancer and possibly heart disease.

There is evidence that the chlorine in the water we drink may be destroying some of the vitamins which we would otherwise get from our food. Now there is evidence that chlorine in swimming pools may be causing premature ageing of the skin, if not an increase in the photosensitivity of the skin, which in turn means greater risk of skin cancer and melanoma.

Another additive to some water supplies that is of concern is fluoride. Do you know that fluoride has been traditionally used for killing cockroaches and rats? It is an active ingredient in the widely used poison known by the numbers 10-80. There is also mounting evidence that there could be a link between fluoride intake and an increased risk of hip fracture and even bone cancer.

It is obvious that we must stop looking to chemicals to solve these problems. It is high time we learn to take our cue from nature and see how we can deal with water purification naturally. We know that sunlight and oxygen disinfect water. We should use sunlight as a sterilising agent and develop ultraviolet light-based water treatment systems which add no harmful chemicals.

Our food is also polluted. We reduce its nutritional value by adding harmful preservatives. We add chemical colours and chemical flavours to compensate for refining natural foods. More and more of our food is fabricated in laboratories and factories and this trend is likely to increase in the coming decades. Soon, we will not know what natural food is like.

This degradation has started to affect our health and it could also be contributing to the many tensions that exist in our personal lives. We are becoming more and more dis-oriented. If we want to bring back some balance then we must stop turning our back on nature.

Our Buildings: A Third Skin

Ancient wisdom tells us that if we learn to live in harmony with everything and everyone with whom we share this planet, then it is possible that we may rediscover a similar harmony within ourselves. Our buildings can help us to achieve this harmony.

Like the clothes we wear, a building as a kind of third skin. Its main job is to make the human body comfortable and to protect it from extremes of climate. Also, like a good quality garment, a building is much more comfortable to live in if its skin, that is, its walls and roof, breathes and acts like a filter. It will not make us comfortable if a building seals off and isolates us from the natural world that nourishes our body, mind and spirit.

If we use natural materials and carefully orient a building, then we can maximise the advantages and minimise the disadvantages of being close to nature. Our aim should be to harness natural energies, such as those produced by the sun and the wind to heat or cool our buildings. This is a good way to create comfortable environment naturally.

Early in the 20th century we experienced what is known as the Modern Movement in Architecture. It had a great influence on how we still build our towns and cities. One of its inventions was the technology of post and beam structures which do not rely on weight bearing walls to support the roof.

Once designers realised this, they found that they could use reinforced concrete and steel frames to construct buildings of all kinds that had free and open plans. They were able to design highrise buildings which now dominate the skylines of our city centres.

Walls were no longer seen as barriers between the inside and the outside. They were seen as filters that could bring nature and the natural energies into the building in a way that was not possible before.

The Problem: Sick Buildings

Sadly, somewhere along the way, our building designers and developers seem to have lost their way. They have failed to exploit their new freedoms. It has become normal practice to turn away from nature, seal buildings, especially high-rises, and leave it to the high energy consuming mechanical systems, such as airconditioning, to make people comfortable.

In reality, this climate control is rarely comfortable and can never give the variety of experiences and physical and mental stimulation that nature provides. In fact it has now been scientifically proven that buildings designed in this way fail to provide healthy environments. A 1984 World Health Organisation report told us that something like 30% of new and remodelled buildings worldwide are unhealthy.

The risks are high. People have started to complain about indoor air quality. They are asking for compensation. In the USA, hundreds of millions of dollars have been paid out in settlements for the ill health caused by what we now call 'sick building syndrome'.

This situation has become worse since we started to use synthetic building materials, chemicals, and other products whose long term effect is only now starting to be revealed.

The problem is that most designers believe that we escape pollution as soon as we go inside the buildings. In fact, the opposite is true. We don't escape pollution by staying indoors. Indoor pollution has been found to be as much as 5 to 10 times higher than outside levels.

The best quality air we can expect inside any building is the same as outside. This is obvious when you think about it, as our buildings are literally bathed in this outside air.

We know that we can only clean the air, any air, properly if we use very expensive particulate and charcoal filter systems, normally reserved for special situations. For the majority, it is a case of Indoor air = Outdoor air + whatever we add indoors.

The 'tighter' the building, the longer the added chemicals remain and the higher the indoor contamination. Buildings are often designed to be 'tight' for reasons of energy conservation and other running costs. The rationale is that heating or cooling 'fresh' outdoor air requires more costly energy than recycling indoor air, which is already about the right temperature. This is false economy because recycling air can spread disease.

We must be clear about one thing, and that is that airconditioning systems do not produce pure fresh air, they only contaminate it. People often add their own viruses and bacteria to the airconditioned air. Scientists have recorded that even a simple normal cough produces 5,000 droplets of liquid while a sneeze may generate a 1,000,000.

Even the use of a handkerchief does not help. Bacteria spread everywhere throughout the building where the air is circulated. Diseases, like measles in airconditioned schools and the sudden outbreak of flu among office workers, have been recorded.

Out of doors, nature uses the ultra-violet component of sunlight to kill bacteria in the air. Scientists are already working on developing methods to simulate this natural force in airconditioning systems.

A group at the University of Florida found that air-borne micro-organisms die when exposed to ultraviolet rays in the presence of a titanium dioxide filter. Such a system, when developed, could be highly effective in sterilising circulating air in airconditioned buildings.

A further problem is cigarette smoke. We now know a lot about the health hazards of passive smoking. In a study involving 2,100 office workers, non smokers continually exposed to cigarette smoke in the

work environment suffered about as much damage to the small airways in the lungs as the light smokers. This was about half as much as that suffered by the heavy smokers.

Another study found that non-smoking workers in a typical office would inhale equal to two or three cigarette per work shift. This study also showed that none of the existing ventilation standards were adequate and even if these were substantially increased it made no difference whatsoever.

In the workplace, passive smoking leads to higher health risks and potential future litigation, as well as increased absenteeism and reduced performance. In our homes, we pay with ill health and sickness from common illnesses such as asthma and infection.

We also know that airconditioning systems are responsible for what is called legionnaires' disease. It is spread by a virus which not only kills people inside the building but also those within a kilometre radius.

It works like this. The warm air exhaust from the airconditioning system is often located close to the cooling tower where fresh air is brought into the system. Bacterium multiply in the warm environment of the cooling tower, pass into the airconditioning ducts and spread throughout the building. We can get rid of cooling towers.

Apart from legionnaires' disease, airconditioning is also the main contributor to skin diseases such as eczema, psoriasis and acne. These conditions are the result of dry skin caused by low relative humidity levels. Humidity, in case of aircrafts, can get as low as 3%, whereas we humans like the humidity levels to be somewhere between 46% and 65%.

We often find ourselves frustrated when we move into over-heated and dry airconditioned hotel rooms. The first response is to shut off the system and then try and open one of the windows. This is usually impossible since they are often well sealed.

Dr. Molloy, a world renowned dermatologist, found an ingenious way to deal with such a predicament. He simply chokes the bathroom door open, fills the bath with water, and leaves a little note for the chambermaid saying. 'Please leave this full of water all the time I'm here'. Evaporation from the bath keeps the humidity at a more natural level.

Ross Thorn and Terry Purcell, two researchers from Sydney University's architecture school, found that airconditioning also affects our natural daily (circadian) temperature rhythms. They discovered that our body temperature falls well below the normal 37 degrees Celsius when we are in airconditioned areas for some time.

After coming into contact with what we call 'dead air', our skin appears to suffer a form of sensory deprivation. Our skin is no longer stimulated by air so our body becomes lethargic in the afternoons.

The lesson is that our skin needs constant stimulation from moving air to maintain its normal temperature. Over a long period, the lowered body temperature can literally make us ill and increase our susceptibility to viral infection.

The obvious answer to these problems is to do just the opposite to what we do now – **provide high quality ventilation by opening up our buildings to natural energies.**

Two other things we can do is to specify safe and non toxic materials, and bring plants and shrubs inside the buildings. This is exactly what our ancestors have practiced for centuries. It is just that, much to our own peril, we have learnt to ignore them.

The Solution: Living Building Materials

Ancient seers of India viewed all buildings as living organisms. This meant that all construction materials were also seen as living organisms, as long as their origin could be traced to nature.

Natural organic materials such as wood, soil or stone, especially sandstone, limestone or marble were the obvious choices, since they radiated positive energies, and therefore provided a healthy environment.

They also thought that all inorganic or non-natural materials, especially synthetic materials, were ‘dead materials’ that radiated negative energies. They were lacking in what they called the ‘life force’ meaning everyone who came into contact with them was likely to suffer ill health.

Mud houses were considered a blessing as were timber buildings. In a deep and spiritual sense such buildings sent out positive messages to everyone who was fortunate to live in them. They were indeed lucky people who aged gracefully and considered ageing as inevitable and natural.

The ancient seers extended this awareness to the process of the ageing of objects and buildings. They had found that synthetic and new materials simply did not age in the same slow natural way as natural materials. Synthetic materials had no memory or sense of history.

This is true when we look at, for example, a very old hand carved wooden door. We can picture the tree from which it was extracted; its grain and texture and the quality of its craftsmanship. It sends us signals about the skills of its carver and the generations of men, women and children who have passed through it. You can’t say the same about an aluminium framed sliding glass door.

The negative impact of synthetic building materials and furnishings on our health has been clearly shown by a number of research studies. We don’t use timber in its natural state anymore. It is chipped into little pieces and glued into boards for walls, floors, cupboards, shelves and furniture.

Plastic polymers are used to manufacture fabrics for floor coverings and curtains. The walls and ceilings are insulated with plastic foams which are also used to stuff cushions and bed mattresses.

In their book, *The Perils of Progress*, two Australian scientists, Dr. John Ashton and Dr. Ron Laura of the University of Newcastle, maintain that all these synthetic materials let loose trace amounts of unreacted monomers, plasticisers and other chemicals into the air, especially when new. Take, for example, the suffocating smell of new (synthetic) carpet or of a new car.

They mention several studies that have shown that as a result of exposure to these toxins people suffer from a range of symptoms such as headache, flushing, laryngitis, dizziness, nausea, extreme weakness, joint pains, unwarranted depression, voice impairment, exhaustion, inability to think clearly, arrhythmia or muscle spasm.

Another study of over 1,000 patients identified undiagnosed chronic symptoms associated with the purchase of new carpets, furniture, beds, cabinets, the renovation of buildings, moving into new buildings and insulating with synthetic foam (ureaformaldehyde) insulation.

Rebirthing old buildings is a time when such buildings are at their most dangerous capability with their pent up storage of toxins being disturbed and released in one almighty remaking exercise.

Formaldehyde is one of the main culprits. It is issued by glues, resins and similar agents used in the manufacture of synthetic products, which are now widely known as one of the main sources of indoor pollution caused by so-called volatile organic compounds (VOCs) in buildings.

Other sources of VOCs include synthetic tiles and flooring, contact adhesives and sealants, paints and varnishes. Synthetic carpets are the worst offenders issuing such VOCs as vinyl acetate and propane-diol and the compound 4-phenylcyclohexane (4-PCH).

Then there are VOCs released from flooring materials, including toluene and xylene from adhesives, and phenol and trimellitic from levelling resins which are all extremely toxic as they cause immunological sensitisation and severe respiratory irritation. The list goes on.

Dr. Bill Lawson of the School of Architecture at the University of New South Wales, has conducted scientific research on this subject. He found that **natural organic materials were not only non-toxic, they were far more energy efficient and had less environmental impact than synthetic materials.**

Kinship with Nature

So how can we bring nature closer to people by introducing plants and shrubs to buildings.

Several hymns in the ancient Indian text, the Rig Veda, praise trees, rivers, herbs, forests, night, dawn, dusk, fire and clouds. Plants were believed to contain the divine presence.

Hindu priests have always maintained flowering trees at temple sites. They use blossoms in religious rituals. Trees such as *Peepul* and flowering shrubs were thought to possess qualities which could enhance a person's spiritual life.

They also believed in the therapeutic value of plants and vegetation. They were convinced that they provided physical and psychological benefits. Basil, *Neem*, mango, coconut and banana are given pride of place in a courtyard or surrounding garden.

The Basil (Tulsi) plant contains 27 minerals and is used in 300 Ayurvedic medicines. It destroys disease carrying germs, and is also used in the treatment of asthma, tuberculosis and leprosy. It is known to purify blood and improve the digestive system. *Neem* cleanses the air, acts as a pesticide and its oil is extensively used in physiotherapy.

The Lungs of the Earth

Air, or oxygen, is known as the breath of plants and plants are considered the lungs of the Earth. The ancients viewed the Earth as an extension of the human body and plants effectively as an extension of the lungs of our body.

Through the process of photosynthesis, plants produce the oxygen we breathe in and absorb the carbon dioxide we breathe out. A human being uses one third of a ton of oxygen every year and requires 500 to 700 litres in a 24 hour period to stay healthy.

Approximately 90% of the body's energy is created by oxygen. All body activities, from brain functions to elimination, are regulated by oxygen. A toxic and polluted environment, devoid of oxygen, creates imbalance in the body's energy system, making a person prone to stress and disease.

We are all contributing to reduced oxygen levels in our living environments by adding chemical and auto pollution and by removing minerals from the soil and forests from the planet.

Tree cover is an important indicator of the health of the planet, as it provides oxygen for us to breathe. Yet we are clearing eleven million hectares of forest each year without adequately replacing it.

Environmental scientists working with NASA have found that many plants are very good at absorbing indoor pollutants such as benzene and formaldehyde. They are very effective in reducing allergic reactions triggered by these toxins. In fact they plan to launch selected plants into space as part of the biological life support system aboard future orbiting space stations.

We can do the same in buildings. By placing appropriate indoor plants within buildings we can minimise the adverse effects of the various toxic materials used in their construction.

During the night, plants should be removed from the sleeping areas because they reduce oxygen levels and increase the quantity of carbon dioxide. This is the reason why ancients in India advised against sleeping under trees and bushes at night.

At Sydney's University of Technology, Professor Margaret Burchett found that plants in the home and office not only reduce pollution; they also benefit us psychologically. Her studies clearly validate the ancient wisdom which has emphasised a close rapport between humans and their natural environment. This rapport was reflected in traditional garden concepts of the Persians, Indians, Chinese, Japanese and others whose culture goes back thousands of years.

A Way Forward

There have been some great ideas about how to bring nature into densely populated urban areas. In his design for a tall office building in a congested area of Sydney, architect Harry Seidler has used an atrium with shrubs and even tall trees to bring nature closer to people. He rationalised that it was a good investment to provide sufficient soil depths for some of the trees to enable them to reach heights of 15m or more.

We live in an overcrowded and increasingly polluted environment. We must bring nature into our day to day lives; create a sense of urgency and do whatever we can to make up the loss and neglect that has done so much harm to our health and well being.



Water Furnace

<http://www.waterfurnace.com>

A major source of energy is right under your feet.

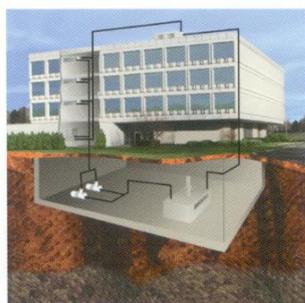


And no more cooling towers!

Your own backyard has the potential to be your source of heating and cooling comfort. Now you can get safe, reliable, energy efficient heating and cooling from one piece of equipment. Geothermal energy represents the leading edge of heating and cooling technology. It moves heat energy to and from the earth to heat and cool your indoor environment. And compared to ordinary systems, geothermal technology can save you 30% to 60% on your monthly energy bills. Geothermal is the safest, cleanest, most reliable space conditioning system you can buy.

Geothermal energy is an unlimited resource. The lot surrounding a suburban home or other building contains a vast reservoir of low temperature thermal energy, typically 10 times that required over an entire heating season. This resource is constantly re-supplied by the sun, the surrounding earth, and heat rejected while cooling during the summer. The universal definition of geothermal is "...pertaining to the heat of the Earth." By using the Earth to provide up to 50% of a building's total heating and cooling needs, GHP systems are truly geothermal energy made practical.

Four basic types of geothermal energy sources:



Boiler/Tower Systems



Ground Water



Closed Loop Earth Coupled



Pond Loop Systems

Closed loop systems circulate a water-based solution through a "loop" of small diameter, underground pipes. In cold weather this solution absorbs heat from the Earth and carries it to the geothermal unit. The geothermal system amplifies the heat and delivers it indoors. In warm weather the process is reversed, excess heat is carried from indoors and into the earth. You keep refreshingly cool during the hottest summer.

Horizontal loops are often considered when adequate land surface is available. Pipes are placed in trenches, in lengths that range from 100 to 400 feet (30 metres to 120 metres).

Vertical loops are the ideal choice when available land surface is limited. Drilling equipment is used to bore small-diameter holes from 75 to 300 feet (23metres to 90 metres) deep.

Pond (lake) loops are very economical to install when a body of water is available, because excavation costs are virtually eliminated. Coils of pipe are simply placed on the bottom of the pond or lake.

Open loop systems utilize ground water as a direct energy source. In ideal conditions, an open loop application can be the most economical type of geothermal system.

Boiler / Tower Systems:

For efficiency upgrades where large geothermal systems are not viable, existing boiler/tower jobs are frequently retrofitted. Hybrid systems incorporate both geothermal loop coupled with down-sized conventional heat rejection or addition equipment (boiler or tower).

Four times the efficiency:

A geothermal system uses the Earth's thermal properties in conjunction with electricity to provide unprecedented efficiency. For every unit of electricity the system uses, it provides four units of heating energy, giving a geothermal system a 400% efficiency rating on average. These numbers can translate into real savings on your utility bills year- round.

The WaterFurnace Advantage:

When you invest in a WaterFurnace geothermal system, you can be assured that you are receiving the highest quality, best performing heating and cooling system available. Here are some of the benefits of geothermal ownership.

Lower operating costs: The WaterFurnace system operates more efficiently than ordinary heating and air conditioning systems-30% to 60% in most cases.

Comfortable: Because the unit uses the relatively stable temperature of the earth as an energy source, you are assured of constant, even winter heating and better humidity control in summer.

Safe and clean: No flame, no flue, no odours, just safe reliable operation year after year.

Flexibility: The unit provides heating, central air conditioning and hot water all from the same compact unit.

Economical Water Heating: Water heating can be a significant energy expense. WaterFurnace units can reduce the high cost of water heating by as much as 66%.

Attractive: The completely self contained indoor unit needs no noisy, unsightly outside condensing unit

Environment: The system emits no carbon dioxide, which is considered a major contributor to environmental air pollution.

WorryFree® warranties: In the unlikely event of a service problem, WaterFurnace systems are covered by the best warranty in the industry.

GREEN and HEALTHY BUILDINGS for the HEALTHCARE INDUSTRY:

Gail Vittori

Center for Maximum Potential Building Systems,
Austin, Texas



Introduction

Just as health care professionals diagnose a patient's illness and prescribe appropriate treatment, so too are a growing number of building professionals diagnosing how buildings affect human health and the environment and prescribing strategies to minimize these impacts. This is in response to mounting evidence that buildings through their life cycle are significant causes of human illness and environmental degradation. According to the U.S. Environmental Protection Agency (EPA) and its Science Advisory Board (SAB), indoor air pollution is one of the top five environmental risks to public health. On average, people in the US spend 90% of their time indoors.

Many common construction materials can emit dangerous compounds and harbour infectious moulds, fungi and bacteria. Specific materials such as adhesives, carpeting, upholstery, and manufactured wood products emit **volatile organic compounds (VOCs)**, including formaldehyde, a probable human carcinogen. PVC (polyvinyl chloride or vinyl) products such as flooring, carpeting and wall covering can release a variety of hazardous additives, including phthalate plasticizers and heavy metal stabilizers.

For people confined indoors due to illness and particularly for those with depressed immune systems, both prominent populations in healthcare facilities, the consequences of any of these impacts can be significant. As well, facility staff and visitors are susceptible to the range of potential health effects of poor indoor air quality, including asthma and other respiratory health problems, cancer, and reproductive and developmental impairment.

How buildings are designed, and the materials and methods used to construct and operate them, have significant consequences to the natural environment and health outcomes of people outside of the building envelope as well. Building-related activities are responsible for 35% to 45% of carbon dioxide (CO₂) releases into the atmosphere, a precursor to global warming, and deplete the stratospheric ozone layer by using refrigerants and products, including some insulation materials, manufactured with ozone depleting compounds. Buildings use over 75% of the



PVC produced. The manufacture and disposal of PVC, as well as its combustion in accidental fires, is linked to the emissions of the persistent and bioaccumulative toxins, dioxins and furans. Construction also accounts for about 40% of raw stone, gravel, sand, and steel consumption, and 25% of virgin wood.

Buildings use about 40% of energy resources and 16% of water, while building construction and demolition generates about 25% of municipal solid wastes. Each of these impacts has direct or indirect consequences on human health, the extent of which is becoming better understood as the interconnections between buildings, human health and environmental quality are subjected to more rigorous analyses.

This shift in practice towards green and healthy buildings is fundamentally consistent with the core value of health care professionals – first, do no harm. To this end, healthcare practitioners should assume a public health oriented position relative to the facilities in which they operate, and ensure that these buildings do not degrade the health of individuals or of the general public by implementing sustainable design, operation, and maintenance practices.



Healthcare providers are just beginning to understand the process of creating and maintaining environmentally sustainable healthcare settings. They are changing from first-cost to full cost accounting, which extends the conventional balance sheet to include life cycle costs. They are incorporating preventive maintenance and integrated, anticipatory design concepts into buildings.

Green and Healthy Buildings for the Healthcare Industry

Finally, they are partnering with suppliers and design professionals to improve medical outcomes, user satisfaction and productivity through changes in the built environment.

Guiding Principles

More than an optimization of any single component, sustainable design and construction represents the integration of materials and methods that, together, create the physical manifestation of a building. The entire life cycle of building materials and products, as well as the building as a whole relative to its physical, environmental and human contexts on the local, regional and global scales, must be evaluated for environmental and health considerations (see Figure 1 below). We are informed by the U.S. EPA's findings that **indoor air pollution is one of the top five environmental risks to public health**, and by the U.S. Science Advisory Board's assessment of highest global environmental priorities: global climate change, loss of biodiversity, habitat destruction, and stratospheric ozone depletion.

While not as obvious as to their affect on human health as indoor air quality, these indicators of environmental health at risk—rising global temperatures, increased exposure to ultraviolet radiation, and diminished supplies of natural resources—signal trouble for the human species. Establishing life cycle health and environmental considerations as evaluative criteria for design decisions and material and product specifications yield measurable benefits in enhanced patient outcomes, improved worker productivity, and reduced operations and maintenance costs, to name a few. This recognition should

trigger immediate review and modification of existing A/E Guidelines, standard procurement policies and specifications.

Upstream environmental and health impacts occur during the materials acquisition (source), transport, manufacture, and distribution of materials and products. These impacts can be equivalent to 10-20 years of a building's operation. In conventional economics, these impacts are called "externalities."

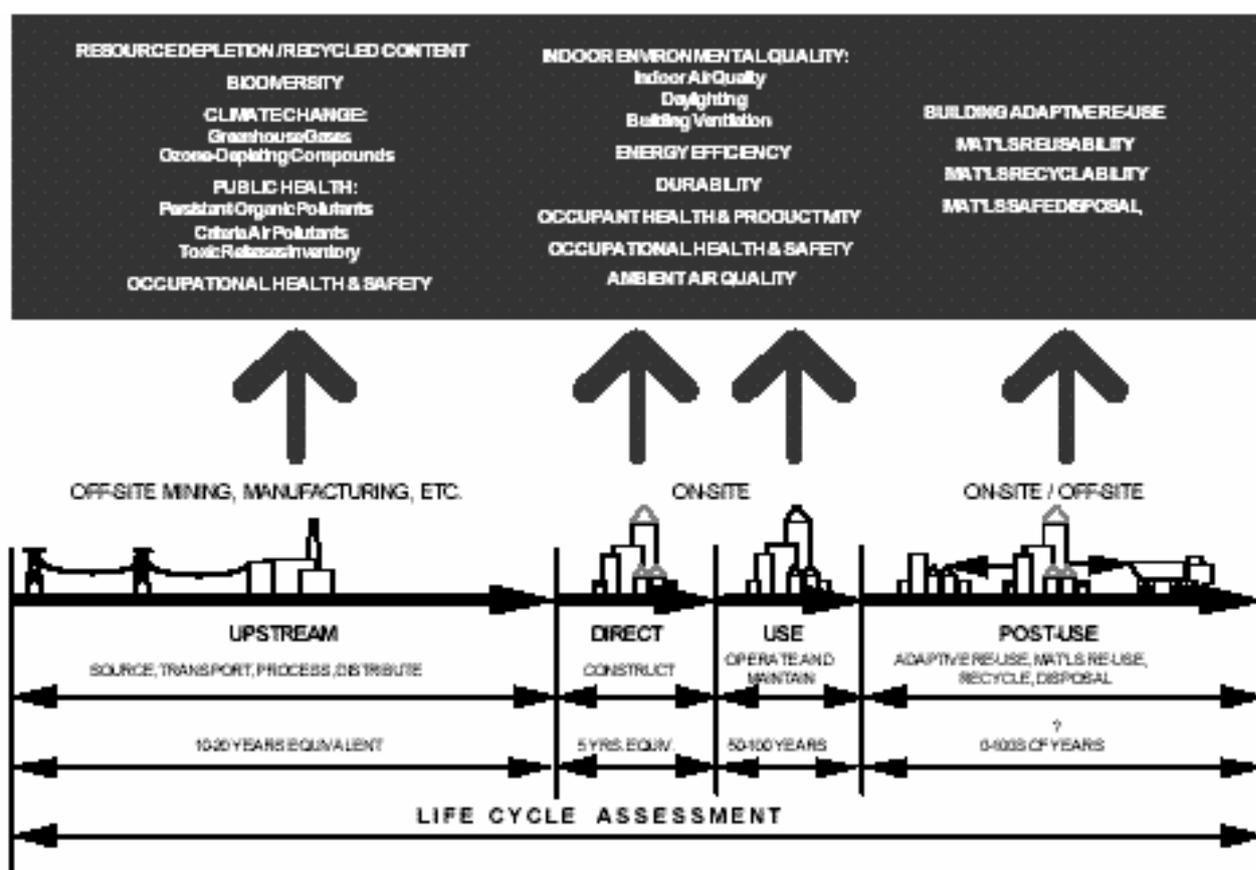


FIGURE 1: LIFE CYCLE ASSESSMENT OF BUILDING MATERIALS AND PRODUCTS
(Figure by CENTER FOR MAXIMUM POTENTIAL BUILDING SYSTEMS)

Construction of the building is the **Direct** life cycle stage. Its impacts are equivalent to about five years of building operation. The **Use** stage includes the operation and maintenance of the building and is typically assumed to be 50 years or more in Life Cycle Costing estimates. Owners are interested in payback periods during the expected life of the building, i.e., in how many years will savings in operational costs become equal to or greater than an initial investment in a particular improvement. Beyond a cost justification, investment in healthy building practices can yield measurable results in medical outcomes for patients.

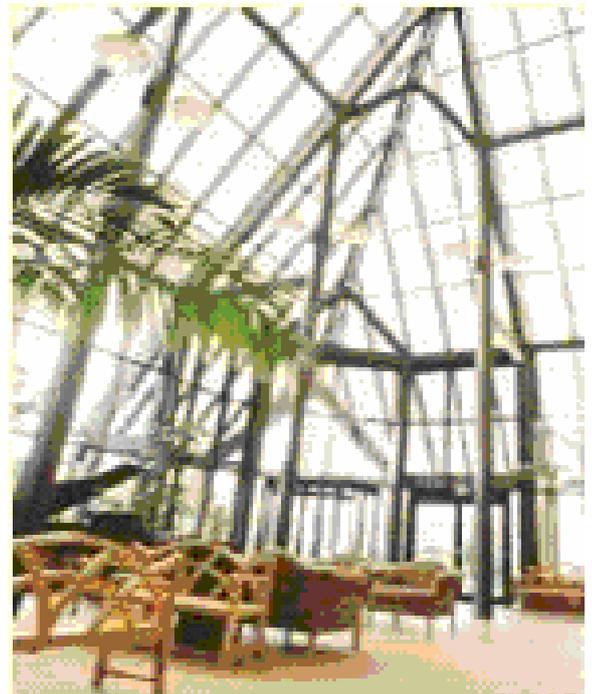
After the building's useful life, the building can be modified for "adaptive re-use" or the building's materials and products can be reused, recycled, or disposed. This is the **Post-Use** stage of materials and products. Reusing or recycling materials reduces burdens on landfills, conserves resources, and saves the contractor or owner the costs of landfill disposal. This is an example of "cost avoidance".

Case studies confirm that **facilities can be greened with nominal, if any, additional costs. Design decisions and material choices that may represent higher first costs are recouped through savings in operations, maintenance and enhanced worker performance over the life of the building.** Indeed, recent studies at major commercial / manufacturing facilities, **correlate superior indoor environmental quality (IEQ) with enhanced worker productivity.** Because worker salaries represent the highest portion of a building's operational costs, a 1% improvement in productivity far outweighs any additional costs associated with green design features or healthy materials and products. Consistent with these findings and more germane to healthcare professionals, other research shows that improving **the quality of hospital spaces can lead to decreased length of stays for patients.** Establishing the highest achievable standards for IEQ is an important guiding principle for all healthcare facilities.

Problem Statement

Unique Characteristics of Healthcare Facilities

Healthcare facilities, have unique programming criteria that guide design decisions and material, product and equipment specifications. Understanding the complex of human health implications of these decisions is critical. For example, the Academy of Architecture and Health cites research indicating that **natural lighting, indoor landscaping, rooftop gardens, solariums, and small atria have a health impact on hospital staff and can improve the feeling of well being and medical outcomes in patients. They recommend maximizing views of nature and landscaping from all patient environments, and increasing the use of skylights, interior transom windows, and natural light.**



In addition, these buildings undergo a high rate of change as interior spaces are reconfigured, remodelled and outfitted with new furnishings and equipment, reflecting changes in management and delivery systems. A result is an enormous amount of waste. Recognizing this trend, the International Facility Management Association (IFMA) Healthcare Council has tracked the development of flexible healthcare interiors based on building shell construction with universal distribution networks designed to minimize waste and accelerate schedules. According to an article in IFMA's Facility Management Journal, "The advantages of this approach are rapid project completion, clean and quiet installation, great flexibility and costs similar to those of conventional construction, but with significant lifecycle cost and operational savings".

Representing a substantial share of annual design and construction activities, the healthcare sector is well-positioned to highlight the potential that buildings have to reverse environmental decline and to create environments for people that enhance health, patient outcomes, and workplace performance. The purchasing power represented by the healthcare industry can lead to industry partnerships to improve the health and environmental profiles of buildings throughout their life cycle. Recognizing this shared responsibility among designers, manufacturers, building owners, facility managers and public policymakers sets an agenda that will yield important outcomes. As the allied building professionals design green and healthy buildings, manufacturers will shift their practices in response to demand for sustainable products and practices.

Indoor Environmental Quality

While poor air quality is commonly associated with outdoor air, air inside buildings is often worse.

As buildings were constructed to tighter energy efficiency standards in the 1970's, the materials and compounds used to manufacture common building materials were found to have harmful emissions, with direct effects on people's health. In response, improved ventilation standards were established; however, numerous common building materials and products—standard specifications for commercial and institutional buildings—continue to be sources of indoor air pollution. Both improved ventilation rates and source elimination are necessary to achieve and maintain good indoor air quality.

According to the U.S. EPA, most sources of indoor air pollution come from materials and products used in buildings, such as **adhesives, carpeting, upholstery, and manufactured wood products that emit VOCs, including formaldehyde, a probable human carcinogen.** Indeed, the construction industry is the primary end-user of formaldehyde-based products, representing 70% of its use. Potential health effects from VOCs and other contributors to poor indoor air quality include asthma, cancer, and reproductive and development effects. Specifications that require use of materials with low or no VOCs and no added formaldehyde certified by strong emissions testing protocols can greatly improve indoor air quality.

PVC building products raise serious indoor health concerns along with the life cycle environmental concerns mentioned above. The release of hydrogen chloride gas fumes and dioxins and furans resulting from accidental or intentional combustion of PVC has prompted domestic and international firefighter organizations to advocate the use of PVC-free products. In addition, exposure to PVC can lead to exposure to the host of hazardous compounds used as additives in PVC products. Particularly notable are the offgassing of phthalate plasticizers used in many flexible PVC products, and the release of heavy metals stabilizers such as lead, cadmium and organotins used in rigid PVC products. PVC has also been found to encourage toxic mould growth as moisture is trapped behind PVC wall coverings.

One of the plasticizer additives used in flexible PVC products, DEHP (diethylhexyl phthalate), was evaluated by the federal Center for the Evaluation of Risks to Human Reproduction (CERHR) of the National Toxicology Program. In their report, the CERHR expressed concern that exposure of pregnant women to current estimated adult exposure levels of DEHP might adversely affect the development of their offspring. They also raised serious concern about the possibility of adverse effects on the developing reproductive tract of male infants exposed to very high levels of DEHP from medical devices. As a result,



the U.S. Food and Drug Administration recently urged healthcare providers to consider alternatives to PVC medical products that leach DEHP and Health Care Without Harm has recommended that hospitals specify building products made without PVC.

Acknowledging these concerns, some major hospital systems are seeking to **eliminate PVC from both medical devices and building products**. PVC free products, in both traditional and new material formulations, are available for the entire range of building applications from carpet and flooring products to wall coverings, roof membranes, furniture and pipes.

Obstacles to Green Building

Despite a growing recognition of the benefits of green building, many factors contribute to only a modest transformation of design and building practices to date.

These include:

- **Resistance to change:** Innovation in the building industry lags behind virtually every other economic sector, with a few notable exceptions. The consolidation of ownership of natural resources and manufacturing infrastructure retards the competitive vibrancy that has become a distinguishing characteristic of other sectors such as telecommunications. In addition, professional academic training for architects and engineers has been slow to incorporate environmental and human health considerations into the core curriculum, so practitioners leave school without the benefit of this training.

Recommendation: Require the same level of innovation in your buildings as in your healthcare delivery systems; contract with design professionals with established credentials in green and healthy buildings; provide appropriate training to building related professionals to implement the changed practice.

- **Fear of liability:** Introducing unfamiliar methods and materials raises liability concerns, especially when professional architects and engineers are required to stamp drawings.

Recommendation: Establish strategic academic and industry partnerships, invest in research, development and demonstration projects, and monitor outcomes to reduce the liability risks. Compare the benefits of enhancing the environmental and health performance of buildings with the present liability of buildings that compromise environmental quality and human health. Consider that these present liabilities could be substantially expanded and increased as a more robust economic valuation of environmental quality and human health is codified and enforced.

- **Perception of higher costs:** Healthcare facilities typically operate for 30, 50, 100 years or more. An accounting system that artificially distinguishes the capital (first cost) budget from the operations and maintenance (O&M) budget hampers the ability to make decisions based on life cycle cost analysis.

Recommendation: Front-loading the design process and material and product specifications to create a green and healthy building and optimize cost performance over the life of the building is a sound investment. A study by the National Bureau of Standards concludes that in a typical office the labour cost of employees is 13 times the cost of the facility itself over its life cycle, including construction, furnishings, maintenance, and interest, while the cost of design is only about 1/50th the labour cost of

people. Investing in design, materials and products that enhance productivity and improve health-related outcomes are quickly recouped and improve the bottom-line over time.

Solution

Redefining buildings through their life cycle as integral parts of a healthy regional ecosystem, and as environments that directly impact human health, are basic principles of green building. Minimizing wastes, pollution, and toxics associated with the construction and operation of buildings and pursuing every opportunity to optimize indoor environmental quality are measurable performance goals. This agenda is consistent with the fundamental mission of healthcare professionals and should be reflected in their building portfolios.

The healthcare industry is positioned to evaluate, recommend and implement policies and procedures that enhance the therapeutic qualities of healthcare facilities and minimize material- and labour-intensive remodelling and renovation practices. Moreover, investments should extend to enhance the environmental performance of their buildings by adopting and implementing green building guidelines and establishing health and environmental performance parameters for all planning, design, specification, operations, maintenance, and post-use decisions.

Implementation

Short-Term Actions (Year 1)

1. Incorporate green and healthy buildings into the strategic plan and establish an in-house “green team” to implement corporate commitment with mandate to:
 - review existing building-related policies and procedures, augmented by consultants as appropriate;
 - develop green specifications;
 - develop green housekeeping guidelines for building superintendent and custodial staff; engage in legislative advocacy; and establish accountability protocols.
2. Require architects, engineers and contractors to specify commercially available, cost competitive materials and products as substitutes for products that compromise environmental quality and human health. Example substitutes are:
 - PVC-free products, e.g., flooring, wall covering, carpet backing, ceiling tile, plumbing pipe, roof membrane.
 - Formaldehyde-free engineered wood products, e.g., oriented strand board, medium density fibreboard, plywood, furnishings.
 - No/low VOC products, e.g., paints, adhesives, stains, finishes, floor coverings.
 - Acoustical ceiling tiles that do not support growth of fungi and bacteria.
 - Materials and products manufactured without ozone depleting compounds (CFCs, HCFCs and halon), e.g., insulation, refrigerants, fire suppressants.
 - Treated wood manufactured without chromium or arsenic.
 - Certified sustainably harvested wood products (as per Forest Stewardship Council).
 - Highest available recycled content steel and concrete to fulfil performance requirements.
3. Provide and/or require attendance at green and healthy building training seminars for all building related staff and upper management.
4. Expand responsibilities of Environment, Health & Safety Department to include monitoring indoor air quality and ongoing commissioning of major operational systems.

5. Measure energy and water consumption, greenhouse gas emissions, and waste generation and establish efficiency goals based on baseline.
6. Adopt the American Society of Healthcare Engineering (ASHE) Green Healthcare Construction Guidance Statement as a goal for facility project design and use to create a road map of strategies to incorporate in designs.
7. Review and modify, as appropriate, U.S. Green Building Council's LEED rating as a preliminary green building evaluative tool.
8. Establish reuse and recycling as prioritized tiers of the facilities' waste management practices.

Mid- to Long-Range Actions (Years 3-5)

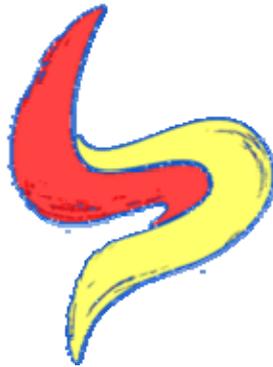
1. Establish life cycle metrics for environmental, human health and natural resource performance to guide design decisions, material and product specifications and construction and operational protocols.
2. Design for the long-term (50-year+ building life expectancy).
3. Merge capital & O&M budgets to optimize life cycle costing.
4. Establish procurement policies and building material and product specifications consistent with the green and healthy metrics; provide for annual review / revision.
5. Establish partnership with regulators to review / revise regulations to reflect impacts on human health and environmental quality.
6. Establish an internal green and healthy building rating system, and/or adopt the U.S. Green Building Council's LEED with amendments to reflect particular priorities of healthcare facilities with focus on environmental health criteria and environmental exposures.
7. Establish permanent position to oversee compliance with green and healthy building standards and create a template for green building design, construction, operation and maintenance.
8. Provide ongoing green building training opportunities (on-site/off-site) for all building related staff and upper level management.
9. Integrate / balance resource flows (energy, water, materials) to enhance life-cycle efficiency.
10. Design for flexibility to facilitate operational changes, respond to changing user needs and minimize waste generation and labour requirements

Key Online Resources

- Center for Maximum Potential Building Systems • www.cmpbs.org
- Health Care Without Harm • www.noharm.org
- Healthy Building Network • www.healthybuilding.net
- Hospitals for a Healthy Environment • www.h2e-online.org
- Environmental Building News • www.buildinggreen.com
- National Institute of Building Sciences (NIBS) Whole Building Design Guide • www.wbdg.org/index.asp
- U.S. Green Building Council • www.usgbc.org

**PASCAS
PERS**

WHAT is POSSIBLE:



Luxury Paints low odour base, non-toxic **paints**, produced with the additive, Bactum, which kills bacterium viruses such as golden staph.

Hospitals, laboratories and other industries where sterility is crucial in ensuring a safe and effective working environment will benefit most from Bactum. The safe, non-toxic formulation inherent in the paint is completely safe around humans yet provides a strong arsenal against the growth and spread of harmful bacteria and mould such as;

- Escherchie coli (Faecal bacterium)*
- Staphylococcus aureus (bacterium)*
- Candida albicans (yeast)*
- Aspergillus niger (black mould)*

The Bactum paint additive, when applied to any paint, actively prevents the growth and spread of these bacteria moulds. The result is a cost-effective method helping to control the growth and spread of theses harmful and potentially deadly bacteria and diseases.

David Plester Export Manager
 LUXURY PAINTS Pty Ltd ABN 85 465 041 603
 8 Manburgh Terrace
 Darra 4076 Queensland Australia

Bs 61 7 3375 3199
 Fx 61 7 3375 3886
 Em davep@luxurypaints.com.au

Aeroharmonics solutions deodorise, disinfect and detoxify **air** streams. After treatment, a small portion of the purified air stream will be inhaled. Those inhaling purified **air** will have a sense of well being instead of the negative moods induced by contaminated air.

This new technology has the potential to produce molecular vapour continuously, using chemically modified antimicrobial / antibacterial agents, which can be delivered at a controlled dose rate in confined areas such as aeroplanes, airports, hospitals and medical clinics. There is great potential for this technology to be used in disease control: although a virus is a million times larger than a molecule of the antiviral agent, the population density of the molecules is many millions times higher than that of a typical virus. Thus providing an excellent opportunity for effective eradication of the airborne virus.

All **air** within the health facilities can be treated with Molecular Vapour Generators (MVG) or with larger capacity Atomic Detoxification, Deodorisation and Decontamination Units (ADDDU).

Dr John William STEINER Chief Scientific Officer Mb: 0429 129 442
 AEROHARMONICS Pty Ltd ABN 76 103 145 026 Bs 61 7 3700 9936
 PO Box 6036 Fx 61 7 3870 8207
 St Lucia 4067 Queensland Australia Em: enviromate.aus@uqconnect.net



The Magna-Ion Water Distillation process can convert any polluted **water** feedstock to absolute purity. The Magna-Ion Pure Water process replicates nature's way of making **water** by replicating nature's formula. Magna-Ion Pure Water, just by taste alone, causes it to stand out.

Give us any water and we will give it back to you absolutely pure.

Andrew Coventry Hm: 61 7 5578 5918
 MAGNA PURE WATER Pty Ltd Bs: 61 7 5574 7064
 25 Piccadilly Place Fx: 61 7 5574 7065
 Highland Park 4211 Queensland Australia Em: jedoel@financefacilities.com

Electro Magnetic Fields (EMF) that are man-made and excessively strong can be designed out of the zones where patients are at most risk – in their beds. 240 volt current runs at 50 hertz and this and its sinusoidal curve is dangerous to your health. Clearance from all wiring should be one metre. Basically, wires dropped down cavities near patients need to be re-routed. The corona or aura given off electrical cabling and equipment extends one metre, even through walls, and a patients head must not be in its zone.

All electrical equipment within the hospital / hotel / clinic is to be Electro Magnetic Compatibility (EMC) C ticked. Such equipment is tested by the Australian Communications Authority.



Screening of **EMF** is also possible with copper earth screen plates.

MAGNACARE Pty Ltd ABN 54 008 270 086 Bs: 61 8 8344 6609
 103 Main North Road Fx: 61 8 8344 5965
 Nailsworth 5083 South Australia Em: health@magnacare.com.au

HEALING GARDEN:



The healing garden a place where patients and health care providers can accomplish goals in the healing process. The healing garden consists of tangible and intangible components that aid physical and mental recovery. The two together provide a holistic healing experience which ultimately speeds recovery.

To speed physical recovery, the garden provides spaces to stretch your legs, to get fresh air, and to feel the warmth of the sun. Extensive plantings provide the seasonal interests of colour, aroma, and texture. Distant views are incorporated into the site to capitalize on the striking beauty that may surrounds the centre. Benches are integrated into the site to provide comfortable resting areas. These elements all allow patients to conduct physical recovery in a comfortable, soothing environment, instead of a cold hospital room.

Specific elements in the healing garden also target the power that the mind has over physical recovery. The garden makes a patient set goals, and rewards them when they meet these goals. The following is a list of site elements and the ways they function in the mental healing process:

- Terracing

The upper terrace is fully wheelchair accessible. This allows the patient to get into the garden and see the possibilities. The second terrace is accessible by special steps which allow easy access to patients with walkers. The bottom terrace is accessible by standard steps to patients near the end of recovery. What this sequential process of accessibility allows is a new discovery at each milestone in the physical recovery process. By increasing the experience level as recovery progresses, the garden actively encourages healing. One garden becomes a dozen or more gardens to various users in different stages of treatment.

- Water

Water has incredible healing powers, but is it important that the water be accessible. When people see water, the first thing they want to do is touch it, which is hard for people with impaired mobility. Multi-level pools with waterfalls and a raised boulder fountain allow patients to touch water without bending over. This provides all patients an opportunity to engage their environment and derive its healing powers.



- Benches

The site plan integrates benches as key elements in the function of the healing garden. The terrace benches are built into the walls, allowing patients to sit comfortably on the perimeter of the open space. This arrangement is physiologically comforting because people don't have to worry about what's happening behind them. The benches in the upper half of the garden are long and curvilinear, allowing a variety of places to sit in different social settings. Some places along this bench are intended for people to sit by themselves, others allow people to sit comfortably in groups. This variety in seating allows numerous people to use the garden in the way that is most comfortable.

- Paving

The paving includes a symbolic river that winds its way through the site, eventually ending in the terrace pools. This river binds the site into a unified experience, completing the holistic nature of the garden. The paving is wide enough for wheelchairs to pass each other, and is graded to prevent water from pooling and freezing.

- Lighting

The healing garden contains lighting that both accents built and planted features, and provides safety. The steps and benches are underlit to accent the vertical plane, and trees are uplit to accent their branching pattern. The lighting adds another unique way to experience the space.

- Planting

The healing garden is heavily planted with a variety of specimen trees and shrubs that accomplish different goals. The upper half of the garden is planted as an Aspen grove with an understory of pines, dogwoods, perennials, bulbs and annuals all working in concert to provide year round colour, texture, and aromatic interest. Some plants are also the sources for some of the drugs used in cancer treatment, expanding the contact between the patient and the natural source of wellness.

All the garden features come together in a cohesive plan. This provides an environment that is welcoming, and encourages interaction with the outdoors. Patients may not realize that all these things are happening in the garden, but they benefit from the feelings the space evokes subconsciously.

In today's health care environment, similar healing gardens can play a vital role in speeding recovery, and lowering health care costs. These gardens are a vehicle in the healing process, aiding recovery by brightening spirits.

Japanese Zen Gardens

If you want to enjoy traditional Japanese Buddhist gardens, Kyoto is the city to go.



<http://www.pascashealth.com/index.php/library.html>

Library Downloads – Pascas Papers

All papers may be freely shared. The fortnightly mailouts are free to all, to be added into the mailout list, kindly provide your email address.

info@pascashealth.com

