

**You can't see it, you can't smell it, but it makes you feel ill. "Sick Building Syndrome" is the undetectable indoor equivalent of smog. Anna Newnham reports on a company which has come up with an environmentally friendly and aesthetically pleasing solution to the problem.**

# Plant cure for sick buildings

**D**oes the building where you work make you feel ill? An estimated one in five office workers answer yes to this question and complain of feeling sick, having headaches, skin rashes, irritated eyes and congested lungs.

They suffer from "sick building syndrome" - the symptoms associated with modern buildings where the windows are shut to keep the heat in and air is continuously recirculated around the building. Some of the buildings with such energy conscious heating and ventilation systems trap in polluting gases which are released from modern building materials, furnishings and cleaning products.

Common toxins are benzene, formaldehyde and trichloroethylene which seep out of the carpets, tables, marker pens, glue and cigarettes. One world health organisation estimates that 30% of all new or remodelled buildings have air pollution problems. But help for the beleaguered office worker is at hand. A Cheshire-based company, Greenscene, has come up with a cheap, low-tech answer which draws on millions of years of developing natural technology - in a word... plants.

## NASA research

Recent research by the American space research organisation NASA into providing clean air in space, revealed that plants not only absorb carbon dioxide and produce oxygen - but also absorb and biodegrade harmful toxins in the atmosphere. The answer, however, is not as simple as junglifying the office with rubber plants. NASA research shows that certain plants are good at absorbing certain toxins, and Greenscene offers plant displays based upon the results of careful research and analysis.

Greenscene has been supplying and maintaining plant displays for over 20 years and Greenscene's managing director David Foster has become

well acquainted with the problem of sick buildings during that time. "When we came in contact with NASA's research in the USA we were very interested and started looking into it in fine detail. I went to America and spent quite a lot of time there looking at machinery and methods that were used to sort the problem out."

The Greenscene solution begins with an analysis of the air in the office. A £20,000 machine identifies the presence of six gases - benzene, carbon monoxide, carbon dioxide, hydrocarbons, formaldehyde and water vapour. When the make up of the air is known, Greenscene picks particular plants to combat particular toxins and builds a special display.

## Active carbon filter

If the air in the building contains too much formaldehyde, emitted perhaps from the foam backed carpet or cleaning materials, Greenscene will increase the number of spider plants, chrysanthemums and mother-in-law's tongues, if benzene is present, caused by smoking, petrol and plastics, then the displays will contain plenty of English ivy and gerbera daisies.

The plants are grown in active carbon soil, which acts as an extra filtering system. A particle of the active carbon under the microscope looks a bit like a bath sponge - a mass of different sized holes. As air passes through the carbon the larger toxin particles get trapped in the holes while the smaller particles of clean air pass back into the atmosphere.

The plant roots "eat" the toxins embedded in the soil, cleaning it in approximately three days. When a fan is added to blow air up through the soil and leaves, the rate at which toxins are removed from the air increases by up to 10 times.

Mr Foster demonstrates the system by wafting a lighted cigarette under the sensor of the analysis machine producing a frighteningly effective argument against smoking. A plethora of poisonous gases are registered, which decrease minute by minute as they disperse around the room. Mr

Foster then places the sensor over the fan assisted plant display and the levels of pollutants registered on the machine fall to zero.

"People are sometimes working in buildings that are 100 times more contaminated than the outside air," says Mr Foster, "and when you have that level of toxins in the air you're struggling with any of the conventional methods I know of."

Greenscene has installed some of the new systems in place of its old displays and is currently installing the system in the offices of a major insurance firm. Early indications show the system works in practice as well as in theory.

"It is working better than our expectations and our customers that have got it so far are very happy. Our experience has been that people perform better and don't feel ill. But that's not very scientific, all we can say is that the air quality is much improved, if somebody says they're ill it's not because of the air," says Mr Foster.



Greenscene would like to get in at the design stage of a building and install a conservatory on the roof, through which air could be passed and then circulated all over the building via a conventional air conditioning system.

The NASA research was only completed in April, so Greenscene is very much in the forefront of technology - but will it catch on? "It depends on how much proof people need. If somebody comes in from outside and says 'it's raining' do you believe them?" says Mr Foster, "or does it take five or ten people to say that it's raining before you believe them?"

Greenscene rents and maintains a container of plants for £8-10 a month. A fan assisted display consisting of 3 containers and a fan, costs around £40 a month.

More information-circle 200

Greenscene's clean air plant system

# 4737