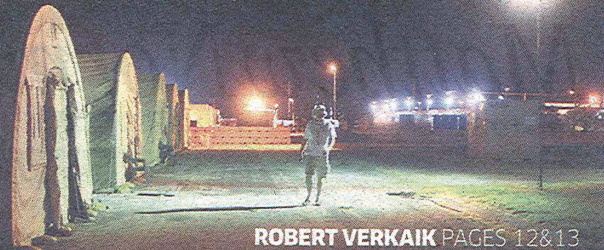


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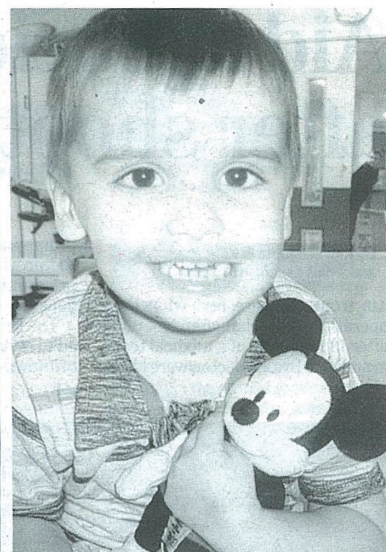
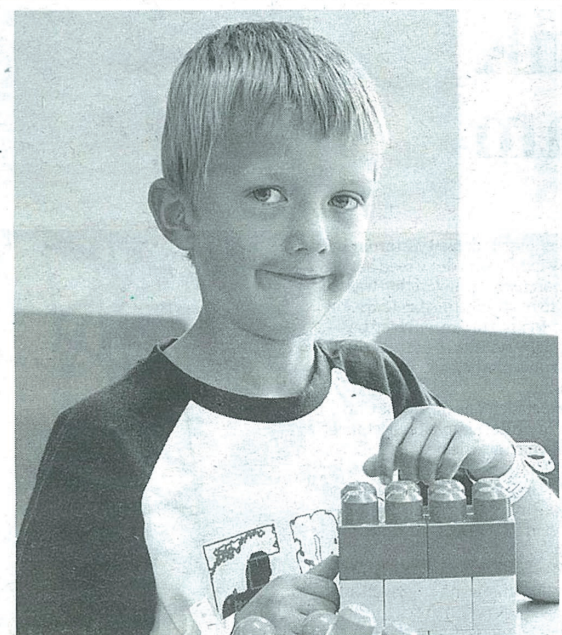
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www.independent.co.uk

MONDAY 9 AUGUST 2010  
Number 7,433



Young patients at Alder Hey Children's Hospital in Liverpool play with toys coated with 'liquid glass', which repels dirt and grime and is believed to prevent the build-up of hospital-acquired infections

## The miracle spray-on glass that stops the bugs

By Steve Connor  
Science Editor

ALDER HEY Children's Hospital in Liverpool is coating the toys in its wards with a revolutionary form of "liquid glass" that has proven in trials to reduce the number of disease-causing bacteria living on the surface of objects.

Severely ill children being treated at Alder Hey are often not allowed to play with the hospital's pool of toys because of fears that infections will be passed between patients, some of whom may have suppressed immune systems resulting from their life-saving treatment.

The liquid glass, which is safe and completely inert, forms an invisible, flexible coating on the surface of an object and repels dirt and grime. More impor-

tantly, it is believed to prevent the build-up of hospital-acquired infections such as the superbug *Staphylococcus aureus*, which is resistant to many antibiotics.

Alder Hey is testing the experimental coating on the toys in its children's wards because these shared objects come into intimate body contact and could easily become a source of a hospital-acquired infection spread between the children. "We have an awful lot of toys and many of them are difficult to clean. We even have to remove some of them because they are so difficult to keep clean, yet they are so important for the children," said Pauline Bradshaw, operational director of infection, prevention and control at Alder Hey.

"We view toys in the same frame as any other medical device that has to

be cleaned and decontaminated. Once the toy is coated with the liquid glass you cannot see any difference whatsoever. I think it's got great potential not just for toys but for other hospital settings," Ms Bradshaw said.

Tests of the liquid glass in another nearby hospital, Southport and Formby District General, have shown that coating surfaces such as floors, bedside tables, washbasins, toilet handles and lift buttons, can reduce bacterial growth by between 25 and 50 per cent.

The three-month trial at Southport compared surfaces coated with the liquid-glass, made by a German company called Nanopool, against untreated surfaces. Hospital staff followed their usual cleaning routines and were not told which surfaces had been coated.

Scientists took swabs of different hospital areas every week for the 12-week period and the final results demonstrated a clear, statistical difference in bacterial load between the treated and untreated surfaces, according to the official evaluation of the trial. "These initial results suggest that the Nanopool coating would be effective in reducing levels of contamination on a range of surfaces in hospitals and could potentially improve the efficiency and effectiveness of the cleaning regime," the report says.

"The evaluation also confirmed that the Nanopool coating can be applied in a busy hospital setting with relative ease and with minimal disruption," it says.

The liquid glass, a form of silicon dioxide in solution, was originally developed as an anti-graffiti coating for the outside of buildings but scientists soon realised that it had the potential to act as an anti-bacterial barrier.

Nanopool said that it has conducted tests at a meat-processing plant in Germany and found that cleaning treated surfaces with hot water was just as effective at killing bacteria as cleaning untreated surfaces with a bleach solution.

Neil McClelland, Nanopool's UK proj-

ect manager, said that the liquid glass coating is just a few millions of a millimetre thick and the electrostatic forces on the nanoscale film repel water and dirt. They also prevent bacteria from replicating in the way they would normally do on an untreated surface, he said.

"The tests show that we can reduce bacterial loading by between 25 and 50 per cent at a stroke and I suspect it may be higher with a bespoke cleaning method we are developing. As soon as the data on the trial was released we got a request from the same hospital in Southport to coat 150 toilets," Mr McClelland said.

Brent Dunleavy, the managing director of Radal Technology, which is subcontracted by Nanopool, is working with Alder Hey and other NHS hospitals interested in using liquid glass to coat surfaces at risk of spreading superbugs. The trial on the Alder Hey toys will involve a new cleaning method that does away with the usual caustic, bleaching agents and instead uses a "skin-safe, food-safe biocide", said Mr Dunleavy.

Conventional cleaning products used in hospitals often leave a residue that could interfere with the anti-bacterial properties of the liquid glass, he said.