

## ISSUE 14, MAY 2009

- Are infection control measures contributing to antibiotic resistance?
- French government agency advises against use of phthalates in medical devices
- New studies link pesticide use to Parkinson's Disease and childhood brain cancer

## Are infection control measures contributing to antibiotic resistance?

New research suggests products being used in hospitals to prevent the spread of bacteria could in fact be accelerating the development of antibiotic- and biocide-resistant strains.

Biocides, which are active in many disinfectants used in hospitals and health care environments - in particular triclosan and quaternary ammonium compounds - act on bacteria in a similar way to antibiotics.

They do this by activating efflux pumps in the membranes of bacterial cells. The pumps are natural protection mechanisms that remove unwanted substances out of the cell.

Low level exposure to biocides increases the activity of efflux pumps, meaning bacteria are also increasingly able to resist the effects of antibiotics.

Genetic mutation can also increase the efficiency of efflux pumps. Depending on the environment in which the bacteria are growing, those that have stronger resistance to threatening substances will survive and create resistance among a population.

Because some biocides are also capable of carrying mobile genetic elements, or plasmids, biocides can even stimulate cross-resistance between biocides and antibiotics.

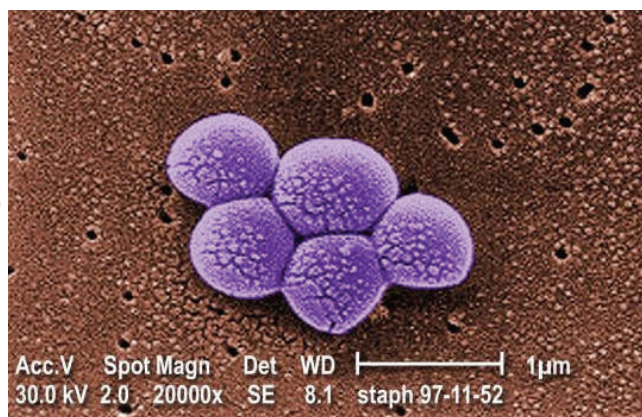
Of particular concern is the widespread use of silver in hospital products and devices. Healthcare is the largest consumer of silver of all the industrial sectors.

Silver's natural anti-bactericidal qualities has lead to application not only in wound care and bone prostheses, but more recently to a wide range of other products and materials including soaps, textiles, walls, floors, as well as clothes and shoes.

However, researchers at Uppsala University in Sweden have found that this continuous use of silver in healthcare environments could be making bacteria resistant not only to the effects of silver, but even to certain antibiotics.

One such class of antibiotics, beta-lactam, accounts for 50% of antibiotic treatment.

While the benefits of silver are widely recognised, little attention has been paid to the potential



Effects observed on efflux pump activity have led to concerns among some researchers that some biocides, especially silver, could encourage the development of antibiotic-resistant bacteria such as MRSA (above).

risks of continuous use of silver and its possible contribution to antibiotic resistance.

Recent findings published by the European Commission show very little is known about the potential effects of biocidal products in healthcare environments.

Asa Melhus, Associate Professor in Clinical Microbiology from Uppsala University, said that despite a lack of conclusive evidence, the risk of a link should be enough to get the attention of the health care industry.

She said: "Even if there was no connection between biocides and antibiotics... biocide resistance is itself scary. Infection control measures have saved more lives than antibiotics.

"If we cannot eradicate bacteria in the hospital environment with biocides, hospitals may become death traps."

Without a full understanding of the causes of biocidal resistance, the researchers at Uppsala have warned that, instead of improving hygiene, the widespread use of biocides like silver could increase the risk of serious bacterial infections in hospitals.

## FRENCH GOVERNMENT AGENCY ADVISES AGAINST USE OF PHTHALATES IN MEDICAL DEVICES

The French agency responsible for the safety of medical products, AFSSAPS, has advised medical professionals against using DEHP-containing devices in certain procedures and with patient groups considered at high risk of harm from phthalates.

Device manufacturers will also be required to mention the presence of phthalates in information given to the device user.

The measures are being put in place to cover the time period before entry into force in 2010 of new EU laws which require medical devices containing substances suspected of being carcinogenic, mutagenic or reprotoxic to be labelled as such. DEHP is one of these substances.

AFSSAPS has issued its advisory in the context of formal recognition from the French government that chemical pollution is a possible cause of declining fertility, increased rates genital malformations and rise in testicular cancer.

French healthcare NGOs CNIID and C2DS welcomed the move, stating it will help to accelerate the substitution of phthalate-softened PVC medical devices for safer alternatives.

Since Nicolas Sarkozy took the French Presidency, the French government has been active in introducing a range of regulations designed to reduce the incidence of illnesses linked to environmental factors.

## New studies link pesticide use to Parkinson's Disease and childhood brain cancer

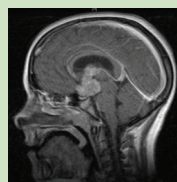
New research in the US has indicated that children living in houses where pesticides are used are twice as likely to develop childhood brain cancer.

The study [link: <http://is.gd/wB5k>] is part of a growing body of research connecting pesticides to the onset of some of the diseases which are becoming increasingly prevalent in Western society.

Brain cancer is the second most common cancer in children. In the UK it has become the leading cause of cancer deaths, killing 47% more children than leukaemia. Incidence of childhood brain cancer is reportedly increasing at 2% per year.

Besides cancer, fresh evidence is emerging that pesticides are also a factor in the onset of degenerative brain disorders.

Scientists recently found that people living within 500 meters of a field sprayed with a combination of the pesticides maneb and paraquat resulted in a 75 percent higher risk of Parkinson's disease. [Link: <http://is.gd/wB5G>]



Research is connecting pesticide exposure with increased risk of brain and neurological disorders. Especially hazardous are mixtures and indoor use. Picture licensed under Creative Commons 3.0, by [Tdvorak](#).

## RECENT NEWS AND SCIENCE ABOUT THE ENVIRONMENT AND HEALTH

**Failure of the FDA risk assessment process for bisphenol A:** Excellent piece giving insight into the political manoeuvres which, in the eyes of many scientists, badly compromised the FDA's assessment of the safety of BPA. Essential reading for anyone concerned about how politics can influence safety recommendations. <http://is.gd/wBqR>

**Prevention by numbers and the lack of epidemiologists:** Interesting article outlining how the lack of investment in understanding the environmental causes of cancer could limit our understanding of preventing the disease. Note that the author conflates prevention by limiting exposure to environmental factors with prevention through early screening. <http://is.gd/wBz4>

**Health Canada makes it official - BPA is health hazard:** Canada has become the first country to formally declare bisphenol A hazardous to human health, banning use of the chemical in baby bottles. <http://is.gd/wBzg>

**American Cancer Society - Can cosmetics cause cancer?** The American Cancer Society has posted a new discussion of cosmetics and cancer on the ACS website. It lists environmental websites alongside FDA and cosmetics industry websites. This ACS effort to take a neutral approach to the cosmetics and cancer debate is a very important development. <http://is.gd/wBA6>

**Child obesity is linked to chemicals in plastics:** Exposure to chemicals used in plastics may be linked with childhood obesity, according to results from a long-term health study on girls who live in East Harlem and surrounding communities by researchers at Mount Sinai Medical Center. <http://is.gd/t1B3>

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HCWH Europe: [www.noharm.org/europe](http://www.noharm.org/europe)  
CPES: [www.cancerpreventionsociety.org](http://www.cancerpreventionsociety.org)

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