

# the monitor

keeping all those with an interest in OHS informed of developments in workplace health and safety nationally and internationally

Issue 1 Vol 19 February 2015



## OHS professionals' input in new legislation

**The passage of the Work Health and Safety Bill 2014 through the legislative process will provide the occupational health and safety profession with an opportunity to ensure that the health - as distinct from the safety - provisions are given thorough and in-depth consideration prior to its finalisation.**

General statements about duty-of-care responsibilities which allow random interpretation will do little to effect change when what is needed is clarity and certainty about what needs to be done to improve the management of workers' health.

New inclusions in the draft legislation will elevate the discipline of occupational health to the status currently accorded to the safety discipline.

These inclusions are:

- extended duty of care by PCBU's to provide for the 'welfare' of persons at work or affected by work
- inclusion of psychological health in the definition of 'health'
- requirements for officers of the PCBU to exercise 'due diligence'

- requirements to monitor both the physical and mental health of workers and the conditions at the workplace and to consult with workers when making decisions about the procedures for such monitoring.

The range of professionals represented in the occupational health discipline and their associations should take this opportunity to provide input on the draft legislation to ensure the required clarity and certainty is evident in the final version.

It is unlikely that another opportunity will present itself for a considerable time (the current Act was enacted in 1988). It will be of no avail to claim post-passage that 'we were not consulted'.

The Occupational Health Society Management Committee is currently arranging a seminar to discuss the issues referred to earlier and to hear from qualified experts their interpretation of the issues identified.

**Interested persons should register their intention to attend promptly, to avoid disappointment.**

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## Legislative/regulatory matters

### First entity fined under SA's harmonised WHS laws

A South Australian company that persevered with 'weak' administrative controls has become the first entity prosecuted under the WHS laws.

The employee who opened a guard on a schnitzel-making machine and placed her finger on the chain to check if it needed lubricating sustained a traumatic crush injury and had the tip of her finger surgically removed below the base of the nail.

The Industrial Magistrate said that inadequate administrative hazards controls essentially left the worker to work out for herself how to deal with the indications that the drive chain may need lubricating.

Magistrate Stephen Mark Leischke found that the guard was designed to be very easily opened, and that there should have been a physical barrier on the guard that could only be altered or removed by the use of tools.

The employer was fined \$10,500 (from a maximum penalty of \$30,000).

The Magistrate declined to apply the maximum discount because the employer showed a lack of contrition in failing to compensate the worker for her permanent injury.

*Source: OHS Alert, 19 November 2014*

### "WorkSafe" restored in Victoria

The Labor Government in Victoria has announced the restoration of the world renowned WorkSafe name which had been deleted in a costly and failed corporate rebranding exercise by the former government.

"Since it was launched in 2001, WorkSafe has made its mark through awareness and advertising campaigns and the highly-visible presence of inspectors", said the Minister with responsibility for the Victorian WorkCover Authority.

*Source: OHS Reps, 29 January 2015*



# SAFETY



## UK firms to be punished for corporate manslaughter

Large firms convicted of corporate manslaughter will face much tougher sentencing guidelines proposed by the UK's Sentencing Council.

Punishment for companies found guilty for breaches of health and safety, as well as food safety and hygiene offences, will be significantly increased.

The new guidelines suggest that judges should impose fines in relation to the size of the convicted organisation. For large firms, this could mean fines of up to £20m for corporate manslaughter and up to £10m for criminal health and safety offences resulting in a fatality.

*Source: OHS Reps SafetyNetJournal 303, 28 November 2014*

## Work related injury rates decline while non-work rates don't!

According to a study by the Institute for Work and Health in Ontario, the overall decline in total injuries of 30 per cent from 2004 to 2011 can be almost entirely attributed to a decline in occupational injuries.

The incidence of non-work injuries did not change.

One possible reason for the diverging trends between work-related and non-work related injuries is the level of investment in injury prevention says the president and senior scientist at the Institute for Work and Health.

He said that some estimates suggest that employers may spend as much as C\$1000 per worker per year to prevent work-related injury and illness among their employees. However, as a society we invest perhaps a tenth of that amount in protecting children, adults and seniors from the causes of injury in non-work settings. This low level of investment should concern us.

*Source: Cos Mag, 6 January 2015*



## E-learning for training health professionals

A review carried out by Imperial College, London researchers has concluded that e-learning is likely to be as effective as traditional methods for training health professionals.

E-learning is already used by some universities to support traditional campus-based teaching or enable distance learning.

The findings, drawn from a total of 108 studies, showed that students acquire knowledge and skills through online and offline e-learning as well or better than they do through traditional teaching.

**However, the authors suggest that combining e-learning with traditional teaching might be more suitable for healthcare training than courses that rely on e-learning because of the need to acquire practical skills.**

*Source: ScienceDaily, 11 January 2015*

## UK government rethinks proposal to exempt self-employed workers from OHS legislation

The world's largest professional body in occupational health, the Institution of Occupational Safety and Health (IOSH), has called for the removal of a clause that would exempt certain self-employed workers from compliance with health and safety legislation in the United Kingdom.

The Institution and other professional OHS organisations have expressed concern that exemption could lead to confusion, lower standards and an increase in the risk of injury and illness at work.

The Government says that it needs more time to consider responses to a consultation on the proposed measure following the opposition's tabling of an amendment that would have radically changed it.

*Source: TUC Risks, February 2015*



# AIR POLLUTION

## Major step forward in reducing diesel particulate emissions underground

A goldfields mining company has not only achieved productivity improvements with the purchase of a new fleet of trucks at their underground operations, but took a major leap forward in the health of its employees by cutting diesel particulate emissions at the same time.

Kambalda operations manager, Brett Fowler, said that compared with the earlier engines they are going to see greatly reduced diesel particulate emissions – a human carcinogen – to about a 25th of the existing level of emissions per truck. This will lead to about a 30% overall reduction in particulate emissions which will be very beneficial for the health of employees.

*Source: Australian Mining Monthly, December 2014*

Below: The TH551 truck exiting the portal at Mincor's Kambalda operations



## Diesel exhaust a damage to health in just two hours

Just two hours of exposure to diesel exhaust is enough to cause significant damage to the human body, a new University of British Columbia study concludes.

The study looked at how pollution particles affect the way genes are expressed in the body.

Dr Chris Carlsten, research leader, said that "quite rapidly, it turns out, we're showing in hours, you observe changes in the blood that may have long-term implications."

It is believed that exposure to the particles affects the chemical 'coating' that can attach to parts of a person's DNA.

Dr Carlsten said that the next step is to figure how to reverse the damage.

Source: CBC News, 8 January 2015



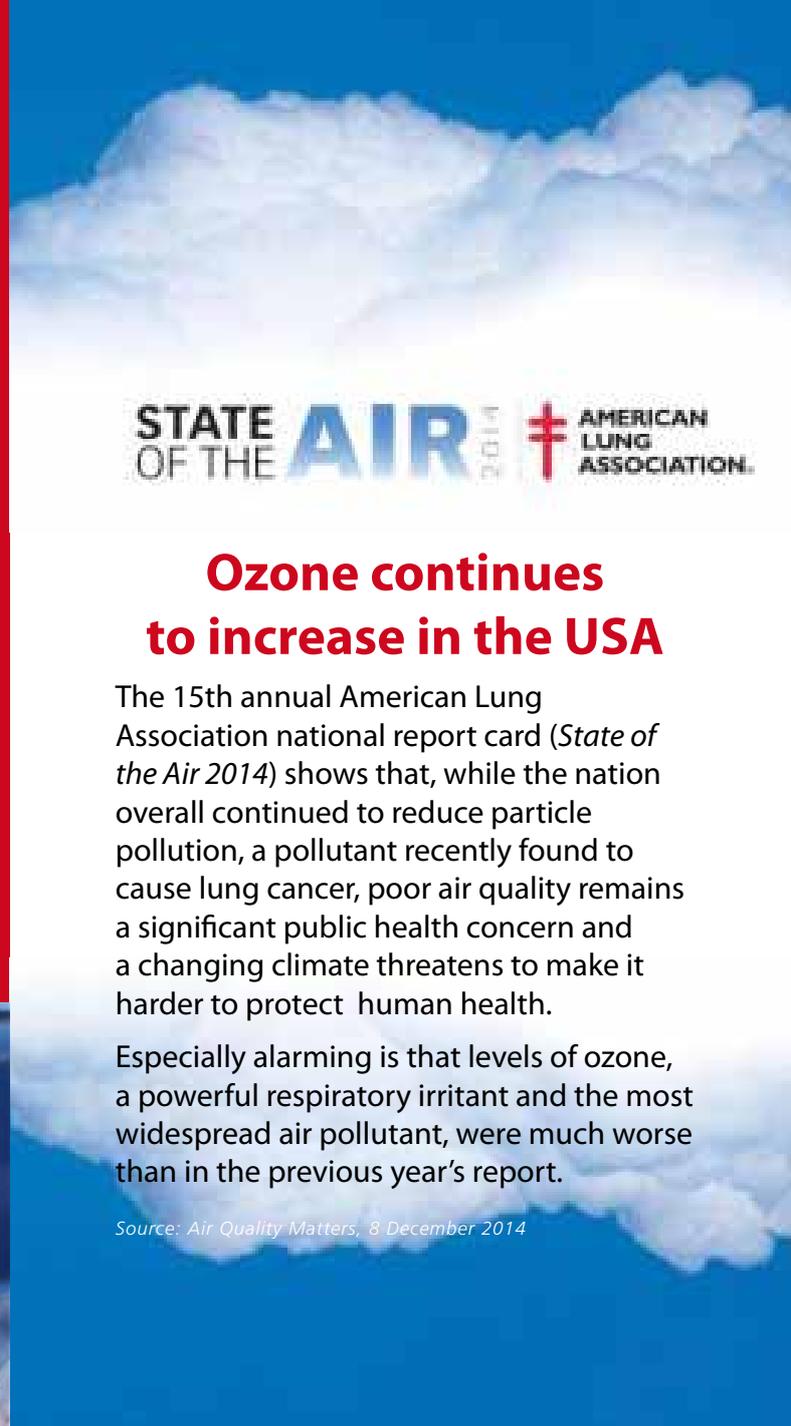
## Statins may protect people from air pollution

Statins prescribed to lower cholesterol and reduce risks of heart attacks and strokes, seem to diminish inflammation that occurs after people breathe airborne particles.

About one in four Americans over the age of 45 takes statins such as the brand names Lipitor and Zocor.

Although drugs cannot be prescribed to protect people from air pollution, recent studies have shown that statins cancel out the presence of signs of inflammation from PM<sub>2.5</sub>, carbon monoxide and nitrogen oxide. Scientists believe that this inflammation is a key factor in heart disease.

Source: Chemwatch November 2014



STATE OF THE AIR 2014 AMERICAN LUNG ASSOCIATION

## Ozone continues to increase in the USA

The 15th annual American Lung Association national report card (*State of the Air 2014*) shows that, while the nation overall continued to reduce particle pollution, a pollutant recently found to cause lung cancer, poor air quality remains a significant public health concern and a changing climate threatens to make it harder to protect human health.

Especially alarming is that levels of ozone, a powerful respiratory irritant and the most widespread air pollutant, were much worse than in the previous year's report.

Source: Air Quality Matters, 8 December 2014

## Air pollution linked to higher rates of chronic kidney disease

Investigators from the University of Michigan have found a link between the prevalence of chronic kidney disease and the level of particulate matter even after taking account of patient risk factors for CKD including age, diabetes and hypertension.

An elevated prevalence was observed when particulate matter levels were as low as 8.4 µg/m<sup>3</sup> which is much lower than levels typically considered unhealthy for sensitive groups such as the elderly.

Source: Science2.0 News, November 2014

## US grants to reduce indoor pollutant exposure

The US Environmental Protection Agency has awarded funding to eight organisations to promote public health by reducing exposure to indoor pollutants, such as radon and environmental asthma triggers, commonly found in homes, schools and other large buildings.

It is providing US\$45m in funds to ensure Americans, especially in low-income, minority and tribal communities, are able to reduce their exposure to indoor pollutants and safeguard their families' health.

Source: US Environmental Protection Agency, 30 November 2014

## Researchers link air pollution to heart disease

In a paper published in the *European Heart Journal* researchers report that many types of cardiovascular disease are linked to poor air quality.

They say that not only does air pollution exacerbate heart problems, but also appears to play a role in the development of heart disease in otherwise healthy people. There is particularly strong evidence of the harmful effects of suspended particles, as opposed to gas pollution.

Among the most important pollutants are particles in suspension and gases like ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), volatile organic compounds (like benzene), carbon monoxide (CO) and sulfur dioxide (SO<sub>2</sub>).

Source: *European Heart Journal*, doi:10.1093/eurheart/ehu458

## AIR POLLUTION KILLS 7,500 LONDONERS EACH YEAR

The number of deaths attributable to nitrogen dioxide and particulate matter PM<sub>2.5</sub> air pollution in the UK capital may be as high as around 7,500 each year, claims campaign group Clean Air in London (CAL).

The new estimates are 'significantly higher' than previous official estimates which put the figure at 4,300 each year. However, this figure only relates to PM<sub>2.5</sub> pollution.

Based on a Health Impact Assessment published online, the CAL projects that PM<sub>2.5</sub> will be responsible for 5,061 deaths in 2020 with NO<sub>2</sub> the cause of 2,684 deaths that year.

Source: *Air Quality News*, 2 December 2014

# AIR POLLUTION EXPOSURE OF COMMUTERS

'Active commuting' is being promoted in cities around the world with citizens urged to cycle or walk to work, improving their fitness as well as reducing air pollution and greenhouse gas emissions. However, while there are obvious health benefits of cycling and walking there is a danger that active commuters may inhale high levels of air pollution, as their breathing rates are higher than those of sedentary motorists.

Researchers in Auckland, New Zealand, carried out a series of air pollution measures on cyclists, walkers and motorists which showed that carbon monoxide levels in the air were higher near the centre of the road resulting in car commuters receiving the highest average concentrations followed by cyclists and pedestrians.

However, because of the different breathing rates and travel times, the actual dose received by commuters showed a different pattern. The average dose for the cyclist travelling the 2,600m was 3.9 times greater than for the motorists, and 2.3 times greater for the pedestrian.

Following an analysis of how far from the centre of the road the cyclist and the pedestrian would need to be they concluded that cycle lanes would need to be, on average, 5.8m from the centre of the road and footpaths 6.4m away to ensure that active commuters received no greater dose of air pollution than commuters in cars.

Conclusions:

- more research is needed
- even small increases in distance from the road centre can substantially decrease the dose of pollution received.

Source: *Science for Environment Policy*, 11 December 2014



# HEALTH - PHYSICAL

## Excessive sitting linked to disease or premature death

In an analysis that pooled data from 41 international studies, Toronto researchers found that the amount of time a person sits during the day is associated with a higher risk of heart disease, diabetes, cancer and death, **regardless of regular exercise.**

The research showed that prolonged sedentary behaviour was associated with a 15 to 20 per cent higher risk of death from any cause, a 15 to 20 per cent higher risk of heart disease, death from heart disease, cancer, and death from cancer and as much as 90 per cent increased risk of developing diabetes. The negative effects from prolonged sitting were even more pronounced among those who do little or no exercise.

**David Alter, a senior scientist at the Toronto Rehabilitation Institute said that “we need to get sedentary behaviour on our radar and start talking about that, not just exercise.”**

*Source: Cos Mag, 22 January 2015*



## Open-concept offices elevate sickness incidence

According to a survey by Canada Life Assurance Group, employees working in open-concept offices take 70 per cent more sick days than their counterparts working in isolation.

The move towards a more collaborative working environment means employees are working in closer proximity than ever before and, along with the mingling of personal and shared belongings, this is further increasing their chances of becoming ill.

*Source: Cos Mag, 22 January 2015*



## Uranium mining has lasting consequences

Scientists have finally discovered why residents in a remote Kazakhstan village, known as “Sleepy Hollow” are mysteriously falling asleep for days at a time.

They claim radon gas from nearby Soviet-era uranium mines seeped up to the surface and poisoned the residents of Kalachi.

Radon is a colourless, odourless and tasteless gas which occurs naturally through the decay of uranium and breathing it is thought to cause lung cancer.

Local government officials are considering plans to move the entire village because they feel it is impossible to eradicate radon gas from the area.

Although radiation levels in the mine themselves are not thought to be dangerous, they have left a deadly legacy for the villagers of Kalachi.

Source: *DailyMail*, 7 February 2015

*Pic: Children affected by the mystery illness are so dizzy they can barely stand without aid and spend days at a time in bed.*

## Does a yoghurt a day keep diabetes 2 away?

According to research published in open access journal *BMC Medicine*, a high intake of yoghurt has been found to be associated with a lower risk of developing type 2 diabetes.

Researchers from Harvard School of Public Health pooled the results of three prospective cohort studies that followed the medical history and lifestyle habits of health professionals. Within the three cohorts 15,156 cases of type 2 diabetes were identified during the follow-up period.

They found that higher intake of yoghurt is associated with a reduced risk of type 2 diabetes, whereas other dairy foods and total dairy food intake did not show this association.

Senior researcher Frank Hu said that the consistent findings for yoghurt suggest that it can be incorporated into a healthy dietary pattern.

Source: *ScienceDaily*, 25 November 2014



## Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s



## The effects in the future of climate change on selected causes of death

The World Health Organization has released a report titled Quantitative Risk Assessment of the Effects of Climate Change on Selected Causes of Death, 2030's and 2050's which uses a number of scenarios to estimate the effects of climate change on selected health outcomes in the context of uncertain climate and global health futures.

Under a base case socio-economic scenario, the authors estimate approximately 250,000 additional deaths due to climate change per year between 2030 and 2050.

*Source: World Health Organization*



## Ability to balance on one leg may reflect brain health and stroke risk

Struggling to stand on one leg for less than 20 seconds was linked to an increased risk for stroke, small blood vessel damage in the brain and reduced cognitive function in otherwise healthy people, according to new research reported in the American Heart Association's journal Stroke.

Although previous studies have examined the connection between gait and physical abilities and the risk of stroke, this is the first study to closely examine how long a person can stand on one leg as an indication of their overall brain health.

*Source: ScienceDaily, 18 December 2014*

# HEALTH - PSYCHOLOGICAL

## Depression speeds aging

People suffering from depression show signs of advanced cellular aging, such as significantly shorter telomeres (caps at the end of each strand of DNA).

Researchers from the VU University Medical Centre in Amsterdam, along with US collaborators, have found that study participants who were depressed or who had experienced bouts of severe depression in the past, had shorter telomeres than healthy volunteers and the effect held true even after lifestyle differences - such as heavy drinking and smoking - were corrected for.

Author, Josine Verhoeven, said that psychological distress, as experienced by depressed persons, has a large, detrimental impact on the 'wear and tear' of a person's body, resulting in accelerated biological aging.

**According to the researchers, the results may help to elucidate a molecular link between major depressive disorder and increased onset risk of heart disease, diabetes, obesity, and cancer - trends that have been established by previous research.**

Source: *MedicineNet.com*, 10 February 2015

## Workplace depression can be contagious

In a contentious study conducted by Massey University School of Management, New Zealand, researchers have concluded that the low morale of a manager can 'infect' their workforce, rubbing off on staff and affecting their moods.

Professor Jarrod Harr, who worked on the study, said that workplace depression - as distinct from clinical depression - has a 'contagion effect' and can spread from leaders to their staff.

He added that 'leaders who are depressed are also likely to perform poorly (as rated by their followers) and this also influenced the followers' depression.

Source: *Human Capital Online*, 3 December 2014

## Brain abnormalities found in young bipolar patients who attempt suicide

Teenagers and young adults who attempted suicide were found to have abnormalities in the frontal areas of their brains, a new study has found.

Researchers conducted brain scans on 68 participants, aged 14 to 25, with bipolar disorder, a mental illness that causes extreme emotional highs and lows. Of these patients, 26 had attempted suicide. Brain scans were also done on a control group of 45 teens and young adults without bipolar disorder.

Compared to bipolar patients who had not attempted suicide and those in the control group, the participants who attempted suicide had abnormalities in the prefrontal cortex and related areas of the brain.

Specifically, those who tried suicide had less 'integrity' of white matter in key frontal brain systems, including one that connects the frontal lobe with areas that control emotion, motivation and memory.

The findings suggest that white matter abnormalities in the brain's frontal systems may be associated with suicide risk in teens and young adults with mood disorders such as bipolar disorder and depression, the researchers concluded.

Source: *MedicineNet*, 9 December 2014

## GPs, the first port of call for mental-related diseases

Almost 16 million GP encounters were mental health-related in 2012/13 according to the Australian Institute of Health and Welfare.

These encounters accounted for 12.3 per cent of total GP encounters.

There has been an average annual increase of 4.7 per cent since 2008/09.

The three most frequently managed mental health problems were depression (32 per cent), anxiety (16 per cent) and sleep disturbance (12 per cent).

Medication was the common form of management of mental health problems with anti-depressants the most common medication.

Source: *AIHW, Media Release* 13 November 2014



## Compound in curry spice boosts stem cell growth in rat brains

According to the findings of a new study by researchers at the Institute of Neuroscience and Medicine in Julich, Germany, a spice found in curries may boost the brain's ability to heal itself.

Researchers suggest that a compound found in turmeric could encourage the growth of nerve cells thought to be part of the brain's repair kit.

They say the research, based on rats, may pave the way for future drugs for strokes and Alzheimer's disease, although more trials are needed to see whether this applies to humans.

Source: IFL Science, 1 October 2014

Photo credit: Anant Nath Sharma, "142/365. Turmeric City." via Flickr. CC BY-NC-ND 2.0

## Psychological Disability 2012

A report from the Australian Bureau of Statistics titled *Psychological Disability 2012* confirms that the number of people in Australia with a psychological disability has increased between 2009 and 2012.

Some key results:

- of all people with any type of disability, 18.5 per cent had a psychological disability
- 3.4 per cent of Australians (770,500) reported having a psychological disease, with similar rates for men and women, an increase from 606,000 people in 2009

Importantly, a wide range of long term health conditions and impairments co-exist with psychological disability.

Source: Australian Policy Online, 9 February 2015

# SLEEP/FATIGUE

## Waking up to the sleep problem every employer is facing

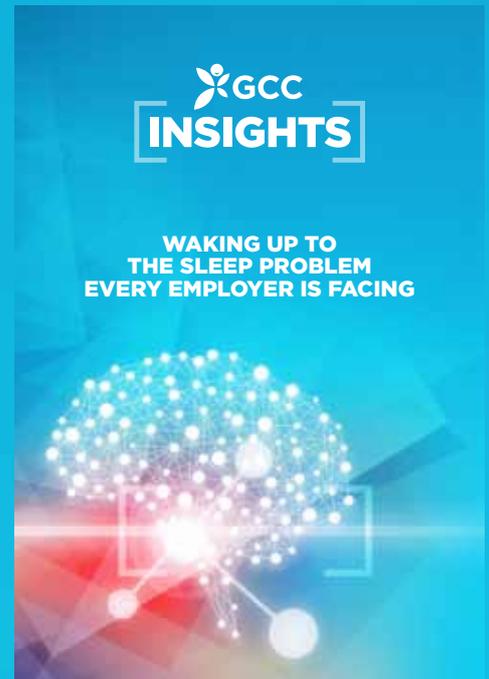
Global Corporate Challenge Insights have released a report titled "Waking up to the sleep problem every employer is facing" which examines:

- why a focus on optimising sleep is a valuable risk management strategy;
- how to transform your workplace culture so that sleep is valued and respected;
- what it takes to modify the sleep habits and behaviour of individual employees;
- evidence that employees' health, productivity and morale improves when they get enough sleep.

While not containing anything new, the document does make a good economic case for employers to address the problem of excessive daytime sleepiness which is increasingly being recognised as a critical contributor to lower productivity and poorer mental health in the workplace.

The report is available at <http://info.gettheworldmoving.com/rs/globalcorporatechallenge/images/Sleep-insights-report.pdf>

Source: EHS Today, 22 December 2014



## Sleeping well linked to better mental health

Sleeping well during middle age may be an 'investment' that leads to better mental functioning later in life say researchers from the Sleep Neuroscience and Cognition Laboratory at Baylor University in Waco, Texas.

"If sleep benefits memory and thinking in young adults but is changed in quantity and quality with age, then the question is whether improving sleep night delay – or reverse – age-related changes in memory and thinking" said director Michael Scullin who analysed 50 years of sleep research.

He said that they came across studies that showed that sleeping well in middle age predicted better mental functioning 28 years later.

**While the researchers found an association between middle-age sleep and mental ability later in life, the study did not prove cause and effect.**

"However, even if the link between sleep and memory weakens with age, sleeping well is still linked to better mental health, improved cardiovascular health and fewer disorders and diseases of many kinds" said Scullin.

Source: MedicineNet, 27 January 2015

## Circadian rhythms regulate skin stem cell metabolism and expansion

Scientists at the University of California – Irvine studying the role of circadian rhythms in skin stem cells have found that this clock plays a key role in co-ordinating daily metabolic cycles and cell division. The research shows for the first time how the body's intrinsic day-night cycles protect and nurture cell differentiation.

Bogi Andersen, professor of biological chemistry and medicine, said that while the studies were conducted in mice, the greater implication of the work relates to the fact that circadian disruption is very common in modern society, and one consequence of such disruption could be abnormal function of stem cells and accelerating ageing.

Source: Science Daily, 6 January 2015

## Behavioural changes seen after sleep learning

Research published in the *Journal of Neuroscience* suggests that certain kinds of conditioning applied during sleep could induce us to change our behaviour.

The researchers exposed smokers to pairs of smells – cigarettes together with rotten eggs or fish – as the subjects slept, and then asked them to record how many cigarettes they smoked in the following week.

Although they did not remember smelling the odours the next morning, the subjects reported smoking less over the course of the next week.

The researchers say that what they have shown is that conditioning can take place during sleep, and this conditioning can lead to real behavioural changes.

Our sense of smell may be an entryway to our sleeping brain that may, in the future, help us to change addictive or harmful behaviour.

Source: ScienceDaily, 12 November 2014

## Obstructive sleep apnea causes weight gain and diabetes

People who suffer breathing and heart rate abnormalities, termed 'obstructive sleep apnea', are likely to develop diabetes, and the risk increases if they have a hereditary propensity, report scientists at the National Autonomous University of Mexico.

They say that a person with these risk factors is likely to develop the condition because the sleep disorder causes metabolic changes by increasing insulin resistance.

This sleep disorder can not only cause diabetes but is also responsible for the increase of cholesterol, triglycerides and hypertension.

Researchers suggest that people with this condition should be referred to a sleep clinic in order to obtain a correct diagnosis of the disease or prevent its development.

Source: Science Daily, 3 January 2015



# HAZARDOUS SUBSTANCES

## Communique from Australia's 1st International Conference on Asbestos Awareness and Management

This conference, held in Melbourne in November 2014, featured experts in asbestos from industry, unions, government and medical expertise from around the world.

It was the consensus of all delegates that all forms of asbestos fibres kill and the only solution is to eliminate the sources. There is no known safe level of exposure to asbestos and the conference found no scientific evidence to support the concept of controlled use advocated by some in the asbestos producing industry.

The full communique can be found at [http://www.asbestossafety.gov.au/files/Communique\\_from\\_Asbestos\\_Awareness\\_and\\_Management\\_Conference\\_201114\\_0.pdf](http://www.asbestossafety.gov.au/files/Communique_from_Asbestos_Awareness_and_Management_Conference_201114_0.pdf)

*Source: Asbestos Safety and Eradication Agency, 20 November 2014*

## Continued use of asbestos

Researchers from the US and India have found that despite widespread knowledge of the hazards of asbestos and bans on any use of asbestos in more than 50 countries, an estimated 2 million tons of asbestos continues to be used around the world each year.

Although this amount is significantly less than two decades ago, considerable amounts are still used in India, China, and Russia and in some developing countries.

The authors concluded that "all forms of asbestos pose grave dangers to human health. All are proven human carcinogens. There is no justification for the use of asbestos and its production and use should be banned worldwide."

*Source: OHS Repts SafetyNetJournal, 11 December 2014*

## Asbestos-related diseases epidemic in France

France's Institute of Health Surveillance has released details of the national epidemic of asbestos cancer.

With 1,700 asbestos fatalities and 2,200 cases of asbestos cancer diagnosed per annum, the banned substance remains a potent hazard for life.

The Institute reported a significant rise in the incidence of mesothelioma in the late 1990's and the 2000's among women, 28 per cent of whom had no known exposure to asbestos.

*Source: OHS Repts, SafetyNetJournal, 29 January 2015*

## Mesothelioma reaching epidemic proportions

Mesothelioma incidence has reached epidemic proportions in various countries stimulating research at the Centre for the Study of Environmental Cancer in Monfalcone, Italy which has reported some interesting results.

The highest incidence rates are reported from some countries in Europe (United Kingdom, the Netherlands, Malta, and Belgium) and in Oceania (Australia and New Zealand). Relatively low incidence/mortality rates are reported from Japan and from Central Europe.

Researchers concluded that the mesothelioma epidemic shows no sign of attenuation. Data is not available for the most populous countries.

*Source: Bianchi C, Bianchi T. Global mesothelioma epidemic: Trend and features. Indian J Occup Environ Med 2014; 18:82-88*



## **Mysterious kidney disease affecting sugar cane workers**

**Something is destroying the kidneys of farm workers along the Pacific coast of Central America.**

Over the past two decades more than 20,000 people in Western Nicaragua and El Salvador - mostly men and many of them in their 20's and 30's - have died of a mysterious form of kidney failure.

Researchers have been able to say definitively that it is not diabetes or other common causes of kidney failure.

A new study from Boston University finds a clear connection between the disease and the work these men are doing.

The report says that "the decline in kidney function during the harvest and the differences in kidney function by job category and employment duration provides evidence that one or more risk factors of chronic kidney disease (CKD) are occupational.

The researchers found that the kidney function of field workers declined over the course of the six month harvest. Sugar cane cutters and planters saw the sharpest drop.

Sugar cane workers blame their kidney failure on agricultural chemicals.

A growing suspicion that pesticides or herbicides are the culprit prompted the Salvadoran National Assembly to ban 53 agrichemicals late in 2013.

*Source: NCBI, January 2015*

Below: Former sugar cane cutter Manuel Antonio Tejarino in March 2014. He died of kidney disease two months later.



# NOISE

## Can too much hearing protection put workers at risk?

In an article in the January 2015 edition of *ISHN* readers are warned that over-protection is a common mistake in hearing protection as it can diminish a person's ability to hear critical noises such as warning signals, moving vehicles and other workers. Put simply, over-protection can actually prove detrimental to a person's immediate safety.

Understanding the noise levels of hazards in the working environment is critical to determine the level of hearing protection necessary. Protection is needed when sounds are 85dBA or above because, at this level, a person's hearing can be permanently damaged.

Tips for preventing over-protection:

- Know your noise levels.
- Choose the correct hearing protection device which lowers the exposure to a safe level for the worker – but not below 85dBA.
- Ensure employees are aware of the risks of both under and over-protection.

Source: *ISHN*, 5 January 2015



## Sounds you can't hear can still hurt your ears

Low frequency sound exposure has long been thought to be innocuous, however, a new study suggests that this is not so.

Humans can generally sense sounds at frequencies between 20 and 20,000 cycles per second [or hertz (Hz)] although this range shrinks as a person ages.

For the new study, researchers at the Ludwig Maximilian University in Munich, Germany, asked 21 volunteers with normal hearing to sit inside a soundproof booth and then played a 30Hz sound for 90 seconds. Then, they used probes to record the natural activity of the ear after the noise ended, taking advantage of a phenomenon dubbed 'spontaneous opto-acoustic emissions' (SOAE's), in which the healthy human ear itself emits faint whistling sounds.

People's SOA's are normally stable over short time periods but in the study, after 90 seconds of the low-frequency sound, participants' SOAE's started oscillating, becoming alternately stronger and weaker. The changes aren't directly indicative of hearing loss but they do mean that the ear may be temporarily more prone to damage after exposure to low-frequency sounds.

Source: *Chemwatch, Bulletin Board*, October 2014

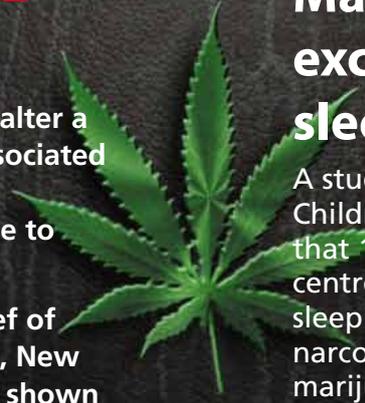
# LEGAL/ILLEGAL DRUGS

## Chronic pot-smoking – brain effects

Long-term marijuana use appears to alter a person's brain causing one region associated with addiction to shrink and forcing the rest of the brain to work overtime to compensate, a new study has found.

Dr Scott Krakower, assistant unit chief of psychiatry at Zucker Hillside Hospital, New York, said that previous studies have shown that marijuana use can affect IQ, motivation and ability to plan or make decisions. These effects are likely to grow more pronounced as newer forms of marijuana with greater levels of THC, the main psychoactive agent in the marijuana plant, hit the market.

Source: MedicineNet, 10 November 2014



## Marijuana usage and excessive daytime sleepiness

A study by researchers from Nationwide Children's Hospital, Columbus, Ohio has found that 10 per cent of adolescents sent to a sleep centre for evaluation of excessive daytime sleepiness, with testing results consistent with narcolepsy, had urine drug screens positive for marijuana, confounding the results.

A key finding of this study is that marijuana use may be associated with excessive daytime sleepiness in some teenagers, said Dr Mark Splaingard, a faculty member.

A negative urine drug screen finding is an important part of the clinical evaluation before accepting a diagnosis of narcolepsy and starting treatment in a teenager.

Source: Science Daily, 13 February 2015

## Most employers forget that alcohol and work are a deadly combination

In a survey conducted by the US National Institute on Alcohol Abuse and Alcoholism, 60 per cent of respondents said their companies are "tough" on illegal drugs but "soft" on alcohol. Additionally, more managers and supervisors reported drinking during the workday and at company functions than other employees.

The Office of National Drug Control Policy says that employers tend to put less emphasis on alcohol and its negative impact at work perhaps because it is legal. Also, many companies do not have alcohol policies and those that do may not enforce them effectively.

John Pompe, manager of disability and behavioural health programs at Caterpillar, says that alcohol and substance abuse-related problems present a clear threat to employers in terms of productivity loss, safety, employee engagement, use of supervisory time and health care costs.

The problem is that most employees with substance abuse problems go unrecognised and even more go untreated.

Source: EHS Today, 9 September 2014

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## 40% of Australians smoke, drink too much alcohol or use illicit drugs

According to an Australian Institute of Health and Welfare report released in November 2014, over 40 per cent of Australian's smoked daily, drank alcohol in a way that put them at risk of harm or used an illicit drug in 2013.

The report shows that there is often a relationship between daily smoking, risky drinking and recent illicit drug use, with almost 11 per cent of Australians reporting two or more of these risky behaviours and about three percent engaged in all three behaviours.

Source: AIHW, Media Release, 25 November 2014

# WORKERS' COMPENSATION

## Long working hours the cause of fatal crash

The Workers' Compensation Commission of NSW has awarded \$498,950 to the administrator of the estate of a female employee who died as a result of a motor vehicle accident which occurred on a journey between her place of employment and her place of abode.

The Commissioner determined that the fatigue caused by the long hours required in her employment was a real and substantial connection with the circumstances of the accident or incident in which the deceased suffered her injuries and which resulted in her death. If fatigue was involved, which the Commissioner so found, there was a real and substantial connection with the meaning of the Act.

This Certificate of Determination is an extremely useful document for professionals or students interested in the matter of fatigue and long working hours.

*Source: Workers' Compensation Commission, December 2014*

## Return-to-work rate following injury differs between the sexes

A research project led by the University of British Columbia (UBC) has found notable differences in work disability duration among men and women with the same type of injury working in the same occupation.

Researchers say that these differences have implications for employers in terms of increasing their awareness of the role of sex and gender in workplace health outcomes, and in developing more successful health and safety and return-to-work programs.

Researchers analysed data on acute injuries, such as tendonitis, bursitis, musculoskeletal injuries and back strains, in a range of industries from farming to logging to health care.

A persistent difference arose across the board - women were off work longer than men.

Dr Chris McLeod, UBC, said that research showing that women have different health care experiences than men is something the medical community needs to respond to.

*Source: WorkSafe BC Magazine, January/February 2015*

*Pic: BC Working Group*



# CANCERS

## Breast cancer and occupation – the need for action

The American Public Health Association has expressed concern that research and prevention measures to identify and eliminate occupational and other environmental hazards and risk factors for breast cancer in women remain largely overlooked.

As a result, hazards continue unabated for women generally especially those who work outside the home.

The Association says that the science linking breast cancer and occupation in particular, is growing, with researchers identifying commonly used chemicals that induce breast tumours in test animals. Other animal studies link chemicals that mimic reproductive hormones to elevated breast cancer rates, including two recent investigations focused on occupational hazards.

Action required starts with making a national priority of promoting and supporting research on occupational and other environmental causes of breast cancer.

Other public health actions include hazard surveillance and primary prevention activities such as reductions in the use of toxic materials, informed substitution and green chemistry efforts.

Green Chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances.

*Source: American Public Health Association, Policy 20146, 18 November 2014*



## Women plastics workers and breast cancer risk

A 2012 Canadian study has confirmed recent epidemiological findings of a five-fold elevated breast cancer risk for premenopausal women who work in the plastics industry.

Extensive literature and research shows that workers are exposed to chemicals identified as mammary carcinogens and endocrine disrupting chemicals and their working environment is heavily contaminated with dust and fumes.

Consequently, plastics workers have a body burden that far exceeds that found in the general public. The nature of these exposures in the plastics industry places women at disproportional risk, underlining the importance of gender.

Measures for eliminating these exposures and the need for regulatory action is discussed in the paper.

*Source: OHS Repts, SafetyNetJournal, 309, 5 February 2015*



## Toiletry chemicals linked to testicular cancer and male infertility

A new report from the Nordic Council of Ministers (representing Denmark, Finland, Iceland, Norway and Sweden) which focuses on endocrine disruptor compounds (EDC's - hormone-mimicking chemicals) used routinely in toiletries, cosmetics, medicines, plastics and pesticides, has found that they can cause serious health damage.

The EDC's are thought to be particularly harmful to male reproductive health and can cause testicular cancer and infertility.

The Council is demanding that the European Union speed up its plan to identify, assess and ban harmful EDC's.

Source: Chemwatch, Bulletin Board, December 2014

## Stop death, disease and illness at work

The European Trade Union Confederation (ETUC) has condemned the European Commission for blocking health and safety improvements and for putting forward an extremely weak health and safety strategy.

The ETUC has called for:

- Legally enforceable exposure limits for 50 of the most cancer-causing chemicals and substances toxic to reproduction;
- A Directive on musculoskeletal disorders to prevent back injuries and other illnesses caused by heavy lifting or muscular strain;
- Action to require employers to assess and prevent psychosocial risks at work such as stress which 25% of workers experience.

This call follows the inaction by the Commission on a number of initiatives for improving health and safety in Europe.

Source: ETUC Press Release, 1 December 2014

## Kidney cancer risk in ore refinery in Finland

Research published in the Journal of Occupational and Environmental Medicine has concluded that occupational exposure in oil refining, particularly to crude oil, may increase kidney cancer risk.

The results from a cohort of employees in the oil refinery industry in Finland from 1967-1982 found a threefold increase in the kidney cancer risk for exposure to hydro-carbons in crude oil.

Source: Journal of Occupational and Environmental Medicine, Vol 57, p68-72, January 2015

## If cells can't move, cancer can't grow

Researchers from the Centenary Institute of Cancer Medicine and Cell Biology, NSW, have shown that they can slow down the movement of cells and potentially stop tumours from spreading and growing by blocking a widespread enzyme DPP9 (dipeptidyl peptidase 9).

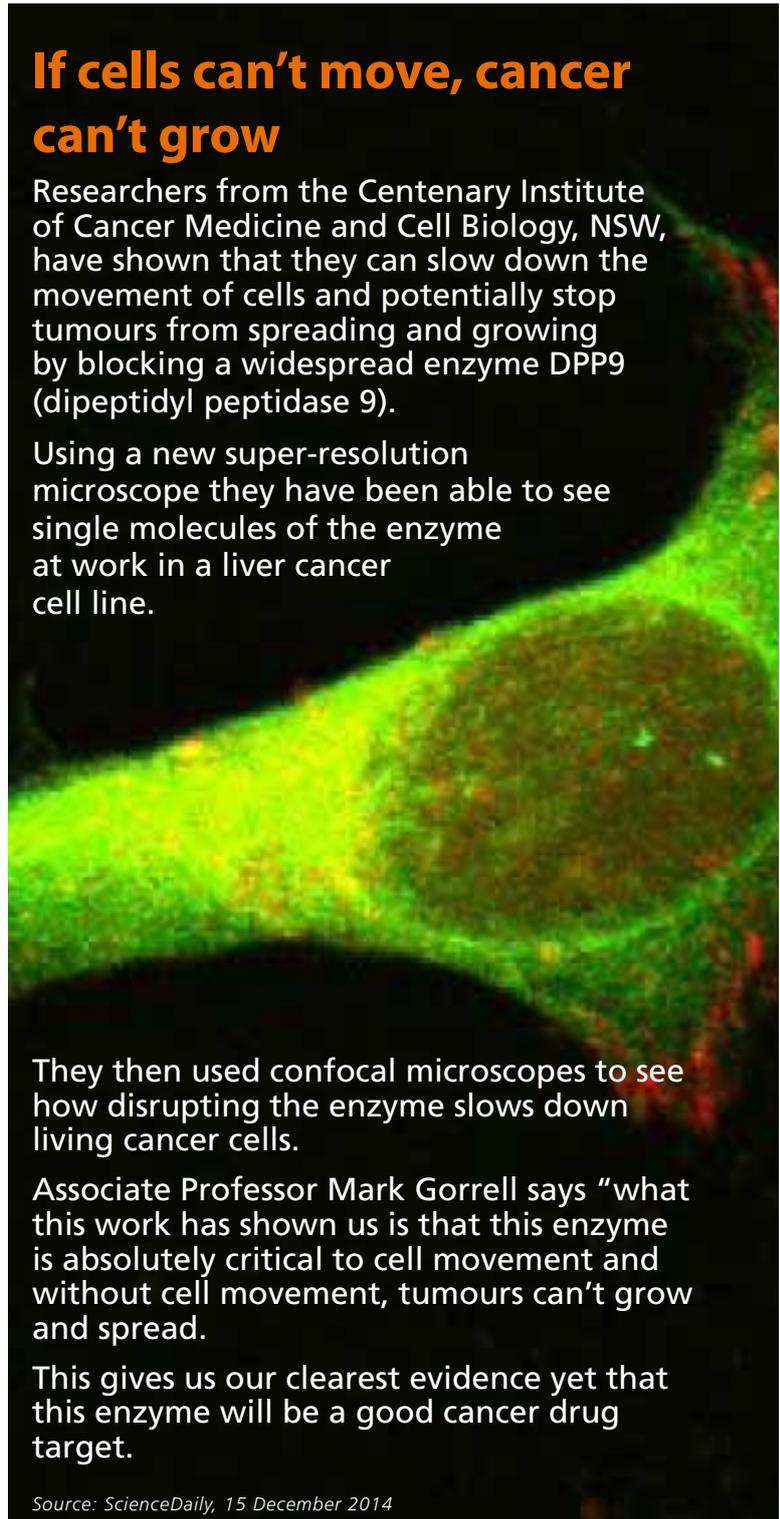
Using a new super-resolution microscope they have been able to see single molecules of the enzyme at work in a liver cancer cell line.

They then used confocal microscopes to see how disrupting the enzyme slows down living cancer cells.

Associate Professor Mark Gorrell says "what this work has shown us is that this enzyme is absolutely critical to cell movement and without cell movement, tumours can't grow and spread.

This gives us our clearest evidence yet that this enzyme will be a good cancer drug target.

Source: ScienceDaily, 15 December 2014



# E-CIGARETTES CAN CONTAIN UP TO 10 TIMES THE CARCINOGENS OF CIGARETTES

A government-funded study in Japan has revealed that e-cigarettes - electronic devices designed to replace traditional cigarettes –contain high levels of chemicals that have been linked to the development of cancer.

E-cigarettes contain flavoured liquid which is treated electronically and the resulting vapour inhaled to produce a tobacco flavour without the harmful smoke.

Researchers in Japan have been directed by the Government to continue their investigations into the health risks of e-cigarettes.

*Source: Chemwatch, Bulletin Board, December 2014*



## Nanomaterials in construction products to be scrutinised

Nano-enabled construction products are being increasingly used in the US but manufacturers are under no obligation to identify that their products contain nanoparticles in warnings or on safety data sheets. Consequently, construction contractors and workers have no mechanisms for understanding potential exposures.

The Center for Construction Research and Training (CPWR) is proposing emerging technology research which will address both deficiencies by focusing on nanotechnology and its impact on construction. This effort will identify nano-enabled products that are being installed or used by US construction workers and rate the exposure potential of the products using focal groups or affected tradesperson.

It has created a dedicated website that contains information on over 400 construction products that are probably nano-enabled and those that are identified as posing the greatest risk will be selected for breathing zone measurements of various trade workers performing tasks with standard tools.

Findings will be disseminated through the varied and extensive communication tools maintained by the Center.

CPWR collaborates closely with NIOSH's Nanotechnology Research Center.

*Source: CPWR, Release 8 January 2015*

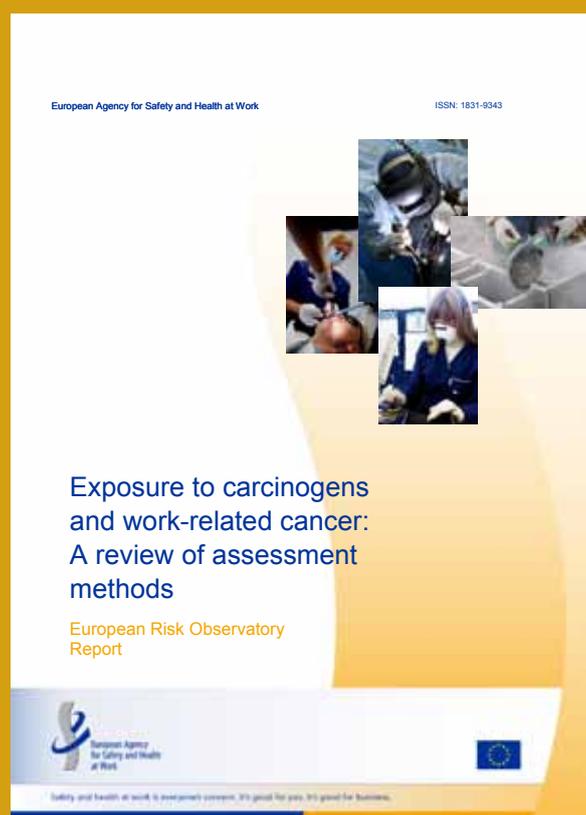
# Exposure to carcinogens and work-related cancers: a review of assessment methods

A report on work-related cancers by the European Agency for Safety and Health released in February provides recommendations for filling gaps in our present knowledge, a crucial task if we are to improve identification and prevention of occupational cancer. It concentrates on the assessment of carcinogens and work-related cancer with the following objectives:

- to describe carcinogens and cancer causing conditions in the workplace
- to evaluate sources of information and identify knowledge gaps
- to give recommendations for filling these gaps
- to describe prevention measures

The full report is available at <https://osha.europa.eu/en/press/press-releases/world-cancer-day-new-report-highlights-ways-to-improve-the-prevention-of-work-related-cancer>

Source: OSHA Press Release, 4 February 2015



## IARC rejects claims that most types of cancer are due to 'bad luck'

The International Agency for Research on Cancer has strongly disagreed with the conclusion of a scientific report on the causes of human cancer published in the journal Science on 2 January 2015.

The study suggested that random mutations (or 'bad luck') are the major contributors to cancer overall, often more important than either hereditary or external environmental factors.

For many cancers, the authors argue for a greater focus on the early detection of the disease rather than on prevention of its occurrence. If misinterpreted, this position could have serious negative consequences from both cancer research and public health perspectives.

IARC experts point to a serious contradiction with the extensive body of epidemiological evidence as well as a number of methodological limitations and biases in the analysis presented in the report.

Source: World Health Organization, Press Release 231, 13 January 2015

# HOW TO KILL CANCER WITHOUT KILLING THE PATIENT

Nano-medicine explores and exploits the interaction between nano particles and cells. A **nano particle** is a microscopic particle of matter that is measured on the nanoscale, usually one that measures less than 100 nanometres.

A drug can be packaged in a carefully designed and constructed nanoparticle, and the surface of that nanoparticle then coated with something like an antibody or protein that will hone in on a target found almost exclusively on the surface of a tumour cell. Once in the body, the nanoparticle finds its way to its target and delivers its tumour killing contents, with little or no interaction with other healthy cells.

Scientists at the Monash Institute of Pharmaceutical Sciences in collaboration with the University of Warwick, UK, are co-operating to see just how far they can push the boundaries of nano-medicine.

Professor Tom Davis says that drug delivery is one of the main applications of nano-medicine, because you can change the distribution of drugs in the body and you can target the drugs to the specific sites they need to go to. This means you can use reduced concentrations of the drug to achieve more powerful results with no side effects.

In laboratory tests with rats, nanoparticles achieved double the reduction in liver venous pressure compared with conventional drugs.

The hope now is to test this approach in clinical trials on humans. Nanoparticles are also being used to explore a new frontier of medicine called **Theranostics**, in which doctors are able to concurrently diagnose and deliver a therapeutic agent.

The ability of nanoparticles to hone in on a tumour means they can be used to bring significantly greater contrast to existing imaging techniques, such as magnetic resonance imaging (MRI) or positron emission tomography (PET).

Furthermore, that same nanoparticle can serve two purposes; delivering the contrast agent to the tumour and, at the same time, delivering the drug to kill the cells of that tumour. This allows doctors to see, in real time, the signal change from the tumour when the drug is released.

*Source: Medicine enters the nano world, Delivering impact Monash, February 2015*

To enable the nanoparticles to target specific cells, antibodies (green) are attached to the surface of the nanoparticle.

Nanopic Source: Sonia Kretschmar, Monash University



## Occupational Health Society of Australia (WA)



Incorporated in 1978, the Occupational Health Society of Australia (WA Branch) is a non-profit association which provides a forum for the wide range of disciplines engaged in the occupational health profession in Western Australia.

The aims of the Society are:

- to develop effective occupational health practice within WA
- to encourage awareness by individuals, organisations and other bodies, of the role of occupational health
- to provide a forum for professional contact between persons interested in, and working in, occupational health
- to express an independent, professional viewpoint on all aspects of occupational health considered desirable in the public interest
- to seek the improvement or an extension of the existing legislation for the promotion of safety and health at work in order to ensure uniform principles are applied in all occupational activities.

Visit [www.ohswa.marcsta.com](http://www.ohswa.marcsta.com) for more information.



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