

Image: Courtesy of University of Warwick

## Depression's physical source discovered

Understanding of the physical root of depression has been advanced in a study which shows that depression affects the part of the brain which is implicated in non-reward – the lateral orbitofrontal cortex – so that sufferers of the disease feel a sense of loss and disappointment associated with not receiving rewards.

The human medial (reward-related, OFC13) and lateral (non-reward-related, OFC47/12) orbitofrontal cortex networks that show different functional connectivity in patients with depression.

This area of the brain, which becomes active when rewards are not received, is also connected with the part of the brain which is involved in one's sense of self, thus potentially leading to thoughts of personal loss and low self-esteem.

Depression is also associated with reduced connectivity between the reward brain area in the medial orbitofrontal cortex and memory systems in the brain, which could account for sufferers having a reduced focus on happy memories.

**These new discoveries could herald a breakthrough in treating depression, by going to the root cause of the illness, and helping depressed people to stop focussing on negative thoughts.**

In a particularly large study, almost 1,000 people in China had their brains scanned using high precision MRI, which analysed the connections between the medial and lateral orbitofrontal cortex -- the different parts of the human brain affected by depression.

Researcher, Professor Jianfeng Feng commented:

**"Our findings, with the combination of big data we collected around the world and our novel methods, enables us to locate the roots of depression which should open up new avenues for better therapeutic treatments in the near future for this horrible disease. More than one in 10 people in their lifetime suffer depression, a disease which is so common in modern society and we can even find the remains of Prozac (a depression drug) in the tap water in London."**

The study was carried out by Professor Edmund Rolls (University of Warwick UK), Professor Feng and Dr Wei Cheng (Fudan University, China) and other centres in China.

Source: ScienceDaily, 18 October 2016



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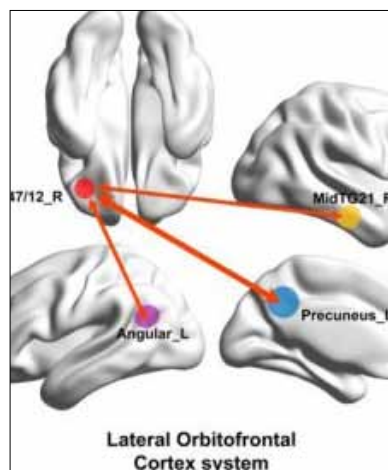
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#### MONITOR EDITOR

Geoff Taylor

Archived editions of the Monitor are available online at [www.marcsta.com](http://www.marcsta.com)

OHSA(WA), PO Box 171, Belmont WA 6984

E-mail: [safety@marcsta.com](mailto:safety@marcsta.com)

[www.ohswa.marcsta.com](http://www.ohswa.marcsta.com)



## Legislative/regulatory matters

### **Update on Work Health and Safety (Resources and Major Hazards) Legislation in WA**

The Department of Mines and Petroleum (WA) has issued a Resources Safety Alert advising the current arrangements for proceeding with the Work Health and Safety (Resources and Major Hazards) Bill.

- It is now expected that the draft Bill will be finalised by November 2016. Following the State Election in March 2017, the elected Government will decide the timing for introducing the Bill into Parliament.
- In the meantime, DMP will publish the final draft of the Bill on the DMP website (when the draft is ready) for a three-month public comment period.
- Drafting instructions for the regulations will proceed together with supporting guidance, tools and templates.
- Further opportunity will be provided for stakeholder consultation.
- Subject to approval, drafting of the regulations by Parliamentary Counsel will commence once the Bill is introduced into Parliament. When final draft regulations are ready, they will also be released for public comment.

**The concern for the Occupational Health Society of Australia (WA) and other relevant organisations will be that the three month public comment period does not extend over the December-January period when it is difficult to develop a proper and thorough response.**

### **Update on how workers' health is managed on NSW mine and petroleum sites**

The Department of Industry Resources Regulator in New South Wales has advised all mine and petroleum operators that they must have developed and implemented a health control plan by 1 February 2017.

A health control plan is a principal control plan which forms part of the safety management system required for all mine and petroleum sites in keeping with model legislation.

The health control plan must include five elements:

- Control measures for eliminating or minimising workers' exposure to health hazards such as dust, noise, hazardous substances, contaminants (airborne or otherwise), ultraviolet and ionising radiation and vibration.
- Control measures to ensure that workers are fit to carry out specific tasks including control measures for minimising the risk that a worker will be impaired by fatigue, extremes of temperature, moisture content of air or intoxication by alcohol or drugs.
- How health hazards will be monitored and how exposure to workers will be monitored (for example, air sampling to monitor the environment and monitoring tests such as hearing tests or x-rays to monitor workers' exposure).
- Arrangements for monitoring the health of workers at the mine or petroleum site in accordance with the appropriate regulation.
- How health records (including first aid record) of workers at the mine or petroleum site will be managed.

**With the Work Health and Safety (Resources and Major Hazards) Bill expected to be tabled in Parliament by mid-2017, the extent to which the requirements for the management of workers' health will mirror the content of legislation operating in New South Wales and Queensland will be a matter of concern to all occupational health and safety professionals.**

# SAFETY

## Precarity – a new causative factor endangering safety

The latest statistics on accidents in the workplace in Spain indicate that they increased by 12.3 per cent in 2015 in relation to 2012.

In 2015 there were more than 529,000 accidents, including 629 fatalities.

Data available for the first six months of 2016 confirm this worrying upward trend.

An increase in the rate of frequency of accidents can be noted in all the sectors examined, namely construction, agriculture, services and media.

Between 2012 and 2014 the increase in accident frequency rates is more substantial in women (15 per cent) than among men (8 per cent).

**Trade unions maintain that the main cause in the increase in accidents at work is Precarity (a precarious existence lacking in predictability, job security, material or psychological welfare), made possible by government reforms (increase in fixed term and part-time contracts) which lead to a deterioration in health and working conditions.**

On one hand, the workload increases; on the other hand, during the crisis companies have prioritised other things and prevention has become a secondary consideration. Unions maintain that fear of losing their job makes workers accept worse working conditions.

Accidents on the way to or from work deserve particular attention. They affect mainly women (almost 57 per cent, although they represent only 45 per cent of the population). The main reasons are that women work part-time more than men, have to combine two jobs and on top of that are responsible for the bulk of domestic and family duties in contrast to men.

Source: ETUI, 9 September 2016

## Safety alarm after tragic increase in fatalities in Victoria

Workplace fatalities in Victoria are set to soar to the highest figure in more than a decade with 24 workers already losing their lives in 2016.

The devastating number comes as the workplace watchdog will also undergo a recruitment drive for more inspectors.

Of the 24 workers killed this year so far, seven have been in construction and another seven have been on farms.

Victorian Finance Minister, Robin Scott, called on businesses to develop a plan to deal with any increased workload in the lead up to Christmas which is typically the deadliest period.

Source: *The Herald Sun*, 30 October 2016

## WorkSafe WA inspection program confirms previous concerns

A pro-active inspection program conducted throughout the 2015-16 financial year by WorkSafe, which looked specifically at the safe movement of vehicles in manufacturing and wholesale workplaces and their interaction with people, has confirmed previous concerns in those industries.

WorkSafe Director Joe Attard said that the inspection program was prompted by concerns about the number of previous serious incidents involving mobile plant and pedestrians.

WorkSafe inspectors visited 172 workplaces as part of the program and issued 79 improvement notices, of which 50 related directly to the safe movement of vehicles.

"It appears that in many workplaces insufficient attention is being paid to spaces where vehicles and

pedestrians interact; strict rules need to be in place in these spaces to ensure the work environment is kept as safe as possible," said Mr Attard.

WorkSafe has published a Safety and Health Alert on its website that contains more detailed information on the factors that contributed to recent incidents, along with advice on the actions required in workplaces.

Source: *WorkSafe Media Release*, 1 November 2016

## UK workplace inspections increasingly rare

Nearly half of UK workplaces have never had a health and safety inspection – including more than 80 per cent of construction workplaces, according to a new TUC survey of health and safety representatives.

The survey which analysed responses from over 1,000 safety representatives, found manufacturing is the only sector in which a majority (57 per cent) of safety reps said there had been an inspection during the past year.

In stark comparison, in the notoriously hazardous construction industry – where there were 65,000 reported work-related injuries and 67,000 work-related illnesses in 2015 – just over one in six (17 per cent) reps was aware of an inspection in the last year.

**Overall, 46 per cent of respondents said that, as far as they know, their workplace has never had an inspection by the HSE.**

The TUC said that by 2019/20 government funding of the HSE will have been slashed by nearly one half in a decade, adding that in recent years, local councils have reduced workplace inspections by 97 per cent.

Source: *TUC Risks*, 769, 22 September 2016

# WORKCOVER WA INDUSTRY BENCHMARK REPORT 2012/13 TO 2014/15

Workcover WA has released its industry benchmark report for the three year period 2012/13 to 2014/15 which provides a comprehensive analysis of the incidence and frequency of compensable workplace claims and associated costs for each industry division and sub-division.

Selected data from the report which warrants the attention of occupational health and safety professionals:

- Industry divisions with the highest average claim costs (Table 1)
- Industry divisions with the highest injury frequency rates (Table 2)
- Industry sub-divisions incurring the highest claim costs (Table 3)
- Industry sub-divisions with the highest injury frequency rates

Table 1		Table 3	
Financial and insurance services	\$74,197	Insurance and Superannuation Funds	\$100,637
Mining	\$73,677	Oil and Gas Extraction	\$ 96,205
Electricity, gas, water and waste services	\$51,761	Petroleum, coal product manufacturing	\$ 85,405
Professional, scientific and technical services	\$50,969	Electricity supply	\$ 76,800
Construction	\$50,893	Metal ore mining	\$ 74,256
Transport, postal and warehousing	\$50,756	Exploration and other mining support services	\$ 73,796
Agriculture, forestry and fishing	\$43,385	Internet service providers, web search portals and data processing services	\$ 66,920
Rental, hiring and real estate services	\$43,260	Non-metallic mineral mining and quarrying	\$ 62,338
Public administration and safety	\$42,671	Basic chemical and chemical product manufacturing	\$ 61,558
Information media and telecommunications	\$40,379	Heavy and civil engineering construction	\$ 60,743
All industry average	\$44,133		

Table 2		Table 4	
Agriculture, forestry and fishing	15.7	Coal mining	42.8
Manufacturing	14.9	Fabricated metal product manufacturing	41.7
Arts and recreation services	13.4	Agriculture, forestry & fishing support services	37.5
Construction	12.6	Fishing, hunting, trapping	30.6
Health care and social assistance	12.5	Wood product manufacturing	30.0
Transport, postal and warehousing	11.6	Heritage activities	18.4
Wholesale trade	10.4	Heavy civil and engineering construction	26.5
Education and training	8.2	Residential care services	22.8
Accommodation and food services	8.1	Other transport	23.1
Retail trade	7.4	Public order, safety and regulatory services	20.2
All industry average	8.5		



## Vehicle related fatalities the major offender in Canada

Researchers from the Canadian Association of Petroleum Producers have completed a data analysis over a 13 year period which shows that vehicles account for 60 per cent of work-related incident fatalities.

During that time highway motorised vehicles were the source of 44 per cent of fatalities, followed by air vehicles at 10 per cent. Other types of vehicles that caused fatalities were plant and industrial powered vehicles, rail vehicles and water vehicles.

Data was collected from the Association of Workers' Compensation Boards of Canada, from 134 industries and all 10 provinces and two territories.

Researcher Claudette Fedorak said, "When it comes to the nature of the injury, traumatic injuries and disorders from accident fatalities are decreasing slightly, meanwhile, neoplasms, tumours and cancers and systemic disorders are increasing.

The percentage of those fatalities (neoplasms, tumours, cancers) has increased by 386 per cent since 2001.

**The biggest cause of disease fatalities in non-metallic minerals (80 per cent) is asbestos."**

Source: Cos Mag, 20 September 2016

## Vehicles the main cause of fatalities in the agricultural industry

Safe Work Australia has released a 'Work Health and Safety in the Agricultural Industry' report that identified key risks faced by workers in the agricultural industry, as well as providing statistics about injuries, fatalities and workers' compensation. This includes information regarding how the agricultural industry compares with other industries.

One of the key findings of the report was that the fatality rate in the agricultural industry is significantly higher than the all-industry average. However, it is in line with the overall downward trend and the rate has fallen by 24% since 2003.

**Importantly, the report found that around three-quarters of fatalities in the agricultural industry involved vehicles, while approximately one-third of fatally injured workers were aged 65 and over.**

The involvement of vehicles in work-related fatalities is similar to that reported in Canada.

Source: SafetySolutions, 27 September 2016



# Are firefighters in more danger than ever before?

New construction materials are making firefighting more hazardous to the health and wellbeing of first responders, as well as building tenants and homeowners.

Today's homes and businesses are equipped with more advanced fire and smoke sensors, and firefighters have more durable safety equipment and a deeper knowledge of firefighting. Cities enforce strict fire safety codes and other building regulations to prevent fires and minimise risks when they do occur.

**Yet modern buildings are burning and collapsing faster than those that were built 60 or 100 years ago. Published studies indicate residential fires are more difficult to escape and more likely to have quick flashover rates, giving firefighters less time to reach buildings and homes before disaster strikes.**

So why are fires actually getting more dangerous and difficult to control?

It turns out that one key variable has affected our ability to deal with fires: the materials that fuel them. Just as technology has increased our power to detect and fight fires, it also has introduced a variety of modern materials and construction trends that make smoke and fire more difficult to contain.

Some of these more-recent changes include flammable textiles, plastics with high burn rates and less practical building layouts and foundations. It's difficult to pinpoint just one problem; a variety of construction and manufacturing changes have converged to make recent fires hotter and the smoke from those fires more deadly.

These synthetic fabrics and linings are replacing cotton, wool and other natural materials, which are more expensive and less durable but also slower to burn.

*Source: EHS Today, 7 September 2016*

## Construction fatalities escalating in Singapore

In Singapore a report released by the Workplace Safety and Health (WSH) Institute revealed that fatal injuries at work were up by 40% compared to the same period last year.

Of the 42 deaths, 17 were attributed to the construction sector which is extremely high compared to Australia.

The Minister of Manpower, Lim Swee Say said he was alarmed at the rate of increase of fatalities reported and called for better attitudes by construction companies who accept WSH infringements as "unavoidable" and set aside "safety budgets" for such emergencies. This would lead to unsafe practices in the workplace, he warned.

Lim urged the WSH Institute to prioritise the improvement of working conditions in the construction sector, strengthen workplace safety and health competency in the workforce and build WSH ownership.

*Source: HRD Singapore, 27 September 2016*



Rescuers search for survivors at the accident site after four residential houses collapsed in Lucheng industrial district in Wenzhou City. Photograph: Xinhua/REX/Shutterstock

## MIGRANT WORKER HOUSING COMPLEX KILLS 26 WORKERS IN CHINA

In October, 22 migrant workers were killed in an Eastern China city when four buildings they were sleeping in suddenly collapsed in the middle of the night.

The buildings had already been condemned for demolition but the owners were renting them out as sleeping quarters to migrant workers employed in nearby factories.

The tragedy highlights the fact that the cost of China's industrial expansion has forced workers to endure long hours, low pay and face hazardous conditions both at their workplaces and in their living quarters.

Source: *SafetyNetJournal* 384, 19 October 2016

## Can we eliminate preventable fatalities?

At the National Safety Council (NSC) Congress and Expo held in Anaheim, California in October, the CEO and President Deborah Hersman provided a practical example to support the National Safety Council's belief that all 300,000 preventable deaths in the USA could have been avoided.

She did so in terms that her audience could grasp.

She said, in her opening address: "If you think it's possible to eliminate preventable deaths in our lifetime, please stand up. If you think you can eliminate preventable deaths in your department, please stand up. In your team, please stand up."

Eventually, every audience member was standing.

**"We can get to zero" said Hersman, looking at the audience. "The solutions to your safety issues probably already exist."**

Hersman suggested safety leaders examine the leading causes of injuries at their facilities and among their team members. "Put your energies into solving those issues," she suggested. "Remember, by focusing on your number, we can all get to zero."

Source: *EHS Today*, 19 October 2016





## Unions apply pressure following latest Bangladesh disaster

As the death toll in Bangladesh's latest factory tragedy rose to 34, unions applied additional pressure for Government action and union involvement to keep workers in the country safe.

Global union ITUC said the 10 September fire at the Tampoco Foil factory showed a callous disregard of the Bangladesh Government for workers' safety and a disregard by multi-nationals of the dangers in their supply chains.

The union said that despite having a workforce in excess of 300 there was no union presence in the factory, nor was there a worker-elected safety committee which Bangladesh law states should be present in workplaces with more than 50 workers.

Source: TUC Risks, 770, 1 October 2016

## Final body recovered from Didcot (UK) disaster

The last missing body in the remains of the collapsed Didcot Power Station building has been taken from the site.

A guard of honour was formed as the body, thought to be that of John Shaw, 61, was taken away. Mr Shaw, from Rotherham, was one of four killed during a partial collapse at the Didcot A plant on 23 February 2016.

A joint Thames Valley Police and Health and Safety Executive investigation is ongoing to establish the circumstances of the disaster.

Below: Guard of honour as body believed to be John Shaw leaves Didcot Power Station site. Picture credit: Thames Valley Police

Source: ITC News, 11 September 2016



# AIR POLLUTION

## Magnetic nanoparticles Alzheimer's' Link

Researchers at Lancaster University have discovered tiny magnetic particles from air pollution present in human brains, which they claim could be a potential cause of Alzheimer's disease.

Examining 37 individuals aged between three to 92 years old from Mexico City or Manchester, the researchers found abundant magnetic nanoparticles in brain tissue that they claim "shouldn't be there."

This strongly magnetic mineral is toxic and causes the formation of reactive oxygen species in the human brain, which cause cell damage and death and as such are associated with neurodegenerative diseases— including Alzheimer's disease, the researchers said.

The researchers used spectroscopic analysis to identify the particles as magnetite.

Lead researcher Professor Barbara Maher said "The particles we found are strikingly similar to the magnetite nanospheres that are abundant in the airborne pollution found in urban settings, especially next to busy roads, and which are formed by combustion or frictional heating from vehicle engines or brakes."

Other sources of magnetite particles include open fires and poorly sealed stoves near their homes. Particles smaller than 200 microns are small enough to enter the brain directly after breathing air pollution through the nose.

"Our results indicate that magnetite nanoparticles in the atmosphere can enter the human brain, where they might pose a risk to human health, including conditions such as Alzheimer's' Disease."

Professor Maher added the research "doesn't yet prove a causal link between these particles in the atmosphere and Alzheimer's disease, but it's a potential environmental risk factor that we can't afford to ignore."

Leading Alzheimer's researcher, Professor David Allsop of Lancaster University's Faculty of Health and Medicine said "This finding opens up a whole new avenue for research into a possible environmental factor for a range of different brain diseases."

Source: *AirQualityNews*, 6 September 2016

Power plants, like the one in Tyumen, Russia (pictured below), let off air pollution that contains many nanoparticles, including magnetite. The new study finds this magnetite can make its way into human brains. Source: 2016 American Association for the Advancement of Science





## Air pollution in Nepal causes more deaths than road accidents

Compared to about 2,000 deaths by road accidents in the country, ambient air pollution killed a staggering 9,943 people in Nepal in 2012, according to WHO data, prepared to show country-by-country breakdown of deaths attributable to air pollution.

As many as 36 people out of 100,000 die in Nepal due to various deadly diseases linked to air pollution.

Among the total deaths, stroke killed 3,183 while ischaemic heart disease caused deaths of 3,328 people. Similarly, chronic obstructive pulmonary deaths killed 1,170 while lung cancer and acute respiratory disease claimed lives of 923 and 740 people respectively during the period (2012).

With over one million deaths from dirty air, China tops the WHO list for deadly outdoor air pollution, followed by India and Russia with at least 600,000 and 140,000 deaths respectively. Ambient air pollution, mostly PM2.5 and PM10, was responsible for over three million deaths around the world in the period.

The report states: **“Exposure to air pollutants can affect human health in various ways, leading to increased mortality and morbidity. Today, air pollution is the largest environmental risk factor.”**

Source: MyRepublica, 1 October 2016

## Air pollution limits inadequate to protect public health

Living in the most polluted parts of a city appears to have a similar effect on your blood pressure as becoming overweight, according to the world’s largest ever study of the effects of fossil fuel emission on human health.

Researchers warned their findings showed that current European Union limits on air pollution were not low enough to adequately protect people.

The WHO has warned that air pollution is “wreaking havoc on public health”, while campaigners have described diesel fumes as the “Biggest public health catastrophe since the Black Death.”

A new study investigated the effects of air pollution and traffic noise on 41,000 people in five different countries, Spain, Germany, Norway, Sweden and Denmark.

Professor Barbara Hoffmann of Heinrich-Heine University in Dusseldorf, who led the study, said “As virtually everybody is exposed to air pollution for all of their lives, this leads to a high number of hypertension cases, posing a great burden on the individual and on society. One very important aspect is that these associations can be seen in people living well below current European air pollution standards.”

Source: Independent UK News,



## Air pollution linked to car accidents

Air pollution is bad for the lungs but research in Britain now suggests it is also causing more car accidents.

In one area covering west London, as many as four extra traffic accidents a day could be triggered by a spike in dirty air levels, according to a study by Lutz Sager, an environmental economist at the London School of Economics.

The research suggests that even a small rise in the average concentration of nitrogen dioxide — just 1 microgram per cubic metre — is enough to increase the average number of accidents each day by 2 per cent, with cities suffering the biggest effects.

Mr Sager, who works in the LSE's Grantham Research Institute on Climate Change and the Environment, said he could only speculate about exactly why bad air might be affecting drivers.

It is possible that drivers get distracted by itchy noses or sore eyes, but he suspects it has more to do with the effect on drivers' reaction times. "There is research that shows that students do worse on tests when there are higher amounts of air pollution in the rooms where they have their test sites," he said. "It may be that people feel more tired or are less focused, or have a slower reaction time."

The findings strengthen the case for cutting air pollution and are probably relevant in other parts of the world, he added.

**"Whatever the exact mechanisms responsible, the robust finding of a significant effect of air quality on road safety is important given the high cost of road traffic accidents through damage to vehicles and deaths and injuries to people every day," he said.**

Source: UK Financial Times, 3 October 2016

## Two billion children breathe toxic air worldwide

As Indians awoke on Monday 31 October 2016 to smoke-filled skies from a weekend of festival fireworks, New Delhi's worst season for air pollution began - with dire consequences.

UNICEF says about a third of the two billion children in the world who are breathing toxic air live in northern India and neighbouring countries, risking serious health effects including damage to their lungs, brains and other organs.

For the Indian capital, the alarming numbers are hardly a surprise. New Delhi's air pollution is among the world's worst and spikes every winter because of the season's weak winds and countless garbage fires set alight to help people stay warm.

New Delhi's residents were advised to stay indoors on Monday 31st, with health warnings issued for the young, elderly and those with respiratory or heart conditions. Officials said the high pollution levels were made worse by the ongoing burning of spent crops in agricultural fields in the neighbouring states of Punjab and Haryana.

Anumita Roy Chowdhury of the Centre for Science and Environment said "Children face much higher health risks from air pollution than adults. They breathe twice as quickly, taking in more air relative to their body weight, while their brains and immune systems are still developing and vulnerable."

Source: Katy Daigle, Associated Press, 31 October 2016

*Above: A Delhi traffic policeman talks to a bus driver at an intersection amidst smoke and smog, on the morning following Diwali festival in New Delhi, India, Monday, Oct. 31, 2016. As Indians woke that Monday to smoke-filled skies from a weekend of festival fireworks for the Hindu holiday of Diwali, New Delhi's worst season for air pollution began, with dire consequences. A new report from UNICEF says about a third of the 2 billion children in the world who are breathing toxic air live in northern India and neighbouring countries, risking serious health effects including damage to their lungs, brains and other organs. (AP Photo/Manish Swarup)*

# HEALTH - PHYSICAL

## Impacts of chronic back problems

Chronic back problems are long-term conditions that include specific health conditions such as disc disorders, sciatica and curvature of the spine, and back pain or problems that are not directly associated with a specific disease (such as osteoarthritis).

They are common and associated with high impact on the community in terms of economic and disease burden, as well as on individuals in terms of quality of life and disability.

The Australian Institute of Health and Welfare has released a new report on musculoskeletal conditions as underlying and associated causes of death.

In Australia, an estimated 3.7 million Australians (1 in 6 people) (males/females – similar) had chronic back problems.

In 2011, “back pain and problems” were the third leading cause of disease burden in Australia.

Although musculoskeletal conditions were not among the leading underlying causes of death, the bulletin shows that these conditions were likely to have contributed to about 1 in 20 deaths in Australia in 2013.

Source: AIHW, 14 July 2016

## Targeting gut bacteria to reduce weight

A new therapy that involves engineered gut bacteria may one day help reduce the health problems that come with obesity. Incorporating the engineered bacteria into the guts of mice kept them from gaining weight and protected them against some of the negative health effects of obesity.

More than one-third of adults in the US are obese, putting them at greater risk for conditions such as fatty liver disease -- caused by fatty deposits building up in the liver -- and atherosclerosis, the hardening and narrowing of the arteries. Scientists have recently discovered that the microorganisms living in our gut, known as the gut microbiota, play an important role in obesity and may offer a new therapeutic target.

Researchers at Vanderbilt University are studying whether obesity-related diseases might be treated or even prevented by altering the gut microbiota. To find out, they engineered gut bacteria that produce a small lipid that helps suppress appetite and reduce inflammation. People who are obese typically produce less of this lipid, which is made by the small intestine.

Sean Davies, PhD associate professor said “We have previously shown that this approach with engineered bacteria could inhibit obesity when standard mice were fed a high-fat diet. Our new studies focused on mice highly prone to develop atherosclerosis and fatty liver disease, and we showed that the engineered bacteria were beneficial not only in inhibiting obesity, but also in protecting against fatty liver disease and somewhat against atherosclerosis.”

“Some day in the future, it might be possible to treat the worst effects of obesity simply by administering these bacteria,” Davies said. “Because of the sustainability of gut bacteria, this treatment would not need to be every day.”

Source: ScienceDaily, 27 August 2016

Australian Government  
Australian Institute of Health and Welfare

BULLETIN 136 • JULY 2016




### Musculoskeletal conditions as underlying and associated causes of death

2013

**Summary**

Musculoskeletal conditions are a range of conditions that affect the bones, muscles and connective tissues. In this bulletin, the musculoskeletal conditions reported include osteoarthritis; rheumatoid arthritis; osteoporosis; back problems; gout and other inflammatory arthropathies (inflammation of one or more joints); and lupus and other systemic connective tissue disorders.

Arthritis and musculoskeletal conditions are not commonly recorded as the underlying cause of death; however, they are prevalent chronic diseases affecting 30% of Australians, and are more commonly reported as other causes that contributed to the death.

	1 in 20 deaths in 2013 were directly caused by, or contributed to by, musculoskeletal conditions (6,963 deaths).
	Of any musculoskeletal condition, osteoporosis made the greatest contribution to mortality, contributing to 1,856 deaths—as an underlying cause for 167 deaths and as the associated cause for 1,689 deaths (making it the most common musculoskeletal condition recorded as an associated cause).
<b>81</b>	81 was the average age at death for which musculoskeletal conditions were recorded as the underlying cause, compared with 76 years for deaths due to all causes.
	2 in 3 deaths with a musculoskeletal condition recorded as an underlying cause in 2013 were among females (806 deaths compared with 375 deaths among males).

bulletin 136

## Updated driver medical standards from 1 October 2016

Australians, their doctors and other health professionals will have better guidance on whether they are safe to drive thanks to updated medical guidelines contained in the new edition of *Assessing Fitness to Drive* for commercial and private vehicle drivers.

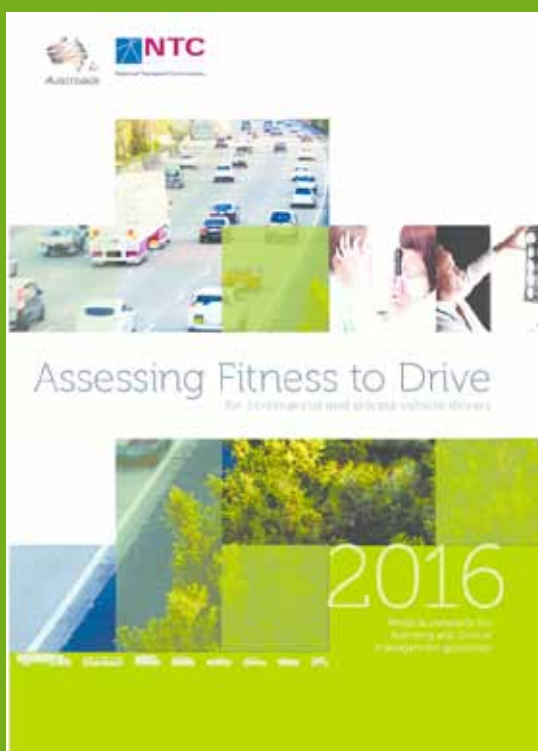
The Chief Executive of the NTC, Paul Retter said the new edition would give health professionals the best available information to help them discuss driving with their patients and assess their patients' ability to drive safely.

The updates also include clearer guidance for health professionals to support consistent assessment and decision making.

**This includes new features such as flow charts to guide assessment of conditions such as epilepsy and dementia, a questionnaire to assist assessment of drivers with diabetes and more detailed information about determining and supporting functional driver capacity.**

The new edition comes into effect on 1 October 2016, from which date all assessments conducted for the purpose of driver licensing should be undertaken according to the updated edition.

Source: NTC News, 1 September 2016



## Exercise great caution when research is funded by vested interests

Using archival documents, a new report published online by *JAMA Internal Medicine* examines the sugar industry's role in coronary heart disease research and suggests the industry sponsored research to influence the scientific debate to cast doubt on the hazards of sugar, and to promote dietary fat as the culprit in heart disease.

The Sugar Research Foundation (SRF) initiated coronary heart disease research in 1965 and its first project was a literature review published in the *New England Journal of Medicine* in 1967. The review focused on fat and cholesterol as the dietary causes of coronary heart disease and downplayed sugar consumption as also a risk factor. SRF set the review's objective, contributed articles to be included and received drafts, while the SRF's funding and role were not disclosed, according to the article.

**The authors of the new report noted that "this historical account of industry efforts demonstrates the importance of having reviews written by people without conflicts of interest and the need for financial disclosure."**

Marion Nestle, PhD., MPH, of New York University, in a related commentary said "This 50-year-old incident may seem like ancient history, but it is quite relevant, not least because it answers some questions germane to our current era. ... The authors have done the nutrition science community a great public service by bringing this historical example to light. May it serve as a warning not only to policy makers, but also to researchers, clinicians, peer reviewers, journal editors, and journalists of the need to consider the harm to scientific credibility and public health when dealing with studies funded by food companies with vested interests in the results -- and to find better ways to fund such studies and to prevent, disclose and manage potentially conflicted interests."

Because coronary heart disease (CHD) is the leading cause of death globally, the health community should ensure that CHD risk is evaluated in future risk assessment of added sugars. Policy making committees should consider giving less weight to food industry funded studies, and include mechanistic and animal studies as well as studies appraising the effect of added sugars on multiple CHD biomarkers and disease development, conclude the researchers.

Source: ScienceDaily, 12 September 2016

## Poor approach to health, safety and welfare results in serious injury

In the UK, an employee who fell about five metres from a two storey detached house, sustaining serious injuries including a fractured spine, was placed in an induced coma for two weeks and remained in hospital for three months.

No scaffolding had been provided – despite the firm being aware it was required - and the work was not being supervised.

The company pleaded guilty to a criminal safety offence and was fined £144,000 and ordered to pay £43,606.15 in costs.

**On appeal, the company was unsuccessful with the District Judge confirming she was satisfied that their approach towards the welfare of their employees was lax and casual, and it was their overall poor management of health and safety that directly led to this incident.**

Source: *TUC Risks*, 767, 10 September 2016

## Chronic back problems affect one in six Australians

An estimated 3.7 million Australians had chronic back problems in 2014–15, according to a report released in August by the Australian Institute for Health and Welfare (AIHW).

The report, *Impacts of Chronic Back Problems*, explains the impact on an individual's quality of life, as well as the impact on the community in terms of economic and disease burden.

Chronic back problems are defined as long-term (6 months or more) health conditions and include disc disorders (such as a herniated disc or disc degeneration); sciatica and curvature of the spine; and pain not caused by another condition such as osteoporosis or osteoarthritis.

People with chronic back problems are more likely to report a poorer quality of life than those in the general population, with similar rates for men and women.

'People with back problems are around two times as likely to say they have poor health, high levels of psychological distress and severe bodily pain, compared with the general population,' said AIHW spokesperson Ann Hunt.

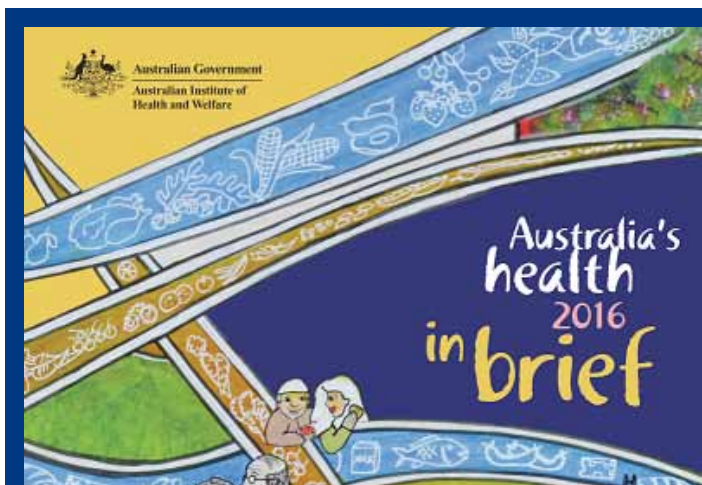
Source: *AIHW*, 16 August 2016

## Australia-wide research could provide "ground breaking" results

A trial involving more than 16,000 Australians taking a daily dose of aspirin will finish next year, with results of the health effects to be announced in 2018. The Aspirin in Reducing Events in the Elderly (ASPREE) trial involves participants taking one tablet per day. More than 30 per cent of participants, or 5,700, in the Australia-wide trial are from regional areas, including 200 people aged over 70.

Project leader, Dr Suzanne Orchard from Monash University, said that although she now had almost six years of data it was not yet possible to extrapolate any early outcomes. To increase the rigour of the research, the trial involves researchers, participants and their GPs not knowing whether the tablet was an aspirin or a placebo. She believes the outcomes would be "ground-breaking".

Source: *ABC News*, 5 October 2016



## Australia's health – then and now

The Australian Institute of Health and Welfare (AIHW) has released "Australia's Health 2016 in Brief", a companion report to "Australia's Health 2016" which presents some key statistics from the main report.

Some of the relevant data includes:

- We are living longer than ever before.
- For the first time, cancer is our biggest overall killer.
- Many of us have chronic disease.
- Heart disease is our leading single cause of death.
- One in seven people will have suicidal thoughts.
- More than 1 million have diabetes.
- Socio economic disadvantage associated with human health.
- Health declines with disease.
- Disability adds to health inequality.

## The quality of occupational health provision deteriorating in the UK

The Head of Safety of the TUC has questioned the effectiveness of some occupational health provision in the UK, with a lot of employers simply using it to monitor sickness absence and less than half actually providing access to rehabilitation.

**He said that a clear move to outsource provision has seen “some dreadful examples of very bad occupational health providers. For many employers occupational health means sending someone to a doctor after they have been off sick for a while to find out if they are ready to come back. These doctors often have no qualifications in occupational medicine.”**

He warns that occupational health provision in the UK is “appalling” with Greece the only EU member state providing less cover.

The proposals contained in the Western Australian draft OHS legislation will need careful scrutiny to ensure that employees here will not suffer a similar fate.

## Queensland tightens legislation to counter black lung

The Queensland Government has introduced stricter rules around dust management, reporting of exposures and medical assessments for coal mine workers.

Regulations will now require coal mining companies to:

- Report dust monitoring results every three months.
- Advise whenever dust concentrations exceed exposure limits.
- Report all identified cases of black lung and certain work-related lung diseases.
- Carry out various health assessments of employees.
- Carry out respiratory function and chest x-ray examinations every five years for underground miners and every 10 years for surface workers.
- Retain results for comparison to past results where available.

Source: *SafetyNetJournal* 384, 19 October 2016

## Occupational health and working conditions at major online retailers under scrutiny

In the UK an investigative report into online fashion retailer Asos, which revealed that the company had subjected 4,000 workers at its Yorkshire warehouse to a brutal workplace regime, has led to the instigation of a parliamentary probe.

In June, a MorningStar report revealed that staff undergo body searches, are denied toilet breaks and some have even had to urinate at drinking water points as there was no time to walk to the toilets.



In addition to body searches, workers are spied on by an increasing number of CCTV cameras and are made to remove their shoes and socks if they trigger an alarm when they leave work.

Staff also have to pass through a security check when they go to the toilet. Security guards are posted outside the toilets and a facility area where they can get a cup of tea.

**The Union GMB regional secretary Neil Derrick said: “These reports show that employment at Asos is not only stressful, invasive, and deeply exploitative but also hazardous to workers’ health. Ignoring the concerns of GMB members has now become downright dangerous.” He added: “Health and safety issues, round the clock, in-your-face surveillance, impossible targets and unfair contracts have created a damaging, anxiety-ridden workplace and our members have been under the cosh for too long.”**

After a written request from GMB, the House of Commons business, innovation, and skills select committee confirmed it will now consider conditions at Asos in its existing inquiries into BHS and Sports Direct. A separate inquiry into Asos was not ruled out by MPs.

Source: *TUC Risks*, 771, 8 October 2016





# Bacteria 'alarm clock' may trigger repeat infections

**Scientists have discovered a bacteria 'alarm clock' that wakes dormant salmonella in the body, allowing the bug to trigger a repeat infection.**

The researchers from Imperial College London say that the 'alarm clock' is shared among different types of bacteria – including Salmonella and E.coli. The findings may explain why some people suffer repeated bouts of infections – for instance, ear or urinary infections – despite taking antibiotics.

The team now hope to use these findings to tackle hard to treat infections.

Dr Sophie Helaine, leader author of the research said "Whenever bacteria such as Salmonella invade the body, around a third of the bugs 'cloak' themselves as a defence mechanism against the body's immune system. They enter a type of stand-by mode possibly to hide from the body's immune system, which means that they are not killed by antibiotics.

The bacteria stop replicating and can remain in this dormant state for days, weeks or even months. When the immune system attack has passed, some bacterial cells spring back to life and trigger another infection.

If we can figure out how to control this mechanism and force the bacteria out of stand-by, we could then treat them with antibiotics to kill them."

Source: RDMag, 19 October 2016

## IARC scientists defend glyphosate cancer ranking

The World Health Organization (WHO) agency that labelled the world's most widely used herbicide a probable cause of cancer in humans has hit back after the agri chemical industry responded with a savage attack on its science and findings.

IARC made the evaluation on glyphosate, the chief ingredient in Monsanto's Roundup in March 2015 and this prompted the British union federation, the TUC, to call on safety representatives to ensure members were not exposed to the product.

Monsanto has labelled the IARC finding as "junk science" and claimed its members are part of an "unelected undemocratic foreign body" despite the fact that the IARC Working Group comprises independent experts from scientific agencies around the world, including its chair Aaron Blair, a scientist emeritus at the US National Cancer Institute.

Australian epidemiologist Professor Lin Fritschi commented that "we were independent and just looked at the science. We had strict rules on what was admissible and came to a conclusion on that evidence. We made the right decision based on the evidence."

The people most at risk are people who use glyphosate a lot, such as farmers and gardeners and they are the ones who should try and reduce their use.

Source: Cancer Hazards, 10 November 2016 NOVEMBER 2016 / MONITOR / 17

# NOISE /HEARING



## HARD OF HEARING? IT MIGHT BE YOUR BRAIN, NOT YOUR EARS

**The reason you may have to say something twice when talking to older people may not be because of their hearing. Researchers have determined that something is going on in the brains of typical older adults that causes them to struggle to follow speech amidst background noise, even when their hearing would be considered normal on a clinical assessment.**

Researchers at the University of Maryland have found that adults aged 61-73 with normal hearing scored significantly worse on speech understanding in noisy environments than adults aged 18-30 with normal hearing.

The researchers, who are all associated with the UMD's Brain and Behavior Initiative, studied two areas of the brain. They looked at the more 'ancestral' midbrain area, which most vertebrate animals -- all the way down to fish -- have, and which does basic processing of all sounds. They also looked at the cortex, which is particularly large in humans and part of which specialises in speech processing.

In the younger subject group, the midbrain generated a signal that matched its task in each case -- looking like speech in the quiet environment, and speech are clearly discernible against a noisy background in the noise environment.

But in the older subject group, the quality of the response to the speech signal was degraded even when in the quiet environment, and the response was even worse in the noisy environment.

The researchers say "Part of the comprehension problems experienced by older adults in both quiet and noise conditions could be linked to age-related imbalance between excitatory and inhibitory neural processes in the brain. This imbalance could impair the brain's ability to correctly process auditory stimuli and could be the main cause of the abnormally high cortical response observed in our study."

"Older people need more time to figure out what a speaker is saying. They are dedicating more of their resources and exerting more effort than younger adults when they are listening to speech."

Lead researcher, Samira Anderson, concluded "The main message is that the older adults in our study have normal hearing as measured on an audiogram, yet they have difficulty understanding speech in noise because the timing aspects of the speech signal are not being accurately encoded. Because they have normal hearing, talking louder does not help. So if someone is having trouble understanding you in a noisy restaurant or in a crowded room, it is most important to speak clearly at a normal or slightly slower than normal rate."

*Source: ScienceDaily, 18 October 2016*

# HEALTH - PSYCHOLOGICAL

## Mental health at work a challenge say employers

Reported mental health issues in the workplace have risen 56 per cent in the past year and almost half of companies in a major survey say at least one employee has committed suicide or been at risk of doing so, according to a new report conducted by Minter Ellison.

Eighty-one per cent of the company representatives responding to a survey said they spent up to 25 per cent of their time managing staff with mental health issues. Depression and anxiety were the most common.

Of the companies surveyed, 44 per cent said that someone on their staff had either committed suicide or attempted to in the previous two years. **But 74 per cent of organisations said they lack formal and specific mental health policies or procedures.**

Minter Ellison partner, Harriet Eager, said that in most cases, employees did not raise mental issues with managers until they were involved in performance management.

"Managers need to increase their preparedness to discuss mental health proactively. They are the ones on the frontline dealing with these issues. So they need to be given the skills to identify issues with staff and training on what words to use when raising it with them" she said.

Source: Australian Financial Review, 7 September 2016

## Caffeine – does it reduce the odds of dementia?

Higher caffeine intake in women is associated with reduced odds of developing dementia or cognitive impairment, according to the results of a new study published in The Journals of Gerontology, Series A: Biological Sciences and Medical Sciences.

Among a group of older women, self-reported caffeine consumption of more than 260 mg per day was associated with a 36 per cent reduction in the risk of incident dementia over 10 years of follow-up. This level is equivalent to two to three 230 ml cups of coffee per day.

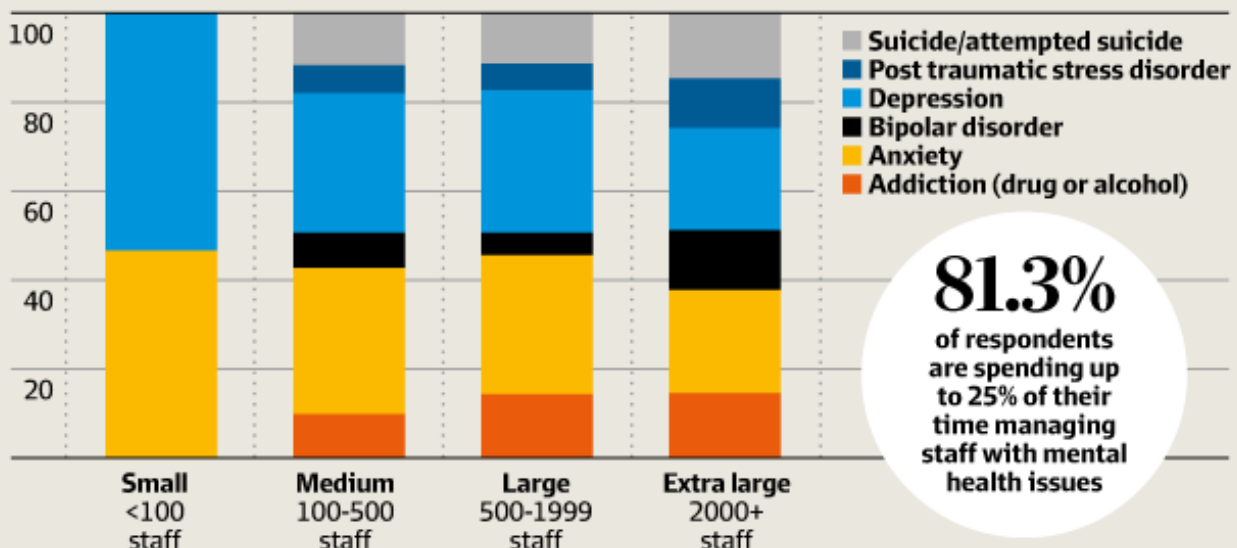
Ira Driscoll, PhD, the study's lead author and her research colleagues used data drawn from 6,467 community-dwelling, post-menopausal women aged 65 or over who reported some level of caffeine consumption.

**Driscoll said that "While we can't make a direct link between higher caffeine consumption and lower incidence of cognitive impairment and dementia, with further study, we can better quantify its relationship with cognitive health outcomes." Research on this topic will be beneficial not only from a preventative stand point but also to better understand the underlying mechanisms and their involvement in dementia and cognitive impairment."**

Source: DDDMag, 7 October 2016

## Feeling the pressure

### Mental health issues presenting in staff in past 2 years by organisation size (%)



SOURCE: MINTERELLISON

# SLEEP / FATIGUE

## Does the body clock work differently for women?

You may have noticed that women are more prone to sleep disturbances than men. They are, for instance, up to twice as likely to suffer from insomnia than men. Could there be a link between the body clock that regulates sleep and being a female or a male? Yes, according to an original study conducted by Dr. Diane B. Boivin of McGill University's Department of Psychiatry and the Douglas Mental Health University Institute.

By controlling for the menstrual cycle and hormonal contraceptive use, Dr. Boivin shows, in the Proceedings of the National Academy of Sciences (PNAS), that the body clock affects sleep and alertness differently in men and women.

**"For a similar sleep schedule, we find that women's body clock causes them to fall asleep and wake up earlier than men. The reason is simple: their body clock is shifted to a more easterly time zone," says the Director of the Centre for Study and Treatment of Circadian Rhythms at the Douglas Institute, one of the research centres of the CIUSSS de l'Ouest-de-l'Île-de-Montréal.**

And, she adds, "This observed difference between the sexes is essential for understanding why women are more prone to disturbed sleep than men."

Importantly, the results of this study hint that women could be less biologically suited for night work. Further research will be necessary to explore this matter and develop interventions suited to men's and women's health.

Source: ScienceDaily, 12 September 2016



## There's a 'switch' in our brains that wakes us up

Oxford University researchers have discovered what causes a switch to flip in our brains and wake us up. The discovery, published in the journal Nature, brings us closer to understanding the mystery of sleep.

Sleep is governed by two systems—the circadian clock and the sleep homeostat. While the circadian clock is quite well understood, very little is known about the sleep homeostat.

Professor Gero Miesenböck, in whose laboratory the new research was conducted, explained: "The circadian clock allows us to anticipate predictable changes in our environment that are caused by the Earth's rotation. As such, it makes sure we do our sleeping when it hurts us least, but it doesn't speak to the mystery of why we need to sleep in the first place."

That explanation will likely come from understanding the second controller—called the sleep homeostat. The homeostat measures something—and we don't know what that something is—that happens in our brains while we are awake, and when that something hits a certain ceiling, we go to sleep. The system is reset during sleep, and the cycle begins anew when we wake up.

The sleep switch is a 'hard' switch, meaning that it is either on or off. "That makes sense," said Miesenböck. "You want to be either asleep or awake but not drift through twilight states."

Dr Diogo Pimentel, one of the two lead authors of the study, said: "Being able to operate the sleep switch at will has given us a chance to find out how it works."

Lead author Dr Jeff Donlea said: "In principle, this is a device that's similar to the thermostat on the wall of your living room. But instead of measuring temperature and turning on the heat when it is too cold, this device turns on sleep when your sleep need exceeds a set point."

**As Prof. Miesenböck explained: "The billion-dollar question in all of this is: what is the equivalent of temperature in this system? In other words, what does the sleep homeostat measure? If we knew the answer, we'd be one giant step closer to unravelling the mystery of sleep."**

Source:

# TRAINING

## A Curriculum for Teaching Workers with Intellectual and Developmental Disabilities about Health and Safety on the Job

The rate of workplace injury among employees in vocational rehabilitation programs is more than 60% higher than that of injured workers as a whole (out of every 100 workers in these settings, 5.5 workers get injured on the job as compared to 3.2 out of 100 workers who get injured on the job in general work settings).

Jobs performed in sheltered employment settings and by workers with intellectual and developmental disabilities (IDD) in general can be hazardous.

One reason for the shortage of occupational health and safety training for workers with IDD has been the lack of curriculum for schools, support agencies, and employers.

**The University of California with support from NIOSH has developed a Safety and Health Curriculum for Workers with IDD. Staying Safe at Work is a six-lesson training program designed to teach basic occupational safety and health knowledge and skills to young and older workers, and students with disabilities.**

The curriculum is intended for supported employment agencies, community vocational rehabilitation programs, high school transition programs and other organisations that place in jobs or hire workers with IDD.

The curriculum uses highly interactive and fun learning activities to teach workplace safety and health skills, which are general, transferable, and can apply across all jobs and industries.

Source: NIOSH, September 2016



## Arrest highlights big safety training problem

A Sydney man has been arrested and charged with the fraudulent supply of Work Health and Safety Induction Cards to unqualified workers, in a joint operation between NSW and Federal police.

Police will allege the man, who purported to work for a registered training provider, completed white cards training while pretending to be other people, before providing the resultant white cards to those people for a fee.

**CFMEU national secretary Dave Noonan said the union had been opposed to online white card training since it was first conceived. He said "we wouldn't accept driver licences being handed out online without proof of identity, yet regulators have turned a blind eye to this practice in construction."**

The union is calling for mandatory face-to-face safety inductions.

Source: OHS Alert, 23 September 2016

Left: The alleged fraudster (right) shortly after his arrest



## ILO to modernise networking practices

The International Labour Organization (ILO) has undertaken to modernise international networking practices in occupational safety and health as part of the ongoing ILO policy portfolio and management reform.

They are conducting a global survey with the aim of constituting a comprehensive knowledge base on the scope of work, structure, functioning modalities, technical capacity and networking practices of OSH agencies, institutions and organisations that are actively engaged in OSH knowledge development through research, studies and analytical work.

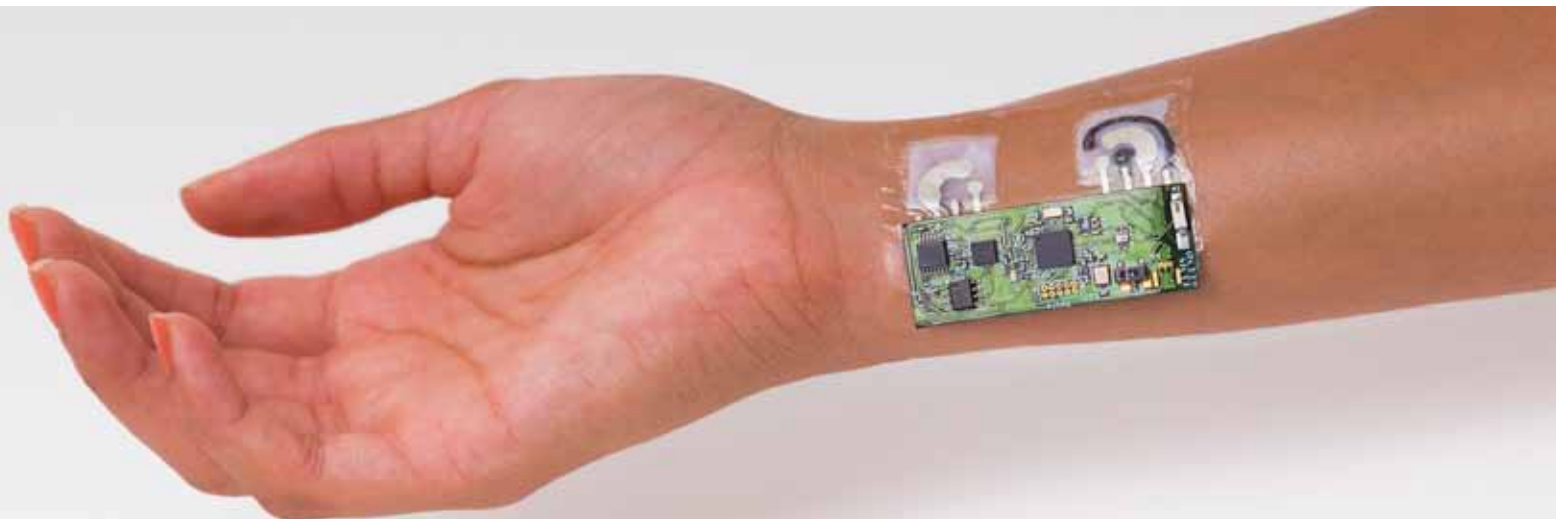
The survey contains the following eight sections:

- 1-2: General information on key functions and scope of work
- 3: Governance and management
- 4: Research priorities, topics and outcome sharing
- 5: Organisation and delivery of services
- 6: Practices in public awareness raising
- 7: International networking
- 8: Resources

Results will be released during the World Congress of OSH in Singapore in September 2017.

Source: ILO

## Legal/Illegal Drugs



### Wearable sensor sends alcohol levels to your cell phone

Engineers funded by the USA National Institute of Biomedical Imaging and Bioengineering (NIBIB) have developed a small monitoring device, worn on the skin, that detects alcohol levels in perspiration. It was designed as a convenient method for individuals to monitor their alcohol intake, which could help reduce unsafe drinking which can lead to vehicle crashes, violence, and the degeneration of the health of heavy drinkers.

Seila Selimovic, Ph.D., director of the NIBIB Program in Tissue Chips, explains the new technology.

“It resembles a temporary tattoo, but is actually a biosensor patch that is embedded with several flexible wireless components. One component releases a chemical that stimulates perspiration on the skin below the patch. Another component senses changes in the electrical current flowing through the generated sweat, which measures alcohol levels and sends them to the user’s cell phone.”

The new wearable monitor has the advantage of being non-invasive and unseen by others, for example in a bar – features that could make its use more attractive to individuals.

Professor Patrick Mercier, Ph.D. at UCSD’s Jacobs School of Engineering and co-senior author said of the advantages of their technology design. “Measuring alcohol in sweat has been attempted before, but those technologies took 2-3 hours to measure alcohol levels. Our patch sends alcohol levels to your smartphone in just 8 minutes, making real-time alcohol monitoring possible, practical, and personal.”

Source: ScienceDaily, 17 October 2016

# HAZARDOUS MATERIALS

## USA industries rushing to defend their products

A new US chemical safety law has triggered an immediate response from chemical producers – a rush to make sure their favourites are at the back of the queue for official scrutiny.

The law, passed in June, gave the US-EPA the authority needed to evaluate and regulate the tens of thousands of commercial chemicals it oversees in the US.

The new law was hailed as a more transparent 'new risk-based safety standard', replacing the Toxic Substances Control Act.

While industry groups are actively defending the toxic substances they produce or use, other stakeholders are calling on the EPA to make these high risk substances a priority.

Chemical safety journalist, Elizabeth Grossman, says the "keep off" list are top causes of cancer, including asbestos, benzidine dyes and vinyl chloride monomer.

*Source: OHS Repts SafetyNetJournal, 380, 21 September 2016*

## Thailand and Bhutan cooperate to provide chemical management program

A team of international training experts in the field of risk assessment and risk management of chemicals led by the Chulabhorn Research Institute, Bangkok, Thailand travelled to Bhutan to conduct in-country training in collaboration with Bhutan's Ministry of Health and the World Health Organisation (1-4 June 2016).

The training course was developed to provide basic scientific knowledge of the principles and concepts of risk assessment and the process involved to illustrate how risk assessments are conducted and what different issues are involved.

The training course was attended by 34 participants from various governmental agencies and academic institutions.

In addition to attending lectures, participants worked on several different case studies, including occupational and environmental exposures to benzene, health risks of polychlorinated biphenyls in indoor air from construction materials and the health effects of arsenic in drinking water as well as presentations by attendees to demonstrate their understanding of the risk assessment process.

*Source: Chulabhorn Research Institute, Newsletter Jul 2016*



## Chemical regulation drives safety improvements

Regulations are 'critical drivers' encouraging industry to substitute hazardous chemicals, a new study has found. Joel Tickner and Molly Jacobs from the Lowell Centre for Sustainable Production at the University of Massachusetts, Lowell, concluded the biggest hindrances are too few staff and resources focused on substitution, ignorance of safer alternatives and limited information in the supply chains.

Geert Dancet, executive director of ECHA, the European Chemicals Agency, which commissioned the report said "I believe that this work lists concrete proposals that regulators and industry should seriously consider to implement."

Professor Tickner, the report co-author, commented: "One aspect, where Europe can learn from the US, is that the pressure to substitute hazardous chemicals in the US derives more through the supply chains, where the retailers and brands play a key role. In Europe, regulations seem to be a more important driver. Improved sectoral and supply chain collaboration and information sharing could accelerate substitution in Europe even before regulatory actions are taken."

Source: *TUC Risks*, 767, 10 September 2016



## Nail salon workers at risk of severe ailments

In late July, the New York State Department of Health issued a report on workers exposed to hazardous chemicals in nail salons. The report's authors reviewed the scientific literature and consulted experts from health and environmental agencies across the United States and found that people working in the nail care industry are potentially exposed to about 100 chemicals that are present in manicure products, including some carcinogens (benzene, formaldehyde and toluene).

When examining the labelling of nail products, they also found discrepancies between the chemicals listed and the chemicals actually present in the product. For instance, toluene was found in 10 out of 12 products, with labels stipulating that there were "toluene free".

The authors considered that long-term exposure to the products used in nail salons could result in a variety of ailments, ranging from headaches, irritations of the skin, eyes and respiratory system to chronic disease as severe as cancer and other illnesses affecting various organs or systems, including the reproductive system.

Following the release of the report, the Governor of the State of New York announced the entry into effect in October of new regulations imposing ventilation requirements in nail salons across the state.

Source: *ETUI*, 9 September 2016



## WorkCover Queensland issues new asbestos health monitoring guide

WorkCover Queensland has released new guidance material on asbestos health monitoring developed following consultation with unions, industry associations, occupational health specialists and the Asbestos Related Support Society of Queensland.

The guidance covers when asbestos health monitoring is required for workers carrying out licensed asbestos removal work, other non-licensed asbestos removal work and asbestos related work. It also clarifies that health monitoring is not required for incidental or one-off exposure to airborne asbestos fibre.

Health monitoring for asbestos includes:

- considering the worker's demographic, medical and occupational history
- considering records of the worker's personal exposure
- a physical examination of the worker with emphasis on the respiratory system.

Health monitoring would not ordinarily include a chest X-ray unless clinically recommended.

Other requirements for PCBUs (person in control of a business or undertaking) include:

- ensuring health monitoring is carried out by or done under the supervision of a registered medical practitioner with experience in health monitoring
- consulting workers about choosing the registered medical practitioner for the health monitoring
- paying all expenses relating to asbestos health monitoring
- taking all reasonable steps to obtain the health monitoring report from the medical practitioner as soon as practicable, and giving the worker a copy of the report
- keeping the worker's health monitoring report as a confidential record and not providing it to anyone without the worker's written consent.

For more information about asbestos health monitoring visit [www.asbestos.qld.gov.au](http://www.asbestos.qld.gov.au)

# CANCERS

## Link between cancer and obesity not well recognised

Three out of four (75 per cent) people in the UK are unaware of the link between obesity and cancer, according to a new Cancer Research UK nationwide survey. The survey also found that people from lower socioeconomic backgrounds are less likely to know about the link. And men are less likely than women to be aware of the increased risk of cancer caused by obesity.

As well as general ignorance about obesity and cancer, the survey showed that more than three-quarters (78 per cent) of those asked didn't know obesity was linked specifically to ovarian cancer.

More than two thirds (69 per cent) didn't know there was a link with breast cancer and more than half (53 per cent) didn't know pancreatic cancer was linked to obesity.

There was better awareness of the link with bowel cancer, with 60 per cent of those surveyed knowing the association and 55 per cent of people linking obesity with liver cancer.

A recent report by Cancer Research UK and the UK Health Forum estimated that if current trends of being overweight and obese continued, there would be a further 670,000 cancer cases over the next 20 years. The report also found that the number of obese people would be higher among lower income groups.

**Dr Julie Sharp, Cancer Research UK's head of health information said "A quarter of all UK adults are estimated to be obese, and this has a real impact on their risk of developing cancer. Eating a healthy balanced diet and becoming more active can help people to keep a healthy weight. And encouraging children and teenagers to do the same can help them keep to a healthy weight later on in life."**

**Alison Cox, director of prevention, added "Cancer isn't at the forefront of people's minds when talking about obesity and that's really concerning. Few understand that excess weight increases the risk of several cancers, including some of the most common such as breast cancer."**

*Source: ScienceDaily, 8 September 2016*



## Does eye colour increase cancer risk?

In a new study, scientists from the Ohio State University Comprehensive Cancer Center – Arthur G James Cancer Hospital and Richard J Solove Research Institute and cancer geneticist Tomas Kirchoff, PhD of the Perlmutter Cancer Center of NYU School of Medicine report the first evidence of a strong association between genes linked to eye colour and the development of uveal cancer.

**Lead researcher, ophthalmologic pathologist and cancer geneticist Mohamed Abdel-Rahman, MD, PhD, says “This is a very important discovery that will guide future research efforts to explore the interactions of these pigmentary genes with other genetic and environmental risk factors in cancers not linked to sun exposure, such as eye melanoma. This could provide a paradigm shift in the field. Our study suggests that in eye melanoma the pigmentation difference may play a direct cancer-driving role, not related to sunlight protection.”**

Because there is a known clinical connection between eye melanoma and skin cancer, in this study researchers sought to determine whether there were commonly shared genetic risk factors between both diseases, as the inherited genetic risk of skin melanoma has been more extensively explored in previous medical literature.

The team analysed 29 inherited genetic mutations previously linked with skin melanoma to determine if there was an associated risk of uveal melanoma.

The analysis revealed that five genetic mutations were significantly associated with uveal melanoma risk. The three most significant genetic associations occurred in a genetic region that determines eye colour.

“The data indicates for the first time, that there is a shared genetic susceptibility to both skin and uveal melanoma mediated by genetic determination of eye colour. This knowledge may have direct implications in the deeper molecular understanding of both diseases,” say the researchers.

Researchers expect the data presented in this study to fuel the formation of large national and international research consortiums to conduct comprehensive, systematic analysis of inherited (germline) genome data in large cohorts of uveal melanoma patients.

*Source: Ohio State University, Media Release 22 August 2016*

## How melanoma spreads to other organs

In a landmark discovery, researchers at Tel Aviv University have unravelled the metastatic mechanism of melanoma, the most aggressive of all skin cancers.

The scientists discovered that before spreading to other organs, a melanoma tumour sends out tiny vesicles containing molecules of micro RNA which induce morphological changes in the dermis (the dense layer of skin beneath the epidermis, or outer layer of skin) in preparation for receiving and transporting the cancer cells. The researchers also found chemical substances that can stop the process and are therefore promising drug candidates.

“The threat of melanoma is not in the initial tumour that appears on the skin, but rather in the metastasis – in the tumour cells sent off to colonise in vital organs like the brain, lungs, liver and bones” said research leader, Dr Carmit Levy of the TAV’s Sackler School of Medicine.

Having discovered the mechanism the researchers proceeded to look for substances that could intervene and block the process in its earliest stages. They found two such chemicals which were tested successfully in the lab and may serve as promising candidates for future drugs.

Dr Levy said “Our study is an important step on the road to a full remedy for the deadliest skin cancer. We hope that our findings will help turn melanoma into a nonthreatening, easily curable disease.”

*Source: ScienceDaily, 22 August 2016*

## Mesothelioma incidence in the Netherlands

Every year in the Netherlands, approximately 500 people are diagnosed with mesothelioma and this figure has been stable since 2005. In absolute terms, the number of persons diagnosed with mesothelioma has doubled since the early 1980s.

Of the victims, 90% were men and 80% were over 65 years old. The average age of diagnosis is gradually increasing over the years. One quarter of the patients died within a period of three months; two thirds within the year.

Declining rates in some provinces result from the closure in the 1970s of shipyards. In the meantime, many former dockers have died as a result of exposure to asbestos at work.

*Source: ETUI, 13 October 2016*

# NANO

## Desktop 3D printers – their ultrafine and nano particle emissions

Desktop versions of 3D printers are now making it possible to turn our homes, offices, and classrooms into small-scale manufacturing facilities, giving us the ability to create an endless variety of products with just a computer, 3D printer, and plastic fibre building material.

Commercially available desktop printers can emit substantial amounts of ultrafine particles (UFPs) in indoor air. UFPs are tiny particles less than 100 nanometres in diameter. A human hair is approximately 60,000 nanometres wide.

**However, according to a recent Finnish study, a significant amount of ultrafine and nanoparticles are emitted into the air by these printers while they are used. As desktop 3D printers become more commonplace, it’s important to recognise the risks of exposure to these particles and learn about the controls that can be put in place to help safely reduce and prevent exposure.**

Emissions tests conducted by the National Institute of Occupational Safety and Health (NIOSH) showed that desktop 3D printers released high numbers of particles. The emission levels peaked a few minutes after printing began and did not return to zero until about 100 minutes after printing ended.

The emissions also varied by the material used.

Exposure to small particles has important health implications. UFPs can penetrate the lungs and lead to inflammation, headaches, and negative cardiovascular effects. Inhaled UFPs are deposited throughout the respiratory tract and may pass through different protective barriers into the bloodstream, harming other organ systems.

**Since most desktop 3D printers are not equipped with exhaust ventilation or filtration accessories, it is important to identify the physical and chemical properties of their emissions to better understand exposure potential and risk when using this technology in non-industrial settings.**

*Source: Canadian Centre for Occupational Health and Safety, Report Vol 14, Issue 8*

# WORKERS' COMPENSATION

## Samsung lung cancer deaths were 'occupational'

The first officially recognised cases of occupational lung cancer among Samsung Electronics' semi-conductor\* workers have been accepted as work-related by the Korean Workers' Compensation and Welfare Services.

According to the ruling, "the deceased appear to have been continuously exposed to arsenic while performing their duties, and given that their diagnoses of, and deaths from, lung cancer came at an early age in the absence of other risk factors, a connection with their duties is recognised."

Arsenic is a known cause of lung cancer.

**SHARPS (Supporters for the Health and Rights of People in the Semi-Conductor Industry), the Seoul based health and safety campaign group for Samsung victims said that the ruling meant that Korean authorities now recognise officially eight conditions as occupationally related to semi-conductor work – leukaemia; lymphoma; aplastic anaemia; breast cancer; chronic inflammatory demyelinating polyneuropathy; brain cancer; ovarian cancer; and lung cancer.**

\* A substance that does not conduct electricity at low temperatures but does at higher temperatures. Used especially as a base material for computer chips and other electrical devices.

Source: *Cancer Hazards*, 6 October 2016



Above: Activists and other people gathered in front of Samsung Town in Seocho District, Seoul, make flower patterns and traditional carvings on March 20, 2016, to commemorate 76 workers who died from occupational diseases related to Samsung Electronics' semiconductor operations. The statue of a patient wearing a hospital gown symbolises workers who have died from leukaemia Pic: Source: *Shin So-young, The Hankyoreh*

## Lack of employer remorse a factor in major compensation award

The Federal Court has ordered more than \$1,272,109 in damages and compensation, and \$24,600 in interest payments be paid to a coal miner victimised and stood down by Rio Tinto, an amount nearly unprecedented in workplace disputes.

The employer injured his neck while driving a bulldozer in 2010, an injury that Rio Tinto admitted was caused by the company's negligence.

He continued to work at the mine for three years and it was not until the Queensland District Court awarded him \$630,000 in November 2013 as compensation for his injuries that Rio Tinto stood him down.

The Federal Court found that Rio Tinto's decision to stand down the employee was done in retaliation for his winning his damages claim, and was in breach of the Fair Work Act.

Justice Reeves highlighted the lack of remorse that the company had for the action as a major factor in the decision.

Source: *OHS Repts SafetyNetJournal* 378, 7 September 2016

## New WorkCover WA Guidelines for the evaluation of permanent impairment

WorkCover WA has issued updated Guidelines for the Evaluation of Permanent Impairment, with an operational date of 1 December 2016.

The Guidelines are used by Approved Medical Specialists when performing an evaluation of permanent impairment under the Workers' Compensation and Injury Management Act 1981.

Copies of the Guidelines and supporting documentation can be found at [www.workcover.wa.gov.au](http://www.workcover.wa.gov.au)

# Subscription to the *Monitor*

The *Monitor* is published by the Occupational Health Society of Australia (WA).

It is the only publication available at this time that provides readers with information on events and research being carried out worldwide, ensuring a wide and authoritative coverage of occupational health, hygiene, workers' compensation and safety.

Readers of the *Monitor* are therefore being encouraged to apply for Membership to the Society.

The Committee feels that membership of the Society is warranted and the nominal fees assist in ensuring the continuation of the *Monitor*.

Members enjoy discounts at events organised by the Society.

The membership application form is located at the last page of this edition.



## Occupational Health Society of Australia (WA)



Membership of the Society is open to all those interested in occupational health and safety.

\$50 ordinary membership

\$20 student membership.

Simply email [safety@marcsta.com](mailto:safety@marcsta.com) with your details.

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.**

### Membership Fees

At the first meeting of the incoming Committee of the Society on 26 February, 2016 the matter of annual subscriptions was considered at length. It was agreed that the current fees should be retained at \$50 for ordinary members and \$20 for students.



## Occupational Health Society of Australia (WA)

### Members - Ordinary

Dean BUTLER, OccuMed  
Forbeteh Walters CHENWI, Safety Agency Cameroon  
Alan CLARKSON (COHSPrac), SHEQ Australia  
Allaine COLEMAN, CGU Workers' Compensation  
Dr Peter CONNAUGHTON  
Maria DANIEL  
Chrissie FEARON, Mates in Construction WA Ltd  
Debbie GASKIN, DFES  
Paulette GAYTON  
Lynette GILBERT, QHSE Consultant, Tidehill Pty Ltd  
Patrick GILROY AM, MARCSTA  
Ross GRAHAM  
Antony GREEN, Holcim  
Zoe HOLDAWAY, Zone Workplace Health Solutions  
Chris JACOBS  
Dr Janis JANSZ, Curtin University  
Ralph KEEGAN, Frontline Safety and Training Services  
Sheryl KELLY, Kreating Inventive Safety Solutions  
Dave LAMPARD, WA Police Union  
Shona LINDLEY, Jardine Lloyd Thompson  
Robert LOERMANS  
Kylie LONGHURST, Prensa Pty Ltd  
Dr John LOW, OccuMed  
Joe MAGLIZZA, Holcim Australia Pty Ltd  
Alison MARTINS, OH&S Consulting  
Peter McMAHON, Safety Expertise Australia  
Peter NICHOLLS, FMR Investments  
Dr Nicol ORMONDE, Ormonde Health Consulting  
Dr Karina POWERS, Ability OPN  
Dan RAYNER, Bengalla Mining Company Pty Ltd  
Peter ROHAN, Department of Mines and Petroleum  
Paula SINCLAIR  
Geoffrey SWAN  
Prof Geoffrey TAYLOR, Curtin University  
Dr Kar Chan WAN, OccuMed

### Members - Student

Said ABDILAH, Student, Curtin University  
Muhammad AHMED, Student, Curtin University  
Georgina GREENLAND, Student, Curtin University  
Rachel HAMMOND, Student, Curtin University  
Jacqueline LUSENO, Student, Curtin University  
Deepak MARU, Student, Curtin University  
Tim RICHARDS, Student, Curtin University  
Izzie SHMUKLER, Student  
Stephen WALKER, Student, Curtin University  
Bronte WEEKES, Student, Curtin University



# Occupational Health Society of Australia (WA)

## APPLICATION FOR MEMBERSHIP

### MEMBER INFORMATION

Title (Mr, Mrs, Ms, Dr etc)	
Firstname	
Surname	

### PREFERRED MAILING DETAILS

Address			
Suburb		Postcode	
Home Phone			
Mobile			
E-Mail			

### EMPLOYMENT INFORMATION – Only complete if you wish company to be recorded against your name

Company/Self Employed	
Work Phone	
E-Mail	

### EDUCATIONAL/PROFESSIONAL DETAILS (if applicable)

Please attach your resume.

### APPLICATION FOR: (an invoice will be issued)

- Student Membership \$20       General Membership \$50

### AGREEMENT / SIGNATURE

I certify that the information provided in this application is correct and I agree to adhere to the constitution and code of ethics of the Association. I also give consent to the Society to collect, use and disclose my personal information in accordance with the National Privacy Principles in matters relating to the Society.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Email to [safety@marcsta.com](mailto:safety@marcsta.com)