



Google's leading futurist predicts humans will start living forever by 2020

Google's chief futurist, Ray Kurzweil, has predicted that humans are going to live forever, and he thinks it's going to happen as soon as 2029.

According to Kurzweil's calculations, *Singularity* — the merging of human intelligence with nonbiological intelligence, or technology — will happen in 2045.

He says that "the nonbiological intelligence created in that year will reach a level that's a billion times more powerful than all human intelligence today." He added: "But there will be dramatic changes prior to that."

"By the 2020s we'll start using nanobots to complete the job of the immune system," he said. "Our immune system is great, but it evolved thousands of years ago when conditions were different."

He believes that nanobots — microscopic, self-propelled robots — will act as T cells, which are blood cells involved in our immune responses. Using T cells to attack cancer cells is already an idea that researchers are using in some cancer immunotherapy, but Kurzweil wants to take it a step further. Instead of harnessing the body's own T cells, he wants to send in nanobots to do the job.

"They're the size of a blood cell and are quite intelligent," he said. "I actually watched one of my T cells attack bacteria on a microscope slide. We could have one programmed to deal with all pathogens and could download new software from the internet if a new type of enemy such as a new biological virus emerged."

"I believe we will reach a point around 2029 when medical technologies will add one additional year every year to your life expectancy," he told Hochman. "By that I don't mean life expectancy based on your birthdate, but rather your remaining life expectancy."

The US National Cancer Institute supports nano technology with its Alliance for Nanotechnology in Cancers.

Source: *ScienceExplorer*, 4 May 2016. Picture Ray Kurzweil. Credit Ed Schipul/Wikipedia (CC by SA2.0)



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Legislative/regulatory matters

WA Work Health and Safety Regulations under review

WorkSafe WA has announced that it will be undertaking a review of the model Work Health and Safety Regulations despite the fact that the Government has not yet decided to adopt the model legislation.

The key principles of the review are to identify where the regulations could be modified to make them more suitable for the Western Australian working environment, minimise prescription and keep the burden of compliance at an acceptable level.

A Discussion Paper has now been released for a public consultation period of three months ending on 31 August 2016.

The Occupational Health Society of Australia (WA) will be responding to the relevant occupational health and hygiene issues contained in the review and any reader interested in these matters is invited to participate.

Contact safety@marcsta.com if you are interested in participating.

The Discussion Paper can be downloaded from:

https://www.commerce.wa.gov.au/sites/default/files/atoms/files/discussion_paper.pdf

UK Health and Safety Executive (HSE) to be downsized

The UK's health and safety watchdog is not the regulator, enforcer or guide it used to be – and things could be about to get a lot worse. The UK's HSE is to undergo huge budget cuts over the next three years. It follows earlier cuts and a dramatic decline in workplace safety inspections and enforcement.

A new HSE strategy document says everyone must 'act together' but includes no new targets, concrete plans or regulatory proposals

The HSE's Business Plan for 2016/17 gives more insights, notes Hugh Robertson, head of safety at TUC.

"In 2009/10 before the coalition government came to power, the HSE received £231 million from Government. In 2019/20 it will receive £123 million, a reduction of 46 percent in 10 years."

According to the Business Plan, HSE funding will drop by more than 12 percent over the next three years.

Source: OHS Repts SafetyNetJournal, 358, 13 April 2016



Chemical supply company fined \$5000 for failing to report serious incident

A chemical supply company located in Bassendean, WA has been fined \$5000 by the Department of Mines and Petroleum for failing to report a dangerous goods incident which caused significant burns to one of its workers.

The incident occurred in March 2015 when a quantity of sulphuric acid spilt into a bund, a specially-built spill containment structure, and a supervisor entered the bund before the spill had been neutralised. The supervisor received significant burns to his lower right leg, requiring skin grafts and ongoing medical care.

The Department of Mines and Petroleum was not notified by the company and only became aware of the incident after being contacted by WorkSafe and the injured supervisor's wife.

While investigating the incident the department discovered that the company was unaware of its obligations regarding reportable incidents.

Source: Department of Mines and Petroleum Media Release, 25 May 2016



US OSHA – high hazard industries to post injury and illness data on websites

In May the US Occupational Safety and Health Administration introduced a new rule requiring employers in high-hazard industries to send OSHA the injury and illness data they are already required to collect, for posting on the agency's website.

OSHA believes that public disclosure of work injury data will encourage employers to increase their efforts to prevent work-related injuries and illnesses.

David Michaels, who heads the regulator, said: "Our new reporting requirements will 'nudge' employers to prevent worker injuries and illnesses and demonstrate to investors, job seekers, customers and the public that they operate safe and well-managed facilities. Access to injury data will also help OSHA better target our compliance assistance and enforcement resources at establishments where workers are at greatest risk, and enable 'big data' researchers to apply their skills to making workplaces safer."

Hugh Robertson, head of safety at the UK's Trade Union Congress says that if the UK authorities want to nudge employers into safer and healthier behaviour, the US is showing it the way to go.

According to Robertson "There is no question that this is a really positive step forward and the TUC will be calling on the Health and Safety Executive (HSE) to do that here. We already have a prosecutions database. An injury one is just the next step forward."

Source: TUC Risks, 751, 21 May 2016

SAFETY



OIL INDUSTRY DECLINE RESULTS IN SAFETY DECLINE

The first fatal helicopter accident in Norway's oil industry since 1997 occurred on 29 April when a helicopter crashed on the way back from an oil platform killing 13 people.

While the cause of the crash is still unknown, the accident is a "wake-up call" said Leif Sande, the leader of Industry Energy, the biggest oil union in the country.

The accident happened as petroleum producers are cutting spending and trimming costs for the second consecutive year to adapt to a collapse in crude prices.

In an annual report published the day before the crash, the Petroleum Safety Authority (PSA), the industry watchdog, said safety could be at a "cross roads". An indicator gauging the risk of serious accidents rose for the first time last year since 2012 after reaching a record low in 2014, it said.

The picture above shows police and rescue workers investigating at the scene following the helicopter crash.

Source: TUC Risks, 749, 7 May 2016. Pic Torstein Boe/NTB Scanpix via AP, Norway Out)

Major UK construction firm heavily fined for trench fatality

A construction giant (Balfour Beatty) has been fined UK£ 2.6 million following the death of an employee working in a trench which collapsed on him in Lancashire.

The court heard that the employer failed to adequately risk assess the works or control the way in which the excavation took place.

The company pleaded guilty to three criminal offences.

Source: TUC Risks, 750, 14 May 2016

Overview of Dangerous Goods, Reportable Situations and Incidents

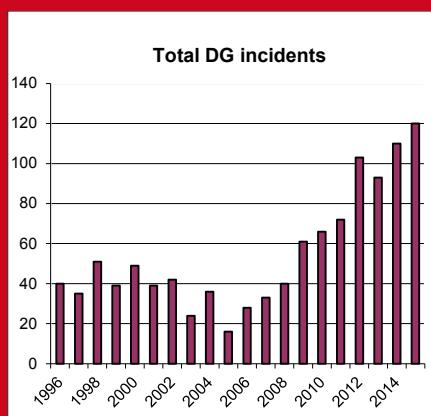
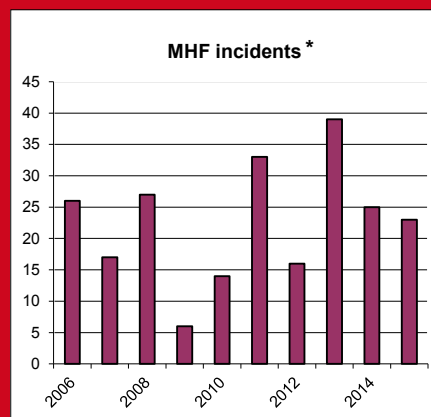
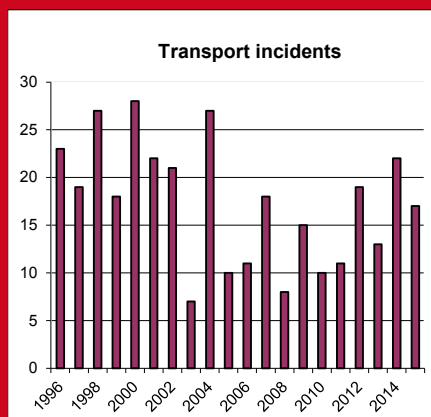
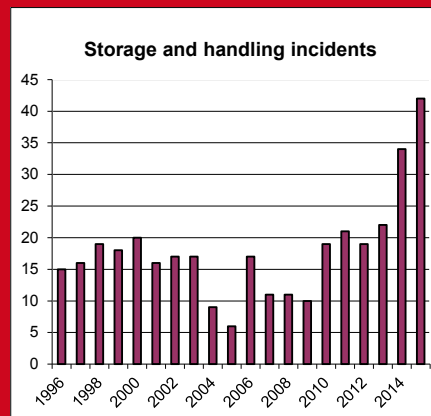
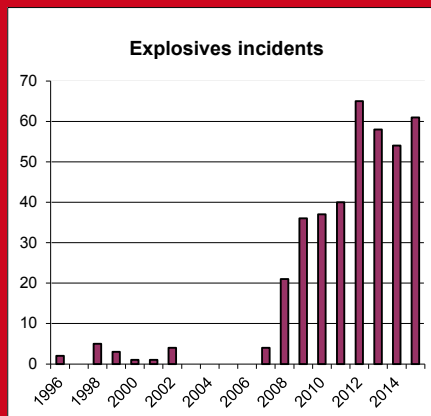
The Department of Mines and Petroleum has published a report "Overview of Dangerous Goods, Reportable Situations and Incidents 2015" which describes dangerous goods (DG) and explosives incidents that occurred in 2015.

The report also compares the 2015 incident data with comparable data collected since 1996 and provides some statistical analysis of incident data for that period.

The report is an informative and useful resource for those professionals concerned with the use and handling of dangerous goods.

Source: Department of Mines and Petroleum, May 2016

Number of reportable situations and incidents for 1996–2015



*Major Hazard Facility

Bipartisan support for OHS penalty increase for reckless endangerment

The Victorian Government recently introduced legislation to increase the maximum penalty for a body corporate found guilty of recklessly endangering people at workplaces to \$3,033,400 making it higher than for an equivalent breach of the model WHS Act.

Victoria's Opposition Shadow Finance Minister has supported the legislation saying that the existing maximum penalty did not reflect "the seriousness of the offence as the Parliament had conceived it." He added "you need to make sure that the penalty reflects the severity of the breach of the Act."

Source: SafetyNetJournal, 361, 4 May 2016

Regulatory options for

automated vehicles



The National Transport Commission released regulatory options in May for automated vehicles in a discussion paper that finds a number of barriers to increasing vehicle automation.

The NTC will take recommendations to Australia's transport ministers when they meet in November. Chief Executive Paul Retter says that "stakeholders now have the opportunity to tell us how to make sure we have the best possible national laws for our national economy and our local communities."

Some of the questions that will need to be resolved include:

- How can governments enable on-road trials of automated vehicles nationally?
- How can governments help clarify who is controlling a vehicle when the human driver is not driving? Or when control can alternate between a human and an automated driving system?
- How should the requirement that a driver must have proper control of a vehicle be interpreted by police when there is no human driver?
- What should happen to the range of laws that put obligations on a human driver of a vehicle such as:
 - Rendering assistance after a crash
 - Complying with directions from police
 - Paying any tolls or fines incurred.

Mr Retter called on interested parties to make a submission to help ensure Australia reaps the full benefits of automated vehicles as soon as possible. Submissions must be lodged by Monday, 4 July 2016.

Source: NTC News, 10 May 2016

UK firm fined £1 million for exploding tyre death

A Kent tyre company has been sentenced for criminal safety failings some 10 years after a worker repairing a puncture to the tyre of a 'dresser loading shovel' was fatally injured when it exploded in January 2006.

An investigation by the HSE found the worker was working on his own with inadequate work equipment that was not properly maintained and he was not trained or competent to undertake the work. The company was fined £1 million with costs of £100,000.

The penalties for criminal safety failings continue to increase in the UK with, in another case, Scottish Power being fined £1.75 million after a worker was seriously scalded at a power station causing him to give up his job. The energy giant had known about the faulty equipment for more than four years.

Source: TUC Risks, 754, 11 June 2016



Nursing one of the riskiest jobs

Nursing in the USA now ranks as one of the riskiest jobs with the highest rate of non-fatal occupational injuries. Pamela F. Cipriano, President of the American Nurses Association (ANA) said "US Bureau of Labor Statistics' figures reveal how nurses face painful musculoskeletal disorders (MSDs) from manually lifting and moving patients, they suffer from approximately half of all needle-stick injuries, nearly 1 in 4 have been physically assaulted, and half have been bullied at work."

She adds: "82 per cent of participants said they experienced significant risk for workplace stress, double the national average."

Source: TUC Risks, 750, 14

AIR POLLUTION



REPORT INTO THE HEALTH EFFECTS OF PARTICLES IN AIR POLLUTION ON SYDNEY-SIDERS

A report released by the Woolcock Institute of Medical Research has concluded that air pollution from all sources is capable of adversely affecting the health of Sydney-siders.

The report was prepared in collaboration with the Centre for Air Quality and Health Research (CAR) and Evaluation based in Sydney.

Lead author, Dr Neil Hime from the Woolcock Institute said: "The collation of considerable evidence in this review shows that emissions [from combustion such as vehicle exhausts (petrol or diesel), other diesel exhausts, coal in power stations, and wood in heaters] are likely to have the greatest impact on health. Nevertheless, PM (particulate matter) from other sources that may be substantial in non-urban areas, such as dust emitted during agricultural, mining or natural processes, also has the potential to affect health.

This is why we suggest that immediate efforts should target reducing the total PM in outdoor air."

While the report recognised that PM air pollution levels are low in relation to many industrialised countries, the levels currently present can be high enough to cause measurable adverse impacts on health, particularly in children, the elderly and people with chronic respiratory and cardiovascular diseases.

Dr Hime said one of their conclusions, that "there is no evidence of a threshold below which ambient PM has no health effects", is highly important as it suggests that improvements in population health will continue to occur as ambient concentrations of PM are reduced to 'background levels'.

Despite the findings, the authors stress that the public should not be alarmed since particle pollution levels in Australia are good compared to international standards.

Co-author Dr Christine Cowie added: "as the report suggests, lowering pollution levels from all sources of PM will reap health benefits for NSW residents, particularly for the most vulnerable groups. Fewer people would require hospital treatment and fewer people would die prematurely as a result."

The report, titled "*Review of the health impacts of emission sources, types and levels of particulate matter air pollution in ambient air in NSW*", can be viewed on the CAR website: <http://www.car-cre.org.au/>.

WHO alarmed by air pollution increase

The World Health Organization has claimed that the majority of cities in 'low and medium' income countries that are measuring air pollution levels, do not meet air quality guidelines.

According to its latest urban air quality database, more than 80% of people living in urban areas that monitor air pollution are exposed to air quality levels that exceed recommendations set out by the global health body.

The WHO has suggested that global urban air pollution levels increased by 8% in the five years between 2008 and 2013 and are accountable for around 3 million deaths worldwide.

Ambient air quality guidelines recommended by the WHO suggest that people should be exposed to no more than a 10 µg/m³ annual mean for PM 2.5 or 25 µg/m³ over a 24-hour period. For PM10, WHO recommends that this should not exceed a 20 µg/m³ annual mean and 50 µg/m³ mean over 24-hour period.

According to the WHO, as urban air quality declines, the risk of stroke, heart disease, lung cancer, and chronic and acute respiratory diseases, including asthma, increases for the people who are exposed to the pollutants.

Source: *AirQualityNews*, 12 May 2016

Pic: Air pollution in Beijing – one of the cities included in WHO's database



Air pollution exposure linked to risk of stillbirth

Researchers from the Centre for Environmental and Respiratory Health at the University of Oulu in Finland, in a study published in the journal *Occupational and Environmental Medicine* in May, claim that exposure to air pollution leads to a heightened risk of stillbirth among expectant mothers.

The conclusions were drawn after researchers looked at evidence from 13 epidemiological studies that asked whether maternal exposure to ambient air pollution triggers stillbirth.

Researchers also concluded that exposure to other routinely monitored air pollutants such as nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), PM10 and ozone (O₃), could also be associated with elevated risks, but not all associations reached 'statistical significance'.

However, the authors of the report said that further studies needed to be carried out to strengthen the evidence of a link between air pollution and stillbirth.

Dr Marie Pedersen of the Department of Public Health, Centre for Epidemiology and Screening, University of Copenhagen, commented "Stillbirth is one of the most neglected tragedies in global health today, and the existing evidence deserves additional investigation."

Source: *AirQualityNews*, 25 May 2016.

HEALTH - PHYSICAL



This wristband tracks the chemicals you encounter every day

Simple lightweight silicone wristbands are giving researchers a new window on people's environmental exposures to toxic organic chemicals. They sequester and concentrate organic compounds, with a chemical absorption profile similar to that of human cells.

And, unlike other devices for tracking chemical exposure, the wristbands are comfortable to wear.

For one week, 92 preschool-aged children in Oregon sported colourful silicone wristbands provided by researchers from Oregon State University.

The children's parents then returned the bands, which the researchers analysed to determine whether the youngsters had been exposed to flame retardants.

The scientists were surprised to find that the children were exposed to many polybrominated diphenyl ethers (PBDEs), chemicals that are no longer produced in the United States, as well as to organophosphate flame retardants, which are widely used as substitutes for PBDEs.

Silicone wristbands are easy to slip on, lightweight, and comfortable to wear compared with traditional personal air monitoring devices that rely on bulky air pumps, filters, and electronics.

The number of chemicals that the method detects keeps growing, said environmental chemist, Kim Anderson. The screening method provides qualitative information on whether the chemicals have been absorbed by the wristband. It does not provide information on the amount of each chemical, but Anderson and colleagues are working to change that.

They have already developed quantitative methods for analysing certain classes of chemicals, including PAHs, pesticides, and flame retardants, absorbed into the wristbands.

The bands are also helping researchers examine whether there is a link between prenatal exposure to hazardous polycyclic aromatic hydrocarbons (PAHs) and asthma in children. Anderson is collaborating with an epidemiologist at Columbia University, on a project with pregnant women in New York City.

The wristbands have caught the attention of researchers around the world. Projects are under way in Africa, Asia, Europe, and the US to evaluate the bands for use in monitoring farm and worker-related chemical exposures.

The full article provides more information on research by the US EPA which is excited about the flurry of research underway using silicone wristbands for monitoring everyday exposure to chemicals.

Source: Chemwatch, 28 May 2016. Chemical & Engineering News, 18 April 2016 ; <http://pubs.acs.org/cen/news> ;

Fire retardants polybrominated diphenyl ethers (PBDEs) – what you need to know

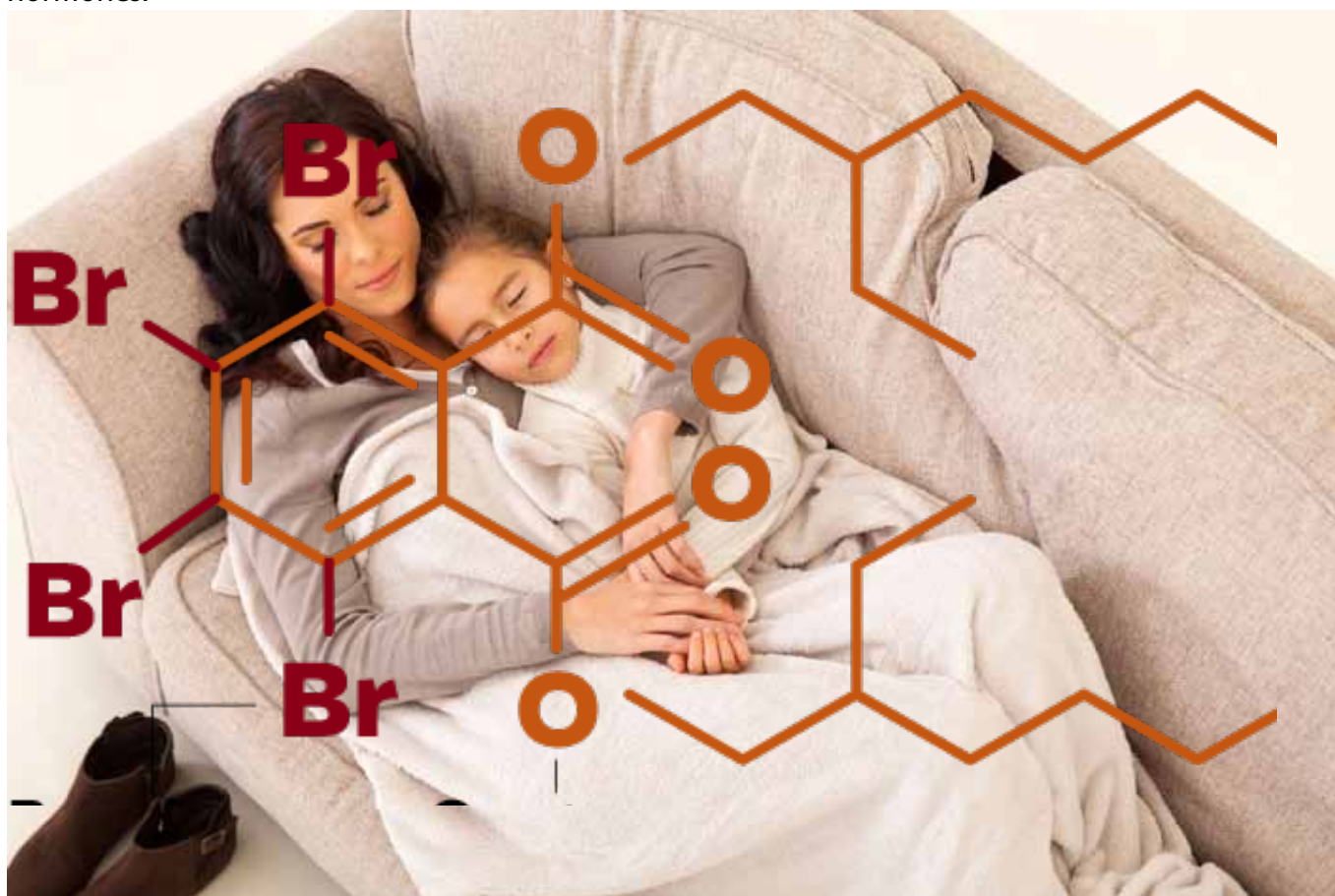
Recent US research has found that exposure to flame retardants, widespread in developed countries, may be linked to thyroid problems, especially in post-menopausal women.

Safety standards have led to materials such as furniture foams, mattress and carpet padding, and many other consumer products and building materials being treated with flame retardants.

The study, published in *Environmental Health*, suggests that exposure to one of the most widely used class of flame retardants, called polybrominated diphenyl ethers or PBDEs, which are known to 'migrate' out of products, causes these problems.

PBDEs have been found in household dust, food, in animals and nearly everywhere else scientists have looked. PBDEs have previously raised health concerns because of their environmental persistence, their ability to build up in fat tissue and because they have been linked to cancer in animal studies.

Additional studies have shown PBDEs to interfere with endocrine hormones, including thyroid hormones.



Source: *Environmental Health* 2016;15:60, DOI: 10.1186/s12940-016-0141-0, © Allen et al. 2016

Occupational particulates affect heartbeat

A new US study by researchers at the Universities of Connecticut and Harvard and other institutions has found that occupational exposures to particulate matter cause irregular heartbeat associated with cardiovascular mortality.

Cardio responses of 72 male boilermakers exposed to small particulate matter while welding experienced a significant increase in heart arrhythmia, six to seven hours after exposure. They also found that their chances of experiencing irregular heart rhythm caused by a premature heartbeat increased by three percent for every 100 $\mu\text{g}/\text{m}^3$ increase in particulate matter.

Source: *SafetyNet* 632, 11 May 2016



INTERIM FINDINGS OF THE REVIEW OF RESPIRATORY COMPONENT OF THE QUEENSLAND COAL MINE WORKERS' HEALTH SCHEME

An interim findings review by the Centre for Occupational and Environmental Health at Monash University in collaboration with the School of Public Health at the University of Illinois at Chicago is complete. The review team was tasked with identifying deficiencies in the current Coal Mine Workers' Health Scheme which could have led to delayed detection in cases of coal workers' pneumoconiosis (CWP). It found:

- There was poor documentation regarding follow-up or referral where abnormal spirometry or chest x-ray results had been found during health assessments.
- Where abnormalities were detected, suitable recommendations to mitigate further workplace exposure were not made.
- In some cases the medical reviews for the health scheme were performed less frequently than required and with fewer than the required necessary tests.
- There was misattribution of the cause of obstructive abnormalities on spirometry to tobacco smoking alone.
- CXR reports were not based on ILO classifications for pneumoconiosis. Where interstitial CXR changes were noted this was not adequately followed up.
- Nominated medical advisors did not appear able to access previous health information collected under the scheme, so a clinically significant decline in lung function in serial spirometry was not detected.

Other significant deficiencies noted included:

- The current focus of the health assessment scheme among stakeholders is to assess general fitness for work e.g. pre-employment and periodic health assessments.
- The current health assessment form was totally inadequate.
- Only miners determined as "at risk of dust exposure" were required to undertake a chest x-ray.
- Appointment of 'nominated medical advisers' was an employer responsibility and there were no minimum qualifications and/or experience required (apart from being a registered medical practitioner).
- The database is not currently being used for surveillance purposes.

Natural Resources and Mines Minister, Anthony Lynham has now confirmed that a seventh coal worker from central Queensland has been diagnosed with black lung disease.

The review is a disturbing catalogue of mismanagement and disregard for worker health. In the light of the report, it is hoped that the Western Australian government will order a resumption of the Mine Worker Health Surveillance Certification process to ensure the continuing health of the mining workforce.

HEALTH - PSYCHOLOGICAL



VICTORIAN PARAMEDICS TO BENEFIT FROM MENTAL HEALTH TRAINING PROGRAM

A \$1 million mental health training program has begun to address the high suicide rate among Victorian paramedics which is four times higher than that of the general public.

The program will involve training employees to recognise the signs of mental health issues, and to engage with one another openly about them.

State government health minister, Jill Hennessy, said mental health must be recognised as a mainstream occupational health and safety issue. "It is so important that we really challenge the stigma associated with mental health."

Ambulance Victoria and the State Government have partnered with mental health organisation, Beyond Blue, to deliver the training.

Source: ABC News, 8 June 2016

How shift work affects cognitive function

A new study from Uppsala University, Sweden, shows that compared to non-shiftworkers, shiftworkers needed more time to complete a test that is frequently used by physicians to screen for cognitive impairment. However, those who had quit shiftwork more than five years ago completed the test just as quickly as the non-shiftworkers

Christian Benedict, associate professor and corresponding author of the study, said "Our results indicate that shiftwork is linked to poorer performance on a test that is frequently used to screen for cognitive impairment in humans. They suggest that it may take at least five years for previous shiftworkers to recover brain functions that are relevant to the performance on this test."

Source: ScienceDaily 17 May 2016



Most antidepressants don't work on young patients

In a new study published in June in the journal *Lancet*, scientists say most antidepressants don't work for children or teenagers with major depression, some may be unsafe, and the quality of evidence about these drugs is so bad the researchers cannot be sure if any are truly effective or safe.

Researchers studied 14 antidepressants and found only one drug that seemed to be useful.

Dr Andrea Cipriani of the University of Oxford, and his colleagues, analysed 34 drug trials that included more than 5,000 patients. Of those, 22 studies were paid for by pharmaceutical companies.

The scientists called the quality of the evidence in the research they studied "very low" - so low that they said the findings in the research weren't enough to change how patients are treated.

"We now have a hierarchy of pharmaceutical treatments and the only one that is better than a placebo and other drugs is Prozac" said Dr Cipriani. He added that psychological treatment such as behaviour therapy should be tried before prescribing drugs, echoing the recommendations of some current guidelines.

Even with all of the limitations the authors highlight in the study, Cipriani said doctors shouldn't shy away from prescribing antidepressants if children need them.

"We have an effective tool," he said of Prozac. "There is also a risk [from] not prescribing drugs for patients who really need them."

Source: *DDD Magazine*, 9 June 2016

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Concern about the mental health of health care workers

In Canada in early June, a panel of experts will explore how psychologically healthy healthcare settings are essential to patients' health.

Bill Tholl, President and CEO, HealthCareCAN says that "Stigma, stress, anxiety, depression and burnout are common workplace-related conditions in healthcare. Healthcare workers tend to feel like they're invincible. So many others depend on them for care that they can neglect their own well-being, or fail to recognize that they sometimes need help too."

The Mental Health Commission of Canada (MHCC) and HealthCareCAN are working together to focus on the special needs of workplace. This work is part of a three-year case study to follow how more than 40 organisations are implementing the National Standard for Psychological Health and Safety in the Workplace.

Despite societal progress around de-stigmatising mental health issues, Bill Tholl says that healthcare workers themselves often feel that stigma.

Tholl is pleased to see that "increasing access to mental health will be one of basic building blocks of a new Health Accord. We are prepared to work with government to level the playing field between mental health and physical health."

Source: *HealthCareCAN*, 5 June 2016

LEGAL/ILLEGAL DRUGS



Progress toward breaking amphetamine grip

To help overcome the destructive brain chemistry of drug addiction, US scientists are developing vaccines that block drugs from generating a “high” or even reverse an overdose. Researchers have now created a vaccine that cultivates a potent immune response against methamphetamine.

The researchers then checked how well this vaccine protected mice against the effects of methamphetamine, a stimulant that typically increases their activity level.

They found that vaccinated mice moved around about a third as much in the following 90 minutes after getting a 2mg/kg dose of methamphetamine as those given carrier protein alone.

The National Institute on Drug Abuse warns that researchers are far away from human trials.

Lead researcher Kim D. Janda of Scripps Research Institute, a non-profit American research facility, says they plan to continue to optimise the vaccines they have developed. They are still trying to increase concentration and affinity to give the best chance of having something successful.

Source: Chemwatch, 21 May 2016

SLEEP/FATIGUE



Heavy vehicle driver fatigue data final report released

The National Transport Commission (NTC) has released the Heavy vehicle driver fatigue data final report which was endorsed by the Transport and Infrastructure Senior Officials Committee early in May.

The framework developed by the NTC will see four fatigue-related projects being pursued:

- conduct new research to evaluate the fatigue impact of the current laws
- develop nationally consistent definitions and measurements of fatigue
- analyse commercial data to evaluate the frequency and impact of fatigue regulations
- review road agencies' ability to link crash data to driver accreditation.

Research activities will be conducted by the Alertness Safety and Productivity Cooperative Research Centre (CRC) based in Canberra.

Source: National Transport Commission, 13 May 2016

Pic above: NTC chief executive Paul Retter says the fatigue data framework will help ensure data is collected in a consistent and comparable way across all states and territories.

UNTREATED SLEEP APNEA MAY BE RELATED TO MELANOMA AGGRESSIVENESS

A paper presented at the 2016 International Conference of the American Thoracic Society in May suggests that untreated severe obstructive sleep apnea (OSA) is associated with increased aggressiveness of malignant cutaneous melanoma.

The new study, which involved researchers from 24 teaching hospitals, involved 412 patients, average age 55.8 years, with confirmed malignant melanoma.

Dr Martinez-Garcia, lead author, said "Our findings have implications for both patients and physicians. People who snore, frequently wake up at night or have daytime sleepiness should see a sleep specialist, especially if they have other risk factors for cancer or already have cancer. Physicians – especially dermatologists, cancer surgeons and medical oncologists – should ask their patients about potential sleep apnea symptoms, and refer them for a sleep study if they have these symptoms."

Source: ScienceDaily, 16 May 2016

Rapid Eye Movement and memory formation

For decades, scientists have fiercely debated whether rapid eye movement (REM) sleep - the phase where dreams appear - is directly involved in memory formation.

A study published in *Science* by researchers at the Douglas Mental Health University Institute (McGill University) and the University of Bern now provides evidence that REM sleep does, indeed, play this role - at least in mice.

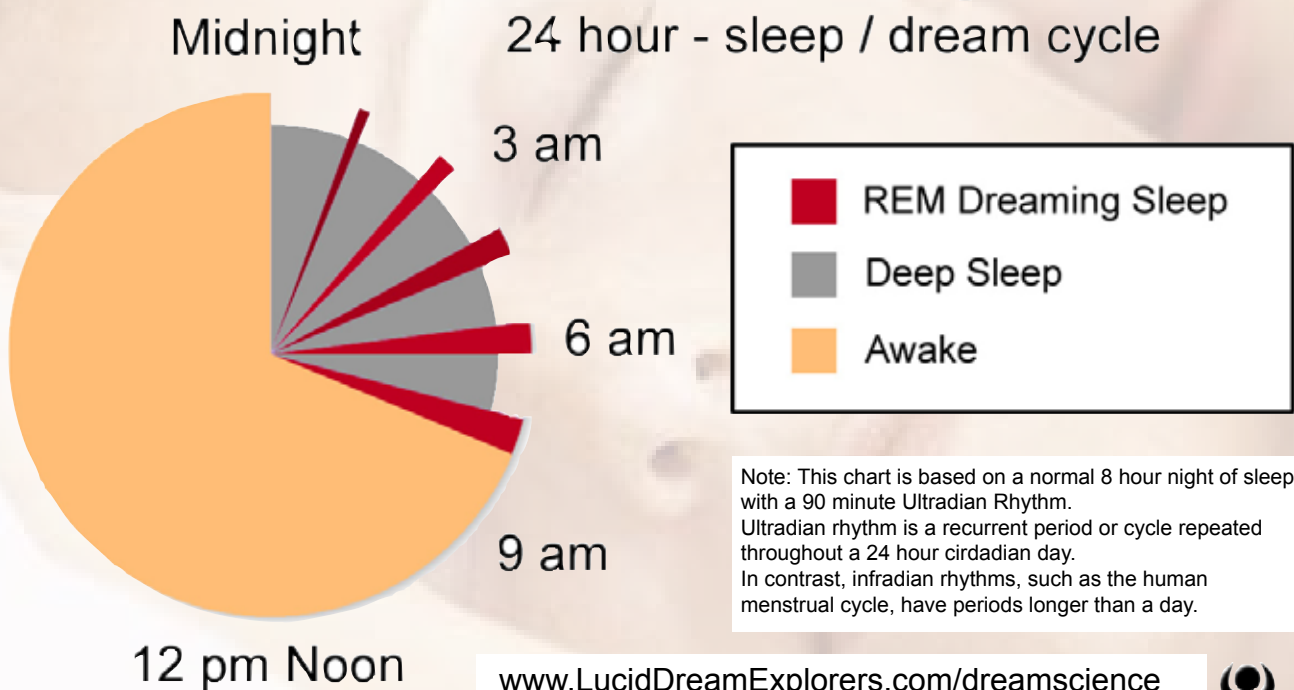
Sylvain Williams, a researcher and professor of psychiatry at McGill said that "We already knew that newly acquired information is stored into different types of memories, spatial or emotional, before being consolidated or integrated. How the brain performs this process has remained unclear - until now. We were able to prove for the first time that REM sleep is indeed critical for normal spatial memory formation in mice."

REM sleep is understood to be a critical component of sleep in all mammals, including humans. Poor sleep-quality is increasingly associated with the onset of various brain disorders such as Alzheimer's and Parkinson's disease.

Source: *ScienceDaily*, 13 May 2016

Circadian Rhythm:

24 hour - sleep / dream cycle



HAZARDOUS MATERIALS



Are you GHS ready?

New labelling of workplace
hazardous chemicals from 1 Jan 2017

The Globally Harmonised System of Classification and Labelling of chemicals

SafeWork Australia has issued a reminder to manufacturers, importers, suppliers or end users of workplace hazardous chemicals to adequately prepare for the new Globally Harmonised System of Classification and Labelling of Chemicals (GHS), which will become mandatory under the model Work Health and Safety laws from 1 January 2017.

If you work with hazardous chemicals you should:

- ensure safe systems of work are in place to manage the risks associated with hazardous chemicals in the workplace
- review your chemical inventory and dispose of chemicals which are out of date or no longer used, and
- talk to your chemical suppliers to check you will receive GHS labelled stock

For more information about the transition to the GHS visit the Safe Work Australia website and access the following resources:

- Hazardous chemicals including the globally harmonised system of classification and labelling of chemicals (GHS)
- GHS information sheets
- GHS frequently asked questions

Source: Safe Work Australia, 25 May 2016

Endocrine disruptors link to infertility confirmed

A growing body of evidence tends to suggest that exposure to endocrine disruptors is linked to a wider range of female reproductive problems such as infertility and complications during pregnancy.

There appears to be enough scientific evidence to point the finger at some substances used in pesticides and plastic products. As a new study now shows, at least two common female diseases that lead to reproductive difficulties often develop due to substances used in those products. The scientists involved in the study found endometriosis, a chronic disease of the uterus lining and uterine fibroids, benign tumours in the uterus, are both attributable to endocrine disruption. Both diseases can cause infertility and are usually very painful.

The study was published in the online 22 March edition of the *Journal of Clinical Endocrinology and Metabolism*.

Source: Chemwatch, 21 May 2016

Further warning about endocrine disrupting chemicals

According to a meta-analysis by Utrecht University Institute for Risk Assessment Sciences, exposure to hormone-disruptive substances costs Europe billions of Euros each year. These substances are present in items such as food products, food packaging, pesticides, cosmetics and synthetic clothing.

Authors of the report say "It is high time that governments implement more policy measures to reduce exposure to these substances."

The greatest costs seem to be due to neurological (behavioural) diseases such as ADHS and autism, and metabolic diseases such as obesity and diabetes.

The researchers combined and compared studies in which the costs of diseases due to hormone-disrupting substances have been calculated. Despite the different approaches used on these studies, the cost estimates correspond fairly well.

The authors have also identified additional cost for three conditions – endometriosis, neural tube defects and asthma.

Source: Health cost that may be associated with endocrine disrupting chemicals, 11 April 2016

Canada 'moving forward' on an asbestos ban

Canadian Prime Minister, Justin Trudeau, has made the federal government's first commitment to move forward with a plan to ban asbestos. He made the comments while speaking at Canada's building trades' union policy conference in Ottawa.

"We've actually made the commitment that we are moving forward on a ban ... here in Canada," said Trudeau in response to a question from a trade union leader. "We know that its impact on workers far outweighs any benefit that it may provide."

Canada continues to import construction products and automotive parts that contain the toxic fibre, but it now longer exports the material.

Officials in the Prime Minister's office confirmed the government is currently reviewing its strategy on asbestos, including looking at a potential ban.

About 2,000 Canadians die of asbestos-related diseases every year – many of those deaths have been linked to asbestos exposure in the workplace.

Source: CBC News, 11 May 2016

MSHA seeking data on controlling exposure to diesel exhaust in underground mines

The US Mine Safety and Health Administration has published a Request for Information on the exposure of underground miners to diesel exhaust and approaches to control and monitor exposure of miners to diesel exhaust.

Many underground metal and non-metal mines use a variety of feasible controls to reduce exposures to diesel exhaust. These controls include ventilation, diesel equipment maintenance, ultra-low diesel fuel, diesel oxidation catalysts, new EPA-approved engines and administrative controls – such as limiting the number of engines in a ventilation course and limiting idling time of diesel-powered equipment.

Assistant Secretary of Labour, Joseph A. Main said "It's time for the agency to look back and review its existing standards and determine whether they adequately protect miners' health."

Source: DOL, MSHA, News Release, 8 June 2016

CANCERS

NANO-BALLS FILLED WITH POISON WIPE OUT METASTATIC CANCER IN MICE

For most cancer patients, it's not the original tumour that poses the greatest risk. It's the metastases that invade the lung, liver, and other tissues.

Now, researchers have come up with an approach that tricks these spinoff tumours into swallowing poison.



To date, experimentation has only proved effective in mice but researchers are planning to launch clinical trials in cancer patients within a year.

Steven Libutti, a geneticist and cancer surgeon at the Albert Einstein College of Medicine in New York City, explains that the treatment works in three steps to place a conventional chemotherapeutic agent near the nucleus (or nuclei) of a metastatic cancer cell where the drug molecules are most lethal. "It's almost like a multistage rocket" that lifts astronauts off Earth, sends them to the moon, and returns them safely," he says.

Researchers led by Mauro Ferrari, a nanomedicine expert, as well as president and CEO of the Houston Methodist Research Institute in Texas, have spent years developing porous silicon particles as drug carriers.

Up to 50% of cancer-bearing mice given the treatment showed no signs of metastatic tumours eight months later, the researchers report today in *Nature Biotechnology*. In humans, Ferrari says, that's equivalent to being cancer-free for 24 years. "If this research [is borne out] in humans and we see even a fraction of this survival time, we are still talking about dramatically extending life for many years," Ferrari says. "That's essentially providing a cure in a patient population that is now being told there is none."

Source: Sciencemag, 14 March 2016. ScienceDaily, 29 April 2016

Above pic: Dr. Mauro Ferrari is CEO and president of the Methodist Hospital Research Institute.

Mesothelioma in Australia – the third wave

The Asbestos Safety and Eradication Agency report *“Future Projections of the Burden of Mesothelioma in Australia”* advises that there is increasing proportion of cases arising from exposure other than during asbestos mining, manufacture and heavy industrial use (the first wave) and mainstream product use (the second wave).

This so-called third wave arises from other sources of exposure, including disturbance while living in, or renovating a home containing asbestos containing materials (ACM).

The third wave also includes background cases, where the source of exposure may not be known. Third wave cases are generally caused by low-dose asbestos exposure and typically occur later than the first or second waves.

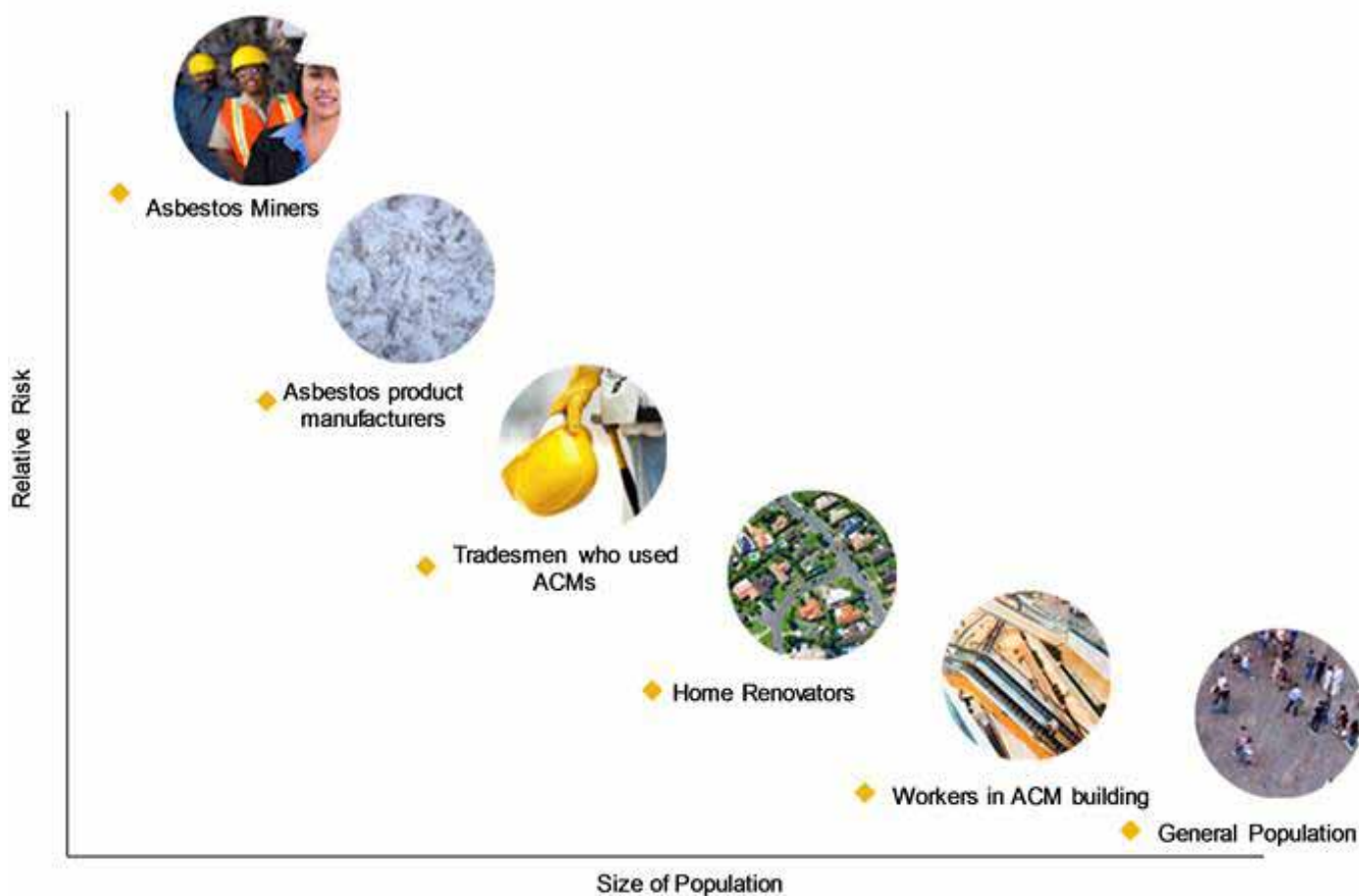


Figure 1 – Relative size and lifetime risk of contracting mesothelioma

Note: this chart is not drawn to scale and is for illustration purposes. Not all groups exposed in Australia are shown.

Source: ASEA,

Carcinogen exposures in the workplace

SafeWork Australia has released three reports on carcinogen exposures in the manufacturing, construction and agricultural industries.

The reports have been compiled from data contained in the Australian Workers' Exposure Study funded by the National Health and Medical Research Council, SafeWork Australia and the Cancer Councils of Australia and Western Australia.

The researchers found that:

- 67 percent of the manufacturing workforce were probably exposed to at least one carcinogen
- 96 percent of the construction workforce were probably exposed to at least one carcinogen with 53 percent exposed to at least four carcinogens
- 99 percent of the agricultural workforce were probably exposed to at least one carcinogen.

Carcinogen exposures that were common to all three industries:

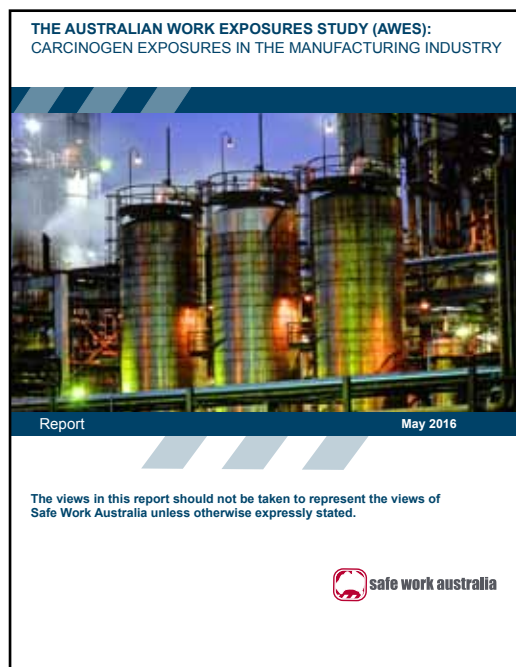
	% of workers exposed		
	Manufacturing	Construction	Agriculture
Diesel exhaust	20	37	94
Solar u/v radiation	15	86	99
Wood dust	14	36	71

What can be done?

The authors recommend that as a first step, preventative actions should be focused on the most common carcinogen exposures and those for which options for preventing or minimising exposures are well known.

It will be interesting to see whether regulatory authorities will initiate any preventative action particularly with regard to the human carcinogen, diesel exhaust, which appears to affect all major industrial sectors.

Source: SafeWork Australia



Non-Hodgkin Lymphoma linked to specific jobs

New research conducted by more than 30 researchers from 13 countries included an analysis of 10 international non-Hodgkin lymphoma studies consisting of about 10,000 cases and 12,000 controls. It confirmed associations between the development of the cancer and certain categories of work.

Categories identified were:

- Field crop farm workers
- Women's hairdressers
- Textile workers
- Cleaners
- Spray painters
- Printers
- Electrical workers
- Wood and metal workers

Researchers say that the findings of the present study can be further refined at the next stage, after specific exposures are identified in detailed exposure studies. Two kinds of NHL were especially associated with employment as women's hairdressers and two types of NHL were especially associated with work in the textile industry.

Researchers speculated that exposure to solvents in many of the jobs identified may play a role in the development of non-Hodgkin lymphoma.

Source: OHS Repts SafetyNetJournal, 359, 20 April 2016



A new EU Union roadmap on carcinogens in the workplace

On 25 May, six organisations including EU-OSHA, the European Commission and the European social partners signed a covenant agreeing to participate in a new scheme to reduce exposure to carcinogens in the workplace.

Cancer is estimated to cause more than half of all work-related deaths in Europe, and the new scheme proposed to raise awareness of the risks as an element to prevent exposures.

It also aims to achieve more widespread and efficient exchange of the many good practices that already exist in this area.

Source: European Agency for Safety and Health at Work, 25 May 2016

Cancer risk perception could lead to adverse health outcomes among women

Researchers at the University of Missouri recently examined the perceptions of risk among females and found that minority and less educated women believe that breast cancer, rather than heart disease, is the more common killer. Based on these findings, they recommend that health care providers should incorporate healthier lifestyle strategies for heart disease with messages for improved breast health to exert greater impact on disease outcomes.

Breast cancer is a leading cause of death for females in the U.S. where one in 30 women will die of breast cancer. The death rate for heart disease is significantly higher at one in seven. Obesity remains at the top of health care providers' concerns.

Researchers suggest that progress toward improving U.S. population health requires that health care providers use strategic opportunities to leverage healthy and active lifestyle messages for obesity and heart disease, in combination with breast health. These messages also should be targeted to different cultural and ethnic backgrounds as well as education levels.

Source: ScienceDaily, 16 May 2016

NANOPARTICLES

Microplastics and their health consequences

According to Frank Kelly, a professor of environmental health at Kings College, London people could be breathing in microparticles of plastic with as yet unknown consequences on health. Microplastics are known to be damaging to life in the oceans, with marine creatures mistaking them for food. They may then be consumed by people eating seafood.

He told MPs investigating the issue that the particles could be being inhaled too.

Kelly told an evidence session of the Environmental Audit Committee that there is a real possibility that some of those microparticles will be entrained into the air, and they will be carried around and we will end up breathing them.

He said a French study had detected the particles in the air. If we breathe them in they could potentially deliver chemicals to the lower parts of our lungs and maybe even across into our circulation in the same way as we worry about vehicle related emissions.

Public attention in recent months has focused on one kind of microplastic called microbeads and used in toothpaste and as exfoliants in toiletries such as face washes.

A European parliament resolution calling for an EU-wide ban on microbeads has gained backing from 340 of the 751 MPs.

Some major manufacturers of toiletries have already taken action to stop using microbeads. Unilever ended their use in 2015, while L'Oréal says it will have phased them out by 2017. Safe alternatives are already available.

Source: Chemwatch, 28 May 2016



Pic: Microplastics set against grains of sand to show their actual size. UNSW, Vivian Sim



Anger at EC inaction on nanomaterials

The European Trade Union Confederation (ETUC) says the decision by the European Commission to set up an Observatory for nanomaterials, instead of a Register, fails to protect workers from health risks and does not contribute in any way to the traceability of nano-materials, and the transparency and accountability of industry.

Esther Lynch from the ETUC said "Workers have a right to know what they are handling and being exposed to. That way, unions can assess risk, support the work of health and safety representatives and demand the necessary health standards. That is what a Register would enable and an Observatory cannot."

Source: TUC Risks 748, 30 April 2016

WORKERS' COMPENSATION CANCER COMPENSATION EXTENDED TO ALL FIREFIGHTERS

The WA Government has introduced a Bill – Firefighters and Emergency Volunteers Legislation Amendment (Compensation) Bill 2016 to extend its automatic cancer compensation laws to volunteer and other firefighters.

Under the existing legislation a current member of a permanent fire brigade who contracts any one of 12 types of cancer is entitled to compensation without having to prove the disease arose from work. The Bill expands this “presumption to include state-employed firefighters, volunteer firefighters and former members and officers of a permanent fire brigade.”

Source: OHS Repts SafetyNetJournal, 363, 18 May 2016. Pic: Yarloop fire, ABC News



Malignant lymphoma recognised as an occupational disease

In what has been described as an ‘unprecedented ruling’, authorities in South Korea have recognised non-Hodgkin Lymphoma as an occupational disease. The Korea Workers’ Compensation and Welfare Service (KCOMWELL) decision on 1 June approved workers’ compensation to a former employee who died of the blood disorder four years ago.

An advocacy organisation, SHARPS, says it has identified around 200 Samsung workers who developed the blood condition. KCOMWELL cited that non-Hodgkin Lymphoma constitutes an occupational disease as the employee could have developed it as a result of exposure to benzene or other materials.

SHARPS said that KCOMWELL’s decision was significant because for the first time it declared malignant lymphoma an occupational disease.

Source: TUC Risks, 754, 11 June 2016



Occupational Health Society of Australia (WA)



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

\$50 ordinary membership

\$20 student membership.

Simply email safety@marcsta.com with your details.

Members - Ordinary

Dean BUTLER, Occumed
Alan CLARKSON (COHSPrac), SHEQ Australia
Allaine COLEMAN, CGU Workers' Compensation
Dr Peter CONNAUGHTON
Maria DANIEL
Debbie GASKIN, DFES
Paulette GAYTON
Lynette GILBERT, QHSE Consultant, Tidehill Pty Ltd
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Ross GRAHAM
Anthony GREEN, Holcim
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
Joe MAGLIZZA, Holcim Australia Pty Ltd
Alison MARTINS, OH&S Consulting
Peter McMAHON, Main Roads WA
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
Prof Geoffrey TAYLOR, Curtin University
Dr Kar Chan WAN, OccuMed

Members - Student

Muhammad AHMED, Student, Curtin University
Georgina GREENLAND, 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



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 for more information.

MEMBERSHIP OF THE OCCUPATIONAL HEALTH SOCIETY OF AUSTRALIA (WA)

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.

Subscription to the *Monitor*

The availability of the *Monitor* newsletter on a no-cost basis was also discussed and, while it was confirmed that the widest local, national and international audience should continue to have access to the publication (currently some 530 recipients), it was reasonable to expect recipients to become members of the Society.

Local members enjoy discounts at events organised by the Society.

Readers of the *Monitor* are therefore being encouraged to consider completing the Application for Membership which appears in every edition.

The *Monitor* 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.

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



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 _____

POST OR EMAIL THIS APPLICATION TO THE ADDRESS BELOW: