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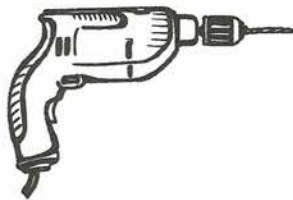
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The WSO was founded in 1975 in Manila, The Republic of the Philippines, as a result of a gathering of over 1,000 representatives of safety professionals from all continents at the First World Safety and Accident Prevention Congress. The WSO World Management Center was established in the United States of America in 1987 to be responsible for all WSO activities, the liaison with the United Nations, the co-operation with numerous Safety Councils, professional safety/environmental (and allied areas) organizations, WSO International Chapters/Offices, Member Corporations, companies, groups, societies, etc. The WSO is a not for profit corporation, non-sectarian, non-political movement to **"Make Safety a Way of Life"**.

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All articles shall be written in concise English and typed with a minimum font size of 12 point. Articles should have an abstract of not more than 200 words. Articles shall be submitted as Time New Roman print and presented in the form the writer wants published. On a separate page the author should supply the author's name, contact details, professional qualifications and current employment position. This should be submitted with the article.

Writers should include all references and acknowledgments. **Authors are responsible for ensuring that their works do not infringe on any copyright. Failure to do so can result in the writer being accountable for breach of copyright.** The accuracy of the references is the author's responsibility.

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The E-Waste Problem of Nigeria & Proposed Solutions

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Abstract

E-Waste disposal in Nigeria is poorly managed. The products of E-waste can cause adverse ill health effects if allowed to contaminate the soil, plants and water. This article identified the current disposal practices and recommends more effective and safer ways to dispose of E-waste in Nigeria. The recommended disposal options are applicable to developing best practice for E-waste recycling, minimization and safe disposal for countries worldwide.

Keywords:
E-waste management. Municipal waste. Nigeria. Health & Safety. Public Health.

Introduction

Nigeria is a tropical country on the west African coast along the Gulf of Guinea. It covers an area of some 923,769 square Km. and is situated between latitudes 4° and 14° N of the equator. The capital city of Nigeria is Abuja. Major cities include Lagos, Port Harcourt, Aba in Abia State, and Kaduna. In July 2011 the population of Nigeria was 155,215,573 people with a population growth rate of 1.9% per year and a life expectancy at birth of 47.56 years (Omuidi Index, 2012). Nigeria is composed of more than 250 different ethnic groups, has over 500 indigenous languages and is Africa's most highly populated country. According to the results of the 2006 census report published by the National Population Commission of Nigeria (last National Census results published), the country has a total number of 36 states with the major industrial states being Anambra, Imo and Abia State in the eastern part. In the western part there is Lagos which is the industrial and commercial centre of Nigeria and the location of 60-70% of the nation's industries.

Table 1: Figures of population of major cities in Nigeria.
(Source: National Population Commission of Nigeria, 2006).

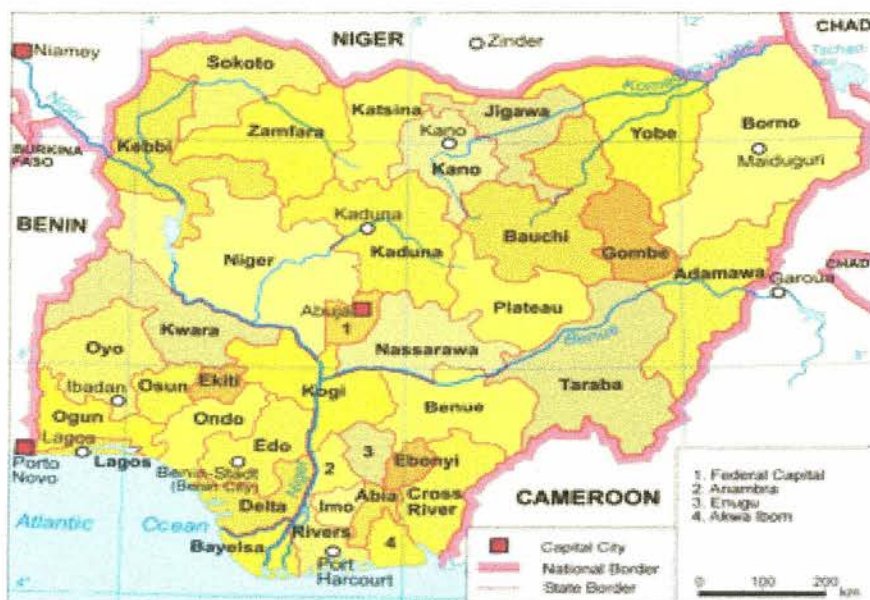| Major Cities	Population
Lagos	11.4 million
Kano	3.3 million
Ibadan	3.3 million
Benin city	1.2 million
Port Harcourt	1.2 million
Maiduguri	1.1 million
Zaria	1.0 million

Figure 1. Map of Nigeria (Wikipedia, 2012, p.1)

Background of Municipal Waste

All waste can be divided into two main categories - solid waste and hazardous waste. Solid waste is then divided into municipal solid waste (MSW), industrial waste, electronic waste, otherwise known as waste from electrical and electronic equipment (WEEE), and finally the biomedical waste (Miller & Spoolman, 2012). Total solid waste is classified as everything that people in Nigeria throw away each day and discard. Waste both from domestic and commercial sources has grown significantly in Nigeria over the past decades, and it has been stated that the waste density in Nigeria ranges from 280 to 370 kg/m^3 and the waste generation rates ranges from 0.44 to 0.66kg/capital/day (Miller & Spoolman, 2012). Waste management, involving the collection, transfer, treatment, recycling, resource recovery and disposal of the solid wastes that are generated in Nigeria, has been a struggle (Ogwueleka, 2009). This paper assesses the problem of E-waste in Nigeria with the aim of proposing a feasible solution to the Waste management of Electrical and Electronic Equipment problems.

Description of E-Waste

Electronic waste is known as E-waste, E-scrap or waste of electrical and electronic equipment nearing their useful or end-of-life. Electronic waste (E-waste) is a term that is used to refer to obsolete, broken or irreparable electronic devices; like televisions, discarded computer monitors (flat screen and cathode ray tubes), computer central processing units (CPUs), laptops, mobile phones, entertainment device electronics, printers, scanners and other electronic communication products which have been disposed of by their original users.

Known and suspected routes of E-Waste dumping

The Basel Action Network (BAN) is a body responsible for ensuring the implementation of the Basel Convention on the Control of Trans-boundary Movement of Hazardous Wastes and their Disposal which is an international treaty designed to reduce the movements of hazardous waste from developed countries to less developed countries (LDCs) (Basel Action Network, 1989).

According to the findings of investigations into dumping of used electronic equipment in Nigeria dumping is a result of the growth in the Information Technology (IT) SECTOR in Nigeria, which is similar to other developing countries, where there has been a boom of importation of commonly called "second hand goods" or "non-tested end of life products" (Ewaste, 2011). These products are sent from developed countries like the United States of America, the European Union, South Korea, Japan and from Australia to Nigeria thereby contributing to E-waste in Nigeria (Basel Action Network, 2012). About 25% of this equipment is repaired or refurbished for use in Nigeria and is becoming important components in bridging the digital gap, but 75% is beyond repair and ends up in Municipal Waste Dumps in Nigeria (UK Department for Business, Innovation & Skills, 2012).

Components of electronics and effects of these on human health.

Nnoroom in 2009 (cited in Osibanjo, 2009) conducted an E-waste contamination environmental assessment in Africa. This research identified that in Nigeria there were high soil concentrations of copper, nickel, lead and zinc in the E-waste disposal sites in Lagos, Benin City and Aba in Nigeria that majorly exceeded the European Union safe limits. Surface water and plants near E-waste disposal sites in Nigeria were found to be heavily contaminated in this study. Environmental contamination can affect the health of the population that lives near contaminated soil, plants and water.

Improperly discarded electronic products can create hazardous waste from the flame retardant substances used in plastics and circuit boards, solders containing lead and tin, barium and lead in cathode ray tubes, mercury and beryllium alloys in connectors, among other potential environmental hazards. Some of the effects of electronic waste components include:

Table 2. Effects of E-Waste constituents on health.

Source of e-wastes	Constituent	Health effects
Solder in printed circuit boards, glass panels and gaskets in computer monitors	Lead (PB)	Damage to central and peripheral nervous systems, blood systems and kidney damage. Affects brain development of children.
Chip resistors and semiconductors	Cadmium (CD)	Toxic irreversible effects on human health. Accumulates in kidney and liver. Causes neural damage. Teratogenic.
Relays and switches, printed circuit boards	Mercury (Hg)	Chronic damage to the brain. Respiratory and skin disorders due to bioaccumulation in fishes.
Corrosion protection of untreated and galvanized steel plates, decorator or hardeners for steel housings	Hexavalent chromium (Cr) VI	Asthmatic bronchitis. DNA damage.
Cabling and computer housing	Plastics including PVC	Burning produces dioxin. It causes Reproductive and developmental problems; Immune system damage; Interfere with regulatory hormones
Plastic housing of electronic equipments and circuit boards.	Brominated flame retardants (BFR)	Disrupts endocrine system functions
Front panel of CRTs	Barium (Ba)	Short term exposure causes: Muscle weakness; Damage to heart, liver and spleen.
Motherboard	Beryllium (Be)	Carcinogenic (lung cancer) Inhalation of fumes and dust. Causes chronic beryllium disease or beryllicosis. Skin diseases such as warts.

Sources of E-waste in Nigeria include the following:

- Importation of electronic accessories, especially the un-usable parts.
- The importation of used electrical electronic equipment.
- Local generation from consumption of new electrical electron equipment.
- Donations, usually from overseas, to charity organizations and academic institutions etc.

Methods of E-waste management in Nigeria

Correct waste management simply means the collection, keeping, treatment and disposal of waste in such a way as to render the waste harmless to humans, animal life, the ecology and the environment generally. It could also be defined to be the organized and systematic dumping and channeling of waste through pathways, or landfills, to ensure that the waste is disposed of with attention to acceptable public health and environmental safety. Thus proper waste management is expected to yield a result that will abate any E-waste problems in Nigeria.

In Nigeria the infrastructure for solid waste management is weak and ineffective. There is neither a well established system for separation, storage, collection. transportation and proper disposal of E-waste; nor are there any practical regulations that can take absolute care of issues surrounding hazardous waste management in the states of Nigeria. Normally E-waste management is poor as the waste is disposed:

(a.) In urban dumpsites into the rivers and ditches;
(b.) Bashing open cathode ray tubes with hammers, exposing the toxic phosphorous dust inside;
(c.) Cooking circuit boards in works over an open fire to melt the lead solder;
(d.) Sale of reusable and serviceable parts;
(e.) Burning the plastic casings creating dioxins and furans, some of the most poisonous fumes that can be breathed in;
(f.) Materials recovery of recyclables such as copper, gold and silver from non-repairable E-waste by open burning of cables.

These crude methods, employed in Nigeria toward E-waste management, are practices and technique which are non-

rudimentary. The citizens embark on these practices in oblivion of the health implications that results due to unprotected exposure to the hazardous constituents of the waste of electrical electronic equipment. In practice the widely used E-waste management methods in Nigeria have included the manual dissembling of waste of electrical electronic equipment without consideration of the hazardous nature of the constituents. For example, there have been cases of recovery of solder and chips from Printer Circuits Boards (PCBs) by heating them. PCBs are self-contained modules of interconnected electronic components formed by a thin layer of conducting material deposited, or printed, on the surface of an insulating board. They contain elements that are potentially toxic if they are released to the environment.

Proposed solutions for E-waste management in Nigeria.

(a) Recycling

During recycling of E-waste, which is a complicated process, E-waste components are stripped apart by hand and put through several delicate processes in order to recover 95-98% of materials from the E-waste. The raw materials that remain, such as glass, copper, plastics and metals, can be recycled to good use instead of wasting valuable space in landfill and contaminating the environment.

In the management of E-waste, the most practicable hierarchy is as follows.

* ❖ Reuse, repair or refurbishment of the electronics.
* ❖ De-manufacturing and disassembly.
* ❖ Recovery of valuable components.
* ❖ Hazardous and base metal recovery.
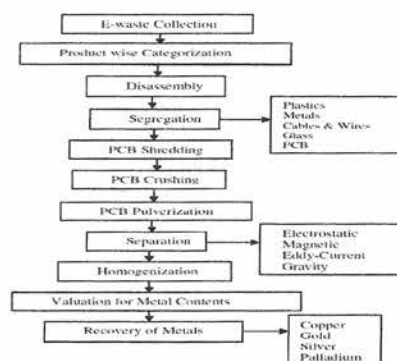* ❖ Hazardous component management and environment friendly disposal.

Figure 2. Process flow chart for recovery of saleable materials e-waste.

(Source: Sukanya, 2012, p.24)

(b) Shredding

When components, that can be recovered, are obtained from electronics approaching their end of life, then E-waste can be processed through the use of shredders to obtain suitable materials for the recycling process. For the segregation of the electronics components the technology of the shredder is highly efficient and can be used in Nigeria to separate the E-waste. The shredder is a machine that can be used to reduce the components of the E-waste. The waste material to be shredded is directed to the center of the counter-rotating shafts. Thus the size of the waste material is reduced by the shearing or tearing action of the cutter discs. E-wastes, like electronic scrap, hard drives, monitors, TV's wires and cables, printers, circuit boards, cell phones, DVD's, CD's and key boards can all be processed for recycling. Thus the use of low speed, high torque shredders with 3, 4-shaft can be suitable for assisting with effective E-waste disposal and reduce the E-waste materials to a uniform and desirable small to medium particle size.

These processed materials can be stored in various material streams. This can be done by using magnetic separation. This is a unit operation in which ferrous metals and non ferrous metals are separated from other waste materials by utilizing their magnetic properties. Thus ferrous metals are attracted, and also separated from, the non-ferrous metals. This is achieved through the use of eddy-currents and induction and can yield a proper segregation of the E-waste. In the head of the head pulley a conveyer has a permanent magnet and spins at a high rotation speed. A reversed magnetic field is generated when a conductor is present, a charge is generated and, as a result, the conductor will be lifted and lands away from the non-conductor particles. The ferro-metals are attracted and also separated by this process (Doms, 2012).

In Nigeria, if E-waste can be separated into their various components properly, this will encourage efficient recovery of useful metals and other elements. Through smelting metals this recovery can allow for the recycling of useful products like Gold, Copper, and other precious metals such as palladium. Analytically, a total of 5.23kg CO_2 could be saved per desktop computer disposal by recycling materials compared to primary mining of the same amount of metals. (Chatterjee & Kumar, 2009).

Fig 3. A shredding machine for segregation proposed for Nigeria (Serpo, 2008, p. 8)

Recommendations and conclusions

As a result of this review the following recommendations are made for E-waste management.

- The Government of Nigeria should ensure that the Basal Convention is implemented and the importation of E-waste scraps should be banned from entering the country of Nigeria. Outright banning of used electrical electronic equipment (UEEE) is not advocated but the Government of Nigeria should, through development of national /sub-regional/regional legislative and regulatory control of the importation of electronic equipment, control the supply chain based on the lifecycle approach (Osibanjo, 2009).
- There should be practical methods of collecting used electrical electronics from Nigerians, so take back centers should be inaugurated in all the regions of the country.
- Recycling should be encouraged by both the private and the public sector. The reason for the involvement of the informal sector is that recycling can be a financial generating area for the country, since the quantities and qualities of the materials recovered from the E-waste has a high market value.

Through efficient execution of the E-waste recycling in Nigeria, there will be more profit to be derived from the E-waste than its demerits. This it is in line with the cradle to grave proposition in waste management. This approach encourages sustainability thinking and strikes people's consciousness on the need to minimize the environmental impact of products by employing sustainable production, operation and disposal practices. It aims to incorporate social responsibility into product development (Doms, 2012). This approach of E-waste recycling in Nigeria will optimize human health and keep the manufacturers responsible for their products, thereby minimizing the negative environmental impacts of E-waste in the cities of Nigeria.

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A study of the effects of post-traumatic stress disorder developed in the workplace.

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Abstract

This report is a literature review on the effects of post-traumatic stress disorder (PTSD) developed in the professional environment. It was found that PTSD is an increasing and significant ailment in the contemporary work environment and has immense effects on the sufferer's emotional and physical wellbeing as well surrounding members within their network. This article examines the affected individual's legal obligations under Western Australian law and identifies that PTSD contributes significantly on an individual's return to work effort. The easily feigned nature of the disorder, combined with current economic uncertainty is shown to negatively contribute to the unhindered fulfillment of legal obligations by employers and insurers.

Introduction

Post-traumatic stress disorder (PTSD) is a psychological condition that occurs in individuals as a response to an event involving either near or threatened death, a serious injury or a threat to the physical integrity of self and others (MacDonald, Colotla, Flamer & Karlinsky, 2003). The traumatic event in question can occur to possibly anyone and can result from a wide range of situations (Guy & Guy, 2007); however, this report will only focus on workplace-induced trauma, resulting from events including, but not limited to, bullying, violence, accidents, work pressure and injuries (Guy & Guy, 2007).

In Australia during the three year period of 2001 - 2003, stress related compensation claims comprised only 5% of all worker's compensation claims, but had the highest median claims cost at $9,700, second highest average cost at $16,400 and the total worker's compensation claims were estimated to be at approximately $200 million per year (Work related mental disorders in Australia, 2008). With these high figures, it is surprising to find that PTSD is a relatively understudied and underreported field and can often be misdiagnosed as workplace stress (MacDonald, Colotla, Flamer & Karlinsky, 2003). In 2009-10 mental disorders were the most commonly reported disease for workers' compensation claims in Australia and had a medium workers' compensation claim cost of $18,000 in 2008-2009 (Safe Work Australia, 2012). This paper examines literature concerning PTSD, its effects upon sufferers and their occupational and social circles, as well as the pathway to compensation and eventual return to work.

Research methodology

Curtin University's collection of subscribed journals was a primary source of referenced material for this literature review through the use of the above keywords. Secondary sources include Google Scholar, the WorkCover WA website (www.workcover.wa.gov.au), the Australian Legal Information Institute website (www.austlii.edu.au) and Western Australian legislation related to occupational safety and health and to workers' compensation and injury management. All referenced peer-reviewed articles were written no earlier than 2001 in an effort to keep information relatively recent due to the misunderstood nature of PTSD. There were three exemptions to this rule, with all three specifically sought out due to their reference in other more recent articles. A total of 44 articles were reviewed and 19 are referenced in this article.

Effects of PTSD on the individual, their family and their workplace

Individual

Rainbird (2009) states that up to 81% of men and 74% of women will experience one traumatic event in the lifetime. Guy & Guy (2007) reflect a similar figure but continue on to state that 20 – 50% of individuals that have experienced a traumatic event will develop PTSD and that 25-33% sufferers of traumatic experiences that occurred in the workplace will endure long term effects. This article also stated that the full extent of this is unknown due to lack of reliable data. The development of PTSD in an individual is based on the combination of a number of situational factors; such as nature, type and scale of traumatic event and personal factors such as previous exposure to trauma, mental health and personal traits (Rainbird, 2009; Hillenberg and Wolf, 1989).

The reaction to trauma can be placed under three main phases, which include the immediate reaction, an acute reaction in the month following the event and chronic or long-term reactions (Rainbird, 2009). Following the event, Maslach & Jackson (1984) outline three symptoms that can occur and are suggestive of PTSD. These are; reliving the experience, avoidance of stimuli associated with the event and hyper-arousal such as impaired concentration, difficulty sleeping, impaired ability to live in the present and inability to have positive emotions such as a happiness and loving feelings. These symptoms were also articulated by Horton (2011) when

recounting a personal experience with PTSD that was caused by a response to the visual identification of a former soldier's military tattoo while working as an Occupational Health Manager, thus causing her to recount memories of her experiences as a military nurse in Iraq. Horton (2011) also outlined further personal effects such as the breakdown of a long-term relationship, feelings of shame, failure and embarrassment, and finally depression. Similarly, Hillenberg and Wolf (1989) state that there is a positive relationship between the impact of the trauma and increased feelings of personal validation, vulnerability, powerlessness and fear, indicating that individuals that are more emotionally affected by the trauma are at risk of developing further mental health issues.

Family
PTSD sufferers, like most mental disabilities, can place enormous strain on family relationships. Additionally, it is the strength of these relationships that also play a major part in the recovery of the affected individual. Hillenberg and Wolf (1989) identify that the individual's family need to understand the trauma event to aid healing. If understanding does not occur due to suppression, lack of problem solving skills or being in a generally unsupportive environment, the PTSD symptoms will continue and intensify.

While a caring partner is highly important to the health of the suffering individual, the overall effect on partners of PTSD sufferers can be varied. A study performed by O'Toole et al (2010) examined the mental health of partners of Australian Vietnam war veterans three decades after the conclusion of conflict. The study found higher than expected rates of anxiety disorder and severe recurrent depression. Additionally, the study found a positive correlation between the intensity of the PTSD sufferer's combat history with the intensity of their partner's anxiety and depression. A second study, based in Montreal, by Chartier-Otis, Guay and Marchand (2009) examined the impact on partners from civilian PTSD sufferers. The results failed to present a statistically significant correlation between a partner's distress and the PTSD sufferer's symptoms. Fewer than 20% of tested candidates exhibited depression and anxiety and only 37% exhibited relationship distress. While the results of the two studies are mixed, they do reflect findings by Hillenberg and Wolf (1989) who state that the intensity of the effects of PTSD on an individual are positively related to the intensity of the traumatic event, therefore it can also be argued that there is an increased effect on the family of the PTSD sufferer due to a more volatile event.

Workplace
Similar to most other forms of mental health issues, an employee's suffering can greatly contribute toward organizational dysfunction in the form of absenteeism, increased staff turnover, decreased productivity and poor morale (Work related mental disorders in Australia, 2008).

However, with the aforementioned increases in PTSD and other mental health related cases, its largest effect on a workplace is compelling an organization to implement measures to assist in the rehabilitation of potential victims (Rainbird, 2009). Rainbird (2009) states that these measures have generally been implemented in workplaces whose employees are at high risk of developing PTSD and include factors such as risk management, auditing processes, education and training, and post incident support. Furthermore, Rainbird (2009) suggests that if an organization does not include PTSD support measures as a part of its operation, it is potentially at risk of being liable for psychological injuries.

Badenhorst & Van Schalkwyk (1992) reinforces Rainbird's suggestions that if an employer does not implement PTSD support measures, the increase in medical costs, compensation costs and staff turnover can impact an organization significantly. Badenhorst & Van Schalkwyk's (1992) research find that with PTSD support measures implemented, an organization can potentially save up to five times the cost in employee rehabilitation and have the affected staff member return to work up to three times earlier. Employees who received satisfactory care from the employer were also less likely to litigate.

Obligations of the employee under the Workers' Compensation and Injury Management Act, 1981

Pre-injury, every employee is legally obligated to take reasonable care within their work environment to protect themselves and others from incurring an injury, and to report an injury if it has occurred. A failure to do so is considered an offence and the employee in question may be penalized (Occupational Safety and Health Act of Western Australia, 1984, Section 20).

Post-injury, the employee is obligated to report any symptoms of PTSD and seek medical advice as soon as possible (Workers' Compensation and Injury Management Act, 1981, Section 64). If the medical advice deems that a case of PTSD is present and the employee is given a Worker's Compensation First Medical Certificate, the employee must follow the legally required workers' compensations procedures. This involves obtaining and completing a claim form and working openly with the employer and insurer to accept or dispute the claim (Workers' Compensation and Injury Management Act, 1981, Section 57). The employer may also request that a preferred medical practitioner examines the employee, however this may only be performed once every two weeks (Workers' Compensation and Injury Management Act, 1981, Section 65). While the employee is not obligated to give permission for the employer and doctor to discuss the injury, doing so will assist the fluidity of the process (Workers' Compensation and Injury Management, 1984, Section 57).

During the injury management period, the employee is

obligated to participate in the employer's return to work program, failing to do so may endanger the continuance of compensation payments (Workers' Compensation and Injury Management, 1984, Section 72). The employee has the option to participate in a vocational rehabilitation program and a third party service that is approved by WorkCover WA and can greatly assist in the successful completion of a return to work program (Workers' Compensation and Injury Management Act, 1981, Section 146). If a decision by the employee is made to resign from the original employer, the employee is obligated to inform the employer seven days within beginning the new role (Workers' Compensation and Injury Management Act, 1981, Section 59).

Possible barriers that can prevent an employee from returning to work

The development of PTSD is in itself generally a barrier in an employee's effort to return to work after a workplace accident or incident (Opsteegh et al, 2009). A study by Lange, Burgmer, Braunheim & Heuft (2006) found that 32% of workplace accident victims developed PTSD and failed to return to work within 12 months of the incident. Furthermore MacDonald, Colotla, Flamer & Karlinsky (2003) found that of the employees that managed to recover from PTSD after an accident, only 43% returned to their previous role. The causes of these statistics are a mixture of both personal and workplace factors.

In the occupational sphere, Payne (2011) states that an employee should feel comfortable in taking the required time to rehabilitate from their injuries by living life as normal as possible outside of the work environment. Keeping in mind that it is a legal obligation for an employer to provide a suitable return to work program for injured employees (Workers' compensation code of practice (injury management) 2005, Section 7). A workplace that is not supportive may act to instigate a greater sense of fear and shame forcing the employee to remain indoors, thus prolonging the effects of PTSD. Additionally a pursuit of compensation is found to have a negative impact on an employee's ability to return to full health as well as return to work due to the stressful nature of the process (Compensable injuries and health outcomes, 2001).

One of the symptoms of PTSD is situational flashbacks and nightmares that allow the sufferer to relive the accident continuously. This effect plays a significant part in avoidance of work due to fear (Opsteegh et al, 2009). Guy & Guy (2007)document that it is not uncommon for sufferers of PTSD to lose their jobs upon return to work due to flashbacks, thus reducing their ability to perform the required tasks. Finally, MacDonald, Colotla, Flamer & Karlinsky's (2003) study found that in some cases PTSD develops into such a serious case that it causes sufferers permanent disability forcing either a career change or, in the worst case, a permanent inability to be employed.

Problems that may hinder employers and insurers from carrying out legal obligations

On top of the numerous and complicated laws, legislation and regulations, that in themselves pose a problem for the employers and insurers in their ability to achieve a level of understanding, today's climate of economic uncertainty can be seen as a major issue for employers and insurers (Demaine, 2012). A relatively small or medium business can be at risk of not providing appropriate cover for their employees or a satisfactory return to work program due to the large costs involved. The absence of these requirements is illegal and places a number of parties at risk (WorkCover, 2011).

The issue of feigning in the PTSD realm poses another problem for employers and insurers that may disrupt any legal processes. PTSD is a relatively easy injury to feign due to its subjective nature. The process of determining whether the affected individual's compensation claim is genuine can increase difficulty in carrying out a correct compensation claim processes (Resnick, West & Payne, 2008). Additionally, the process can deteriorate the relationship between the affected employee, the employer and the insurer. Investigations into the legitimacy of a PTSD claim can cause the sufferer to respond defensively and subsequently hinder the fluidity of the claims process(Compensable injuries and health outcomes, 2001).

Conclusion

It has shown that PTSD is a serious ailment that can occur to anybody who is placed in an extraordinarily dangerous or life-threatening situation. The mental symptoms that a case of PTSD can present are of a high intensity that it tends to affect the physical well being of a sufferer. PTSD is also prone to negatively affecting the sufferer's social and professional networks. Being such a serious mental impairment, PTSD poses many threats to an individual's ability to successfully return to work and resume normalcy within their lives, with many affected individuals experiencing permanent effects. The smooth process of making a compensation claim is also at risk due to PTSD being an easily feigned injury causing further unnecessary stress upon the employer and employee. Finally, like all mental disorders, PTSD is relatively misunderstood, understudied and on the rise in reportable cases and subsequent costs. It is hoped that a greater awareness and acceptance will be gained in the near future through further examination and research.

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BOOK REVIEW
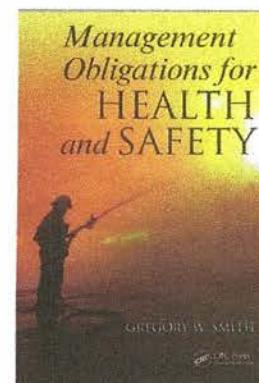
Management Obligations For Health and Safety

Author: Gregory W. Smith.
Publisher: CRC Press. Taylor & Francis Group.
Review by Janis Jansz. RN, RM, Dip. Tch, Grad Dip OHS, MPH, PhD. FSIA. Senior Lecturer Occupational Health & Safety Environment Health, Curtin University. Adjunct Senior Lecturer School of Management Edith Cowan University.

This book highlights management's obligations for workplace health and safety. The author of this book is a practicing lawyer who uses his knowledge of law cases to highlight how management actions can positively or negatively influence the safety performance of the people who work in an organisation. The author records that having a good safety management system is important, but it is the effective implementation and oversight of this system that determines the workplace culture, and the safety of the workplace, work processes, the people who work for the company and the people who are affected by the services and products of the company.

There are 12 chapters in this book. Each chapter focuses on a particular aspect of safety management and highlights why each factor is important using the findings from accident court case that illustrate the roles and responsibilities of managers and other employees. The information presented clearly shows how each "responsible person's" decisions can affect workplace safety. Accidents analysed include Montara, Deepwater Horizon, BP Texas City, Thomas Bata, The Herald of Free Enterprise, Longford, Piper Alpha, Home insulation, Denbo Pty. Ltd, Triangle Shirtwaist Factory, Hamlet Chicken Processing Plant, Excalibur, Gretley Colliery, Chernobyl, Western Power, Black Hawke 221, CICG Construction Company, HMAS Westralia, Owens Container Services Australia Pty. Ltd., Active Learning and Leisure Ltd., Space Shuttle Challenger, BP Grangemouth, Moura, and other accidents for which there are court case transcripts. This book includes information related to safety management that is relatively recent as it covers Safety Culture which is a term that was first used in 1987 by the International Nuclear Safety Advisory Group in a post accident review of the Chernobyl nuclear disaster to the beginning of recorded legal requirements to manage workplace safety that were included in law in 1760 BC in the Code of Hammurabi.

This book is different to other workplace health and safety management books that I have read as it takes a case study approach and tells a story, using legal transcripts and findings, to illustrate points related to safety management that are often not realised or forgotten by Chief Executive Officers, but which are very important to managing workplace safety. For people working for companies that wish to be learning organisations this is a good book to read and use. It is written in an interesting style that everyone from Workplace Health and Safety Representatives, to Managers, to Chief Executive Officers can read and learn from. I work as a university educator and have chosen this book to be the textbook for a postgraduate unit of study on accident prevention and safety management as the book "Management obligations for health and safety" covers these topics in enough detail to develop the accident prevention and safety management skills of the next generation of workplace health and safety professionals.

If you would like to purchase (price Australian $89.95) a copy of it this book can be obtained from Nadine.Raydan@macmillan.com.au or from Boffin Bookshop 806 Hay Street, Perth, Western Australia.

Spinal Cord injuries. The impact, effect and returning to work.

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Abstract

Purpose. Spinal Cord Injuries in the workplace cause significant affects on the individual, their family as well as the employer. The purpose of this article was to research current literature around spinal cord injuries and their effects as well as the legal obligations of the employee, employer and insurer for the injured worker returning to work.

Method. To obtain the literature required for this review, literature was obtained using Science Direct and Google Scholar with the search parameters set from 1997-2012. Key words included; spinal injuries and workers compensation; return to work and spinal injury; legal obligations and workers compensation; workers compensation and injury management; employer and spinal injury; workers compensation and back injury. Articles that were identified in the search were reviewed and relevant publications were obtained and cited within this review.

Conclusion. Spinal Cord Injuries that occur in workers within the construction industry have the potential to alter the individual's life due to the physical and psychological effects of the injury which also affects the family and employer of the worker. Returning to work is a key factor that helps promote motivation and rehabilitation for injured workers suffering a spinal injury, however there are certain physical and psychological barriers that the injured worker faces when returning to work as well as certain obligations they are required to follow to avoid financial penalties. The employer and insurer have legal obligations they must adhere to according to the Workers Compensation and Injury Management Act of Western Australia 1981 when an employee is returning to work, however problems can arise resulting in these obligations not being carried out.

Key words: Spinal Cord Injuries. Workers.

Introduction

The construction industry had 17% of all serious workers compensations claims between 2008 and 2009 (Safe Work Australia, 2011). Twelve percent of those claims were fractures and a further 6% resulted in disorders of the spinal vertebrae with the lower back representing majority of these claims (Safe Work Australia, 2011). The total cost of workers' compensation claims for 2005/06 within Australia was $57.5 billion dollars (Safe Work Australia, 2009). Of the total claims a third was related to the injury and disease which employers bear 3% of the total cost, injured workers bear 49% of the costs and the community bears 43% of the total cost (Safe Work Australia, 2009). The cost of the injury borne by the injured party should be incentive enough to return to work after an injury.

Returning to work can be difficult for individuals who have suffered a spinal cord injury as the recovery period of the injury, depending on the severity, can take up to a year or even three years for the injured worker to be able to return to work, or the injured person may never return to paid employment (Lim & Tow, 2007). The injured party not only has to deal with the physical effects of the injury but also the psychological affects this injury has on them as well as their family and the company the person works for (Lim and Tow, 2007).

The purpose of this literature review was to research current literature around spinal cord injuries in the work place and identify the effects this injury has on the individual, their family and the company the person worked for. The second part of this review was to identify the obligations of the employee as well as identifying the barriers that may prevent the injured worker returning to work. This section also discusses the legal obligations the insurer and employer have under the Western Australian (WA) Workers Compensation and Injury Management Act, 1981 towards the employee.

Methodology

To obtain published literature to review for this paper the use of Science Direct Database and Google Scholar was used. Numerous searches were conducted with Science Direct with the search parameters set to 1997 to 2012 with full text journal articles to be identified. The key words used within searches included; spinal injuries and workers compensation; return to work and spinal injury; legal obligations and workers compensation; workers compensation and injury management; employer and spinal injury; workers compensation and back injury. Articles that were identified in the search were reviewed and relevant articles were obtained and cited within this review.

Further searches for articles were conducted using Google Scholar. The same search parameters were used. Using the advanced search of Google Scholar the following key words were used; spine injuries, effects, workers compensation and

spine injury and the effects on family members. Useful articles were obtained, reviewed and cited within this review.

Additional research and documentation was obtained to support the journal articles through the Safe Work Australia website publication sections as well as the Workers Compensation and Injury Management Act, and the WA workers compensation legislation documentations in order to understand the obligations of both employees and insurers.

35 publications were reviewed in total and 16 are referenced in this article

Spinal Cord Injuries

Work related injuries within the construction industry are extremely high with 77% of injuries resulting in serious workers compensation claims (Safe Work Australia, 2011). Injuries can occur from numerous avenues and result in a number of injuries including spinal cord injuries, which can result from a fracture in the spine that dislocates the vertebrae (National Institute of Neurological Disorders and Stroke, 2012). The damage begins the moment of injury when displaced bones or fragments bruise or tear into the spinal cord tissue (National Institute of Neurological Disorders and Stroke, 2012). Such an injury can occur on a construction site when a worker falls from a height or material such as a wooden beam falling landing on the workers back.

This injury can result in two types of spinal injuries. A complete injury refers to an injury that results in a complete loss of function below the level of a cervical injury referred to as paraplegia or complete quadriplegic. An incomplete spinal injury results in some sensation and feeling below the point of injury (National Institute of Neurological Disorders and Stroke, 2012). Both these types of injuries have significant physical and psychological effects on the individual as well as the family and the employer.

The effects of Spinal Cord Injuries

Individual

Spinal cord injury (SCI) is a catastrophic injury that suddenly changes a person's life. This injury results in physical changes (depending on the severity of the injury) such as; inability to move and or feel body parts, the loss of control over internal organs functions, and breathing maybe compromised. Although cognitive and intellectual functioning of the individual is not altered the individual will have psychological, emotional and social implications that can significantly affect the individual (Vocaturo, 2003).

The physical effects of the SCI is largely dependent on the age of the person injured and the extent of the injury which both play a role in indicating long term impairments and limitations associated with this injury (Vocaturo, 2003). Some of the long term complications associated with SCI include; loss of bladder and bowel function, spasticity, chronic pain, sexual dysfunction and variations in blood pressure. Rehabilitation both physical and psychological in the acute phase of the injury is crucial in order to reduce the negative impact of the trauma as well as rehabilitation success. Table 1 identifies how to interpret the stages of grief theory for patients with SCI (Vocaturo, 2003) indicating the importance of accepting the stages of grief. Table 1 identifies the stages of grief for patients with spinal cord injury.

Table 1. Stages of grief (Vocaturo, 2003, p. 106).

TABLE 5-1	Interpretation of Stage of Grief Theory for Patients with Spinal Cord Injury	
Stage	Interpretation for SCI	Function
Denial	Hope of recovery and return to premorbid functioning	Maintain premorbid identity
Anger	Increased awareness; external expression of emotion	Control situation or destiny
Bargaining	Hope of improvement	Maintain motivation for treatment
Depression	Uncertainty of future; defeat	Grieving of losses; preparing for future
Acceptance	Willingness to do things differently	Regain quality of life

As a result from the physical effects an individual may have from this injury they may also experience and suffer common psychiatric disorders. These can include depression, anxiety disorders including posttraumatic stress disorder and acute stress as well as substance use disorders and suicide (Lim and Tow, 2007). According to Vocaturo (2003), depressive symptoms occur in these individuals due to changes in sleep patterns, low self efficacy, dependency on others, financial stress and helplessness. However it is further indicated that retuning to work and less worry over finances can improve signs of depression.

Substance abuse is common among SCI due to the medical and psychological implications of the injury and dependency on medication to reduce chronic pain. Patients who are not coping with the injury may also turn to drugs and alcohol as a way of coping and or emotional numbing. Suicide in SCI patients is also an issue to be wary of as for some patients this is the only option to be free of the pain and psychological disorders (Vocaturo, 2003).

Research by Krause, Saunders and DeVivo (2011) indicates that to improve the motivation, quality of life and mortality of individuals who have a SCI the economic and financial state of the individual and their family is just as important as the age, sex, race, severity of the injury and physical implications. Therefore as indicated and recommended by Meade, Lewis, Jackson and Hess (2004) it is imperative that in the early stages of the rehabilitation of the individual that a vocational rehabilitation goal is set i.e. return to work program as well as the physical rehabilitation goals. As vocational rehabilitation provides a positive goal for the individual around promoting the expectation of returning to work post injury and can be used as a pull factor to provide meaning and direction to the individual throughout the process of rehabilitation.

The Family

SCI imposes multiple stresses not only on the individual but also for the family members as one injured family member can affect the whole family system (North, 1999). The impact of the injury on the family members can alter the relationships within the family and roles within the family maybe dramatically changed (North, 1999). These drastic changes in the family roles contribute to stress as spouses may also become sole income earner as well as the caregiver (Vocaturo, 2003). The reason the stress is so prominent is due to the caregivers having to learn new domestic roles as well as how to physically care for the injured family members potentially adding strain on the family and marital interaction (Vocaturo, 2003).

North (1999) documents that, in addition to adjustments and stress of the physical disability of the individual, additional emotional factors that the family may feel are associated with injury including; frustration, isolation, guilt, resentment, depressive symptoms and fatigue. North (1999) continues to

report that in addition to the stress and emotional issues associated with SCI, family members also struggle with a wider range of factors such as financial difficulties due to loss of income as well as rising costs of the injured family member, role reversal and legal costs (if applicable).

Workers compensation provides some financial relief to the family of the injured individual however rehabilitation period of the SCI individual is the most costly due to equipment, attendant care and medical treatment. Although some or majority of this maybe covered there are still indirect costs related to loss of earnings and productivity especially if the age of the injured is 30 years old or younger (Krause, Terza and Dismuke, 2008). An additional long term effect for family members is the type of job and level of income their loved one will be able to return to after they have recovered from the injury. According to Krause (2003) those more likely to return to work after SCI are those who have an education and are qualified to return to work as well as having experience in a professional occupation as they will most likely return to a job in a professional environment or administration area. However according to Krause et al (2012) another significant effect SCI can have on family members is the likelihood that the individual may not be able to returning to work as for about every 3 injured individuals only 2 will be able to return to work successfully.

The family of the injured individual are a crucial element in the recovery of the individual, as research identifies that those individuals who have strong family and social support tend to report less feelings of helplessness and demonstrate greater participation in activities. Therefore it is very important that family members are included in the rehabilitation plan and are also provided psychological support if needed to help with their added stress and changes within the family (Vocaturo, 2003).

The Employer

The effects to the organisation from the injured employee are minimal in relation to the individual and the family members. Some of the direct impact and costs an injured worker has on the employed company is in relation to cost of the insurance company premium rising due to injured worker, cost of rehabilitation and re-training the worker for other job functions in order for the injured worker to return to the workforce (Injury and Risk Management Western Australia, 2007).

Other indirect costs that affect the employer include; loss of production, experience and knowledge, management time spent investigating the accident and sourcing and training a temporary employee. Additional effects may be seen in other employees who worked with the injured employee, therefore counselling services may need to be offered as well as reassuring the other workers of the safety measures and possible retraining in the area of safety (Injury and Risk Management Western Australia 2007). The reputation of the company may also be affected by the employee injury if there

is adverse publicity and can affect possible stakeholder involvement in the company in the future.

Obligations and Problems for Returning to Work

All employers require a return to work program as part of their legal obligations to their injured employees. This program is required to meet the standards and requirements of the Workers Compensation and Injury Management Act as a minimum (Work Cover WA, 2011). As part of this program the injured worker has the opportunity to participate and have input into their return to work program while the employer needs to take steps to ensure the worker agrees and complies with this program. With an injured worker returning to work there are certain obligations and barriers they face as well as problems the employer and the insurer face around a worker returning to work after a spinal cord injury.

Obligations of employee

All employees returning to work have certain obligations they need to fulfil according to Work Cover WA (2011) including:

- The injured party has the right to have a say in their return to work management plan and to have a union representative present if required.
- Cooperate and comply with the return to work/injury management plan to the best of their ability.
- Keep in touch with the employer regularly and provide accurate information.
- Notify the insurer if any of employment circumstances change and or if the treating doctor or treatment provider's change.
- Attend medical and other treatment appointments arranged by the treating doctor, or where permitted, arranged by the employer.
- Immediately inform the Injury Management personal in charge of the case if the employee has difficulty carrying out the return to work program.

Employees have a large responsibility around workers compensation and returning to work obligation which are generally explained to them by the insurer or by a workplace injury management co-ordinator.. However if the employee has serious physical and psychological ramifications from the injury they may not understands their obligations and therefore could result in legal ramifications around the worker not adhering to their legal obligations resulting in penalties (Workers Compensation and Injury Management Act, 1981).

Barriers for employee returning to work

An individual with a SCI has many barriers that may prevent the individual from complying and returning to work and in following their retuning to work program including;

- Lack of participation in rehabilitation and return to work programs as well as lack of knowledge and understanding of legal obligations around workers compensation claims and return to work policies.

- Poor communication and relationship with workplace people and insurer.
- Workers compensation claim is being disputed around health status of injured worker returning to work.
- Level of education achieved and experience in the work force before injury occurred has been known to be a barrier. Studies have indicated that injured individuals with less than high school education had a higher unemployment rate. Further studies indicated that individuals with University degrees had an employment rate of 72% (Hess et al, 2000).
- Gender, race and age can be a possible barrier as those individuals who are young at the occurrence of injury will more likely return to work which increases 3 years post injury (Hess et al, 2000). However employees injured over the age of 50 were significantly less likely to return to work (Krause, Terza & Dismuke, 2008).
- Severity of injury and family support provided has been identified by a barrier. Hess et all (2000) identified those who had martial relationships and strong family support are more likely to return to work than those who had little or no family support.
- Time is a barrier for returning to work. As Krause (2003) states that employment rates improve with increasing time since injury. However 2-3 years out of employment companies may see as a negative and the individual may have trouble returning to the same organisation due to the time spent recovering from their spinal injury.
- Other barriers include physical inability to perform the same type of work post injury, poor health, stamina and endurance to work, loss of benefits, inaccessibility of the workplace, lack of transportation to get to work and not feeling physically capable of working (Meade et al, 2004).

Problems for the employer

An employer may have the following problems that hinder the employer carrying out their legal obligations.

- Workers compensation claimed is being disputed by insurer, which may result in legal action and additional financial costs.
- Disputes with the insurer and or worker around their obligations imposed in the injury management plan/return to work program written by the insurer
- The retuning to work program employers have identified does not adhere to the legal requirements of the Western Australian Workers Compensation and Injury Management Act 1981 resulting in employer being liable for penalties.
- Not cooperating with the insurer in providing retraining or different job opportunities to the injured worker who is not able to return to their pre-injury job.

- Not engaging in assisting the individual with work place rehabilitation providers if the individual faces barriers in returning to work.
- Financial constraints and limitation around re-training and/or providing additional training for the injured worker.
- Delays or setbacks in the employee's recovery from the injury and repercussions of injury.
- Employer may experience barriers in regards to accommodating an injured worker, especially if the injured worker in question is in a wheel chair and requires wheel chair access and other altered amenities.
- After the accident occurred in the workplace the employer may have been forced to implement workplace safety changes as far as reasonable practicable, which maybe an additional cost which the employer cannot afford.
- Worker disagrees with the employer about suitable duties and fitness for work that the employer has provided for the worker (Work Cover NSW, 2010).

Problems for the insurer

For insurers to carry out their legal obligations outlined in the Western Australian Workers Compensation and Injury Management Act, 1981 they require employees and employers to adhere to their legal obligations around workers compensation. However insurers may have to deal with potential problems that can prevent them from carrying out their legal obligations. Some of these difficulties may be as follows.

- The employee injury management plan is not being followed by the worker due to disputes in the injury management plan and treatment strategy process.
- Worker disputes their fitness level for returning to work.
- Employer disputes the workers fitness to return to work and level of injury or disability.
- Worker disputes the suitable duties of work provided by the employer.
- Limited and or poor involvement by the employer to provide input into the injury management and return to work program.
- Difficulty with encouraging medical professions to sign off on the workers level of fitness and approval to return to work.
- Poor involvement by the employee around the return to work program.
- Disputes by employee and employee around the claim and level of compensation paid to the employee.
- Employee believing injury was due to work place negligence and therefore filing for common law benefits.
- The return to work program is not up to standards of the code (Work Cover NSW, 2010).

To avoid the problems that may arise for the insurer and employer all three parties need to communicate effectively to ensure all parties agree and understand the retuning to work program and their legal obligations involved with the employee retuning to work.

Conclusions

Spinal Cord Injuries occur in workers within the construction industry. These injuries have the potential to alter the individuals life due to the physical effects, as well as the psychological effects, this injury has on the worker. Spinal cord physical damages can leave the individual as a paraplegic or a quadriplegic resulting in psychological effects such as depression, anxiety disorders as well as an increase substance use disorders and suicide. The result of this injury not only has an effect on the individual but the family members of the worker as this injury can put financial and emotional stress on the family members of the injured worker due to loss of income and becoming the primary care taker of the injured worker. An injured worker also has an impact on the employer as it can result in direct costs around increased insurance premiums and indirect costs including loss of production, experience and knowledge as well as sourcing and training a replacement employee.

Returning to work is a key factor that helps promote motivation and rehabilitation for injured workers suffering a spinal cord injury, however there are certain physical and psychological barriers that the injured worker faces when retuning to work as well as certain obligations they are required to follow to avoid facing penalties. The employer and insurer have legal obligations they must adhere to according to the Western Australian Workers Compensation and Injury Management Act 1981 when an employee is returning to work. This article has reviewed the effects a spinal cord injury has on the individual, their family and employee as well as the legal obligations and problems that can arise for the employee, employer and insurer around the returning to work program.

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Stress in the Workplace

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Abstract

Stress related work injuries and illnesses are becoming a concern across the world with numbers increasing across all countries. Two types of stress related work claims are prevalent, those that arise from physical injury or illness or witnessing a traumatic event and those that arise from a mental disorder or reaction to a work situation. This paper presents a summary of published literature in the context of the effects that stress in the workplace has on the individual, family and organisation.

Keywords

Work Related Stress. Stress and workers compensation. Stress claims. Mental Health. Stress Related Illness. Family life

Introduction

There has been a worldwide increase in work-related mental disorders, affecting all industries and professions (Guthrie, 2010). Stress related work injuries or disease is one of the most complex issues in our modern day workplace. It represents the most expensive form of compensation claim in almost the entire country of Australia. The main cause that has been identified is injuries from body stressing and mental stress disease caused by work pressure, harassment, workplace violence, exposure to a traumatic event, suicide or attempted suicide and other mental stress factors. (Safe Work Australia, 2010).

In relation to mental stress Guthrie, Ciccarelli & Babic (2010) classify stress related work claims into distinct areas. The first area is as a result of trauma or witnessing a traumatic event. These are classified as "physical-mental claims". Another sort of physical–mental illness is when a mental illness or injury occurs as a result of a physical injury. The other type is classified as a disease and can be caused by work or be a pre-existing condition exacerbated by work, categorised as a "mental-mental" claim.

The industries predominantly impacted by mental stress claims are, according to a Safework Australia publication, (2006, p15):

- Health and Community Services.
- Education.
- Personal and other services.

Guthrie and Jansz's (2006) discussion is congruent with this by saying that the professions which featured the most for stress claims were social welfare, miscellaneous service workers, school teachers, nursing professionals but they also added a specific high category for police officers. Interestingly, most of these professions (excluding police officers) have a high number of women working in them and this correlates to work related stress claims being predominantly from women. Jansz and Guthrie (2006) devote a paper to this discussing the experience of workers compensation by women. Guthrie (2005) says that workers in the education industry produce the highest amount of stress claims, with the highest costs for workers compensation and the longest duration of time of work.

More recently in Australia, mental disorders formed 5.5% of all workers compensation claims and 5.7% of all complaints were as a result of the Psychological System in terms of location on the body. Of the 18735 serious claims for diseases, *Mental stress* accounted for 35%. (Safe Work Australia, 2012).

Methodology

The method used to search for literature for this paper was an electronic search of the Curtin Library Database as well as a Google Scholar search for articles of relevance. Only material from 1990 was considered, with general articles on stress excluded. There was extensive information available about work related stress and the associated return to work process. The first search using the keywords 'stress work related" and was constrained to the last 20 years. Of the publications obtained 671,299 were peer reviewed articles, and 25,928 were books. To further refine the search the author referred to the Science Direct database. From Science Direct, using the same keywords and time constraints, there were 503,381 articles available. Further refinement of these articles was based on key phrases such as 'individual effect of work related stress', 'family effects of work related stress' and the 'organisational impact of stress'.

'Stress work related' was also used as the search criteria on the legal website www.austlii.edu.au and this produced 26,347 publications. These were scanned and 5 articles were reviewed for this paper, based on refining the search criteria to work related stress impacts. They were all related to stress related work in the education sector. Australian and Western Australian Government websites were also reviewed extensively to source up to date statistics and other information for work related stress injuries and illnesses as well as to understand the relevant Workers Compensation legislation. In this literature review 22 articles and other references have been cited.

The effects of a Stress Illness

Individual

Stress impacts on a person in a whole of body way, in that all body systems are affected by it. Physical reactions include increased heart rate, blood pressure, muscle tension and

general arousal and alertness. Some other effects include increased body temperature and pulse rate. This is the initial response by the body. If the stress continues the body attempts to cope by altering hormone levels and releasing other chemicals such as cortisol from the adrenal system to help regulate all systems. If the body is not successful at managing itself, physical and psychological exhaustion can result and the body's immunity can drop making the individual susceptible to disease and illness. There is a large amount of research conducted on the impact of stress on Australian Government employees, which documents the physical responses to stress, and one such finding is that chronic perceived work stress is associated with blood pressure changes (Williamson, 1994; Parslow et al, 2004).

The Australian Government (2006) identifies that the main effects of stress on an individual can be categorized into three broad categories: psychological – anxiety, depression, distress, adjustment disorder, behavioural –irritability, poor diet, sleep problems, stopping normal activities like socializing with friends and work colleagues, physiological – raised blood pressure, elevated risk of cardiovascular disease. The government also identifies a link between stress related illness and other musculoskeletal disorders, cancer, digestive disorders, tiredness and impaired immunity or obesity.

The psychosocial impact of a stress related illness can be behavioural changes such as withdrawal from usual social activities, isolation, resorting to alcohol and drugs to soothe and relieve the symptoms and feelings of stress and anxiety and a change in work performance either working harder or working less. This could be in the form of either increased absenteeism, and some times cases of "presenteeism" - being at work but not functioning normally or at all (Cocker et al, 2011). Oranea (1999) identifies a whole range of issues experiences by nurses following traumatic events that include negative feelings, negative team member relationship issues, negative behaviour from others and psychologically bad working conditions.

Parslow et al (2004) says that both men and women who reported higher levels of work stress were found to have poorer mental health and well-being. It follows that an individual who is suffering from work related stress is on a cycle in that the work stress causes the mental suffering: and the mental suffering then lessens the individual's ability to cope with the work stress and increases the impact of stress on that person. The other major impact of stress is the thought by the individual suffering that other may believe he/she is malingering and not really sick as the symptoms and causes can be very difficult to articulate or share (especially in the case of the "mental-mental' stress illness).

The impact of having to work through a workers' compensation claim can exacerbate the stress of the individual too. Sometimes other injury claims can affect an individual and result in a stress reaction. In a recent case in Western Australia,

called "Pecenka -v- Minister for Health" (November 2010), the plaintiff claimed for a psychiatric injury as a result of being accused of breaking equipment to deliberately cause herself injury. The claim for damages for the shoulder injury was successful but the resulting stress claim (psychiatric injury) was dismissed due to a range of prior incidents related to Pecenka's employment.

The financial impact of a stress related illness can be severe, as the person may not be able to work and once all avenues of workers' compensation payments or common law claims are exhausted, may find themselves reliant on some form of welfare payment. So loss of income is a common effect on an individual. Women who work in low paid work often have a bad experience with workers compensation claims as success in claims can be dependent of the personal power of the person concerned. From this perspective, women can be affected more severely than men. (Guthrie and Jansz, 2006; Lipscomb et al, 2007).

As a high proportion of psychosocial stress claims that are illness or disease based are related to managerial behavior, this in itself can be a source of distress. So the very act of attending work can impact on a stressed individual. For example, limited input to decision making, no real choice of how to use skills, stressful job demands and low social support and work. (Parslow et al., 2004; Dollard & Winefield, 2002)

Organisation/Employer
Stress in the individual employee can affect organisations in many ways. Some of these effects include absenteeism, presenteeism, high turnover of staff, low levels of morale and job satisfaction, interpersonal issues between staff, lower productivity levels, higher costs to cover workers compensation claims, working in an unsafe manner, increased legal actions for stress related claims.

Parslow et al (2004) in their study of government employees found that employees working at lower levels in the organisation had higher levels of stress. Those in more senior roles had lower stress levels as they had more control over their work. This is supported by Guthrie's (2005) findings that teachers had the highest levels of stress due to "lack of control" of their work. The implication of this for major organisation is far reaching and includes the requirement to consider managerial strategies designed to reduce the stressful components of work, allowing great control over work for teachers and lower level positions in organisations. The consideration of the "job strain" model developed by Karasek and Theorell (in Parslow et al, 2004) could help the organisations consider the combination of high job demands and low job control on the impact of workers health.

Parslow et al (2004, p.43) support this idea by documenting that:
The employees' health is less affected by their position within this structural hierarchy and is more associated

with various work stressors than can be experienced across all levels of employment. For a large employer, reducing the impact of work stress on its workforce may be beneficial, not only for individual employees but for the productivity of the organisation as a whole.

A worker can have a pre-existing stress illness and still make claim for stress related workers compensation, providing that they can show how the current work environment exacerbated the stress. This is peculiar to the Australian Workers Compensation laws with other countries requiring the individual to prove the stressful nature of the job (Work Cover WA; Guthrie, Ciccarelli & Babic (2010); Hamm et al, 2007). The implication for Australian organisations, is that, Stress Related Injury and Illness could become a high cost area and that medical screening prior to employment including checking for mental illness could be required.

Family

The difficulty with understanding stress is that it is hard to determine the causal factors, unless the stress is caused by the environment (bioecological stressors), for example heat or noise related stress, which is easy to identify. Stress that is difficult to identify can be work related or external stressors or a combination of both. It is fair to say that if a person is suffering from stress in the workplace, this will also be reflected at home. So the impacts on family life can be felt when the person suffering from stress exhibits symptoms such as behavioral changes and stops participating in family events, has sleep and/or eating disorders and other such problems.

There is published research which focuses on the effects of work related stress on women and family life as a link has been found between work and family life balance. Lawson (2008) coins the term "Boundary-spanning" meaning how work and family influence each other and discusses the Voydanoff (2005) model. If there is a fit between the resources and psychological assets that work and family offer, the employee can function well; if not, then this can result in stress. The conclusion is that work can cause stress at home and stress at home can cause stress at work. Lispcomb et al (2007) in the study of poultry workers also show a link between work conditions and family life focusing on low wage earning people in North Carolina.

Other research shows that women in higher level professions did not present the same levels of work related stress mainly due to greater levels of autonomy, decision latitude and skill variety. The study by Ooemens et al (2007) discuss the three characteristics of job design that can impact of mental health. These are autonomy or decision latitude, skill variety and what has been called job demands or work pressure. These issues can cause psychosocial stress.

The Workers Compensation Obligations of Employees

Employees in Western Australia are, as advised by the Work Cover Western Australia website (2012), required to:

Report any injury early so in the case of a stress related illness, this must be reported as soon as the employee is aware of the symptoms
1. Worker's Compensation forms must be completed
2. Attend medical and other treatment appointments arranged by the employee's doctor or the doctor prescribing treatment
3. Provide copies of medical documentation such as medical certificates.
4. Communicate openly with all parties in a reasonable manner and timeframe
5. Provide original copies of their medical certificates in a timely fashion
6. Carry out plans and actions in the return to work program
7. Discuss with the organisation's Injury Management person if they are having any trouble with the program
8. Participate in all aspects of workplace rehabilitation if referred to a provider
9. Advise of any changes in contact details or changes to doctors or treatment providers

There are four main types of claims for work related mental stress illnesses allowable under the West Australian Workers' Compensation and Injury Management Act (1981). This is for mental stress that occurs:
1. After exposure to a traumatic event or workplace violence;
2. As a result of work pressure;
3. As a result of work-related harassment and/or workplace ;
4. As a result of other forms of harassment.

However these claims are allowable only if they do not fall with Section (4). For purposes of the definition of "disability", the matters are as that are <u>not allowable</u> for a workers' compensation claim to be made in relation to the actions include the following:
(a) the worker's dismissal, retrenchment, demotion, discipline, transfer or redeployment;
(b) the worker not being promoted, reclassified, transferred or granted leave of absence or any other benefit in relation to the employment; and
(c) the worker's expectation of:
   (i) a matter; or
   (ii) a decision by the employer in relation to a matter referred to in paragraph (a) or (b)"

However it is indicated that disability "does not include a disease caused by stress if the stress wholly or predominantly arises from a matter mentioned in subsection (4) unless the matter is mentioned in paragraph (a) or (b) of that subsection and is *unreasonable and harsh on the part of the employer*".

This means that an employee cannot claim a stress related illness that was as a result of what has also been called 'management prerogatives" that is the decisions that are made

as listed above. For a claim to be successful that was as a direct result of Section 4 (a), (b) or (c), it is the onus of the employee to prove that the matter is unreasonable or harsh on the part of the employer. This puts a lot of pressure on an employee not to make a claim in the environment where a manager is the target of the complaint. Guthrie and Jansz (2006) discuss this very issue when they discuss women's experience of Workers Compensation in that claims arising from work related stress "sorely test the personal power of a worker". They have to do so by giving evidence in a review hearing usually in the presence of the employer and sometimes the manager who the complaint is about and with unsympathetic insurers in the room also.

Guthrie (2005) and Guthrie et al (2010) present excellent reviews of the effect of legislative interventions for work related stress. They identify that across all jurisdictions in Australia, Workers Compensation claims for stress related injury or disease is increasing. The suggestion is that the cause for this is from a range of factors but relevant to this paragraph is the change to the legislation, which was designed to reduce costs of claims. The way has been attempted through legislation is the introduction in 2006 of "exclusion provisions". (2010:106). This was first introduced in the Commonwealth Safety, Rehabilitation and Compensation Act 1988 but has now been extended to all other jurisdictions.

However, even after the introduction of exclusion provisions (WA–1993), there has still been a slight increase in the overall number of stress-related claims. The reasons for this are unclear and there are speculative suggestions such as industries with rapid economic growth becoming more stressful as work intensity and pressure increases or that employees are being expected to complete more work with less resources and support (Guthrie, 2010).

Most Australian legislation does not require a worker to show that the workplace was stressful or extraordinarily more stressful than some other workplace, but simply to show that the employment was a contributing factor, either at a significant or substantial level, to the stress-related condition. It is the level of contribution by the work to the stress-related condition that is the focus of attention for Australian legislators (Guthrie, 2005).

Barriers preventing Return to Work From Stress Related Illness

Time for processing of claims and Overly Complex Insurer Claims Processes
Slow processing of claims can cause stress and further delay the return to work. The very length of time a stress claim lasts can add pressure to a person who is recovering from stress and thus prevent a return to work. It becomes a cycle of stress, time off work and then further stress. Some people do not receive treatment because insurers have overly complex case management systems designed as a deliberate barrier to claims,

and the doctors do not know how to work within these systems. So stressed employees miss their appointments and do not receive any treatment (Hamm et al, 2007)

Claims process itself is stressful
Guthrie (2005) says that another barrier to preventing returning to work by a worker affected by work place stress is the actual stressor can sometime be the actual claim or litigation itself. This can increase the length of the claim and the complexity surrounding the claim increasing the cost of the claim and the length of time before the worker returns to work. Stress may also be a by-product of another injury or illness, which has caused a worker to be away from work (Guthrie & Jansz, 2006).

The Stress reaction to being off work
The reaction to being off work causes mental stress, which can prevent the return to work. Barrett and Browne (2010) reference Krestan (2000) and Robertson & Brown, (1992) in listing the signs and symptoms of a worker having problems adjusting to their injuries and in the list at least half could be terms used in stress related workers compensation claims. These could be symptoms such as anxiety, anger, depression, fear or guilt- these are described as reactions to oneself after sustaining an injury. These are all also symptoms of mental stress as was described the article written by de Boer et al (2011) about hospital workers experience with work related stress illnesses.

Stress issue identified as another issue – Industrial or Managerial
Barriers to returning to work arise when the claim is refused based on the event that is alleged to have caused the stress is identified as another type of matter; such as managerial, administrative or industrial such as retrenchment or redundancy problems. For example, Guthrie (2005) identifies that in the education environment, the most common mental–mental situations that arise for teachers and lecturers relate to workload issues and stress generated from changes in curriculum and education policy.

Downsizing, Restructuring and Redundancy
Quinlan's (2007) study found that modern day organisations are poorly managed when it comes to considering the impact of staffing levels, business processes and risk assessments, when they are downsizing or restructuring. He found that this environment showed marked increases in mental and physical health problems. The Western Australian (WA) legislation, under the Occupational Safety and Health Act 1984,and under the Occupational Safety and Health Regulations, 1996 requires that risk assessments be completed of the new working environment and consider the "psychosocial and physical" risks in the new environment. This could present difficulties for legal application of a workers' compensation claim. For example, if a claim for bullying that has resulted due to increased workloads from a downsizing exercise, leads to a stress related claim for workers compensation: the managers'

prerogative exclusion could be used by arguing that downsizing is a managers prerogative therefore this claim is not work related.

Other organizational practices such as redundancy can impact on an individual's ability to return to work. Shi (2008) discusses the impact of redundancy on employees and notes that the employee's well being even if they manage to be re-employed quickly is dramatically affected by being made redundant.

Barriers hindering the Employer and Insurer from Carrying out their Legal Obligations under the Workers Compensation and Injury Management Act WA

Establishing a Cause
The hardest thing for workers compensation and mental illness or stress related claims is the legal aspect of proving the link between the illness and the workplace environment or activity in the case of psychosocial claims or, as Hamm et al (2007, p.418) documents, "the issue of causation". This is both from the individual point of view and the company view. For the individual proving that the mental illness is a result of work place stress can be extremely difficult especially when considering in the WA law the exclusions for claims.

For the company the problem lies with individuals who receive inadequate care for their mental illness that is not work related only to have the employee claim that the injury is work related and has been exacerbated by workplace activity.

American health insurers have been reported as not providing adequate mental health care for employees with health related mental issues not work related and then these become work related mental health issues. These issues could be as a result of personality caused stress. This is when an individual suffers stress as a result of the own self-perception or behavioral patterns. The insurers issue is one of cost shifting onto other systems. These cases then become workers compensation cases as sometimes the individual then projects this illness into the workplace and claims it is work related or other times they are just looking for another avenue for recompense and morespecifically, treatment. (Hamm et al, 2007).

Stress related workers compensation claims are easier and usually shorter period when they are trauma related or event related (physical-mental) as the injury is usually more easily understood and classified compared to the mental-mental claims where they can be multi-factorial in causation. Body stressing is the most common workers compensation claim in Australia making up 87% of claims (Safe Work Australia, 2012, p.29).

Establishing the origin of Work Related Stress
Quinlan (2007) in his article about the impact of down-sizing and restricting refers to Barrett (2004) who did an assessment of claims and found that there is great difficulty in determining work and non-work origins of stress, which again is a vicious circle and maybe even borders on boundary spanning given the impact that downsizing and restructuring can have on family matters and following the impact family matters can have on work.

Also a review of common law actions based on bullying and harassment in the UK, USA and Canada (Quill, 2005) found that these cases were very difficult to pursue and could lead to further stressors for an already stressed individual. From the organizational point of view this would further add to costs and damage to reputation, lower levels of productivity etc. In Australia, the situation is very similar. There have been few common law cases of work related stress but the difficulties have been the same: deciding what was work-related, and what was other related stress issues. Because of the low level of common law claims for stress related illnesses, organisations are slow to move to address or be proactive about stress management and prevention.

Precarious Employment
A modern theme of employment all over the world, in Australia and Western Australia is the change to employment conditions. There is a dramatic increase in contract workers, free-lance workers, casual and other forms of employment, a type of employment that Clarke et al. (2007) label as "precarious employment" and they say it contributes to work related health problems. Stress as a result of employment uncertainty and the lack of access to the social networks of a workplace are emerging as key theme for work place health and safety nowadays. Quinlan (2007) also notes that adverse occupational safety and health outcomes, especially higher injury risks, are occurring with subcontracting and outsourcing of work.

Insurers driven by Cost Reduction and Profiteering
Insurance companies acting on behalf of an employer can be driven to reduce cost of the service to the employer and in so doing not enact their legislative obligations completely or thoroughly (Hamm et al, 2007).

Employees
Employees may not attend meetings or furnish required paperwork to enable the legislation to be enacted or followed through.

Incorrect Treatment and or Diagnosis
The type of treatment provided by Doctors and other medical professionals may not be adequate or suitable for the stress condition either when it was a pre-existing condition or as a result of work. This can lead to difficult applying the legislation, as there can be a very marked difference in opinion in regards to mental illness and work impacts.

Conclusion

This literature review has shown that the impact of stress

related illness on the individual could be physical, psycho-social, financial and also cause further stress. The impact on an organisation is on the productivity, costs to the employer, increase in unsafe behavior and lower morale. Families of the individual affected by stress are also heavily impacted.

The main obligations of an employee under the Western Australian Workers Compensation Act 1981 include: immediate reporting of the problem, completing paperwork and following return to work treatment plans instructed by company injury management personnel. Barriers to returning to work include slow processing of claims, the claims process itself, extra stress caused by the claim and by stress being identified as a different issue either managerial or industrial.

Difficulties for employers and insurers in enacting the Workers Compensation legislation include identifying the cause of the stress, identifying work and non-work related stress, precarious employment, lack of employee response or follow-up, cost reduction strategies by insurance companies and incorrect treatment and diagnosis by medical professionals.

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