

WORLD SAFETY JOURNAL

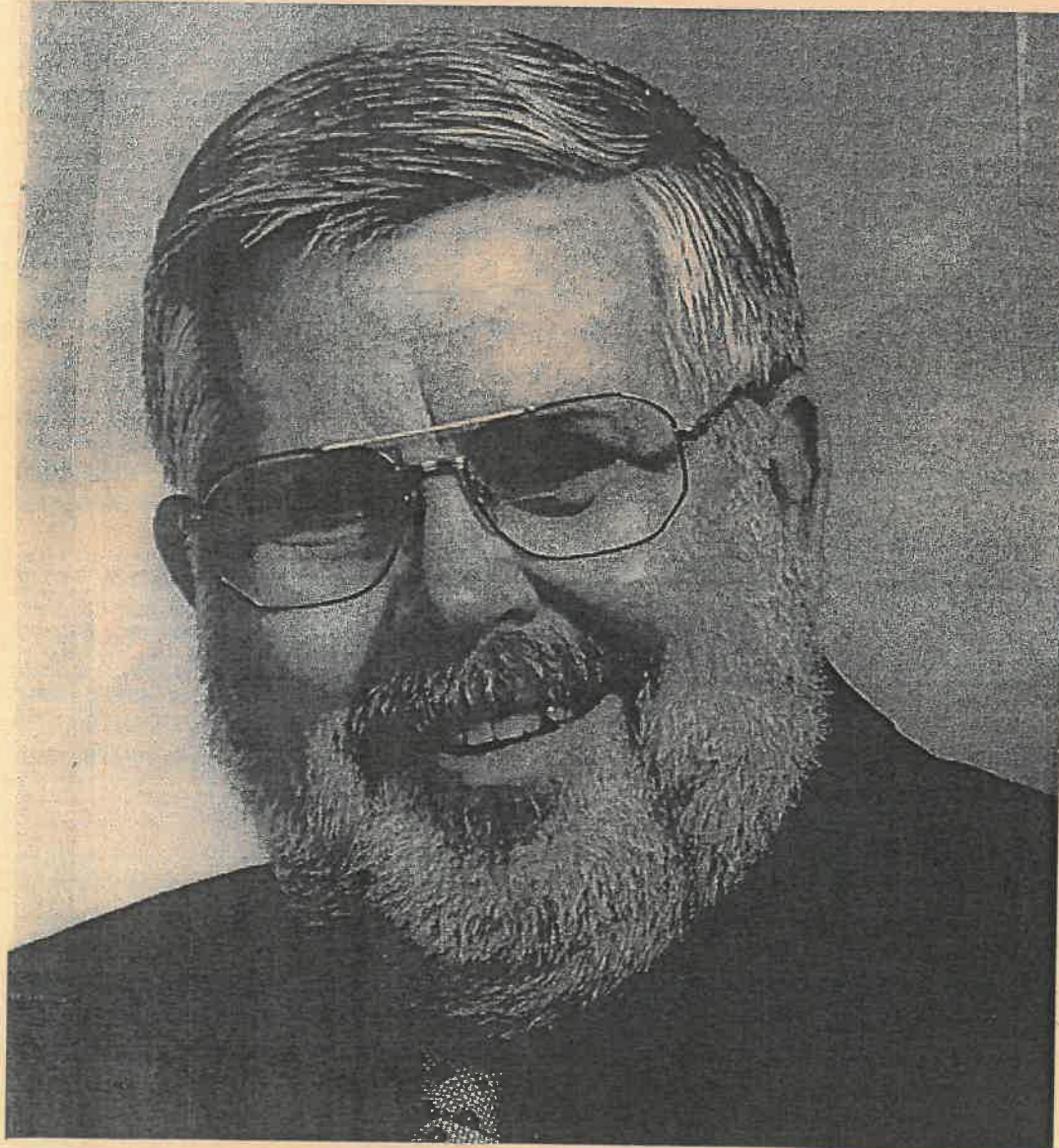
ESP - Enhanced Safety Principles

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- **Hazards vs Risk**
 - **Water Borne Pathogens**
 - **Personal and Road Safety Advice For Travelers**
 - **Use of Total Quality Management Principles To Improve Occupational Safety and Health**
 - **Safety Communications and Consultation**
 - **Safety Management Plan For Emergency Services Field Activities**
 - **Why Is Occupational Safety & Health A Crucial Management Issue for Nurse Managers?**
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Pictured above Dr. John Singley

WORLD SAFETY ORGANIZATION (WSO)

Profile

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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- ❖ Provides recognition for safety publications, films, videos and other training and media materials that meet the WSO required educational standards.
- ❖ Receives proposals from professional safety groups/societies for review and if applicable, submits them to the United Nations for adoption.
- ❖ Establishes and supports divisions and committees to assist members in maintaining and updating their professional qualifications and expertise.
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- March
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- September
- December

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By Dr. Janis Jansz

I had a phone call from an Enrolled Nurse. She was on Workers Compensation payments and had been away from work for 3 months because she was stressed. She wanted some advice before she went to a Workers Compensation Conciliation Review Meeting. The cause of her stress was work related. This nurse was concerned about patient care that was being given which she felt was harming a patient. She went to her supervisor about this care, was not given any support and felt that she was being harassed by the manager because she had highlighted a patient care problem, so she made a Workers Compensation Claim for stress and has not returned to work. In fact she does not ever want to return to work. Other problems she described were being made to lift a very heavy terminally ill patient (who died 4 hours later) without a lifting hoist (to buy a lifting hoist cost money), and being made to be in charge of a ward area with no Registered Nurse (not employing a Registered Nurse saved money) for back up help when she required it. This Enrolled Nurse felt that her employer only cared about profit, not employees' health or safety.



A friend of mine, Sherrilyn Shaw-Mills works for an Insurance Company. Every day she deals with similar Workers Compensation Claims. Sherrilyn feels that many of these claims are preventable. We have put in an application for a research grant from WorkCover Western Australia for Sherrilyn to do her PhD research looking at Pre Claim Prevention of Workers Compensation Claims. For many years Workers Compensation Schemes world wide have attempted to prevent the cost, inconvenience and suffering caused by Long Duration Workers Compensation Claims. The published literature that we reviewed all focused on prevention of Long Duration Claims post claim. The strategies we found were used all seemed to have limited success. Perhaps it was not the interventions used that was wrong. It may have been the timing of the intervention. What Sherrilyn plans to do with the findings of her research into the causes of long duration workers compensation claims, is to develop a model of management for employers to use to implement strategies [specifically targeting employee involvement in every aspect of their work and management practices], to minimise the occurrence of Long Duration Workers Compensation Claims. We plan for the findings of this research to be offered for use world wide to eradicate most long duration Workers Compensation Claims that have psychosocial aspects.

We hope that the outcomes of this research will be that injured or ill workers will be spared the inconvenience, disruption and suffering caused by long duration workers compensation claims which potentially threaten their future livelihood and well being. Employers will be spared the inconvenience and expense of long duration claims that are psychosocial in origin. Insurers will be provided with insight into how best provide assistance to employer groups who are trying to prevent long duration claims from occurring. For governments knowing how to prevent long duration claims before they occur will decrease the cost to society of paying workers compensation and related financial support to employees who are injured or who become ill as a result of their employment. We hope that the findings of this research will also make the medical profession aware of the essential requirements of treating the psychosocial aspects of worker compensation claims.

ARTICLE SUBMISSION

Articles for inclusion in this journal will be accepted at anytime. However there can be no guarantee that the article will appear in the following journal issue.

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 on a 3.5" diskette with the article typed in rtf (rich text format) 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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Articles should be referenced according to the Publication Manual of the American Psychological Association 2002: For example:

Books are referenced as follows

Author, (Year of publication), *Title of publication*, Place of Publication: Publisher

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Articles, where ever possible, must be up-to-date and relevant to the Safety Industry.

All articles are Peer Reviewed by at least two referees before being accepted for publication.

ISSUE DEADLINES

March	31 January	June	30 April
September	31 July	December	31 October

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PROFESSOR DIES AFTER SURGERY

Complications after heart bypass blamed for death

by: Ms. Sarah Hereford, Reporter. Tuesday, March 9, 2004.

Shock and sadness fell upon the College of Information Technology and Engineering (CITE) at Marshall University in West Virginia, United States of America yesterday morning after learning about the death of Dr. John A. Singley, Professor of Occupational Safety and Health. Dr. Singley, who was 71 years old, was admitted to St. Mary's Hospital on Monday, March 1, after complaints of chest pains and shortness of breath. A heart attack was followed up by bypass surgery the following Friday. Heart complications are named as the cause of death Monday morning, March 8, at St. Mary's Hospital.

Dr. John Singley started at Marshall University as an Adjunct Professor in 1987 and became a full-time faculty member in August 1994. Murray Tate, Adjunct Professor in the CITE, said Dr. Singley did more than his share of teaching. "To be considered a full-time Faculty Member you must teach at least nine hours," Tate said. "Dr Singley was teaching 18 hours this semester." Murray Tate received his Master's Degree from the CITE in June 2002 and had Dr. Singley for several classes. "He was one of the best Professors I've had," Murray Tate said. "I considered him more of a Mentor than a Professor. He was tough, but you came out of his classes definitely having learned something. That was his goal."

Dr. Singley received his Bachelor's in Biology from Lehigh University and his Master's and Doctoral Degrees in Biology from Wayne State University. Before coming to Marshall University, he worked as a Safety and Industrial Hygiene Manager for BASF, Corp. in Huntington. He was on the Board of Directors for the World Safety Organization, and a member of several other professional organizations.

At Marshall University, Dr. John Singley was a Member of the Faculty Senate Athletic Committee, as well as Adviser for the student chapter of American Society of Safety Engineers. "Dr. Singley was a person who always stood up for the health of athletes," said Kathleen Miezio, Safety Program Professor. "He cared about individual athletes' health and safety. He worried if they were being worked too hard." Kathleen Miezio said that Dr. John Singley had a strong love for teaching and working with students. "He was such a dynamic guy," Miezio said. "He always volunteered to do anything to help a student."

John Singley enjoyed fishing, gun smithing and being active in Boy Scouts with his sons. Carol Henson, Secretary in the CITE, said he also loved working with high school students. "He has been a Judge in the Fairland High School Science Fair every year since I've been here," Carol Henson said. "He really enjoyed working with students of all ages."

Allan Stern, Safety Program Professor, said the College is trying to find replacements to cover Dr. Singley's classes for the rest of the semester and next fall. "We are shocked and saddened," Alan Stern said. "Courses and programs will carry on and we will do what has to be done to take care of our students." Murray Tate has already taken over two of Dr. Singley's courses. Carol Henson said funeral arrangements are pending and will be announced to through the College's Listserv once they are determined.

Editor's note

I first met Dr. John Singley in 1998 at a World Safety Conference. We spent a lot of time talking together as we both were lecturers teaching occupational safety and health at a university. John had a huge amount of safety and health knowledge that he shared with not only his students but also with other Safety Professionals at conferences and professional association meetings. Listening to his conversations John had obviously done a lot to improve occupational safety and health in the employment positions he had worked in prior to becoming a university lecturer.

The most important people in John's life were his wife, Gail, and their children. He was a caring husband and father and spoke proudly about the achievements of the people in his family. Once his sons had finished school John planned to do an exchange visit teaching occupational safety and health at Edith Cowan University in Western Australia for a semester, while I taught at Marshall University for the same period of time. John was particularly knowledgeable about occupational safety and health in the mining industry, which is one of the main employers of Safety Professionals in Western Australia.

One of the ways that John and I kept in contact was by Email. This was a good way to share ideas and knowledge. John was a good friend who was always there when I asked for help, advice, or just wanted to talk about World Safety matters. John also had articles published in the World Safety Journal to share his knowledge. He organised for the Abstract of all articles printed in the World Safety Journal to be available through Cambridge Abstract Service. At the World Safety Conference on 3rd of November 2003 he presented a paper titled "Hazards vs Risk." At the same Conference on the 4th of November he presented another paper titled "Water

borne pathogens." He was a dynamic and interesting speaker.

John was generous and caring to the people he worked with. I can remember at the World Safety Conference that ended on September 11th 2001. When all public transport was grounded, John helped international visitors to be able to find accommodation to stay in Texas and helped his students, who had attended the Conference, by transporting them home in his car. John always encouraged his students to help at the World Safety Conferences so that they became known to other Safety Professionals and started to build up a network of friends in the Safety field. In occupational safety and health it is impossible to know everything, but you need to know a Professional who has the answers to be able to help solve work related problems and provide sound advice.

The education that John provided has been used by his students to improve occupational safety and health world wide. This education was not just technical knowledge; it was also how to care for people and to help to develop them to reach their full potential to contribute to society and to enjoy their work and life. The effects of John's life will live on through the work and thoughts of the people whose life he has benefitted. The following are the two articles Dr. Singley presented at the WSO's Conference November 3rd and 5th, 2004, Denver Colorado, USA.

Hazard Versus Risk

by: Dr. John A. Singley, Safety Technology, Marshall University

In an article entitled "Risky Business: Perception on Reality," in the winter 2000 issue of the American Institute of Chemical Engineers (AIChE) publication *Safety and Health News*, the editor, Sam West, pointed out the public's misconceptions about risk.¹ More recently in another AIChE publication *Process Safety Progress*, a hazard was defined as a "situation or intrinsic property with the potential to cause a problem."² The term "potential" equates to "probability or chance." These terms equate to risk; thus risk is the probability or chance of an event happening. However, in both professional and lay publications the two terms, hazard and risk, are frequently used interchangeably.

The importance of teaching about chemical safety has been discussed among chemical engineers.^{3,4} However, one of the best texts on process safety, in its first edition, failed to correctly differentiate between the terms hazard and risk.⁵ At Marshall University we teach a course in process safety, as well as courses in systems safety engineering and industrial hygiene. However, in our process safety course we approach the curriculum as the need for safety professionals to interface with chemists

and engineering. This is a different approach from the classic chemistry or engineering curriculum when the students are taught some minimal concepts of safety.

Our students have long been accustomed to differentiating between the two terms, hazard and risk, through the use of a rather simple equation. This equation has been known (at least at Marshall) as Singley's equation. The equation is rather simple. $H + R = A$. The terms of the equation are "H" = hazard, "R" = risk and "A" = accident. For the safety purists, the equation could read $H + R = I$, where the term "I" represents an incident, such as no accident, but a near miss or a health or environmental problem.

Normally, an accident or an incident can be mitigated in only two ways. The first way is by removal of the hazard through the use of non-hazardous material or equipment. Another option in this first method is to stop doing the process.⁶ These two methods both affect the "H" term in the above equation. If either of these two options is available, they are clearly the best procedures from a safety standpoint. However, substitution is not possible for many materials or equipment. Even with

substitution, many materials or equipment still have some inherent hazard associated with them. The second and most common method of preventing an accident or incident is to affect the R term of Singley's equation. By reducing the risk associated with the process or an experiment we can prevent the accident or incident from occurring. However, if we have not reduced the risk to the point where no accident will occur, the risk reduction will result in a reduction of the extent of the accident or incident; that is, its severity. Risk assessment, then, is the evaluation of the risk associated with the process or experiment in terms of its severity and probability of an accident occurring.

What is true of the inherent risks of machines or chemicals is also true about the toxic hazard of a substance. Crowl and Lovar, in their text on chemicals process safety, have described the term toxic hazard as "the likelihood of damage of biological organisms based on experience."⁷ The toxic hazard of a material can be affected by industrial hygiene, practices, while the toxicity of a material can never be changed. Singley's equation is equally applicable for toxic material. The toxicity of a

substance is the "H" term of the equation; the toxic hazard is the "R" term of the equation, and the term "T" could serve as illness. Thus, a modified Singley's equation could read: T (toxicity) + TH (toxic hazard) = I (illness).

A fellow industrial hygienist, Dr. Michael Jaylock with the Rohm and Hass toxicology laboratory, has written on the subject of human health risk assessment.⁸ He, too, has an equation. $R = f(\text{exposure})(\text{toxicity})$. Dr. Jaylock indicates that not only is a chemical's toxicity part of the risk, but that exposure to a chemical also is part of the risk. Jaylock has indicated his equation creates problems. He equates these problems to the uncertainty of science. The problems are not so much the uncertainty of science, but rather the uncertainty associated with the variation of biological systems. These variations are well understood by biologists, who, although having variation problems, have the scientific advantage of not having to create experimental models. The problems created by Jaylock's equation are understandable, since the toxicity of a chemical (its hazard) cannot be changed, while the exposure (the risk) can be modified. It is that exposure (or risk) portion of the equation that professional educators can reduce to safe levels for chemistry and other laboratory students. By reducing the risk we also can reduce the extent of an accident, should one occur; that is we will reduce the severity. In other words along with everything else we do as teachers, we need to become risk managers.

Risk management is that process of making management decisions about the risks that have been identified and analyzed.⁹ A risk can be reduced by making major changes to the way an experiment is done, or the hazard can be totally eliminated by not doing the experiment. There is one other way one

can get rid of risks. That is by transferring the risk.⁹ Insurance is a good example of this method, but not likely to be adopted as any part of a chemistry laboratory protocol. The most common method of risk transfer is buying insurance. This is because total risk elimination is generally impossible without stopping the activity, such as not conducting chemistry laboratory experiments. This purchase of insurance is generally done by a risk manager, who is normally an accountant or someone with financial responsibility. Risk managers determine the insurance type, the insurance carrier, the amount of acceptable deductible, and the coverage limits. Generally, this type of risk reduction of risk elimination will not work for many colleges and universities since many are state institutions. Government institutions are usually self-insured or uninsured. In addition, with all the trouble medical schools are having with physicians' insurance rates, can you imagine the Pandora's box if we were to contemplate student laboratory insurance?

To be useful to practicing chemistry professors, we should say something about risk analysis. In a teaching manual on risk analysis and consequence analysis prepared for SACHE (Safety and Chemical Engineering Education) under the auspices of the AIChE, risk is defined as "any unintended or unexpected outcome of a decision or course of action."¹⁰ This definition is contrary to the standard definition of risk as the probability or a given outcome. This same manual defines risk assessment as "the process by which the results of a risk analysis are used to make decisions."¹⁰ To safety professionals, risk assessment is an evaluation of a risk in terms of severity and probability. Thus, the manual definition agrees with the classic safety definition, since one makes decisions based on the calculated

severity and probability assessment. Normally, this is done using the Risk Assessment Code (RAC) as defined in the standard protocol of systems safety MIL-STD-882B.⁹ However, an element of risk analysis not found in MIL-STD-882B is a risk analysis using the Control Rating Code (CRC). The CRC is a system based on the risk assessment after risk controls have been put in place. It uses a matrix form much like the RAC, but it evaluates the manner in which the energy of a system is controlled through such techniques as system design or even warning devices. The concept of energy control is a basic safety tenant that goes back to the 1930's, and Heinrich's concept of accidents being caused by uncontrolled energy sources.¹¹

The CRC matrix and its use are roughly similar to the RAC criteria of probability and severity.⁹ Typically, after an initial risk assessment that yields an unacceptable or undesirable rating, control mechanisms are applied. After the controls are installed, a second risk assessment is completed to assure that all the CRC rules have been met. These rules can be found in system safety texts.⁹ At this point the procedure or experiment is rated as either acceptable with controls or as unacceptable.

What does all this mean to an ordinary college laboratory professor? It means that we cannot rely on warnings signs, caution signs, or the student's use of personal protective equipment if the experiment itself or the chemicals used in the experiment have the likelihood of producing a catastrophic or critically severe incident, or that the incident is likely to occur frequently or several times in the lifetime of that laboratory. Therefore, professors who are responsible for laboratory courses should ensure that all equipment is working as designed, that all control systems are in place after an appropriate

risk analysis, and that these controls are properly working. Relying on student training alone can only bring about problems. One of the weakest links in any given system is human reliability.

Those in the chemical and laboratory professions need to be sure that in our colleges our students are made aware that risk reduction is a major part of their training. Although many chemicals are inherently hazardous, through simple risk management we can stop or reduce the severity of an accident. As an example, consider chlorine. Chlorine is never non-hazardous. The only way to stop an accident from occurring is to (1) stop using chlorine or (2) reduce the risks associated with its use. Chlorine has and will continue to be used in chemistry and in the chemical industry. However, we can work safely with such chemicals.

Until chemical and laboratory professionals get a clearer understanding of the simple concepts of hazard and risk, it is unlikely that we

can convince the general public about the safety in using and producing chemicals. After all, Bhopal is somewhat fresh in the minds of a large portion of the public.

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Water Borne Pathogens

by: Dr. John A. Singley, Safety Technology, Marshall University

If we are going to discuss water borne pathogens, we first have to discuss the state of the world's water supply. Let's start with the local water supply, Colorado.

- Colorado has the lowest percentage of state populations in the United States served by groundwater (15%).
- Hawaii has the highest (95%).
- Ground water is used to some extent in every state. However, as a major source of drinking water it involves only 2/3 of them.

We use water in a variety of ways:

- To Drink
- To Bathe

- To dispose of wastes
- To irrigate crops
- To support industry
- To generate power

Water pollutants are divided in eight (8) general categories.

- Organic wastes
- Disease carrying wastes
- Plant nutrients
- Toxic and hazardous substances
- Persistent substances
- Sediments
- Radioactive substances
- Heat

Today we will discuss only the second category, disease carrying wastes.

Disease Carrying Wastes

If we enter into an environment of untreated human or animal wastes, we increase the chance of risk that the infectious organisms will spread disease to humans. The major categories of infectious organisms are:

- Bacterial infection
- Viral infection
- Parasitic (including single cell animal vectors)

The risk of infection generally occurs in less developed countries where human sewage is improperly treated, if at all, before it enters an aquatic environment.

Millions of people in less developed countries have no basic sanitation. Thus providing adequate supplies of disease free water presents a major challenge.

Examples of major diseases transmitted through drinking water supplies are:

- Cholera
- Typhoid fever
- Hepatitis
- Dysentery
- Giardiasis

Even in the United States despite chlorination of the drinking water, major outbreaks of disease occur from contaminated water. In 1993 Milwaukee had an outbreak of cryptosporidiosis which affected nearly 400,000 people. Most of these people developed nausea, diarrhea, and discomfort, but for a few people death ensued. The outbreak cost the city approximately \$37 million in lost wages and productivity.

The protozoa Giardis Lamblia causes a disease known as Giardiasis. This is the most common water borne disease in the United States. It is sometimes known also as campers or hikers or backpacker's disease. It can produce severe dysentery in the infected individual. Even the most pristine lakes and streams can harbor the infectious protozoan. The protozoa enter the water through animal wastes.

Many other diseases are also transmitted by water organisms. For example, the protozoa that causes malaria is transmitted by mosquitoes that bred in an aquatic environment. Snails can transmit the schistosome fluke. Both of these diseases are serious threats to human health in less developed countries, where about 200 million cases of schistosomiasis occur annually.

The global scarcity of water is overblown. The real problem is sanitation. The earth has about 35 million cubic kilometers of freshwater. This equates to approximately 1.5 billion gallons for

every person. The effective supply is only a small portion of this figure. For example:

- 97.5% of the world's supply is saltwater
- 2.5% is fresh water

Of the fresh water 68% are in ice caps and the glaciers and the 31% is inaccessible ground and surface water and less than 1% is accessible surface water.

Of this accessible fresh surface water the following are its uses:

- 46% is unused.
- 23% for agriculture
- 2 % for domestic uses
- 8% for industrial use
- 21% for other uses

However, there is an uneven distribution to the world's abundant water supply.

- The amount of water, per capita ranges from 10 million/m³/year in Greenland
- To 10m³/year in Kuwait

In fact unsanitary water presents a much greater threat to the human population than water scarcity.

About 40% of the world population lacks access to modern sanitation. There is a distinct geography associated with this lack of access to modern sanitation. Rural people have more problems than urban people.

Approximately 80% of the populations that have poor sanitation live in rural areas. Also poor countries have more problems than wealthy countries. In China and India alone more than 1.5 billion people live in areas without sanitation facilities.

One of the most common pollutants is human and animal excrement. In many countries raw sewage is dumped into the water supplies. Further, in poor rural countries no cleaning of the polluted water occurs before the people use the water for bathing, cooking or drinking.

Some countries are worse off than others. For example, Afghanistan is in poor shape. 87% of the people lack access to clean water. A number of African countries are not far behind.

- Ethiopia 76%
- Chad 73%

More than 2 million people die each year from waterborne diseases. Most of the deaths occur among children under 5 years of age. Further, almost all of these deaths are preventable through access to sanitary water supplies.

Unfortunately supplying clean water isn't easy. Sewers to remove fouled water, treatment plants and even hospitals to treat those infected with water borne diseases are expensive.

The Asian and African countries that suffer the most from the lack of sanitary water are the ones least able to afford a clean water infrastructure.

In short they don't have a water shortage, they have a money shortage.

Let's look at the various types of pathogens found in polluted water. First let's examine bacterial pathogens.

Bacterial Pathogens

1. **Typhoid fever** is a disease of the gastrointestinal tract. If it is treated with antibiotics it is rarely fatal, but none-the-less debilitating. However, without antibiotic treatment 12 - 30% of the cases result in deaths of the patients.

However the disease is rare if public health controls are in place, but these are just the systems that less developed countries do not have. Minor outbreaks are commonly seen in people who travel to these less developed countries. The typhoid infection is usually brought about by the ingestion of fecally contaminated water, or food cooked in contaminated water.

Even in England, a serious epidemic occurred when canned meat that had been cooled in contaminated water was

imported from Argentina. The cans containing the meat had some breaks in their seals and the meat became contaminated. In this epidemic over 500 people were affected.

The caustic agent of typhoid is the bacterial Salmonella Typhus. If the bacteria can survive the stomach acidity (sometimes aided by the bacteria being ingested with water), the bacteria can reach the intestines. Once in the intestines, they will form colonies and invade the gut lining epithelial cells.

It only takes a small amount of bacteria to establish an infection. It is estimated only 100 - 1000 bacterial cells are needed.

Once the bacteria invade the intestinal lining, ulcers are formed and the bacteria can enter the blood stream. At this point fever usually occurs and the person becomes both physically and mentally debilitated.

The bacteria may become established in other parts of the body, such as the lymph nodes, the spleen, the gall bladder or even the skin. Once the person is infected they will excrete a large amount of bacteria in his or her feces.

The most dangerous aspect of this disease is the potential for some people to become infected but not demonstrate any symptoms. These people become carriers and frequently do not respond to antibiotic treatment, even if they have been diagnosed.

2. Bacterial Dysentery (Shigellosis) is an ancient disease first noted in Japan in a large epidemic towards the late 1800s. It was described in Old Testament biblical writings and in ancient Greek writings.

The disease is common throughout the world. In rural Guatemala it was seen in the late 1960s in infants at the rate of 200,000 cases per 100,000 infants per year. This means that every infant was infected by the disease twice a year.

Shigellosis is also caused by ingestion of water or food that has been fecally contaminated. The pathogen is Shigella. There are three known species of this genus that can produce the disease. All of these are associated with primates, both human and non human.

The usual route is the fecal-oral route. Like typhoid bacteria, the Shigella bacteria invade the epithelial cells of the intestine. Symptoms of the disease are stools produced frequently that contain blood and mucus and severe abdominal cramps. However, only water type of diarrhea may occur and the person may remain undiagnosed.

Untreated Shigellosis can cause death in about 15% of the infected people, usually among the elderly and infants. Sometimes an arthritic condition can occur.

Like typhoid infected but undiagnosed people can act as carriers.

3. Cholera is perhaps the most devastating of the water borne bacterial diseases. Epidemics are not uncommon in poorer countries. The frequency of foreign travel in modern times makes Cholera a continuous threat, even in countries with good water pollution control.

The disease is caused by the bacterial, Vibrio Cholerae, which are transmitted by drinking polluted water or from other material infected by fecal matter from an infected person.

The bacteria colonize in the gut and produce a toxin that attacks the mucosal lining and interferes with osmotic regulation in the person.

Aquatic animals such as crustaceans and mollusks that are filter feeders frequently become infected and serve as a source of infection.

Viral Pathogens

This group of pathogens is known as important agents human illnesses and

they have been linked to human wastes as a major source of serious disease.

The ones of greatest interest are the so called enteric viruses. This term is more a connivance term rather than one of pure taxonomy. However, the water-patient link, has only been fairly established for the polio virus and the Hepatitis A virus.

Many of the viral pathogens can cause acute gastrointestinal and diarrhea illnesses. Such illnesses can be found even in more developed countries.

1. Polio Virus causes poliomyelitis and is probably the most familiar of the water borne viral diseases. In a small number of cases (1% or less) the virus enters the bloodstream, infects the nervous system and causes paralysis.

If vital organs are involved such as the respiratory muscles the disease can prove fatal.

2. Hepatitis A Virus, the so-called infectious hepatitis is transmitted through contaminated wastes. This contamination has produced many outbreaks of the disease.

Other viral disease such as Norwalk virus and Rota virus have been suspected of being transmitted by eating contaminated shellfish from polluted water.

Parasitic Pathogens

Parasitic pathogens are also spread through polluted water.

1. Amoebic Dysentery is caused by the protozoan Entamoeba Histolytica and is a classic example of parasitic pathogens. The WHO estimates some 4 billion people are at risk. As with most of these parasitic infections, the parasite for amoebic dysentery has a life cycle, in this case a four stage life cycle.

2. Cryptosporidium, another parasitic disease that is of more recent interest is the disease caused by the protozoan Cryptosporidium Paravum. It was

originally thought to be spread by direct contact with people or animals. We now know it to be transmitted in water systems even in well developed countries.

Current sewage and water treatment techniques do not always remove the protozoa. As aside note this might be the weapon of choice for terrorists.

3. Other parasitic infections. Other parasitic infections are caused by round worms such as the whipworm Trichuris Trichima. This usually leads to severe dysentery with all of its symptoms.

Other infections include the tape worm which can use cattle infected by drinking polluted water serving as the host. In turn the meat of these cattle containing the cystic eggs is then passed to humans in poorly cooked or raw meat. This occurs frequently is less developed countries.

Trematode parasites are important sources of disease and include a number of blood flukes, called Shistosomers, liver flukes, pulmonary flukes and intestinal flukes. These infections are rarely found in temperate zones, but since a large portion of the less developed countries are not in the temperate zones, this involves a huge populations potential.

In fact at one point in time, Shistosomiasis was the leading cause of death in the

world. Aquatic mollusks living in polluted but seemingly visually pristine waters serve as reservoirs for human infection. There fore the one control method of choice is the elimination of poisoning of these mollusks.

Bio-terrorism

While we are on the subject of waterborne pathogens, everything we have discussed today has the potential for use as a bio-terrorism agent. Most bio-terrorism agents are naturally occurring agents. The very term, bio-terrorism, implies the use of live biological organisms.

Many bio-terrorism agents are more likely to be spread by air, than by water. Because of this fact and the post 9/11 use of anthrax, most of the emphasis has been on the spread of airborne agents.

However, there are several agents that are presently good candidates for waterborne bio-terrorism agents. These include, Brucellosis, Cryptosporidium, E. Coli Dysenteriae, Salmonella, and Shigellosis.

Where people may already be at risk because of other diseases, these agents have the potential to be lethal. However, other agents have the potential for lethality among even healthy individuals.

Included in this list would be Antrax,

Botulism, Plague and Tularemia.

Thus how nations handle their waste treatment and water treatment can mean the difference between a successful bio-terrorism attack and an unsuccessful attack. Again the less developed nations are at a disadvantage and present the greatest risk.

While one could argue that it is unlikely that someone would use bio-terrorism against these less developed nations, keep in mind that many of these less developed nations contain much of the world's supply of natural resources.

An aggressive nation could easily achieve dominance in the world's economy by taking over such nations by using bio-terrorism as a tool of aggression.

Summary

In Summary the control of water pollution by monitoring techniques and adequate safe water treatment and waste disposal is the best method for prevention of water borne pathogens.

As stated earlier, this takes money, which most of the less developed countries do not have.

So the water problems of the world are not a source of water, but a source of money to make possible safe water for human use and consumption.

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Book Review:

Both of these books reviewed relate to improving occupational safety and health in the process industries, however, the information published is also applicable to improving occupational safety and health for many other industries.

DUST EXPLOSIONS IN THE PROCESS INDUSTRIES (3rd ed.).

by: Rolf K. Eckhoff.

The author of this book has spent a life-time studying dust and gas explosions. This book reflects the author's comprehensive knowledge on the causes, and ways to prevent dust explosions. The first chapter provides detailed information on the chemistry and physics of dust explosions. This chapter is written in an easy to read style so that a beginning Safety Professional, or other interested people, can understand why and how dust explosions occur and how to prevent and mitigate the consequences of dust explosions. The information in this chapter is essential knowledge for Safety Professionals to understand and use.

Chapter two describes interesting case histories of dust explosions that have occurred and been investigated from 1785 to today. This chapter takes the technical information described in the previous chapter and shows in practical terms, with well-written stories and photos, why and how dust explosions occurred and ways that these explosions could have been prevented. Some of the case studies also describe how the consequences of the explosion were mitigated. This chapter has excellent educational stories of events that have happened.

All chapters in this book are well illustrated with photos, diagrams, graphs and tables. At the end of each chapter is an extensive, relevant reference list of publications which indicate the extensive, research ability and level of knowledge of the author. The first two chapters are for everyone to read. The remaining part of the book is written in technical language that would be of interest to Researchers and Chemical Engineers. Chapters three and four deal with advanced theoretical aspects of dust cloud formation and flame propagation. Chapters five to eight deal with the latest relevant theoretical research. Chapter nine concludes the research part of the book by analysing the current status of world wide research into the individual elements of the dust explosion phenomena.

Eckhoff, R. (2003) *Dust Explosions in the Process Industries*. Burlington, MA: Elsevier Science.

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Reviewed by Dr. Janis Jansz, Lecturer in, and Program Co-ordinator for, Occupational Safety and Environmental Health at Edith Cowan University.

Personal And Road Safety Advice For Travelers

by: Dr. Peter A. Leggat, WSO-CSE/CSM/CSS(OHS)/CSSD, Associate Professor, School of Public Health and Tropical Medicine, James Cook University, Townsville Queensland 4811 Australia

Abstract

The prevention of common illnesses in travelers is an important aspect of travel medicine. However, the environment can also pose particular concerns for the traveler and, unless simple precautions are taken, can result in significant illness or injury. The environment has a number of potential hazards for travelers, including accidents and injuries, as well as muggings and assaults. Accidents and injuries are the single biggest cause of death when traveling abroad and hence an important area of preventive medicine to address for travelers.

Introduction

Although many travelers are concerned about their personal safety when traveling abroad, it is an often-neglected area in safety. Personal safety is one of the most important areas for travel health advisers to cover when giving advice to travelers going to virtually any country. Individual responsibility is paramount, as fewer people are going on programmed package tours (Behrens, 1990). Travelers should also be advised about important safety nets, such as health and travel insurance and finding medical assistance abroad. Only half of general practitioners (GP's) in a New Zealand study reported giving safety advice to travelers (Leggat et al., 1998), but GP's who saw a greater proportion of travelers were more likely to give safety advice (Leggat et al., 1998). Seventy percent of travel health advisers in travel clinics usually advised travelers about personal safety (Hill et al., 1996). A study of in-flight magazines in Australia revealed a paucity of advice concerning personal safety of travelers (Leggat, 1997).

Accident statistics

Deaths of travelers abroad have been used as an objective measure of the consequences of a breakdown in personal safety and health. A recent Australian study found that this risk of dying abroad was probably similar to that at home (Prociv, 1995). Interpreting these findings was difficult however, since comparisons are being made between different populations. The causes of travelers' deaths was probably the most interesting aspect for travel health

advisers, with the author concluding that advice concerning accidents and injury avoidance was probably more practical than over emphasising protection against infectious diseases (Prociv, 1995).

The Australian study showed that the crude mortality rate for short term travelers and work party members abroad was only about 10 per 100,000 per month or about 0.1% annually (Prociv, 1995). About 35% of deaths abroad were the result of ischaemic heart disease, with natural causes overall accounting for some 50% of deaths (Prociv, 1995). The most common preventable cause of death amongst travelers was accidents. Trauma accounted for 25% of deaths of Australians abroad (Prociv, 1995). Injuries were the reported cause of 18% of all deaths, with the major group being motor vehicle accidents, accounting for 7% of all deaths, which appeared to be over-represented in developing countries (Prociv, 1995). A similar pattern of mortality was observed in American and Swiss travelers abroad (Steffen, 1991).

Deaths of Australian tourists overseas have also resulted from air crashes, drowning, boating accidents, skiing accidents, bombs and electrocution (Prociv, 1995). Homicides, suicides and executions combined accounted for about 8% of all deaths (Prociv, 1995). Most fatal accidents in American and Swiss travelers were traffic or swimming accidents (Steffen, 1991). Deaths and injuries to tourists have also resulted from falling objects at construction sites (Leggat et al., 2001b). Infectious disease was reported as the cause of death in only

2.4% of Australians traveling abroad (Prociv, 1995). The most dangerous destinations for Australian tourists were Europe and Central and South America, with South East Asia accounting for its fair share of deaths (Prociv, 1995). New Zealand and North East Asian countries were amongst the safest countries to visit (Prociv, 1995). In comparison, accident fatality rates in men from the USA were higher in developing countries than developed countries or at home (Baker et al., 1992).

Personal Safety and Security

Travelers should avoid traveling alone, but at the same time travelers should be advised to be careful of becoming involved with those travelers who are engaged in any type of illegal activities. If the traveler is spending considerable time in a country or area, particularly one which is off the beaten track or experiencing instability, travelers should be advised to inform their family and embassy or diplomatic mission of their arrival and itinerary, in the event of any problems. Travelers should be advised to stay in contact with friends and family at home and let them know their location and that they are well. Travelers should also be advised to consider hiring or taking with them a mobile phone, if possible. Group tours should be suggested to travelers going to remote areas. With the increase in global terrorism, it is important to check official consular advice for the destinations of travel.

Personal security is also an issue in many popular tourist areas and the risk of theft may be significant. A number of hotels

and tourism agencies advise travelers about personal safety and travelers should heed this advice. A range of travelers' protective devices is available, but travelers should be advised that they should check with local authorities or diplomatic missions to see if they are legal. Weapons, such as guns and knives, should not be carried abroad at any time.

Amongst the typical scenarios for breakdown in travelers' personal security and safety, include:

- "muggings";
- "druggings", possibly associated with sexual assault;
- sex scams.

"Muggings"

A mugging is an assault, sometimes violent and usually by surprise and with intent to rob, usually in a public place (Leggat et al., 2001a). Muggings can happen to virtually anyone, anywhere. Westerners traveling in developing countries are considered rich, despite the realities of travelers' financial status. Even tattered "Nike's™" can be a prize for muggers. Wearing expensive jewellery or watches is sometimes asking for trouble. It is important to advise travelers to avoid looking too much like a tourist and to wear understated dress. It is also important that travelers do not under dress, as this may impact on cultural expectations. Maps and travel guides should be kept out of sight and directions sought before embarking on a journey. It is important that travelers should stay in reputable accommodations in safe areas and use official taxi services at airports and train and bus stations.

Travelers should be advised to carry just what they need and to avoid carrying large amounts of cash and jewellery,

which should be kept in a safety deposit table or hotel safe where possible. Hotel and hostel room keys should also be left with reception and travelers should avoid carrying these with them. Bum bags are not recommended as they are highly visible and are potential "one stop shopping centres" for muggers. It is preferable to keep passport and valuables in a neck wallet, breathable polycotton pouches capable of holding valuables out of sight under the traveler's shirt. Alternately, a hidden money belt may be useful. Travelers should be advised to keep copies of important documents and card numbers separately, and also with friends/family at home, in case of theft or loss.

Travelers should be advised to avoid resisting if mugged, since it is better to give up your wallet rather than your life. If travelers are injured following a mugging, they should be advised to seek medical attention as well as reporting the mugging to the relevant authorities. Receipts for medical treatment and copies of police reports should be kept for travel insurance claims. Where necessary, travelers should seek advice from their travel insurance and assistance company as soon as practicable. All such incidents should be reported to local authorities.

"Druggings"

Criminals have been known to befriend, drug and rob travelers on trains and buses or even in hotels. This is a worldwide problem. Travelers should be advised to never accept food and drinks from strangers. It is also important that travelers avoid inviting newfound friends to their hotel room. Travelers should not open hotel doors to unannounced strangers or hotel staff, without checking with reception first. Sexual assault is not

uncommon in this type of scenario and follow-up advice concerning or use of post-exposure Human Immunodeficiency Virus or HIV prophylaxis may be needed in some cases. All such incidents should be reported to local authorities. Travelers or their relatives or friends should also advise their Embassy, Consulate, High Commission or foreign affairs department of serious incidents. Travel health advisers should also note that departments of foreign affairs often have advice available for victims of sexual assault, such as a brochure compiled by the Department of Foreign Affairs and Trade (2003) in Australia.

Sex scams

Those who may be seeking work abroad should be vigilant for scams. In particular, travelers should be made aware that the slave trade, including the sex slave trade, still exists in some countries. Even some women from western countries have found themselves virtually captured by their employers, who have taken their passports. Travelers going to work abroad should be advised not to surrender their passports to anyone, except authorised authorities.

Road Safety and Travelers

Driving or riding through many foreign countries can be a rewarding experience, when simple precautions are taken. It is important that travelers are advised to heed road rules, avoid speeding and be cautious of the local driving culture. It is important that travelers are advised to take extreme care whilst driving abroad and be particularly aware of changed traffic conditions, whether a driver or a pedestrian, as vehicles may drive on the opposite side of the road (see Table 1).

Table 1. Traffic Safety Tips for Travelers

For Pedestrians:

- Look both ways before crossing the road; remember the traffic may be going on the "wrong" side of the road
- Don't presume the traffic will stop for you on a crossing
- Beware falling objects at construction sites
- Watch your belongings; carry as little as possible with you

For drivers:

- Carry an international license and your own license for local police (some hire car companies may require international licenses in some countries)
- Take reliable maps with you marked in English and local language if possible; if possible purchase a local driving guide
- Let someone know where you are going
- Know the local language for the phrase: Which way to...?
- Don't travel alone, if possible; think of alternative transport.
- Hire a car or motor bike from a reputable company with safety features installed in vehicles and with comprehensive insurance
- Check vehicles before driving; is it safe? Is there a good spare tire and jacking equipment
- Wear a helmet when riding a motor bike, bicycle or horse
- Use safety features such as seat belts when driving
- Consider safety requirements of any pets traveling with you (don't forget the pets left at home!), which has been discussed in more detail elsewhere (Leggat et al., 2000)
- Observe speed limits suitable for the conditions
- Don't drink and drive or take other drugs which may interfere with driving
- Find out the local traffic rules and adhere to them
- Consider taking/hiring a mobile phone, where possible, for extended road trips in unfamiliar areas and have a contact number, e.g. for a breakdown service or hire car company
- Only travel with licensed taxi companies

The most common preventable causes of death amongst travelers are accidents and injuries (Prociv, 1995; Steffen, 1991). Injury prevention strategies for travelers, which can be communicated by travel health advisers, have been well described elsewhere by Hargarten (1994).

Hire cars

Hire cars can be particularly vulnerable to attack and car-jacking, particularly those which have distinguishing features in terms of color, advertising and specialised license plates. Travelers should be advised to hire vehicles from reputable rental car companies and to carefully examine the vehicle to ensure it appears roadworthy. Hire vehicles, which are security rated, including central and/or computerised locking, engine

immobilisers, reinforced safety glass (armour glass), mobile phone, and vehicle identification and/or tracking, are preferred. Although a foreign driver's license may be accepted by rental car agencies, an international driver's license should be obtained before departure, which may assist when dealing with local authorities.

Driving in unusual surroundings

Travelers should be advised to get directions before setting off or be shown how to use satellite navigation devices installed in their vehicles, and travel only on major routes, unless traveling with reliable guides. Driving alone and driving at night should be avoided in unfamiliar countries. Whilst traveling, travelers should be advised to keep all

doors locked with windows wound up, especially when stopped at traffic lights. Extra care needs to be taken with all luggage and valuables should be placed out of sight, especially while the vehicle is unattended.

Driving in wildlife reserves

Those driving through wildlife reserves should seek advice from their travel agent and foreign affairs officials concerning safety in the reserves they intend driving through. An increase in armed conflicts, especially in north eastern and central Africa, has made military automatic and semi-automatic weapons easily available in many African countries for use in robberies and attacks. Travelers have also encountered life-threatening situations from both wild

mammals, although, fortunately, attacks on tourists by wild mammals, at least in South Africa, appear to be an uncommon cause of injury and death (Dürrhein et al., 1999), and armed bandits in wildlife reserves. Travelers should be advised to remain in their vehicles whilst driving through wildlife reserves and to seek the assistance of a qualified guide if they wish to explore on foot (Dürrhein et al., 1999). Travel warnings about the risk of robberies in game reserves should be sought through consular offices.

Push bikes and motor bikes

Many travelers will also ride push bikes or motor bikes abroad. It is important that travelers take safety helmets and safety wear with them if they intend to ride motor cycles and push bikes, as many countries do not legally require these be worn or provided.

Conclusions

Health advice to travelers needs to emphasise the prevention of injury and the minimisation of the effects of environmental hazards, as much as infectious disease, though basic safety advice. Such advice should include the

importance of injuries to tourists generally as well as specific preventive advice, particularly in relation to motor vehicles.

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Book Review:

Both of these books reviewed relate to improving occupational safety and health in the process industries, however, the information published is also applicable to improving occupational safety and health for many other industries.

ERGONOMIC SOLUTIONS FOR THE PROCESS INDUSTRIES

by: *Dennis Attwood, Joseph Deeb and Mary Danz-Reece.*

Wojciech Jastrzebowski, a Polish University Professor, in 1857 published an article titled "An outline of Ergonomics, or the Science of Work". Dennis Attwood, Joseph Deeb and Mary Danz-Reece have built on this concept to write an excellent book called *Ergonomic Solutions for the Process Industries*.

The first chapter of the book is an introduction that covers, as a figure, the basic concepts of safety. The authors recommend putting safety in the design stage. Many safety professionals are employed in organisations that have the premises already built and have people working for the organisation. This chapter describes how to identify ergonomic issues, how to set priorities, how to conduct a cost benefit analysis and how to develop and implement strategies for the most urgent ergonomic problems in the organisation. This is a very important part of the book, as no matter how much knowledge a safety professional has, the knowledge is useless without the commitment of top management, and all employees, to implementing the recommendations to improve occupational safety and health.

The rest of the chapter summarises the information that is in the remainder of the book. Topics covered include personal factors, physical factors, environmental factors, equipment design, job factors, information processing and the use of human factors in project planning, design and execution. The nine book chapters provide the technical knowledge for people to use to improve workplace, work process and people factors for occupational safety and health.

At the start of each chapter is listed the main headings for the information that follows in the chapter. Case and research based studies are used to show, through practical examples, why safety should be included in the design stage of all facilities, equipment, workplace environment and management systems. The authors provide excellent body physiology information and use this to show why it is important to fit the task to the person, and to design work in a way that it can be performed safely and effectively by people. At the end of each chapter are study questions related to the chapter topic and references for further reading on the topic.

After reading this book I knew that I had found the text book that I had been looking for to educate people in any workplace, and in tertiary institutions, about ergonomics. In a simple, easy to understand manner these authors cover the major concepts of ergonomics. If more detailed information is required the authors refer the reader to other articles, books and internet sites which contained detailed technical information on the topic. This book is well written for its intended readers.

Attwood, D., Deeb, J. & Danz-Reece, M. (2004) *Ergonomic Solutions for the Process Industries*. Burlington, MA: Elsevier Science.

Copies of this book may be obtained from Catherine Colquhoun (Marketing Assistant) at Elsevier Science. The book costs \$130.35 (Australian). Contact by Tel: (612) 9517 8963 or by Email: c.colquhoun@elsevier.com

Reviewed by Dr. Janis Jansz, Lecturer in, and Program Co-ordinator for, Occupational Safety and Environmental Health at Edith Cowan University.

Use Of Total Quality Management Principles To Improve Occupational Safety And Health

by: Mr. Wayne Heald

Abstract

This article identifies how modern Total Quality Management Principles and approaches can be successfully applied to occupational safety and health management practices.

Introduction

"Total Quality Management is the management philosophy that seeks continuous improvement in the quality of performance of all processes, products and services of an organisation. It emphasises the understanding of variation, the importance of measurement, the role of the customer and involvement of employees at all levels in an organisation in pursuit of such improvement." (Chesson, Hemerick & Nedved, 2003, p. 42).

Total Quality Management was developed as an idea by Dr. W. Edwards Deming. He completed his PhD at Yale University in 1928 and then devoted the next 65 years of his life to improving quality activities in industry. The Total Quality Management (TQM) philosophy is based upon the principle that all departments or operations within an organisation are dependent upon each other to ensure overall effectiveness, therefore occupational safety and health objectives, business goals and customer satisfaction should all receive equal importance.

The majority of the methods used in the quality area are pertinent to the field of occupational health and safety management and rehabilitation. Taylor Easter and Hegney (2001) note that the fundamental principle of TQM, being the continuous improvement cycle, is theoretically the same as the risk management process (identifying problem areas, implementing changes, follow up and monitoring of changes). This view is also supported by Weinstein (1996, p. 19) who stated that, "TQM concepts and methods are very applicable

to the field of safety management. Many authors have pointed out that concepts which promote TQM success also produce safety management success."

Fundamental elements of a Total Quality Management based Safety Management System

The following elements are considered to be the basis of a Safety Management System based upon Total Quality Management principles.

Management commitment

Management commitment is essential if the safety management system is to succeed. Leadership is the keystone of any successful managing system (Roughton & Mercurio, 2002). "Total Quality Management lays the burden of responsibility for the bulk of waste, errors and defects on managements shoulders. On the other hand, it is through management's actions that the bulk of the gains from quality improvements must come" (Chesson, Hemerick & Nedved, 2003, p. 42). Management must lead by example, providing adequate resources, including time, to implement the management system. Anything less than this will be seen by employees as being purely *lip service* to safety and therefore hinder ownership of the program. Management must provide guidance in the form of policies and procedures to communicate to employees the organisation's objectives and expectations, and the employee responsibilities.

Continuous improvement

Continuous improvement is a management practice that incorporates a repetitive cycle of checking, correcting and follow-up in order to achieve the highest standards of organisational

outputs possible. In a safety management system this would involve the identification of hazards, assessing their severity, implementing corrective action and continual monitoring to ensure the control methods remain effective and do not introduce additional hazards. This system of continual evaluation and implementation of appropriate action will ensure that continuous improvement, and consequently optimum performance results.

Enhanced communication

If an efficient Total Quality Management based safety system is to be implemented all efforts must be made to reduce interdepartmental and employee-management communication barriers. Having good communication between departments enables the sharing of good ideas and relevant work related knowledge. It enables an organisation's employees to work more effectively to meet their customers' needs and to make the organisation's work processes more cost effective. Free flowing communication and consultation between all organisational personnel regardless of their position is vital to ensure limited resources are allocated properly and decisions affecting stakeholders are satisfactorily addressed.

System measurement

Total Quality Management systems require some form of measurement to provide a qualitative evaluation of the system's performance. Such performance measurement, known as benchmarking, may take place internally against predetermined values or compared against external industry standards. Variation from these predetermined values, or industry standards, will provide an indication of the efficiency of

the system and a guide for further analysis.

Employee participation

The TQM system emphasises teamwork to address all aspects of organisational work. Employee involvement should be sought to obtain suggestions as to methods to improve quality and performance and solutions to problems. The employees who are actually doing the work know what really happens. They often have good ideas on how to improve the work processes that they do. Their expertise should be used. As well as this if employees are involved in the decision making they know the reasons for the decisions and have ownership and commitment to making safety improvements.

Training and empowering of employees

Along with specific job-related training, employees should be educated as to the principles of Total Quality Management in order to provide them with a better understanding of what is happening around them, management objectives and their responsibilities. Such training will also provide employees with the skills to

be able to make informed decision relating to their safety and participate effectively in planning processes. This involvement will provide personnel with a feeling of ownership and empowerment in the organisation resulting in increases in productivity, quality, morale and company image and a decrease in accidents, industrial disharmony and time away from work.

Change in organisational culture

It is the management's role to develop and nurture a culture supportive of safety values and principles (Roughton and Mercurio, 2002). Management must introduce and support new values that encourage a positive change in the organisation's safety culture. Such values should promote behavioral modifications that will positively influence both quality and safety. It is vital that all members of the organisation are committed to the new shift in organisational culture. Employees in the organisation will perceive that safety is supported when they see daily actions that are viewed as preventing incidents (Roughton and Mercurio, 2002).

Conclusions

This article has shown that the fundamental principles of Total Quality Management are the same as the fundamental elements of an effective occupational safety management system. Through using the principles of Total Quality Management an effective safety management system can be implemented for any industry.

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Safety Communication & Consultation

by: Mr. Richard Phelps. Richard is employed as a Risk Coordinator by Chubb Australia. He holds a Diploma in Occupational Health and Safety and is currently furthering his studies at Edith Cowan University. Richard lives, works, and studies in Western Australia.

Abstract

Solid safety practices within a workplace rely on sound communication between employers and employees. Each party has a critical part to play in ensuring that, where possible, a hazard-free environment exists. This paper distinguishes between the need for the consultation process and the necessity for effective communication procedures by highlighting common barriers to workplace communication. It evaluates current literature and provides a framework for companies to adopt better communication and consultation practices.

Introduction

Dialogue between employer and employee is a fundamental principle of safety and health legislation. Supporting this principle are the key concepts of communication and consultation. Though different by definition, both are as equally important in the campaign for an incident-free workplace, where it is necessary for the two to work in tangent in order for success to be achieved. Companies striving towards the ultimate goal of a safe workplace must understand how these two concepts differ and how they must be employed together.

The Marriage of Communication and Safety

It has been more than thirty years since Lord Robens' parliamentary committee in Great Britain laid the foundations of modern day occupational safety and health. One of the major outcomes of that report was the need for "consultation between employers and workers on health and safety issues" (Gunningham, 1984, p.118). This consultative process was to be accomplished, in part, by ensuring that workers had representation on tripartite advisory committees. It was recommended by Robens that this representation be in the form of some kind of employee elected body and stated that there should be "a statutory duty on every employer to consult with his employees or their representatives at the workplace" (Brookes, 1993, p.514). This approach gave birth to the modern safety and health representative. Its philosophy has been adopted by many countries

including Australia, where it is law in every state and territory (CCH, 1993).

The Need for Communication

It has been suggested that a lack of significant communication has been a continuing theme in disaster research (Hopkins, 2000). That is, that available knowledge wasn't utilised (Kletz, 1993) or that vital information wasn't presented to senior management prior to the occurrence of an incident. This breakdown of communication can be easily identified in the *Challenger* shuttle disaster. Winsor (cited in Mohan, McGregor, Saunders & Arcee, 1998) noted that the shuttle's engineers had reported the possibility that the 'O' rings could malfunction in low temperatures. Obviously in this instance the consequences of the 'O' ring failing never reached the critical personnel who, had they fully understood the importance of the 'O' ring, may well have aborted the launch.

In more recent times the Esso gas plant explosion at Longford, Victoria, Australia, was due, in part, to a lack of effective reporting mechanisms and communication structures (Dawson, 2002). Here, control room log books were only very casually filled in by operators at the conclusion of every shift. However, during the subsequent Royal Commission evidence was found in the log books that there were enough entries to suggest the existence of problems. What is interesting to note in this case study is that at the final shift handover there was no mention of the unusual condensate

levels which eventually played a part in the explosion (Hopkins, 2000).

Employees who work alone

In Western Australia there are provisions made for employees who, as part of their occupational duties, are required to work alone at isolated locations. Such provisions are covered by the Western Australian Occupational Safety and Health Regulations of 1996 and further explained in the Guidance Note *Working Alone* (1999). One of the main themes in both publications is the requirement for adequate communication between employer and employee. However, given Western Australia's size communication by telephone is not always going to be possible. Even satellite phones are not foolproof with many incidents of line drop out occurring when employees are working at extremely isolated locations (Gary Alexander, personal communication, 2003).

So what can an employer do to ensure that suitable provisions are made for an employee who is about to travel to an isolated location? Any such journey would require careful planning, whether it was a regular trip or simply a "one off". Consultation with the employees who are scheduled to travel to the remote location, or with those employees who have made the journey in the past, would be a major advantage to the employer. A procedure should be written and included in the company's Safety Management Plan.

Companies, such as Chubb Australia,

who regularly have employees travel to remote locations to carry out service work, have developed such a procedure which now forms part of its Risk Management Manual. Chubb defines a remote site as "any site which is isolated by distance and/or communication" (Chubb Australia, 2003). This procedure was developed over a period of months with every service technician given the opportunity to have an input, to read the first draft, and then to make comment. Having been involved in the development of this procedure the service technicians know what the procedure is, have ensured that the procedure is practical to use, and are committed to using this work procedure effectively.

Migrant workers

Australia prides itself on being a multi cultural society. There is a rich mixture of races, religions and beliefs within the community and, of course, the workplace. The number of migrants who choose to call Australia home grows steadily year after year. At 30 June 2001 some 23 per cent of Australia's total population had been born overseas (Australian Bureau of Statistics, 2003). In just a *three month* period from March 2003 to May 2003 almost *twenty-five thousand permanent settlers arrived* in Australia, over half of which came from non-English speaking countries (Australian Bureau of Statistics, 2003).

Obviously the duty of care in our safety legislation extends to culturally diverse personnel (and also to employees who may be illiterate). Kress (1988) states that communication is pointless unless the recipient understands the meaning of the message. Therefore, in workplaces with a large ethnic workforce, every effort should be made to ensure all safety instructions are understood. That may mean, for example, erecting signage in dual languages and using picture signs.

Consultation

This paper has already provided a clear example of how a large company like

Chubb Australia uses the consultation process as part of its risk management objectives. It differs from general workplace communication as consultation is an invitation from the employer to the employee to have a say on safety and operating issues. This is where the employer should utilise the employees' experience and knowledge to ensure a safe and workable solution or process is conceived.

The consultative process was effectively demonstrated by the Werribee City Council in Victoria. Through strategic safety mechanisms, this local government authority has been able to develop a quality safety and health system. With just a humble formation of a safety committee in the mid 1970s (and the introduction of the Victorian state legislation in 1985) Werribee now has an envious consultative process and safety management system.

Why Consult?

There are many reasons why an employer should utilise the consultation process in the workplace and, perhaps, there is only a single word to describe why this process would not be subscribed to – arrogance. An arrogant employer who did not see the need to involve his employees in important safety and health considerations would probably find himself surrounded by unhappy employees, working in unsafe conditions with low morale. The employer may even find himself, or herself, the subject of constant union scrutiny.

Why, then, should an employer consult with the employees? Consultation forms an integral part of Western Australia's state legislation. It is a primary function of the employer under Section 19 of the Act and forms one of the building blocks of the duty of care. But apart from the legislative requirement, consultation should be encouraged for far simpler reasons. That is, that the employees themselves who carry out the work tasks day in, day out are in the best position to

offer suggestions to improve safety or operating procedures (CCH, 1996). With the establishment of joint consultation the employees can take ownership of their safety. If consultation takes place before changes are made employees are more likely to accept them (Ridley, 2001).

The advantage of a consultative approach goes further. Employees who are involved in the process can "be expected to greatly increase the awareness of their own safety" (CCH, 1996, p.9). Further, it is a demonstration to the workforce that it is a genuine attempt by the employer to make the workplace as safe as possible.

Pathways to Consultation

Companies can employ a range of measures to ensure consultation becomes part of the workplace culture. These measures can be formal or informal processes (Davis & Lansbury, 1996). The most common is the establishment of an effective safety and health committee. Under the Western Australia Safety and Health Act the employer is required to "consult and co-operate with safety and health representatives" (Occupational Safety and Health Act 1984, s.19). Therefore, in a workplace where a committee is functioning in accordance with the legislation, the consultative process should be in operation. Both the employer and the employees have a means to consult with one another – through the elected and trained Occupational Safety and Health Representative. The Guidance Notes dealing with duty of care and Safety and Health Representatives provide further explanation on this method of consultation.

Consultation methods can be as simple as having a suggestion box. One of the advantages to this method is that employees can be confident that their concerns remain confidential. Paradoxically, feedback from a safety representative or the employer is made difficult if an employee wishes to remain

anonymous. (What is interesting to note was that of all the books and articles surveyed for this paper only a very small portion gave the need for consultation a mention in the text – and even then it was usually just a passing reference.)

Conclusion

Nurturing the concepts of communication and consultation within a workplace are vital to developing a safety culture. Companies striving towards the ultimate goal of a safe workplace must understand how these two concepts differ and how they must be employed together. This paper has highlighted some of the potential barriers to effective communication. Employees who work at remote location and non-English speaking employees both pose a potential problem, but by consultation these two barriers can be overcome. A lack of communication can have a disastrous consequence and yet with simple communication procedures most disasters can be avoided.

The importance of workplace consultation has also been described. Employers should, where possible, utilise the skills, knowledge and experience of their employees to make the workplace as safe as possible. A good safety management plan will include consultation within its pages. A genuine company should welcome the formation of a safety and health committee. By accepting the need for communication and consultation both the employer and employee can strive towards an incident-free environment.

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Safety Management Plan For Emergency Services Field Activities

by: Mr. Eric Slof. Eric works as a Volunteer for the Wanneroo-Joondalup State Emergency Service in Western Australia and is currently completing a Bachelor of Science (Security) at Edith Cowan University.

Abstract

A Safety Management Plan is an action plan that an organisation uses to manage occupational safety and health. Employees in emergency services usually work in the community in dangerous situations. This article describes how occupational safety is managed in these situations through the use of a Safety Management Plan.

Introduction

The Wanneroo-Joondalup State Emergency Service headquarters is situated on land provided for this purpose by the city of Joondalup in Western Australia. The State Emergency Service has the infrastructure to support the unit in its operation in the cities of Joondalup and Wanneroo. Funding for the operation of the unit is supplied from three sources; the City Council of Joondalup, the City Council of Wanneroo and FESA (Fire and Emergency Authority). This means that the policies for safety and health come from three main sources; the City Councils, FESA and local unit committees.

The role that the State Emergency Service plays in the community increases the need for the personnel and management to have a greater level of safety and health awareness to prevent injury than is required in many other workplaces. This is because emergency service surroundings offer many situations that are outside most occupational arenas, as their voluntary workers are used for emergency and disaster control situations. The safety and health policies written for the organisation tend to have a focus on off site locations such as storm damage sites and search locations rather than the unit headquarters, which acts as storage and training centre for the unit. The training program constantly ratifies the policies of the unit on safety and health matters with each training program designed by FESA to get the most effective and safest use out of the hardware and personnel. The training program is steady and designed to reinforce the proper procedures to use

to limit the chance of accidental injury. While the unit maintains few policies on safety and health the extensive use of Standard Operating Procedures, which incorporates the safety and health policies, is incorporated into normal work situations.

The plan, described below, is designed to provide a quick and easy reference document for safety and emergency planning and management for the Wanneroo-Joondalup State Emergency Service on operational activities away from the local unit headquarters which are situated at 21 Winton Road Joondalup in Western Australia. The Safety Management Plan includes management systems which have been produced under guidelines for such actions provided by WorkSafe Western Australia in accordance with state legislation and the world's best safety management systems.

Safety Management Plan

Introduction

This document is designed for the use and implementation by the management and volunteer personal that are active within the Wanneroo-Joondalup State Emergency Service (SES) unit's activities and operational duties. This document is not designed to over rule any policy or procedure set up currently, and should be used as a guideline in the creation of any new, or reviewing of the current, policies.

Aim

This plan's aim is to promote a safe and injury free operation at the local headquarters, while assisting in achieving in the other goals of the organisation in meeting community care

requirements during emergency situations.

Management Commitment

The management of the Wanneroo-Joondalup SES unit will be committed to providing a safe and healthy workplace for all its members, whether this is at the headquarters or in the field. Management will endeavour to train all personnel in safe work practices and hazard awareness, assessment and control techniques. The management will continually review work activities performed by the members and improve the safety techniques used. FESA, as governing body will act as an independent evaluation board for these techniques, which are to be taught to the member's state wide including the Wanneroo-Joondalup SES unit.

Planning

The planning process will be three-fold for site safety within the unit with a clear and concise chain of command. These will be used in the making of all decisions with the personnel that take the position selected by the management committee, which is relevant to their experience.

The first stage of planning will be conducted even before an emergency situation is known about and consists of training the personnel to work as a cohesive team and to have a concern for their fellow members, as well as comprehensive instruction and training in safety precautions, that should be implemented, such as the Fall Arrest System.

The second stage will be for a site survey

to be carried out at each location that is to be a work site. A hazard assessment is to be done on arrival at a location by the team leader who is responsible for all personnel safety and welfare while on site. Reviewing the scenario that the team is going to deal with, and the possible hazards such as a slippery roof. If safety apparatus' needs to be set-up, or if the situation is too hazardous to work on and the site is to be avoided. The Team leader will have the overall control of all safety and health matters for team members and civilians in and around the worksite.

The Third stage will be the role of the individual members of a team at the work site. Team members may, if they feel that a hazard has changed or has not been noticed by the team leader, call a stop to all activities and inform the team leader of the circumstances that lead to the stop. This will allow the Team Leader to review the situation and assess the situation in a new light. At any time, if a member feels unsafe, they are to be encouraged to remove themselves from the danger and not to feel intimidated by other team members.

On site planning is to be a co-operative effort with the final call being given by the Team Leader. At the on-site locations the Team Leader has control, even if a person of greater rank is on location such as the Unit Manager. The role of the Team Leader, if there are multiple personnel on site that have that rank, is to be filled by the Duty Team Leader, unless otherwise agreed upon by mutual consent.

The planning will be done using all three steps with the first steps being the set-up of alternative methods which the teams may utilise when in the field and when training. Consideration will be given to the onsite planning of what methods will afford the greatest safety and effectiveness for the team members

working in the situation. Thirdly the team members will do some selfplanning on how to move safely around the site and identify what activities on site they feel may be hazardous. Due to the nature of the fieldwork the planning system has to be dynamic as no two situations are ever alike.

Consultation

The consultation process for the reviewing of policies, procedures, and workplace controls is to be in two phases. The primary phase will be the policy and procedure reviews which are conducted on a regular basis at a state level with experts from various fields and personnel, both volunteer and employed members of FESA. These experts will review the training systems in accordance with the World's Best Practice and case studies from around the globe.

The review will include using the expertise of the people who are working on the ground as well as those who specialise in safety systems. This will allow for the procedures and policies to have the knowledge of experts in the relevant fields as well as the experience of people working in the system. This is required for a balanced system due to the environments that the average volunteer works under. The theoretical means of safety and hazard management can occasionally be redundant, so practical knowledge of the field work must be used as a testing method. The other reason for having practical knowledge of work processes is because a complicated procedure can cause a quick task to take considerably longer, and in situations such as rescue operations the procedures must be economical on both resources and time.

At a local level the workplace hazard control measures to be used will be decided by the team members. These are the procedures that will be followed as a

course using the resources available to the unit and team in the field. The unit will review any new procedures and where there is an optional path, decide with consultation at the management committee level, the plan of action to be followed. This will include all operational management people from the Unit Manager down to the Deputy Team Leader and Member Representatives. Each optional method will be reviewed and the primary method will be chosen for the regular activities of the unit.

Hazard Management Training

Hazard management training will be an important part of the training programs to be developed to prepare and instruct the personnel on the correct procedures to use in the field. These instructions are to be carried out by members of the organisation that are qualified to do so. Hazard management is to be heavily stressed due to the nature of the work that the unit members may be called upon to perform in the natural course of their duties. Inductions will cover the dangers of the general work place for the members and highlights methods to be used to reduce the danger to one self, team members and the community. Hazard control measures to be used will be flexible enough to cater for most circumstances and as such the training in performing tasks will include different models of hazard management.

Related Documents

Standard Operating Procedures (SOP's) available in folders on the unit's resource shelf.

Fire and Emergency Authority (FESA) Policies on Occupational Safety and Health.

Review date

This document is to be reviewed annually in June each year and whenever there are relevant changes in legislation or work practices.

Personal Protective Equipment

by: Ms. Jade Heatly.

Abstract

Personal protective equipment (PPE) is used in the workplace as a last hazard control measure to prevent workers from serious injury or disease. Many workplaces implement the use of PPE through policies and procedures. This is an important part of safety management in the workplace. Before the use of PPE is implemented in the workplace the hierarchy of hazard control measures must be considered to first eliminate or minimise the risks of harm occurring from any hazards. This article covers the legal requirements of PPE in the workplace, the selection and use of PPE, the employee issues related to the use of PPE and considers if the use of PPE can create a hazard in itself.

Introduction

Personal Protective Equipment (PPE) is used in the workplace after all other controls in the hierarchy of hazard control measures have been used to minimise the risk of injury or disease occurring from a specific hazard. Personal protective equipment is also used as added protection in conjunction with other hazard control measures. Ultimately a hard hat or safety boots may save a life. Many companies implement the use of PPE through policies and procedures that set the basis for the requirements for using PPE in the workplace, such as the selection, use, maintenance and training in PPE use and the penalties for non compliance.

Legal Requirements For Personal Protective Equipment In The Workplace

Personal Protective Equipment is generally defined in Occupational Health and Safety legislation as any clothing or equipment that is designed to be worn by a person to protect the person from serious injury or illness. Employers are required to take all practicable measures to ensure the health and safety of people at the workplace. Employers have a duty to ensure that their workplace is safe.

PPE is only to be relied upon when all other hazard control measures have been used, such as improved ventilation or re-design of work practices, as stated in the Western Australian Occupational Safety and Health Regulation 3.32. If an employer is required to provide PPE certain obligations must be met and the employer must ensure that:

- All employees are given clear instructions on the requirements for PPE
- Failure to wear required PPE will not be tolerated
- Employees are given adequate training and instruction on how to fit the required PPE
- The PPE required is appropriate for the task and meets the required Australian Standards
- The PPE is maintained and stored in good condition. (WorkSafe Western Australia Commission, 1996)

Under section 19(1)(a) of the Western Australian Occupational Safety and Health Act there are several factors that the employer must decide upon for the provision of PPE in the workplace. This includes the following.

- The need for PPE
- The availability of PPE
- The location of the workplace
- The need for a personal fit
- Industry practice (Code of Practice, 1996).

Employees have responsibilities that come under Occupational Safety and Health legislation. These responsibilities are as follows. The employee must cooperate with their employer, use the PPE in the manner instructed, not misuse or damage the PPE and must notify the supervisor of any damaged or malfunction of the personal protective equipment (WorkSafe Western Australia Commission, 1996).

Generally the implementation of the use of PPE in the workplace is achieved

through the use of policies and procedures. In these policies and procedures the employer must state the need for PPE, how long it is to be worn and the consequences for the employees if they refuse to wear it. If the employee does not comply with these instructions the employer can remove the employee from the workplace without suffering any financial loss. The policy must include the responsibilities of management, supervisors and employees in relation to the use of PPE.

Hazard Identification And Risk Assessment

Before employers provide PPE to the employees, the employer should:

- Perform a hazard inspection and job safety analysis to identify any hazards to which the workers are likely to be exposed
- Conduct a risk assessment for the possibility of hazards identified causing harm
- Determine which hazards can be entirely eliminated, or the potential for causing harm reduced, through the use of the hierarchy of hazard control measures. These measures are elimination of the hazard, substitution, isolation, engineering controls, administrative controls and lastly
- Provide appropriate PPE if all other control measures have been implemented (Terry & Sack, nd).

Selection Of Personal Protective Equipment

Incorrect selection of personal protective equipment could lead to countless

injuries or even fatalities. It is important to consider the performance capabilities and characteristics of the recommended personal protective equipment and the PPE must meet the relevant Australian Standards.

The process for selection

When employers are selecting the appropriate PPE it is important that the following process is followed:

- Employers and employees should familiarise themselves with potential hazards and the PPE that is available to be used to minimise these hazards causing harm to people.
- Employers and employees should have adequate knowledge of the criteria for selecting the PPE which will provide adequate protection against the identified risks of the hazards causing harm to people.
- Employers and employees should evaluate the PPE to ensure it is fitted properly, used correctly and does not create secondary risks (Hegney, n.d.).

This process would allow for the correct PPE to be selected and purchased. When purchasing PPE it is vital that proof of compliance with relevant Australian Standards is sighted to ensure the equipment is safe. When selecting PPE the employer must consider individual differences such as size, body-shape, and gender (Somerville, 1998). Some employers try to cut costs and in some situations the choice of cheaper PPE can be the difference between life and death. Employers should avoid the temptation to sacrifice quality for price (Somerville, 1998).

Consultation with employees

Consultation with employees is crucial in selecting the best PPE that is required, generally because the workers are well aware of what can go wrong and why, based on their experience with the job. Employees are able to give advice to the employer on what they feel is required. This can also help in the hazard identification stage, risk assessment and

risk control of work related hazards.

If an employer does not consult with employees about personal protective equipment this could create several problems, such as the employees refusing to wear personal protective equipment as they think it is not fashionable. Particularly the younger workers find that fashion is the biggest issue when it comes to PPE. When workers are asked "why don't they wear it" (PPE), the general response has been because they do not look or feel good (Somerville, 2000). This sort of response has highlighted the fact that probably the employer has not consulted and liaised with his employees on the selection of PPE. If employers do consult with employees on PPE issues that response would not have been as likely to have been stated. This is why consultation with employees is crucial to get wearer acceptance.

Use of Personal Protective Equipment

Even after the correct selection of personal protective equipment many considerations need to be made to ensure that the workers are using the PPE correctly, safely and are gaining the maximum protection out of it. When using PPE it must be effective and must be suitable for the person wearing it. PPE must not interfere with the operator when performing the required tasks. The PPE must be of robust construction and not interfere with other PPE being worn at the same time (Ridley, 2001). PPE differs from other hazard control measures because it must be consciously used by the worker, as PPE is an extension of a workers own bodily protection (Mathews, 1993).

Training

When training is carried out for personal protective equipment, the workers must be aware of the hazards and risks associated with the job identified. This helps the employees to achieve safe work practices. Training employees in the safe use of PPE for the required job includes:

- Correct selection, use and wearing of PPE for the worker
- Comfort and fit requirements
- Limitations in use and effectiveness
- The risks caused by incorrect use or poor maintenance
- Maintenance and replacement procedures (WorkSafe Western Australia Commission, 1996).

The employees also need to be aware of personal characteristics and hygiene, like facial hair, as this can affect the protection provided by facemasks and respirators (Somerville, 1998). When employees are using PPE it can be uncomfortable and fatiguing and can sometimes be hazardous. The employer should allow the workers using PPE to have a rest break to recover for at least 10 minutes every hour for PPE such as full body suits and respirators. Job rotation can also be another way to minimise employee fatigue from constantly wearing PPE. The employer could come to an agreement that no worker should have to spend more than half his or her working time using PPE (Mathews, 1993).

It is highly recommended that signs be posted (such as "Ear Muffs must be worn in this area") in the workplace as a useful reminder of the kind of PPE to be worn. This can eliminate workers forgetting their PPE or what PPE they are required to wear.

Storage and Maintenance of Personal Protective Equipment

Inadequate maintenance of personal protective equipment can also contribute to injury and even death of the worker. Proper storage is necessary to protect PPE against distortion, heat, light, chemicals and dust. Employees must take responsibility for care of their PPE after use (Turner, 1999). Employees must also report the loss of any equipment to their supervisor.

PPE must be easily accessible at all times. All PPE should be maintained in a

clean, hygienic and effective condition. It is important that there is a system in place for a regular inspection of all PPE. This ensures that the PPE is providing the best protection and any defective PPE is identified and repaired or replaced. The system should include procedures that identify:

- The responsibilities for maintenance
- The designation of PPE
- Cleaning procedures (in accordance with manufacturers instructions)
- Checking procedures
- Information on the duration of protection (for example for gloves and respirators)
- Criteria for replacement (WorkSafe Western Australia Commission, 1996).

Employee Issues Related To Personal Protective Equipment

There are clearly many issues related to personal protective equipment. Some employees feel there is no need to wear PPE as the person feels that their level of performance will be less. There may also be discomfort from wearing PPE. PPE may cause a low self-esteem. Some employees will not wear PPE readily unless they are forced to by a penalty or encouraged to by payment (Hegney, n.d).

Discomfort is one of the biggest issues relating to PPE. For example workers that are required to wear PPE in a mine are generally required to wear a long sleeved shirt, long pants, boots, safety glasses, hard hat and sometimes a respirator. As mine sites can be hot the employees are prone to heat stress and lots of perspiration, which could drip off their face into their safety glasses and fog it up. This could blur their vision and become a nuisance, as they constantly have to take their glasses off and clean them. Heat stress could cause a significant amount of discomfort and can cause sickness.

Fashion is also an issue with employees complying to wear PPE, for example if there were 2 types of safety glasses and

the "Bolle" brand looked better than the "Uvex" brand but the "Uvex" offered better protection. The majority of the workers would simply choose the "Bolle" brand because it looked better regardless of the fact that it didn't offer as much protection. The workers would have more self-esteem if they wore a more fashionable pair of safety glasses. When PPE is not fitted correctly to the person this can make it difficult for the employee to carry out the job correctly and can be very uncomfortable to wear.

Is Personal Protection Equipment A Further Complication?

The use of personal protective equipment must be carefully monitored by the managers, supervisors and employees to avoid PPE becoming a hazard in itself. There are several common problems that are associated with personal protective equipment. These common problems are:

- *Lack of protection:* This could be equipment that has not been manufactured properly according to the standards and PPE that is not carefully maintained. This could result in the PPE not performing the job it is supposed to (Mathews, 1993).
- *Diverts attention from other control measures:* When employers concentrate their efforts on PPE for long periods of time it diverts their attention away from trying to eliminate or control the identified hazard. It is vital in the workplace that the hierarchy of hazard control measures continues to be used, even when PPE is in use (Mathews, 1993)
- *Infection:* Using PPE, such as earplugs or respirators, can often result in infections. Many workers may experience a common ear infection as a result of using dirty earplugs. This is generally because the employees have not been trained correctly on how to clean and use their PPE.
- *PPE is uncomfortable and makes working more difficult:* PPE can be uncomfortable and make working

more difficult as added stress is placed on the body. When employees are under stress in the workplace this can make the employees more prone to accidents (Mathews, 1993)

- *Difficulties in seeing and hearing:* Some PPE may limit the worker's vision and can inhibit their hearing. If workers cannot see or hear properly they might not be able to hear or see vital warnings. This could increase the workers' chance of an accident (Mathews, 1993).

Conclusion

The use of personal protective equipment does not remove the hazard. PPE is aimed at reducing the risk of injury and disease occurring. All employers must be aware that PPE is used as a last resort to give the employees added protection against the risk of hazards that are unable to be eliminated or controlled from causing harm to the employees by any other means. Employers should be constantly looking for alternatives and better means of hazard control than the use of personal protective equipment.

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Why Is Occupational Safety & Health A Crucial Issue For Nurse Managers?

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Abstract

Through the use of accident and good practice stories and the consequences of the outcomes of these actions this article illustrates why using effective occupational safety and health practices is so important for Nurse Managers. The article also describes actions that managers should take to promote effective occupational safety and health practices in their organisation.

Introduction

Maintaining good occupational safety and health practices is one of all Nurse Managers' most important work functions. Very few people go to work wanting to be made ill, to be injured, to be verbally or physically abused or wanting to be killed. Unfortunately all of these events have happened to nurses at work. Under Occupational Safety and Health legislation the Nurse Manager has the employers' responsibility of maintaining a safe work premises, safe work processes and to facilitate the safe actions of people at the workplace so that everyone who comes onto the premises is protected by the Nurses Managers achieving their legally and morally required duty of care. Nurse Managers also have the responsibility of maintaining their own occupational safety and health.

There is a world wide shortage of trained nurses who want to work in a hospital. Having good occupational safety and health practices helps to attract people to train to be nurses, and then keeps them interested in staying part of the nursing profession as they feel that they are cared about and valued. The following article provides some examples of situations that illustrate why occupational safety and health is such a critical issue for Nurse Managers to be involved in. The first example relates to a reason for a young Registered Nurse to leave the nursing profession.

There is a need for the manager to provide work related education and care for employees.

A Registered Nurse and an untrained Patient Care Assistant lifted a 150-kilogram quadriplegic man, (who was a

"dead weight") higher up the bed using a draw sheet to move this patient.

Outcome

The Registered Nurse damaged the muscles and ligaments in her right shoulder and neck when lifting this patient.

Causes of the injury

The patient was normally lifted at home using a lifting hoist. The nurse caring for this patient did not know how to use the ward lifting hoist to move the patient up the bed. This nurse was new to the ward and did not know that there were red slide sheets that were used on this ward to move patients. The Patient Care Assistant was untrained in lifting.

Consequences

The nurse was a young graduate who took 6 months off work on Workers Compensation payments following the injury. During this time she decided that she did not want to go back to a profession in which she had been injured and at the end of 6 months left nursing to work as a travel consultant.

Manager's responsibility

The manager has the responsibility to

- Provide a culture of care for staff where everyone looks after each other.
- Give an orientation to the ward for each nurse who works there. This orientation should have included where all ward equipment was kept, how to use the equipment competently and a description of the ward safety policy and safe work procedures. Staff should have been encouraged to ask questions of the manager if they required more information.
- Educate all staff (including Patient Care Assistants) on how to assess the

best way to assist patients with movement when this is needed.

- Ensure that the correct equipment required to work safely was in an easily accessible place for all staff to use.
- Provide adequate help and supervision for new nursing graduates.

The cost of implementing the above safety management strategies would have been far less than the cost of not implementing them. In this case the consequences of the accident affected one employee who was probably replaced by another graduate nurse who may have had similar problems. The consequences of not having good safety management may be even more severe as is shown by the next example.

Consequences if an accident happens

Seventeen people were killed in a fire in a Nursing Home. It is thought that the fire started in the patient television lounge, probably from a faulty television set. The fire was detected at approximately 1.30 a.m. when one of the nurses on duty noticed smoke coming from under the door of the lounge room. The nurse opened the door and found the fire too advanced to be put out with a fire extinguisher. She smashed the fire alarm glass and pushed the button to notify the fire brigade of the fire while at the same time shouting "FIRE" to alert residents and her co-workers to the danger. Unfortunately the fire alarm failed to operate properly and the nurse had to phone 000 to have the fire brigade sent to deal with the fire. This also meant that the alarm bell did not make a noise to warn staff and residents who were not within hearing distance of the nurse's voice. It was later revealed that the fire

alarm circuit wire had been destroyed by the initial fire.

There were only two registered nurses and four patient care assistant on duty to safely move 78 residents away from the building. These night duty staff had not practiced how to safely move a large number of residents, many of whom were confused or unable to move without considerable assistance from at least two staff members. Employees were not sure of what to do first. There was no leadership. By the time the fire brigade arrived on the scene, the fire had spread rapidly through the building.

There were no fire retardant doors in the building to slow down the speed of the fire's progress. The staff woke up the residents who were able to ambulate out of the building first and took these people to safety on the footpath away from the burning building. Unfortunately, 11 bed ridden residents did not manage to escape from the intense heat and smoke and their bodies were later recovered by the fire brigade.

Causes of death

The cause of this disaster can be traced back to the fact that safety was not included in the design stage of the work premises as the building did not have fire retardant doors and there was no back up alarm system for emergencies. It can also be attributed to the fact that the electrical equipment was not checked regularly to ensure that it was fit for purpose and that night duty employees were not trained in emergency management.

Consequences

The consequences of this fire were that eleven residents died in the initial fire, forty three residents and two Patient Care Assistants had burns or smoke inhalation injuries and six of the residents later died from their injuries. Many staff and residents were traumatised by the effects of the fire and required counseling to deal with what they had seen and heard. All residents who survived the fire had to

be found a new home for care while the nursing home staff members had to find new employment as the owners of the Nursing Home declared themselves bankrupt after the fire. Property, personal possessions, furniture and equipment were destroyed. There was also a court case related to this disaster and resulting fines for both the Nursing Home Owners and the Director of Nursing for negligence. Compensation payments were awarded to victims of the fire by the court.

Management's responsibility

The Nursing Home Managers had responsibility to:

- Provide a culture of care where everyone looks after each other.
- Put safety in the design stage of the work premises. This would include safe wiring of buildings, having fire walls and fire resistant doors.
- Put Smoke detectors in all rooms.
- Have 3 inspections a month and check the equipment maintenance program for all equipment. Make sure that all electrical and other equipment has been checked to ensure that it is safe to use before it is approved for use. A sticker should then be put on by a qualified technician to state that this equipment is safe for use, and the date that the next check is required.
- Ensure that all products are stored safely, e.g. do not store flammable and oxidising agents together.
- Ensure that fire alarms and extinguishers are in easy to access places and staff are trained to use them competently.
- Have an emergency evacuation plan and map of the premises clearly displayed in every room.
- Ensure that access ways and exits from the building are kept safe for use in emergency situations.
- Train all staff, including people who work at night, in emergency management.
- Designate which employment position will be team leader in emergency

situations.

- Have a back up system for emergency notification, such as a fog horn or loud whistle, that can be used to warn of an emergency if the electrical system is destroyed.

As for the previous example, the cost of good safety management would have been far less than the cost of this incident. Providing good occupational safety and health management from the design stage of the work premises, through to having safe work practices with employees trained in what to do in emergency situations would have either eliminated this accident, or at least minimised the consequences.

Occupational safety and health management

A hazard is anything that may result in death or injury to a person, harm to the health of a person, or damage to property, equipment, process, or loss to the organisation/individual. There are eight major groups of work related hazards. These are as follows.

- Physical. For example, air quality, noise, electrical, heat, cold, radiation.
- Chemical. Solids, liquids, gasses.
- Ergonomic. For example, manual handling, work equipment design, task design.
- Mechanical. Machinery.
- Psychological. For example, shift work, workload, bullying.
- Biological. For example, viral or bacterial infection.
- Environmental. For example, storms, earthquakes, terrorist attacks.
- General. For example, slips trips and falls.

Risk is defined as the likelihood of harmful human or property contact with the hazard. Risk assessment analyses the consequences of contact with the hazard and the probability of this contact being made. The combination of consequences and probability of occurrence determine the degree of risk present. Risk control for identified hazards is a very important part of safety management.

It is a legal requirement, in most countries, for the Nurse Manager to identify work related hazards for their area of responsibility, assess the risks of the identified hazards causing harm, and to control the risk of the hazards causing harm. Effective occupational safety is minimising hazards entering an organisation, the elimination or minimisation of risks that can cause harm within the business processes and minimising the risks of harm occurring outside the organisation arising from business processes, products and services.

Effective safety management includes thinking of everything that could go wrong, from the design of the service, through the working life of the people, premises, equipment, products used, all work processes, the effects that the service may have on the customers, the community and the effects that the government and members of the community may have on the nurses, through to the decommissioning of the organisation. Once all of these hazards have been identified the risk of any hazard causing harm to the service or its employees, or its property need to be assessed and prioritised in order of importance for risk control strategies to be implemented.

Risk control is part of good business quality management practices. It is as much about identifying opportunities for improvement for cost-effective management to improve profits and ensure business continuity as it is about avoiding or preventing losses. For example, the Health Care Complaints Commission in Australia has a program called *Turning wrongs into rights: learning from consumer reported incidents*. This program identifies hazards in health care and uses ways to overcome these hazards as a way to produce quality improvements for health care. A no individual blame system is promoted so that people will not be afraid to report problems. In the same way

Managers need to encourage everyone at the workplace to report any workplace problems to them. This is so that the risk of the hazard causing harm can be eliminated, or at least minimised, and occupational safety and health improved through good risk control strategies.

It is far more profitable to spend money on having a safe work premises, safe work practices and safe employee actions than having to spend the money on the consequences of not having these. When looking at providing a high standard of occupational safety and health the Nurse Manager needs to look at seven main areas. These are as follows.

1. Work environment.
2. Products & equipment used.
3. Management factors including work organisation.
4. Employees.
5. Contractors.
6. Clients and visitors.
7. Community and legal requirements & expectations.

The organisational manager has responsibility for occupational safety and health of the people in their work area. This responsibility starts with what comes into the organisation.

Safety Management for inputs

The first stage of the hazard identification, assessment and risk control program, which is required for occupational safety and health, should be to eliminate or minimise any hazards and risks of harm occurring to employees or other people entering the organisation. This should be considered under three main headings; physical resources, human resources and information. The following example illustrates the importance of effective management for the physical resources that enter the organisation.

The accident and its outcome

A Theatre Assistant was walking past a portable shelving unit when the unit fell on him. His left shoulder and hand were

hit. An X-ray taken shortly afterwards showed the impact had caused a fracture of the Theatre Assistant's left clavicle. The Theatre Assistant also had a bruised swollen left hand.

Causes of the injury

Caster one, of the 4 casters on the unit, had come away from the unit causing it to become unevenly supported and topple over. The weld attaching the caster to the shelving unit had not held and had given way. The equipment stored on the shelving was mostly orthopaedic surgical equipment. Between 90-100 kg of equipment was being stored per shelf on the 5 shelves. The manufacturers, after the accident, stated that the weight that each caster could take was 80 kg. This information had not been asked for, or obtained from, the manufacturer prior to the accident. This gave the total weight that the shelving could safely hold as 320 kg. The weight of equipment stored on the trolley was over 400 kg.

Consequences

Equipment was broken when the shelving fell. This theatre equipment had to be replaced. It took 6 weeks for all replacement theatre equipment to be obtained. Over this period of time many of the orthopaedic operations had to be canceled because the required equipment was not available at the hospital. The affected surgeons and patients were angry. One of the orthopaedic surgeons refused to return to the hospital to perform any future operations. Media publicity of the delays in surgery was given through the story of a patient who was angry at having his surgery canceled until the required equipment was available.

Dealing with this accidents and investigating its causes took many hours of the Theatre Manager's time. The Theatre Manager had to contact the Hospital Risk Management Department. Notify the Theatre Occupational Safety and Health Representative of this accident. Contact the Sales

Representative and then the Manager of the company that had sold the equipment to the hospital to identify that amount of weight that the trolley could hold as this was not previously known by the Manager. The manager had to organise for the trolley to be repaired by the manufacturer. She had to fill in an Accident Investigation Form. Identify the cause of why the shelf fell. Identify hazard control measures and implement these to prevent this type of accident happening again.

The Nurse Manager had to look after the injured employee and take him to the hospital emergency department for a medical practitioner to examine him. She then stayed with the injured employee while he had an X-ray and follow up care. After this she had to complete Workers Compensation forms and be the case manager for the injured employee until he returned to full duties in Theatre. She had to fill out the paperwork to notify WorkSafe Western Australia of this accident because the injured employee was off work for more than 10 days.

The Theatre Assistant was off work for 6 weeks, then returned to work on restricted duties for another month before being able to perform all of his previous duties. A replacement Assistant had to be employed while he was off sick. It proved difficult to obtain a trained Theatre Assistant so an Enrolled Nurse from a Nursing Agency was contracted to work in this position until the injured employee returned to full time work. There was the cost of training the replacement as this Enrolled Nurse had never worked in theatre before and required a lot of supervision and help initially with performing the Theatre Assistant work.

Equipment that was on the trolley, that was not broken, had to be put on another trolley for theatre use, or stored on fixed wall shelves when not in use. The Nurse Manager also had to explain to the

Director of Nursing why the trolley had fallen. The Director of Nursing had to justify to the CEO why so much expensive equipment had to be purchased for the operating theatre.

Manager's responsibility

It was the Manager's responsibility to do the following.

- Check the safety features of the trolley before it was purchased and used. For example, know how much weight the portable trolley could safely hold.
- Have the trolley clearly labeled as to the amount of weight that it could hold and educate staff not to overload the trolley with equipment.
- Ensure that the trolley had regular (3 a month) maintenance.
- Organise daily checking by the scrub nurse to ensure that the trolley was safe for use and not overloaded.

Completing all of these activities would have enabled a safer workplace and minimised the chance of this accident happening. The next stage that the Nurse Manager is responsible for is the safety management of work activities.

Safety management for work activities

The objective of a safety management plan for work activities is to eliminate or minimise risks within the business processes. Risk Control activities in this stage need to cover the areas concerned with work activities and risk creation. These include the following.

- Physical work environment,
- Equipment,
- Products,
- Safety management system,
- Policies and safe work procedures,
- Employee training & education,
- Competence,
- Consultation and cooperation,
- Communication,
- Skilled supervision,
- Providing enough time to complete work safely,
- Auditing, researching and improving safety management, and
- Security.

In occupational safety and health management, when devising safety management strategies for the work activities, it is important to consider each of the following and implement appropriate risk control measures.

1. The operation of business duties during routine and non-routine activities.
2. Maintenance tasks. Who will do the regular maintenance – on site employees or contractors? The business duties that will occur during maintenance.
3. Planned changes in the organisational structure, premises, equipment, processes, products used, procedures, people or information.
4. Foreseeable emergencies giving rise to serious and imminent danger, such as lightning strikes, fire, injury, bomb threats or ill health. As well as planning and putting in place strategies to prevent disasters, such as having an earthquake proof building, there must be known and used procedures for what to do when an emergency happens, and disaster recovery procedures to be implemented immediately when the emergency is over.
5. Decommissioning, dismantling and removal of the buildings or other facilities, equipment and substances. Managers must care not only for employees' physical health, but also for their mental health, as the following example shows.

Adverse Incidents

A 30 year old male patient, who was recovering from a spinal injury after a car accident, was being turned at 6 a.m. This patient became verbally abusive to the nurse attending his care and continued to yell, threaten and swear at her until she stopped doing his pressure area care and turn and walked out of the room.

A demented 69 year old woman was attempting to leave the ward to go down the fire escape. The nurse asked the

patient to return back to her bed. The patient then lashed out at the nurse and punched her on the right side of her face causing the nurse to fall against the wall and bruise her head. The patient then continued to exit through the fire escape door before the nurse could get up from the fall.

Outcome

The nurse felt that the man's behavior was typical of the way that many of the patients on this ward spoke to the nurses. Being threatened and sworn at upset her a lot. An incident form was filled in to report this patient's behavior.

The nurse knew that the lady that she tried to stop leaving the ward was demented but had not realised that this patient could be aggressive. When she had recovered enough the nurse phoned the hospital security to notify these people about the patient leaving the ward. The police were notified. The patient was brought back to the hospital by 2 police officers who found the woman wandering in the middle of the main highway. An accident report was completed for this incident as the nurse had bruising on the right side of her face and on the left side of her head.

At the end of the night duty shift this nurse made an appointment to talk to the Manager for her area and requested to be shifted to work in another area of the hospital and to work on day duty shifts only. Her request was not granted. Two weeks later the nurse handed in her resignation to the hospital, as she felt that the working conditions had not improved and there was no support for staff, only patients' rights seemed to be considered.

Causes of the abuse

The male patient did not like waiting for things to go other than the way he requested them. When he had been given his pressure area care at 4 a.m. he had asked the Patient Care Assistant, who had attended his care, to let him sleep through the 6 a.m. turn. This information

had not been communicated to the nurse by the very busy Patient Care Assistant. The nurse proceeded to provide the patient with his normal 6 a.m. pressure area care. The patient had a past history of being verbally abusive if his every wish was not obeyed.

For the second incident there had been no communication by the lady's relatives that the patient could be violent if apprehended when doing what she wanted. The patient's actions were totally unexpected by the nurse.

Manager's responsibility

The Nurse Managers should have organised a system of communication to recognise and deal effectively with aggressive behavior by patients. For example a black sticker on the patient's chart could mean that this patient could be aggressive. There should also be verbal communication of this information each shift so that all people working caring for the patient were aware of the patient's potential for aggressive behavior.

In the case of the male patient, who had ongoing reports from staff concerning his verbal abuse, an anger management behavior modification plan should have been implemented where this patient had his behavior monitored, documented and appropriate psychological counseling provided to minimise, or eliminate this abusive behavior. There should have been better communication of the patient's request either verbally or in writing. The nurse had done the right action in walking away from this patient when he was upsetting her with his verbal aggression.

In the case of the female patient it would have minimised the possibility of the nurse being injured if an adequate history of the patient's past behavior had been obtained from the patient's previous carers. A warning of the likelihood of this behavior would have meant that the nurse would have called for help to take the patient back to bed, instead of trying

to take her back on her own.

There should have been a zero violence tolerance policy that was documented and used in this hospital. A zero violence tolerance policy would have made staff feel as if managers were listening to their concerns and supporting them. Feeling supported by management increases staff satisfaction at work. There should have been counseling for the nurse to listen to her when she was upset and to help her deal with the two incidents. If the nurse had been granted her request to work in another ward on day duty then she would probably have stayed working at the same hospital.

In this case both the hospital and the nurse were lucky that the nurse was just bruised when she was punched on the face and knocked against the wall. Severe head injury, or even brain damage leading to death could have resulted from this, or a similar incident, if the nurse had been knocked to the ground or further aggressive actions by the patient had occurred. As the work processes were not safe, the nurse was physically injured and suffered psychological stress. As the psychological stress was not dealt with effectively by the manager this case could have become a long duration workers compensation claim that resulted in compensation of many thousands of dollars being awarded to the employee. As well as having good safety management of work processes and effective employee rehabilitation practices, it is important for the Manager to have effective safety management of organisational outputs.

Safety Management of outputs

Risk control of outputs is necessary to minimise risks outside the organisation arising from the work activities, services provided or information given. Any complaints from clients, staff, members of the public, government organisations or businesses must be carefully investigated. Appropriate risk control measures must then be implemented.

Risk Control Measures must also be taken to minimise the work causing any environmental pollution or damage to the environment. Most hospitals have waste management procedures that minimise the amount of waste generated and which dispose of waste products according to the legal guidelines that apply to their workplace.

Staff members should be supported when an investigation of an adverse event takes place. Work process and organisational causes of the event must be considered, rather than just blame the individual, if quality improvement of care is to happen. The following example illustrates the importance of the Manager's role in the safety management of outputs, which in this case is patient care.

Cause of the accident

An 84 year old patient fell and fractured his right femur when walking out of the shower to go back to his bedroom to be dressed by the nurse who had showered him.

In this hospital the bathrooms had a shower area that was so small there was only enough room to shower the patient, not to undress, dry and dress the patient in the bathroom. The patient in this example was recovering from having a Cerebral Vascular Accident (stroke). He had right-sided weakness and was progressing well with his rehabilitation. He was to be discharged home the next day. With the nurse's help the patient had undressed while sitting on his bed. He then walked with the nurse's assistance from the bedroom to the en suite where the nurse assisted the patient to shower. There was not enough room to dry the patient properly in the shower so the nurse assisted the patient to stand up to walk to an area where the patient could be dried using a towel. The patient took 2 steps and fell forward on the wet, slippery bathroom floor.

Manager's responsibility

Under Occupational Safety and Health

legislation the Manager is responsible for not exposing anyone who comes on the premises to danger due to the state of the premises. In this case the bathroom was too small for any patient who required assistance to be showered. There were also other problems that the Nurse Manager was responsible for ensuring that the health care owner rectified. These included the following.

- The manager needed to ensure that all nurses working on the ward were provided with information about which type of patients were able to use the en suite shower facilities. All nurses should be taught to identify hazards, assess the risk of these hazards causing harm and then either control the hazard, or report the hazard to someone who was able to control the risk of the hazard causing harm.
- The best solution would have been to put safety in the design stage of the work premises and to have patient bathrooms that were large enough for a nurse to be able to dry and dress a patient while the patient was sitting on a shower chair.
- Having a shower rail for the patient to hold onto while standing to be dried would have enabled the patient to have better supported his weight and minimised the chance of the patient falling.
- The floor tiles were slippery when wet. The bathroom floor covering should have been made of a material that was non-slip when wet.

Under Occupational Safety and Health Legislation the Nurse Manager also has the responsibility for the safety of external customers (patients) and all visitors to the work premises that the Manager has control of. Occupational Safety is more than just caring for employees' health and safety. It involves caring for everyone who comes onto the business premise, or who can be affected by work activities.

Link between Quality and Safety

Management

It has been found that good business quality management practices result in good occupational safety and health outcomes. The reverse is also true. When occupational safety and health is well managed employees are healthier more productive and, due to research being conducted on the safest and best ways to perform work tasks, businesses are usually more profitable and have higher standards of work.

Benefits of having effective occupational safety and health

All major Western Australian Hospitals provide free immunisation against the three most common strains of influenza for their staff at the start of winter each year. This health promotion strategy reduces staff sick leave as the immunisation helps to prevent the staff from catching these strains of influenza and enables them to come to work to care for patients. It costs far less to immunise employees than it does to find and use replacement staff, and to pay for the sick leave costs for employees who become sick with this virus.

A good occupational safety management program results in the following benefits.

- Less human, material and system losses as an effective safety management program enables business losses to be prevented or minimised due to better decisions being made.
- It allows for business continuity because of the existence of contingency plans, people, equipment, products, etc.
- Provides smarter allocation of resources
- As occupational safety and health management is driven by all levels of the organisation, from the Director of Nursing to the employees caring for patients, a culture of controlling risks and promoting work related safety exists because people are trained to think safety in the design stage and

- implementation of all work.
- An effective occupational safety and health management program increases the management's ability to make better strategic planning and implementation decisions because business risks are able to be evaluated in light of current risk control activities.
- Good safety and health management practices promote team work that encourages the sharing of ideas, information and resources across work groups to promote occupational safety and health as many of the solutions for risk control are within employees' expertise to identify and implement in a cost effective way.
- Effective occupational safety and health management programs reduce the occurrence of lost time through injury or disease, reduce workers' compensation premiums, maintain a fit, healthy workforce, good morale, market support and reduce liability.

- Safety management is a powerful asset that delivers a competitive advantage by allowing cost-effective service to be delivered.
- Increased credibility of service by customers because client needs are more likely to be met.
- Positive publicity and enhanced organisational reputation because of the provision of a high standard of service.
- The organisation is more likely to be accredited by relevant authorities.
- The organisation is more likely to win awards for excellence.
- Employees are more likely to be attracted to work at the organisation and to stay working for the organisation as they feel cared about.

Conclusion

The Nurse Manager is a key person in providing effective occupational safety and health for everyone who comes onto the work premises. Occupational safety

and health must be included in the design stages of all work premises, and processes. It must be considered when equipment or products are purchased and in all management practices because preventing accidents and ill health is much better than dealing with the consequences of not doing this. Having a known and used occupational safety and health management program is essential to be able to control and reduce risks to an acceptable level. It provides public credibility for risk management decisions, cost effective service to the community, meets legal occupational safety and health requirements and continuously improves business activities of the organisation. This promotes effective health service management by the Nurse Manager and enables business continuity. It also makes working for the organisation more enjoyable if people feel that the organisation has a mission and a culture of care.

The WSO's Web Site

www.worldsafety.org

Has Had A Much Needed Face Lift

Check It Out

Diary Of Events

Title: 7th World Conference on Injury Prevention & Safety Promotion

Venue: Austria Convention Centre, Vienna, Austria

Date: 6 – 9th of June, 2004

Cost: Euro 645

Contact: Dr. Wim Rogmans: Email: w.rogmans@consafe.nl

Federal Association for Statutory Accident Insurance in co-operation with the European Agency for Safety & Health at Work

Title: 2nd International WORKINGONSAFETY.NET conference for the prevention of accidents & trauma at work

Date: 31 August 2004

Contact: BG – Academy, Königsbrucker Landstraße 2, D-01109 Dresden, Germany

Fax: +49 (0) 351 457 20 1106 Email: WOS@HVBG.de Internet: www.workingsafety.net

European Commission for Employment & Social Affairs, International Labour Organisation (ILO), European Agency

Title: 6th International Congress on Work Injury Prevention, Rehabilitation & Workers Compensation

Venue: Rome, Italy

Date: 30th November - 3rd December 2004

Contact: Work Congress6 Secretariat Tel: +39 (06) 5487 2115 / 5607 / 5608 Fax: +39 (06) 5487 2019

Email: secretariat@workcongress6.org Internet: www.workcongress6.org

International Labour Office (ILO) in collaboration with the Ministry of Health in China

Title: Conference on Occupational Respiratory Diseases

Venue: Beijing, China

Date: 19 - 22 April, 2005

Contact: Mr. Wang Mushi Tel: 86 10 68792527 Fax: 86 10 68792528

Email: executive@icord2005.com Internet: www.icord2005.com

World Safety Organization

Title: 18th International Environmental Safety & Health Conference & Expo

Venue: Sheridan Denver Tech Center, Denver Colorado USA

Dates: 1 - 4 May 2005

Contact: Debbie Burgess Tel: (660) 747 3132 Fax: (660) 747 2647

Email: wsowmc@socket.net or info@worldsafety.org Internet: www.worldsafety.org

National Institute for Occupational Safety & Health

Title: Occupational & Environmental Exposure of Skin to Chemicals

Venue: Karolinska Institute, Stockholm, Sweden

Date: 12th June, 2005

Contact: National Institute for Occupational Safety & Health

Internet: www.cdc.gov/niosh/topics/skin/OEESC2/conference_info.html

WSO Code of Ethics

Members of the WSO, by virtue of their acceptance of membership into the WSO, are bound to the following Code of Ethics regarding their activities associated with the WSO:

1. Members must be responsible for ethical and professional conduct in relationships with clients, employers, associates and public.
2. Members must be responsible for professional competence in performance of all their professional activities.
3. Members must be responsible for the protection of professional interest, reputation and good name of any deserving WSO member or member of other professional organization involved in safety or associated disciplines.
4. Members must be dedicated to professional development of new members in the safety profession and associated disciplines.
5. Members must be responsible for their complete sincerity in professional services in the world.
6. Members must be responsible for continuing improvement and development of professional competencies in safety and associated disciplines.
7. Members must be responsible for their professional efforts to support the WSO motto "Making Safety A Way Of Life...Worldwide".

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