REVIEW OF LITERATURES

Rosliza Osman, Noorhasimah Awang, Syed Abdul Hamid Syed Hassan, Norsyahidah Mohammad Yusof - ISSN No. : 2201-6333 (Vol. 3 No. 1 January 2015) – mentioned that improving safety performance by applying Behaviour-Based Safety (BBS) into safety risk control has been adopted in major industry. This approach to prevent incident has a number of advantages. Safety regulation is a kind of social regulations on the aspects of workplace and environment safety and it is used to prevent the probability of accidents and reduce damage of accidents.

Suresh Kumar Singh - ISSN No. 2277-727X (Vol-II, Issue-III, 2013) – highlighted that BBS is a process of repeatedly going to co-workers and making random observations till he reaches safe behavior. Based on behavior analysis and can be used by company leaders to bring positive changes in behavior that promote safety in the workplace. An employee knows how to perform the safe actions, but does not, training is not needed. Proper motivation is the critical element needed to make the workplace safe. Punishing a worker for one safety mistake may not actually address the real issue that caused a problem and can have multiple unintended side effects.

Kean Eng Koo - ISSN No. 1913-9020 (Vol. 5, No. 2; April 2012) – mentioned that young adults are more prone to accidents compared to older adults and it happens due to lack of effective safety training and ineffective dispersion of safety knowledge to the young adults. It is necessary to develop and integrate a safety training model using a behaviour-based safety training programme into laboratories for young adults, during their tertiary education, particularly in technical and vocational education.

Ashok Garlapati, Dr. Nihal Siddiqui, Dr Fatema Al-Shatti - ISSN No. 2278-7763 (Volume 2, Issue 5, May-2013) – highlighted that a comprehensive outcome on the behavioral study on engagement strategies of diverse workforce in upstream oil & gas industries for enhancement of Health, Safety & Environment (HSE) performance. The petroleum industry is an essential element of the economy of any Country in the Gulf Region and it is vital importance for the health & welfare of its population.

A. Hemamalinie, A. J. Jeyaarthi, Dr L. Ramajeyam - ISSN No. 2250-2459 (Volume 4, Special Issue 4, June 2014) – mentioned that safety plays a vital role in
the construction sector. Safety Culture is the enduring value and priority placed on workers and public safety by everyone in every group at every level of an organization. It is necessary to review the case study of fatal and non-fatal accidents to examine the current culture in the workplace regards to the management of safety and health and create a safe working environment for the construction company.

Mohd. Aqleem Mir, Bibha Mahto - ISSN No. 2395-0072 (Volume: 02, Issue: 02, May 2015) – highlighted that construction industry which is considered as one of the most hazardous industrial sectors wherein the construction workers are more prone to accidents. Despite recent efforts to improve site safety, construction still accounts for a disproportionate number of occupational related fatalities. In developed countries there is strict legal enforcement of safety in the construction industry and also in the implementation of safety management systems which are designed to minimize or eliminate accidents at work places.

J.C. Jansen and A.C. Brent - SA ISSN No. 0038-223X/3.00 + 0.00 (Vol. 105, Nov. 2005) – mentioned that fatal accidents in the North-West mining region of South Africa have increased significantly since 1999. During 2002 the North-West region experienced the worst ever year in terms of total fatalities, which is one indicator of safety performance. However, the platinum industry, which is mostly based in the North-West Province, has been expanding in the past few years and is subsequently facing the risks associated with increased mining depths as well as longer tramming distances.

Hanna B. Ramussen, Linda Drupsteen and Johny Dyreborg - ISSN No. 1443-8844 (Issue 2, 2013, Article 1, Vol. 17) – mentioned that the oil and gas industry in the Danish sector of the North Sea which has always focused on reducing work-related accidents. Over the years, accident rates have been reduced, and near-miss reporting has gained in importance, because it allows the industry to learn from experience and prevent further accidents. Because of this importance, oil and gas companies use many resources to register and analyze near misses.

Robin L. Dillon and Catherine H. Tinsley - ISSN No. 0025-1909 (2008) – mentioned that Near-misses—successful outcomes in which chance plays a critical role in averting failure—are a common phenomenon, although infrequently studied in management research. As the above quotation suggests, many Space Shuttle missions prior to the Columbia disaster should be characterized as near-misses. The missions were “misses” because failure was forestalled, yet “near” because only chance prevented the failed outcome. Specifically, foam from the left bipod ramp of
the external tank was shed on at least 30 previous shuttle missions; again and again, disaster was averted only because the foam did not hit a sensitive portion of the orbiter.

Faridah Ismail, Norizan Ahmad, Ahmad Ezaaee Hashim and Razidah Ismail - ISSN No. 0128-7702 (21 (4): 1327 - 1339 - 2013) – highlighted that the main focus over the past 150 years has been on improving the technical aspect of engineering systems to improve safety, and these efforts have been successful. As the frequency in technological failure in industry has diminished, the role of human behaviour has become more apparent, and safety experts now estimate that 80-90% of all industrial accidents are attributed to human factors.

Aref Charehzehi and Alireza Ahankoob - ISSN No. 2231-1963 (Vol. 5, Issue 1, Nov. 2012) – mentioned that the construction industry contributes in a significant proportion of economic and social aspects. However, it is also considered to be the most hazardous industry in terms of personal safety and health. Many factors are involved in the accident occurrence at construction site. Some important elements that create a significant portion of accidents include: safety management error, poor training programs, human element, act of god, outdated procedure and no clear monitoring policy.

Noorul Huda Zakaria, Norudin Mansor and Zalinawati Abdullah - ISSN No. 2047-0398 (Vol. 2(5) pp. 75 - 88 July, 2012) - mentioned that the accidents in the workplace occur for a number of reasons. It may results a minimal or tragic, causing minor injury, damage to equipment or even in some cases, major injury or death. Employees need to stay alert and aware at all times to avoid accidents, while managers need to know the most common causes for workplace accidents and be able to identify the risk factors early to prevent it.

Ibraheem, M. Dooba and Alan G. Downe - ISSN No. 1993-8233 (Vol. 5(23), pp. 9794-9799, 7 October, 2011) – highlighted that the Incident Report-Based Safety Knowledge Transfer (IRSKT) model identifies the elements necessary for social systems in workplaces to extract, disseminate and use new safety knowledge emanating from incident reports. The purpose of this paper is to understand how recent developments in systems thinking and materiality of knowledge can influence understanding of safety knowledge transfer (SKT); and to propose a new systems-based safety knowledge transfer model founded on incident reports.
P. J. Foster, A. Parand and J.G. Bennett - SA ISSN No. 0038-223X/3.00 + 0.00 (Vol. 108, Nov. 2008) – mentioned that an analysis of accident statistics shows that quarrying in the UK is a dangerous industry with a poor safety record. It has injury rates that are far greater than those in the UK construction industry, which is considered as the dangerous industry in the UK. In a comparison of the accident rate of the UK quarrying industry with that of some major international mining companies, it was noted that UK had by far the highest rate (three times the average of these companies), and over the years there has been little discernible improvement in this.

Dr. M.O. Agwu - ISSN No. 2235-767X (Vol. 1, No. 5, pp 70-82, August 2012) – mentioned that impact of employees’ safety culture on organizational performance (improved management/employees safety practices, enhanced productivity, increased profitability and reduced accident/ incident rate) in shell bonny terminal integrated project. It defines employees’ safety culture as a product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the level of commitment, style and proficiency of an organization’s safety management system.

R. Pranav, V. Manivel Muralidaran - ISSN No. 2279-0918 (Volume 2, Number 4, 2013) – explained that life of people in the industry is becoming more dangerous; the organizations are not implementing proper safety measures. Accidents are caused due to unsafe working environment; this may cause damage to plant and equipment as well as the employees working in the concern. Controlling major industrial hazards is a challenging issue during last decades. Certain safety standards are developed to support companies in risk reduction and the protection of people and workers against hazardous events.

Jan Visagie, Jacquelene Swanepoel and Wilfred I. Ukpere - ISSN No. 2039-2117 (Vol. 5 No. 20 Sept. 2014) - mentioned that workers, who interact more directly with the physical environment of the manufacturing industry, suffer on average more with psychosocial stress, perceive less job satisfaction and experience a higher rate of workload because certain jobs are more demanding than others and certain features will generate high levels of psychosocial pressure, including unpleasant and dangerous physical conditions; monitoring of devices or materials; as well as repeated exchange of information with others.

K. A. Adebiyi and A. S. Onawumi - ISSN No. 2224-6096 (Vol.4, No.9, 2014) - explained that despite many success stories of manufacturing safety, many
organizations are still reluctant, perceiving it as cost increasing and time consuming. The clear contributor may be due to the use of lagging indicators rather than leading indicator measures. The study therefore proposes a combinatorial model for determining the best safety strategy.

Rehan Masood, Babar Mujtaba, M. Ali Khan, Sajjad Mubin, Faizan Shafique and Hafiz Zahoor - ISSN No. 1013-5316 (2014) – mentioned that implementation of injury/fatality rates in construction is questionable due to absence of administrative body for safety and health in Pakistan but research studies showed significant increase. Accidents records investigation provides lagging indicator of safety performance which is not truly adopted by construction firms. Alternatively, safety climate is leading indicator which addressed safety perceptions and attitudes of workers for safety management system.

Afwina Luthfanny Fathnin, Y. Denny Ardyanto W. and M. Bagus Qomaruddin - ISSN No. 2347-4289 (Vol. 3, Issue 04 - 2015) – highlighted that one of the largest LNG plants in the world located in Bontang East Borneo. As a form of commitment from top and middle management to prevent and reduce accidents in LNG Company continue to make improvements in all areas, one of which runs safety incentive programs. Variables safety incentive, perception of the danger, and motivation has influence on safe behavior. The variable knowledge about OHS has not significant influence on safe behavior. The study showed the influence of safety incentive and safe behavior towards safety performance. Therefore, require increase safe behavior through training BBS (Behavior Based Safety).

Gopinath S. Mohite and Prof. Ashish P. Waghmare - ISSN No. 2248-9622, Vol. 4, Issue 11 (Version - 5), November 2014 – explained that accidents are a major public health concern, resulting in an estimated 1.2 million deaths and 50 million injuries worldwide each year specifically, the relationships between drivers’ characteristics and road accidents are not fully understood. Many factors are involved in the accident occurrence at construction site. Some important elements that create a significant portion of accidents include: safety management error, poor training programs, human element, act of god, outdated procedure and no clear monitoring policy.

Sanjay Tiwari, Rini Nandi and Alok Mishra - ISSN No. 2221-8386 (Volume 2 No 5 May 2012) – explained that the safety in construction is one of the important but has somewhat been neglected in the construction industry. Unfortunately to some
extent, this happens not only at the micro level but even on a national level. It must be accepted that the construction industry has to be operated on scientific lines and it has to cater to the economic and social well-being of all those involved in it. The wide range of construction and building operations with new and complex techniques has brought to surface new problems.

N. Rajathilagam, N. Rajathilagam and A. Azhagurajan - ISSN No. 2249-2496 (Vol. 2, Issue 2, May 2012) – mentioned that fireworks industries are mostly prone to fire and explosion. The hazardous natures of chemicals are being used to produce the scintillating effects during the lighting of the fireworks crackers. Two hundred and sixteen fatal and sixty three are severely injured from 1994 to 2008. The majority of the fatal were male, with a mean age of 36.7 years. The result of the analysis shows that most accidents were caused by too much gunpowder put in at one time and accidents resulting from carelessness while making fireworks. Unsafe acts and unsafe conditions are the main reasons for these accidents.

M. P. Manivannan, P. Raj Mohan and P. S. S. Srinivasan - ISSN No. 2319-1163 (Volume: 03 Special Issue: 11 - Jun-2014) – explained that with increase in the level of globalization, awareness of employees as well as industries on environment, health & safety (EHS) issues are on the raise. The Indian industries are found to adopt the EHS norms specified by the regulatory authorities in India. The study carried out and found that every industry can achieve zero illnesses and injuries, eliminate adverse environmental impacts, and contribute positively to the communities in which they operate by championing safe behaviours and environmentally sound practices.

Adedeji P.A.,Olahere O.A., Adebimpe O.A. and Olunusi S.O. - ISSN No. 2319-1813 (Vol. 3 Issue 6 - 2014) - mentioned that safety in manufacturing industries nowadays can be seen to be gaining grounds of which its importance can neither be underestimated nor overemphasized. As a matter of facts, many industries have embraced an appraisal in their safety department by selecting specific safety interventions on which budget is to be made for the year.

Patrick Foster and Stuart Hoult - ISSN No. 2075-163X (February 2013) – explained that a Safety Maturity Model was developed for use in UK coal mining operations in order to assess the level of compliance and effectiveness with a recently introduced standards based safety management system. The developed model allowed for a “self-assessment” of the maturity to be undertaken by teams.
from the individual sites. Assessments were undertaken at all sites (surface and underground) and in some cases within each site (e.g., underground operations, surface coal preparation plant). Qasim Saleem, Mehwish Shahid and Akram Naseem - ISSN No. : 2229-6166 (Volume 2 Issue 3 Sept. 2011) – explained that the purpose of training and development is Pervasive. Training and development builds a team of highly effective and efficient way. Employees who are trained regularly are well motivated, well-mannered and have enhanced confidence and self-esteem. Training and development prepare and enhance employee’s knowledge and skills to enable them so that they adapt new technology, the changes that are happened inside the organization and the working environment.

Adel Badri, Sylvie Nadeau and André Gbodossou - ISSN No. 2075-163X (2011) – mentioned that despite undeniable progress, the mining industry remains the scene of serious accidents revealing disregard for occupational health and safety (OHS) and leaving open the debate regarding the safety of its employees. They proposed a new concept, called hazard concentration, based on the number of hazards and their influence. This concept represents the weighted fraction of each category of hazards related to an undesirable event.

Su Zhang and Jingui Wang - ISSN No. 0749-0208 (2015) – explained that South Korea Sewol ferry accident was analyzed based on behavior-based accident causation “2-4” model. The direct Behavioral causes of this tragedy were Captain Lee's absence on the bridge in the dangerous range of sailing and a sudden turn made by Park Han-kyul. The important cause of the accident for further expansion was Captain Lee's false command. He didn't get passengers ready for evacuation in the first time. Another important causes leading to the accident were the overloading of cargo and the lack of ballast water on board.

Dr. H. L. Kaila (December 2006) – highlighted that behavior based safety (BBS) emphasizes that employees need to take an ownership of their safe as well as unsafe behaviours. If they behave unsafe, they are not punished, instead they are repeatedly told to correct and when they behave safe, they are encouraged. Both unsafe and safe behaviours are counted and displayed. BBS also discusses the unsafe conditions that influence unsafe behaviours. BBS approach needs a visible presence and a clear management adoption and open communication down the line for its launch with full breath, failing which it is difficult to succeed.
Faridah Ismail and Ahmad Ezanee Hashim (October 2012) – explained that a more closely monitoring on employees' behaviours proof to resolve safety problems. Safety problems are basically related to unsafe or careless employees, many safety problems can be resolved, if behaviours are closely monitored. Despite organisations has policies and well-managed safety management, significant number of accident occurs. Workers’ attitude” is the common possible causes.

Mike Williamsen (May 2013) – highlighted that near-miss reporting, or the lack of it, is a controversial indicator of an organization’s safety culture. Over the years, SH&E professionals have heard concerns about the statistical validity of the many ratios published in the literature. The term itself has been widely debated—should these incidents be called near-misses, close calls, nearhits or something else? This article uses the term near-miss because the author has found that a near universal understanding occurs when it is so termed.

Jaime A. Camelio, Chair, Brian M. Kleiner, Eileen M. Van Aken and William H. Woodall (April 1, 2013) – mentioned that when unsafe conditions arise in a workplace, they may result in employee accidents and fatalities. However, if these problems are detected early, new hazard controls and safety initiatives can be introduced in order to actively reduce or prevent the occurrence of these events. Unfortunately, many safety systems currently monitor and report data that has been aggregated over long time periods, making it difficult to realize and respond to pattern shifts in a timely manner. When monitoring a process over time, a commonly used tool is statistical process control charting.

Nick Pidgeon (September 2010) – explained that the increasing globalization of many systems of production and finance, and our dependence upon large risk-bearing systems, also means that these issues are of increasingly wider relevance, both in traditional high-risk industrial systems, such as aviation and the energy sector, and in a variety of other modern complex settings (including food production, finance, health care and environmental problems such as climate change).

Fabio De Felice and Antonella Petrillo (2012) – mentioned that in most situations, human and machines are linked in one system. Accidents and malfunctions occur in most systems; and, therefore, there are procedures for reporting them. Recently, the emphasis has been on developing techniques for predicting human reliability. Present effort is focused on developing a more academic methodology which applies to practical human-machine systems. However it is desirable to treat the concept of
human error with caution and to avoid an approach in which the operator appears to be held solely responsible.