Ethical case study bhopal disaster construction essay

Part 1Section 1: Introductory BackgroundBhopal, the state of Madya Pradesh is the central city of India populated by around 1 million people. Approximately, one third of its one million inhabitants live in closely compact housing in its northern and central districts. It was blessed with various natural and artificial lakes. It was called the greenest city in India. At least it was before the Bhopal tragedy took place on December 3rd 1984. The tragedy took away the lives of about 2, 259 citizens overnight. Thousands have died in the following weeks and months. While a sum of 20, 000 peoples officially registered as patients that required treatment for symptoms that they acquired from the poisonous gas leak in the chemical factory [1]. The Bhopal disaster, also referred to as the Bhopal gas tragedy, was a gas leak incident in India, considered as the world's worst industrial disaster ever known to mankind. In aftermath of the incident, at least 100, 000 died. The official death count was around 3000 but the unofficial counts are around 8000 to 10000 deaths. Since then, a report in New York Times in the year 2002 indicates the death toll has reached a high of 14, 410 due to the chronic diseases caused by the gas leakage. Initially, the incident started by the ventilation of the poisonous gas to the atmosphere, namely Methylisocyanate (MIC). As the density of the gas is more than the density of the air itself, it has caused the accumulation of the toxic gas in a cloud form but it is close to the ground [2]. Eventually the cloud of poisonous MIC gas streamed through the entire city of Bhopal like a sand storm on desert, leaving no chances for the citizens of Bhopal to rescue themselves. Instant death befall those who lived the nearest to the factory, while for others they have to suffer from acute syndromes mainly in their respiratory systems. Even though they did not die on instant, but they will have to face the

inconvenience truth that they will eventually die after suffering from acute syndromes such as burning sensation in eyes which led to blindness, suffocation as their lungs are filled with fluids. This effect is far more painful than instant death. The company involved in this disastrous tragedy is the Union Carbide India Limited (UCIL) which is co-partner with the Union Carbide Corporation (UCC) which belongs to one of the most influential United States of America chemical companies. Its initial objective was to import, mix and package pesticides manufactured in the United States. However in the year 1979, a methyl isocyanate (MIC) production unit of 5000 tons was installed in order to manufacture an effective and inexpensive carbaryl pesticide marketed as Sevin. [3]Section 2: Problem PresentationGenerally, before establishing this factory, a flawless design was presented to the Madya Pradesh Government and approved by them. The problem that they do not see is that the location or site to set up this factory is only 4. 8 km from a crowded neighborhood in Bhopal [3]. Technically, the idea of setting up a chemical factory to manufacture poisonous chemicals, the location, environment and the civilization in the surrounding area need to be considered first hand. Instead, with the poor management in the corrupted India’s government’s body at that point of time, they only considered what they can achieve through this project, but not the impacts. This proves that no risk assessment initiatives were taken into account by any engineering parties. The second problem occurred in the establishment of the UCIL chemical factory is that the main purpose and objective of the existence of the factory is that the greed to achieve a significant raise in economic growth [3]. When the main objective for the setting up of a factory or high-risk establishment like this chemical factory is mainly for money

purpose, the management or top personnel in this establishment will neglect other important factors in setting up the factory such as environmental ethics, safety responsibilities, professional responsibilities, legal obligations and the concern for humanities. This gives rise to the conflict of interest within organization. The next major problem would be that when setting up a high-risk establishment such as this chemical plant, there was no serious implementation of safety procedures, ethical codes and educating the labors working in the establishment from the lowest rank to the highest rank. This caused no actions to be taken in educating the labors about the importance of safety in the factory, fining those who do not abide the ethical codes while working in the company or operating the machineries so as to avoid any unwanted circumstances to happen. As a result, the Bhopal disaster had occurred. As such, it is proven that the responsibility for safety, risk assessment and ethical codes was an absent criterion in the UCIL plant which were not established by efforts of the company’s engineers as well. Last but not least, even if the main objective of the company or personnel that sets up factories which deal with chemical, nuclear or toxic substances is to obtain a massive income or significant raise in economic growth, the occupational health and safety in the factory must be preserved despite its cost. Furthermore, a safe and healthy working environment will increase the quality and quantity of productions. Section 3: Problem Analysis3. 1Responsibility for SafetyResponsibility for safety is the most important aspect and highest ethical priority of any industry. Engineers must avoid catastrophic failure which could result in loss of property, damage to the environment of the user of that technology, and possibly injury or loss of life. The safety, health and welfare of the employees, employers and even the

public are of utmost important. There should also be a proper emergency response plan. However, most of the safety systems in the plant were not in operating order. The vent gas scrubber designed to neutralize the gas was shut down as it was deemed unnecessary during periods when production was suspended. [4] Moreover, the flare tower could only handle a quarter of the gas that leaked in 1984, and to make it worse, it was out of order at the time of the incident because a section of the pipe connecting it to the tank was being repaired. [4] To reduce energy costs, the refrigeration system had been shut down for 5 months, causing the temperature to increase by 3 to 4 times. [4] The build-up in temperature and pressure is believed to have affected the magnitude of the gas release. Even the tanks storing the MIC gas were overloaded as they were not to be filled more than 60 percent of capacity based on carbide manuals. The purpose of this is to allocate extra space to dilute the gases in case of emergencies. In addition, the emergency dump tank was already occupied by the large amounts of the chemicals. [4]Next, the water pressure was too weak to spray the escaping gases from the stack as it was 120 feet high and the water could only reach 100 feet into the air. [4] They could not spray high enough to reduce the concentration of escaping gas. Other than the safety measures or standards that were not achieved, another aspect of responsibility of safety would be that the workers were not given proper education on the safety procedures despite the high illiteracy rate of the local citizens in Bhopal and lack of training in handling the industrial equipments and machineries. They were hired to do hard labor because of the low labor cost if compared to well-trained labors without illiteracy [2]. Besides that, the safety instructions and rules and regulations hand outs were written in English, all the more reason

to provide a proper system in educating and training the inexperienced workers. Granted, the low cost workers can reduce the company’s expenditure, but it means that the company is irresponsible in keeping the workspace safe and accident-free. The facts and analysis stated have clearly and obviously proven that the UCIL and the engineers of the chemical plant have failed to ethically adhere to their responsibilities to safety and their negligence had ultimately cost others to pay the maximum price. In other words, risks were clearly printed all over the place including the quality of the workers, but completely neglected as there was no engineering code of ethics. 3. 2Risk AssessmentThis whole disaster started from the lack of risk assessment. The root of this problem was in locating the site for the factory in first hand. In every plants or construction projects, there will be an engineer behind the scene evaluating the compatibility of the location to withstand any disastrous accident that could happen resulting from human errors or machines faulty. Ethically, a good engineer should be able to foresee the future impact of setting up this factory at the chosen location and provoke the proposal to set up this factory in the first place. It was proposed that the factory to be built exactly 4. 8 km from the city centre of Bhopal as the UCC thought that the place is strategic for transportation of goods [3]. In saving the cost of production to gain more income, they insist on picking the place closer to the town center to cut down the cost of transportation even though it is too dangerous for the local citizens who live nearby. They had put the environmental ethics and their concern for humanities aside in making this decision. The main source of income for the local citizen in Bhopal was farming and plantation. But when the factory was set up near the Bhopal town, the soil, water and air, basically the

environment was polluted. In fact, the findings of a study made at the factory site after the disaster had proven that the soil in the surrounding area was polluted long before the disaster happened [6]. Basically, the lives of the citizens were already put at risk long before the disaster. The action of approving the proposal for the site of this project was professionally unethical for an engineer. 3. 3Conflict of InterestA conflict of interest occurs when an individual or organization is involved in multiple interests, one of which could possibly corrupt the motivation or morality for an act in another. This is present in the Bhopal disaster when the UCIL had the aspect of severe minimization of costs to obtain higher profits as its main motive and priority. This indirectly lowered the quality of man power, specialization, skill level and morality of workers of the plant of which has its contributions to the disaster. After the year 1982, safety practices were adverse due to the conflict of interest. This was partly due to a high turnover of employees, failure to train new employees' effectively and low technical preparedness of the local labor pool. [4] It can be said that the recruitment and retainment of quality employees for the right job was not preserved, thus giving room for accidents to happen as it is no longer a safe, healthy and supportive workplace. 3. 4Ethical Theories and AnalysisIn the evening of December the 2nd, the periodic washing operations proceeded at around 9. 30pm despite the failure to insert a slip blind into the pipes to ensure that water did not back up into storage tanks and the fact one or two of bleeder valves at the bottom of the discharge pipes were blocked. [5] The worker doing the washing noticed this, and stopped the washing to report the problem. [5] However, his immediate superior, an operations supervisor rather than a maintenance supervisor, told him to continue. [5] The blockage caused water

to back up. This was not detected, and washing continued till after the third shift which comes on at around 10. 45pm. [5]Water then began to flow into the tank and mix with the stored MIC through a normally-open pressurization valve and then through a partly-open isolation valve that should have been closed after the last draw of MIC. [5]This resulted with a highly volatile and exothermic reaction which was possibly catalyzed by the ferrous corrosion of the tank lining. Approximately 12. 40 am the next day, the tank ruptured and within an hour 40 tons of vapour was discharged. [4]In relation with this, it was highly unethical for the worker's immediate supervisor to instruct the worker to continue despite knowing the malfunctions discovered. It was also unethical for the worker to report to the wrong superior. However, he still could not be blamed as there were no proper educational courses for response protocol or code of conduct conducted for the workers in the plant. The supervisor should have adhered to the standard or general safety protocols and evaluated the risks upon finding out about the malfunction. He should have made proper judgment based on proper moral principles before making that decision. If he would have made the right ethical call and the periodic washing was put to halt, the whole disaster would have been avoided. Furthermore, after the disaster breakdown, the director of UCC in UCIL packed up his belongings and moved back to America, denying the breakdown at the factory was related to him or his company. He stated that the breakdown was caused by the human errors which came from the workers at the factory and not the management nor the top personnel [2]. The action of the chairperson of UCC abandoning the tragedy and put the blame on the low-class workers is professionally unethical. They took advantage of the illiterate and uneducated workers of the factory to run

away from the blame [6]. As a result, the government of India fined the UCC in United States for all the loss of lives related to the factory breakdown with the amount of $470 million, and distributed to the family of deceased.

Section 4: Conclusions and SuggestionsThe Bhopal disaster had created an undeniably massive impact on the world’s view in these matters. Ever since the incident occurred, the citizens all over the world especially in developed nations like America, Europe, Japan and Australia have been more aware of the safety precautions practiced in the factories that manufacture chemical or hazardous substances. They started to acknowledge the importance of education especially in safety matters. Important lessons learnt from Bhopal incident would be that professional ethics, responsibility for safety and risk assessment are the most important aspects that should be practiced in every establishment. Non-existent of the subjects mentioned will lead to a disastrous damage to the factory, economy, environment and the civilization. We strongly believe that more ordinances and acts should be implemented by the world government to ensure the safety of the people. Aside from having strategic and constructive plans, ordinances and acts, they should put more efforts in enforcing the law to ensure the absence of corruption in the enforcement bodies. Speaking of this, the government in India did have the constitutional law about setting up chemical factories which are hazardous to the environment and the local civilization, but due to the existence of corruption in the government at that time, things didn’t turn out as planned. Based on the incident, industries would be also suggested to improve the quality of recruitment of employees for significant roles by the strict and proper inspection of past working experiences, education, qualification & literacy. The primary objective of this is to avoid any chance

of any sort of negative conduct of work which may contribute to such disasters. Secondly, this also improves the code of ethics in a company as the level of skill & quality is maintained at a high level. The law should also enforce quarterly or more frequent inspections by government safety bodies on the industrial companies. Failure of the companies to adhere to the safety requirements or policies should result to be penalized severely or maybe even be shut down entirely. Employers should also sustain the quality of workers by keeping the workplace healthy to protect this investment and preserve the skills vital to any business. A safe and secure workplace can also provide morale and increase productivity. The workers should also be well educated on emergency response plans, code of conduct, safety procedures and operation procedures. Professional engineers should also be regarded as the main task force in maintaining a safe and secure workplace while abiding to the code of engineering ethics. This shall enhance the sense of ethics and professionalism in the workers. It is also suggested that the future leaders around the world be educated and stressed up the importance of professionalism and ethics, human safety, human welfare and the environment during their tertiary education as they have achieved a sensible amount of maturity and judgment at that phase of lifeIn conclusion, codes of ethics are important for any professions in this world to ensure the maximum security and safety of the environment at the workplace. With the right code of ethics, the quality of the job will be at its highest point. Part 2: Code of Ethics DevelopmentBased on the Oxford dictionary, ethics is the moral principles that govern a person’s behavior or the conducting of an activity. In addition, codes of ethics are a set of codes implemented in organizations to aid the employers and employees to differentiate between the right and the

wrong. I, an entity of this company, shall at all times abide the codes of ethics set by the management body of the company of which is designed to avoid the unforeseen disaster or accident to happen, whether it may affect me, my colleagues, environment, the company’s name and those who live in the nearby areas. I, in the fulfillment of my professional duties, shall: Read and understand the importance of the company’s rules and regulations that has been handed out to me from the first day at work. At all times, abide the rules and regulations set up by the management body of my company. Always be responsible at carrying out my professional duties in the company. Avoid the course of actions that will result in unforeseen dangers to my colleagues, company, or environment. Obey the orders from my supervisor so long as it does not go against the company’s policy for safety. Obey the orders from the higher authority of the company so long as it does not go against the local government’s policy for safety. Be involved in the safety drills provided by the company from time to time. Report to my supervisor immediately about the machine’s malfunction in the factory whether it happen when I am in charge or others. Remind, insist and stress upon the safety response protocols or safety procedures implemented should there by a negligence of the responsibility for safety by any entity of any party despite their rank. Inspect the conditions of machineries and equipments in the factory from time to time as instructed by the company’s safety bodies. Be truthful and objective in my speech or acts despite the circumstances. Avoid any ulterior acts or negative influences in my duties with integrity should there be the presence of conflict of interest. Keep the safety, welfare and health of all parties as my highest priority. Perform my professional duties only in the area of my skill level and competence as assigned.

Constantly be aware of the risks present in the company regardless of major or minor and report immediately to the highest authority. Report to the governmental safety bodies should there be negligence or lacking of responsibility for safety and risk assessment in the company. Constantly abide to the strict dress code and wearing of safety gears as proposed in the safety regulation. Be aware of all current surrounding and environmental changes at any point of time in order to respond swiftly and safely to avoid any unwanted occurrences of incidents. AppendicesC: UsersChandrayshDesktopUntitled - Copy. jpgFigure: Overview of events that led to the Bhopal Disaster. [7]