Risk assessment analysis on arcdem engineering

Even by simply following government laws will lead to risk management like being considerate to the environment, the company assess the risks and effect of their actions to the condition of their surroundings that even makes finding a location for their plant site becomes critical. During the production cycle, equipment failures and breakdowns affect cycle time, product quality and in turn production cost seriously. The many imposes to maintain a relevant, efficient, effective and dynamic control of manufacturing process.

In order to that, they conduct training programs for their workers to enhance their performance level and guarantee that lesser mistakes will be made that may cause industrial disasters. ARCADE treasure their staffs and employees which encourage them to create policies and procedure that will protect the safety and welfare of thee r workers. Unwanted events are always unexpected like calamities, fire, explosion, and other catastrophes. The company decided to conduct drills for earthquake, ire and other disasters to prepare their employees for that instant event and lessen the casualties if the real thing happens.

First aid was also taught to the workers for temporary remedy in case of emergency. For ARCADE, risk assessment and management has been a long-standing avenue for determination of their business opportunities. They are planning to spend resources on market research and evaluation Of market competitors to determine their course of investment and action. Large risks with small returns are typically avoided, and conversely situations with perceived low or asks with small returns are typically avoided, and conversely situations with perceived low or manageable risks and large gains are developed and added to their portfolio.

Currently, ARCADE is aware what risk management is and planning to improve and apply it for the benefit and advantages it offers. One of their future plans is to apply it in their marketing strategy. B. Personnel Involved in the Initial Phase of Risk Management Program Initial Phase of Risk Management Program includes first construction of safe facilities. The company ensures that the designed facilities are safe and well- instructed. They ensure that facilities and equipment are maintained in a safe operating condition and eliminate facility, public works and contract- related injuries and illnesses.

Personnel involved in this face include the Project Manager, Process Engineer and the Architect, which is also the General Manager himself, Architect Demerit Z. Dijon Jar. Second phase is the safety policies and procedures, they establish safety policies and procedures. Aside from training and orientation among employees, and they provide information on safety written in their policies and rules. By doing so, it is a very effective way to emphasize to their employees that they are as serious about their safety and health.

The responsible for this phase is their executive secretary on the direct orders from the general manager. Third phase is Personnel training, they provide a full range of outreach and trainings in safety and health, and they familiarize themselves with the hazards in their areas. It involves the supervisor of the plant operations since he’s the one who is knowledgeable on the operations and that he ensures that all the workers are knowledgeable on the risk on the company and roved them trainings.

Last phase is Disaster Drills, this drill is for exercise in which their people simulate the circumstances of a disaster so that they have an opportunity to practice their responses. Their drills are used to identify weak points in a disaster response plan, and to get their people familiar with the steps they need to take so that their response in a disaster will be automatic. They perform drills tallest once a year, during the disaster drill, their people are expected to practice things like evacuating the building and assisting each other so that they will know what to do when a real alarm sounds.

The personnel who plan this are the supervisor and the executive secretary with the help of the Lass Piñatas Fire Department. C. Risk Management Activities Risk management is the identification, assessment, and procrastination of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities.

The company has several activities to prevent risk which includes personnel training, they are educated with the hazards associated with their workplace, as well as the actions to take in case of emergencies. Chemical Safety Assessment, they must be assessed as to their potential severity of impact (generally a negative impact, such as damage or loss) and to the probability Of occurrence. Disaster Drills, they perform drills to expose their people with the steps they need to take when certain disaster occurs.

Personal Protective Equipment, this includes the use of personal protective equipment to protect the employee from the chemical and physical agents in the fabrication environment. Safe Facility Design, the personnel responsible

for this designed the facility and yester that either prevent an incident from occurring or minimize the damage should an incident occur. Safety Policies and Procedures, these sets of rules and policies state some safety precautions to prevent injury at work.

These activities can minimize the risks associated with environmental, health and safety hazards at the company. The aim is to ensure that no one is injured or hurt by a hazard at work. II. Risk Management Program Risk Management Practices The company deploys no formal risk management programs, and there are no risk management tools being utilized. However, during the interview, it Was determined that the company implements several risk prevention, reduction and treatment measures.

Safe facility design and construction The company implements measures that focused on the prevention of hazardous production material accidents and fires. There are admit estimative controls, engineering controls, and emergency response elements. Administrative controls are procedural in nature and require that appropriate training be performed. Examples of administrative control requirements include the follows MGM: * dissemination Of semiconductor safety handbook * safety handbooks are available at the main office of the company.

The workers hired are oriented and the key factors are being discussed to newly hired employees * storage plans/hazardous materials inventory statements and separation of incompatible materials, * raw materials in fabrication of semiconductors are placed in different storage areas depending if the materials are income pitiable with each other that may

cause combustion * placards and labeling. * Warning signs like no smoking and restricted areas are posted in such a way that can be easily seen by the workers. Engineering controls are designed into the structure of the facility or include damage should an incident occur.

Examples of engineering control requirements include the following: * fire protection systems, * the fire protection systems are fire drills that are being conducted and the availability of fire extinguishers and sprinklers * ventilation and treatment systems, * the ventilation systems are the exhaust fans located at each wall of every area * detection and shut-off controls, * detection and shut off controls are provided by having an emergency stop button and the circuit breaker which can be easily turned off whenever an emergency occurs * use of non-combustible or fire-resistant materials of instruction. A material that will not ignite, burn, support combustion, or release flammable vapors when subject to fire or heat, in the form in which it is used and under conditions anticipated; any material that passes ASTM Test Method El 36 is considered non-combustible. By using adobe, brick, concrete, gypsum block, hollow concrete block, stone, tile, or similar materials for their exterior wall to prevent fire.

Emergency response controls are intended to respond rapidly to, and control an emergency incident in the event that the administrative and engineering controls fail. Emergency response controls in the company include the following: ; k fire access and water supply * fire access and water supply are the fire extinguishers and the sprinklers. The fire extinguishers are placed in areas near the machines which are the ones prone to fire. The sprinkler turns on whenever a smoke has been detected. Emergency alarms and emergency

control stations * an emergency alarm is placed in one wall near the fabrication are which can be easily pulled once an emergency occurs * emergency response equipment, and * a first aid kit including a burn kit is located near the fire extinguishers ND inside the comfort room for easy access in case of emergency. * spill control, drainage and containment. * spill kit containing absorbent, pads and waste bags are available for easy management of unexpected leakage.

Personal Protective Equipment (PEP) The extensive use of personal protective equipment protects the fabrication employee from the chemical and physical agents in the fabrication environment. Another reason is to isolate the worker from the wafer for process cleanliness reasons. Some of these equipment are the following: Safety shoes * Goggles * Chemical protective gloves * Respiratory protection Flame-retardant coveralls in all areas of the facility where there is potential for fires * Emergency escape respirators The aforementioned equipment are all provided by the company.

Since the company only hires contractual whenever demand is high, there is fluctuation of employees. These equipment are not given to the employees but are assigned to them and will only be used whenever needed. Disaster Drills While a disaster drill may not anticipate every potential scenario, it gives people an idea of how to behave during a disaster. The following are the disaster drills being implemented by the company: 1. Fire Drill.

Training includes: who and where to call, how to check the batteries in the smoke detectors, how to use a fire extinguisher, how to warn everyone about a fire, how to escape from the house if it is on fire, where to meet after

escaping, common sense rules about when to try to extinguish a fire and when to just leave. Fire drills are done annually during the month of March since it is fire prevention month. The Company collaborates with the Lass Piñatas Fire Department in conducting fire drills. 2. First Aid Drill.

Training includes: where the first aid kit is located, what is in he first aid kit and how to use each item, and basic first aid skills. First aid drills are held twice a year every June and December. The schedule of the first aid drill is planned by the executive secretary on the direct orders of the General Manager. 3. Emergency Evacuation Drill. Training includes: what to include in each person’s disaster kit, which vehicle will be used for evacuation, how to quickly access each person’s disaster kit and put it in the vehicle, what other items should be taken when evacuating and how to get them quickly.

Emergency evacuation drill is done annually during the month of August. This is five months after the fire drill as to give time for planning for the supervisor and the executive secretary. 4. Natural Disaster Drill. Training includes: what specific steps to take during a flood, earthquake, tornado, etc. What steps to take during the actual event, and what steps to take after the event (turning off the power/water/natural gas). Natural Disaster Drill is not done annually. According to Ms. Freshened, this is only done when the General Manager has instructed to do this.

Personnel Training Personnel are trained on the use of the protective clothing and emergency espouse controls. They are educated with the hazards associated with the physical and chemical agents, as well as the actions to take in case of emergencies through drills. There is also

specialized on-site emergency response teams that will take immediate action during exposure to hazards. Personnel Training are involves the supervisor of the plant operations since provide them trainings. Chemical Safety Assessment The company’s chemical safety assessment required the assistance of an outside party.

Exposure scenarios were performed, forming the foundation of chemical safety assessments. An exposure estimation and risk characterization table has been attached to each exposure scenario document in order to provide scientific background of the assumptions. All the chemicals used by the company are listed in the Philippine Inventory of Chemicals Chemical Substances (EPICS) and was assessed under the Environment Management Bureau to authenticate that will not violate Philippine Environmental Laws.

It is mandatory that the company must submit annual reports regarding the chemicals and substances they used in their production to monitor its impact to the environment and to the internal ND external individuals who might be affected. Annually, the company is hiring a professional in handling and measuring the chemicals they used like a Chemical Analyst, Chemical Engineers, etc. In order to guide them in the assessment of the substances used in the production and in construction of reports.

The following criteria were considered in the chemical safety assessment (refer to forms below). The exposure scenario is a system of conditions that describes that how a given substance is used during its life cycle, and which control methods are prescribed to avoid or reduce the human and environmental exposure. The exposure scenario contains the appropriate

risk assessment measures and operational conditions which ensure that all the risks arising from the use of the substance can be controlled appropriately.

Based on the risk characterization for human health and environment in the sample completed exposure scenarios, the risks are controlled adequately for the sample substance. Failure Detection Although the company keeps no records of the details of the failures occurring in their products, they follow a process in the detection Of failures in a manner shown below: Preservation of F-ailed Devices For failures resulting from mechanical damage or environmental corrosion, the original condition of the device must be maintained by taking photos.

To avoid progress of failure, the sample should be handled and stored with great care so that the environmental (by temperature and humidity), electrical, and mechanical damages to the device are prevented. Mounting gigs and fixtures can be useful for handling small devices. Visual Inspection Visually inspecting the external condition of the device often provides valuable information for subsequent analysis. First the device is inspected by yes to check for any differences from good ones. Then microscopic inspections are carried out for detailed observation.

A stereoscope’s with magnifying power 4 to 80 is used. Illumination from various angles is used to obtain the best View of the sample. A regular microscope with higher magnification power (50 to 2, 000) is sometimes used to search for failure spots. If further observation is required to detect package cracks, surface wear, particles, whiskers, disconsolation, or

migration, a scanning electron microscope (SEEM) is used. If elemental analysis is required and a sufficient mount of sample is available, atomic absorption photometry is performed.

If the failure is limited in a very small area and it is difficult to obtain the substance in question, electron probe micro analysis (EMMA) should be used. The following items should be observed in visual inspection. (1) Dust The presence of metal, metal oxide, or ash indicates the device has been used in a severe environment such as at a steel mill or power plant. This can be one of the causes of characteristic deterioration. (2) Contamination Small remaining traces of water, oils, solder flux, or spray liquids (e. Insulating materials) can cause poor connections or leakage. (3) Lead Disconsolation The leaders are usually plated to improve solidarity and resistance to corrosion. Plating disconsolation often indicates oxidation by heat, acculturation, flaws in the base material, incomplete preprocessing, or defective plating. (4) Lead Cracking by Stress Corrosion If Can alloy and many other copper-based alloys under external stress or internal residual stress are exposed to ammonia, amines, moist air, and/or high temperature environment, stress corrosion can occur.

It is diagnosed by observing the morphology of the cracks and feature of the grain boundary using an SEEM. (5) Mechanical Lead Damage This damage mode depends on the external form of the lead, load, and the environment. Major breaking types are fatigue breakage, shock breakage, and creep breakage. The fatigue breakage is caused by repeated stress and the creep breakage by stress applied over a long period of time. Other breakage

includes brittle fractures and elongation breaks. The brittle fractures involve rapid formation of a break without plastic deformation.

The elongation breaks develop gradually following plastic deformation. It is important to carefully examine how the breakage occurred to determine the type of breakage. The cracked surface or the surface of broken ends sometimes exhibits a wave pattern, which indicates mechanical fatigue. A disk or ratchet-shaped pattern implies a stress concentration at this point. (6) Package Cracking Cracks are the cause of leakage of moisture into the device. Glass cracks in the hermetic seal are easy to overlook. Inspection using penetrate dyes is effective for small cracks. 7) Metallic Migration When an electric field is applied at high temperature and high humidity, italic ions in the insulation material or at its surface migrate from the positive terminal to the negative, where they are reduced and deposited. This can ultimately lead to a short circuit between two terminals. A metrological and electron probe micro analysis (ARM) are used to observe this phenomenon. (8) Whisker In most cases, solder plating is applied to the lead pins. Accordingly, there is a possibility of tin whiskers being generated regardless of whether the solder is eutectic or lead-free.

The generation of whiskers from conventional eutectic solder plating can be suppressed by adding lead. However, lead-free solder elating must be monitored for whisker generation by using, for example, SEEM. When one or more defects indicated above are detected, the operator or quality inspector proceeds to the electrical test, internal analysis, Decca/ removal of package, location of failed point, physical analysis of chip, or estimation of failure mechanism, whatever category the failures fall under.

All these actions eventually lead to the corrective action. IV. Problems in Implementing Risk Management Programs The major problem that had arisen during the implementation of the informal risk management programs identified earlier is concerned with the uncial aspect. Aside from the facilities and equipment that are vital for the prevention of environmental, health, and safety hazards, the company was also obliged to hire additional personnel for emergency response teams and trainings.

For the chemical assessment of the substances used in the company, it also became imperative that the company seek assistance from an expert in assessment of chemical, which also entailed additional costs. Another concern is the resistance of some employees to changes, specifically those resulting from the chemical safety assessment. Some employees have owe adaptation skills and were not willing to participate in trainings for safety.

Moreover, even with the aforementioned risk management programs being implemented, accidents are still inevitable, although the impacts are not as severe as those which occurred before the programs were being carried out. V. Solutions Undertaken to Resolve Problems On the account of the problems identified above, the company modified their manufacturing processes to improve yields and product performance and decrease costs. Hence, the company was able to allocate funds that are intended to support the present risk management programs and make the adoption of future improved risk management programs possible.