

Chemical Safety Board and Qatar Proposed Chapter

CHEN 455

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“On my honor as an Aggie, I have neither given nor received any unauthorized aid on this academic work.”

Abstract

The Chemical Safety Board (CSB) is a board responsible for carrying out investigations on chemical hazards and accidents that take place in the chemical industry in the United States of America. The Board consists of five appointed members by the President and confirmed by the Senate, and its members reached 35 professional staff in 2008. The mission of CSB is given to it by the Congress and no other agencies can influence or affect the Board's activities as stated in the law. Its main purpose is to maintain the safety of the people and work environment in chemical plants. Once an accident has been selected for investigation, the CSB members follow a set of procedures to find out the causes of the accident and give recommendations to the industry and also to the regulatory agencies about what should be done to avoid such accidents. The completed investigations, as well as the current ones, are made available to the public in order to limit the number of accidents that take place in the chemical industry in the U.S. In this paper, a Qatar chapter of CSB, Qatar Safety Board (QSB), is proposed. Unlike CSB in the U.S., QSB will cover not only the accidents in the chemical industry, but also accidents that take place in the medical, industrial, sea and transportation sectors in Qatar. QSB will give recommendations to the industries on how to avoid the accidents. It will also try to raise awareness among everyone in the work environment in Qatar by making its reports on the accidents available, free-of-charge to the public. QSB will ensure a safer and healthier work environment in Qatar.

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1. CSB Overview

1.1 History

The Chemical Safety Board (CSB) started its duties and operations in 1998. The headquarters of CSB is located in Washington, D.C. The 1990 Clean Air Act Amendments gave authority to CSB. “The Senate legislative history states: ‘The principal role of the new chemical safety board is to investigate accidents to determine the conditions and circumstances which led up to the event and to identify the cause or causes so that similar events might be prevented.’”¹ The CSB board consists of five appointed members by the President, and confirmed by the Senate, and in 2008 there were 35 professional staff. The structure of CSB is shown in Figure 1 and will be discussed in more detail in the next section.

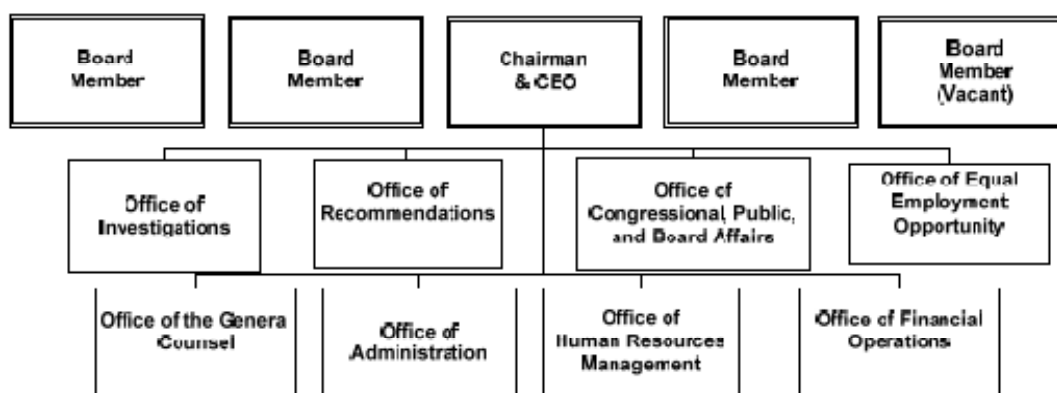


Figure 1: The Organizational Chart of the CSB Board²

The mission of CSB is distinctive and given to it by the Congress, but no other agencies can influence and affect the Board’s activities as stated in the law. CSB will do investigation on chemical hazards and accidents that happen in industries. For example, the Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA) will address some issues related to chemical hazards, and CSB will do investigation on those issues and report back with solutions and suggestions. Thus, the reasons behind the investigation conducted by CSB are as the legislative history states: “The investigations conducted by agencies with dual responsibilities tend to focus on violations of existing rules as the cause of the accident almost to the exclusion of other contributing factors for which no enforcement or

compliance actions can be taken. The purpose of an accident investigation (as authorized here) is to determine the cause or causes of an accident whether or not those causes were in violation of any current and enforceable requirement.”¹ As stated before, CSB works with other agencies like EPA and OSHA; therefore, those agencies need to collaborate in certain situations and issues in order for each agency to accomplish its mission. In order to achieve that, there have been several Memorandum of Understandings (MOU) between the agencies that will help and define how the investigation will be done in a collaborative way to accomplish missions and avoid unnecessary wasted work and effort.

1.2 Mission

The mission of CSB is to maintain the safety of the people and environment in the chemical plants, or as stated “To investigate chemical accidents and hazards at fixed industrial facilities, to issue safety recommendations, and to provide information on preventing accidents to Congress, government, industry, labor, and the American public.”⁴ Thus, the objectives of CSB are as follows:

- Conduct detailed investigations on repeated incidents or huge accidents in chemical plants, for example equipment failures and human errors
- Provide recommendation to different agencies like OSHA, chemical plants, and industry organizations
- Analyze and examine regulations in order to check its effectiveness and efficiency
- Conduct investigations, studies and regular check-ups on chemical plants to assure that plants follow the safety regulations, and make recommendations to prevent accidents from happening in the future and to improve the safety practices

2. Structure and Procedure

2.1 Structure of CSB

The U.S. Chemical Safety Board consists of the Board members and the Board's professional staff. The Board members are appointed by the President and confirmed by the U.S. Senate. There are currently five members serving on the Board, with each member serving fixed terms of five years. The Board chairman is the chief executive officer and his main responsibilities is the agency management duties. The Board responsibilities, as a whole, involve major financial decisions, general supervision, planning and guidelines, and authorization of investigation reports and studies. Board members may also serve as spokespeople at incident sites, and trial hearings, community meetings. Current members of the Board are:

The Honorable John S. Bresland (Chairman and CEO)

The Honorable Gary L. Visscher

The Honorable William B. Wark

The Honorable William E. Wright

On the other hand, the Board's professional staff usually includes attorneys, mechanical and chemical engineers, safety experts and other specialists with expertise in the public and private sectors. Many of the professional staff have years of chemical industry experience. They are responsible for the day-to-day activities and investigations, and they usually prepare the draft reports that are presented to the Board members.

According to the Clean Air Act: "the Board members are appointed based on technical qualification, professional standing, and demonstrated knowledge in the fields of accident reconstruction, safety engineering, human factors, toxicology, or air pollution regulations." The board members can contribute in accident investigations; however, all investigation reports, findings, and recommendations must be authorized by the Board as a whole.

After the Board approves an accident investigation report, it is the members' responsibility to advocate the adoption of recommendations by the industry in which the accident occurred, and by the companies or government agencies involved. Furthermore, written work is contributed to

trade publications and scholarly journals by the Board members at professional meetings in order to present their findings, and to prevent any similar possible accidents from happening.

2.2 Standard Procedure of Investigations

Investigations assigned to CSB are selected either by OSHA or EPA. CSB follows specific criteria that involve the process safety management (PSM) of the investigated incidents in order to evaluate the performance of the process. Such criteria are:

- Accountability
- Process knowledge and documentation
- Design procedures
- Process risk management
- Management of change
- Process and equipment integrity
- Human factors
- Training and performance
- Incident investigation
- Company standards, codes and regulations
- Audits and corrective actions
- Enhancement of process safety knowledge⁵

The following steps illustrate the standard procedure to be followed after an incident is selected for investigation:

1. After the CSB team reaches the incident site, the investigators begin by first conducting interviews with any witnesses such as employees, managers, or anyone who happened to be present when the incident occurred.
2. The team then collects chemical samples and equipment found in the accident sites and sends them to independent laboratories for analysis and testing. The company safety

records, inventories, and operating procedures are also collected for examination for any possible source of deficiencies that might have caused the accident.

3. For several months, the professional staff investigators go through the evidence. During the process, the investigators may talk with plant employees, managers, and other government organizations and authorities. They also consult with the Board members, and review the industry guidelines and regulations before drafting key recommendations and findings.
4. The investigation process usually consumes six to twelve months to complete before a draft report is presented to the Board for deliberation. Reports are then approved through a written vote, or in public meetings conducted at the incident site or in the headquarters in Washington, D.C.
5. Recommendations are distributed to government agencies, industrial companies, trade organizations, and other industry unions/associations. Implementation of each safety recommendation is carried out by OSHA and EPA and tracked and monitored by the CSB staff. The recommendation is closed by a Board vote when completed satisfactorily.

Figure 2 outlines the investigation standard procedure implemented in every investigation process, despite the type of chemical process involved.

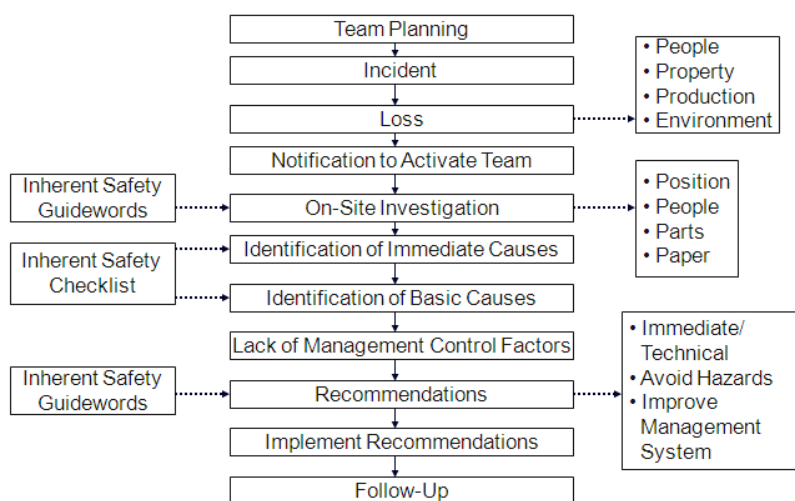


Figure 2: Outline of the Investigation Process⁵

After reviewing proposed actions or incidents, CSB assigns a status to each recommendation. Figures 3 and 4 illustrate the current recommendations' status in CSB, followed by a brief explanation of each status.⁶

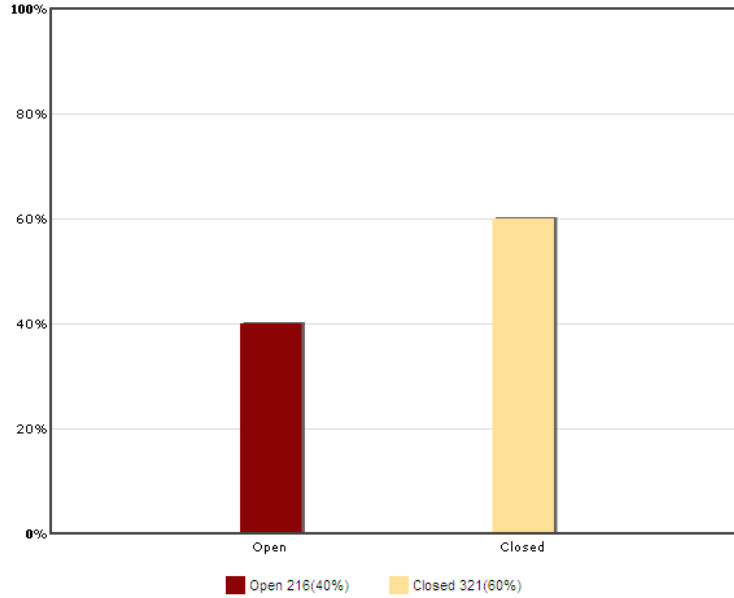


Figure 3: Summary of the Recommendation Statistics⁶

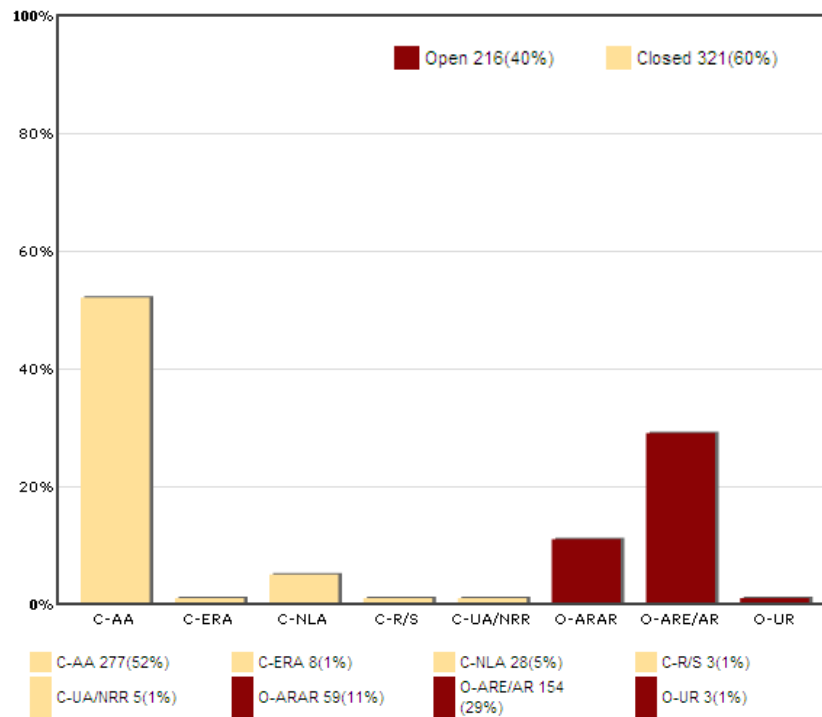


Figure 4: Subcategories of the Recommendation Statistics⁶

Open - Awaiting Response or Evaluation/Approval of Response (O - ARE/AR) – The recipient has not submitted a substantive response, or the evaluation by CSB staff of a response is pending, or the Board has not yet acted on staff recommendation of status.

Open - Acceptable Response or Alternate Response (O - ARAR) - Response from recipient indicates a planned action that would satisfy the objective of the recommendation when implemented.

Open - Unacceptable Response (O - UR) - Recipient responds by expressing disagreement with the need outlined in the recommendation. The Board believes, however, that there is enough supporting evidence to ask the recipient to reconsider.

Closed - Acceptable Action (C - AA) - The recipient has completed action on the recommendation. The action taken meets the objectives envisioned by the Board.

Closed - Exceeds Recommended Action (C - ERA) - Action on the recommendation meets and surpasses the objectives envisioned by the Board.

Closed - Unacceptable Action/No Response Received (C - UA/NRR) – Recipient responds by expressing disagreement with the need outlined in the recommendation and the Board concludes that further correspondence on, or discussion of, the matter would not change the recipient's position.

Closed - No Longer Applicable (C - NLA) - Due to subsequent events, the recommendation action no longer applies (e.g., the facility was destroyed or the company went out of business).

Closed - Reconsidered/Superseded (C - R/S) - Recipient rejects the recommendation and also supports the rejection with a rationale with which the Board concurs. This designation may apply when later facts indicate that the concerns expressed in the recommendation were actually addressed prior to the incident, or when a recommendation is superseded by a new, more appropriate recommendation.⁶

In addition to investigations of specific accidents, the Board is certified to perform investigations for more general chemical risks, despite if the accident has already occurred. Both risk

investigations and accidents investigations results in new safety recommendations. Although some recommendations may be adopted instantly, others may require massive effort and support to be implemented. In general, the findings from CSB investigations are valid for many organizations in the same industry. Therefore, many CSB recommendations have been adopted in the industry, resulting in safer working environments and communities.

3. Investigations

3.1 Completed Investigations

Sugar Dust and Explosion Fire accident

In 2008, CSB carried out about seven investigations, one of which was the Sugar Dust and Explosion Fire accident, which occurred on February 7, at the Imperial Sugar manufacturing facility in Port Wentworth, Georgia. The accident led to 14 worker fatalities and 36 severely injured. The explosions and fires caused by the accident left the sugar refining process area completely damaged, as shown in Figure 5.



Figure 5: Sugar Dust and Explosion Fire Accident, Port Wentworth, Georgia⁷

CSB said in their report about the accident that a steel belt conveyor under the sugar silos was initiated the explosion. The explosion occurred due to an unknown source that ignited the massive concentrations of sugar dust that was accumulated inside the belt conveyor. The explosion propagated rapidly through the buildings. It also led to secondary dust explosions, pressure waves and fires that caused even more damage to the refinery. CSB reported the following as some of the explosion causes:

1. The equipment was not designed to minimize the amount of sugar released to work space
2. Overheating in the steel belt conveyor was most likely what ignited the explosion
3. The sugar dust accumulated in the conveyor was above the minimum explosive concentration
4. The evacuation plans in the buildings were below the required standards. 2-way radios and cell phones were used to notify personnel of the explosion, while many workers relied on face-to-face alert during the explosion

Because of this incident, OSHA started setting standards for combustible dust based on the recommendations that CSB made.⁷

T2 Laboratories, Inc. Runaway Reactions

Another investigation completed by CSB was on an accident that happened in the T2 Laboratories in Jacksonville, Florida. The accident took place on December 19th, 2007. A powerful explosion occurred, killed four people, and injured 32, 28 of which were members of the public who were working nearby. It also destroyed the T2 laboratories. T2 was producing a batch of methylcyclopentadienyl manganese tricarbonyl (MCMT), when a cooling problem occurred. The process operator in the control room asked another operator to report the problem to the owners and ask them to return to the site. One of the owners went to the control room to assist the process operator. After a few minutes, the reactor exploded and the two people in the control room as well as two other people who were leaving it were killed.

After their investigations, CSB reported that an exothermic reaction took place during the first step of the MCMT process. Not enough cooling was being supplied to the reaction, which led to an uncontrollable rise in the temperature and pressure of the reactor. CSB said in their report that the MCMT reactor relief system was incapable of relieving the pressure from a runaway reaction. CSB then made recommendations to the American Institute of Chemical Engineers (AIChE), and the Accreditation Board for Engineering and Technology (ABET), in order to avoid such accidents.

Figure 6 shows some pictures of the accident and its effects. The top two pictures are pictures of the explosion, and the two bottom ones are pictures of the damage in the plant that the explosion led to.⁷



Figure 6: Explosion in T2 Laboratories, Jacksonville, Florida, and its Effects⁷

3.2 Current Investigations

ConAgra Natural Gas Explosion and Ammonia Release

CSB is currently working on eight investigations in America. One of their most recent investigations is on an accident known as “ConAgra Natural Gas Explosion and Ammonia Release”. The accident took place at the ConAgra food facility in Garner, North Carolina on June 9, 2009. It led to 3 fatalities and dozens of injuries. The CSB Chairman, John Bresland, said in his statement about the accident:

“I toured the explosion site yesterday along with our team, and I was very much struck by the scale of the explosion. As others have noted, it is easy to imagine how even more

people could have been impacted by an accident of this magnitude. Around 100,000 square feet of the plant have been affected.”

CSB began investigating the accident the day after it happened. The investigating team included two experts in blast reconstruction as well as 4-8 investigators. Investigations are still being done, and the investigators are still gathering information from witnesses to understand how the accident happened. The company had finished installing a new gas-fired water heater a week before the accident took place. Its purpose was to supply hot water for the plant. Gas is supplied to the heater via a new gas line installed between the gas main on the roof and the pump room, where the heater was placed. On the day the explosion happened, one of the contract companies agreed with ConAgra to use the gas line and the heater. Before doing so, the line was purged to remove the air inside it. CSB suspects that the gases inside the line might have vented into the pump room, leading to a high concentration of flammable gases, and consequently an explosion. However, the information currently available is not enough to determine the actual reason of the explosion. A picture of a part of the plant after the accident is shown in Figure 7.⁷



Figure 7: ConAgra Natural Gas Explosion and Ammonia Release ⁷

Silver Eagle Refinery Flash Fire and Explosion

Another investigation CSB is currently working on is on an accident that took place in Woods Cross, Utah, known as “Silver Eagle Refinery Flash Fire and Explosion”. While the final report of this accident has not been released yet, the investigation supervisor gave some information

about it in a statement. This accident happened on January 12, 2009 when a large vapor cloud was released from an atmospheric pressure tank. The tank contained 440,000 gallons of light naphtha, which found an undetermined yet ignition source and led to a fire. The vapor was seen by witnesses escaping from the vents on the side of the tank. The fire spread to about 230 feet west of the tank farm and caused four people to suffer from severe burns and two structures (a shed and a lab facility) to be damaged. Reports from plant personnel indicated that the tank had a history of vapor leaks before and after some tank repairs.⁷

A picture of the tank that caused the accident is shown in Figure 8.



Figure 8: The Tank that Caused Silver Eagle Refinery Flash Fire and Explosion ⁷

4. Qatar Proposed Chapter of CSB

The Qatar proposed CSB chapter, Qatar Safety Board (QSB), will serve as an independent organization that assesses and investigates accidents in the Qatari market. The scope of industry will involve the chemical, industrial, medical, sea and transportation industries. This is due to the fact that there is no significant amount of chemical incidents in Qatar for the Board to be limited to them.

QSB's main responsibility will be to investigate incidents, report findings and make recommendations. The size of the chapter may be limited to eight members, for the start up and the number of employee may be increased later when needed. The structure of the chapter will be as shown in Figure 9.

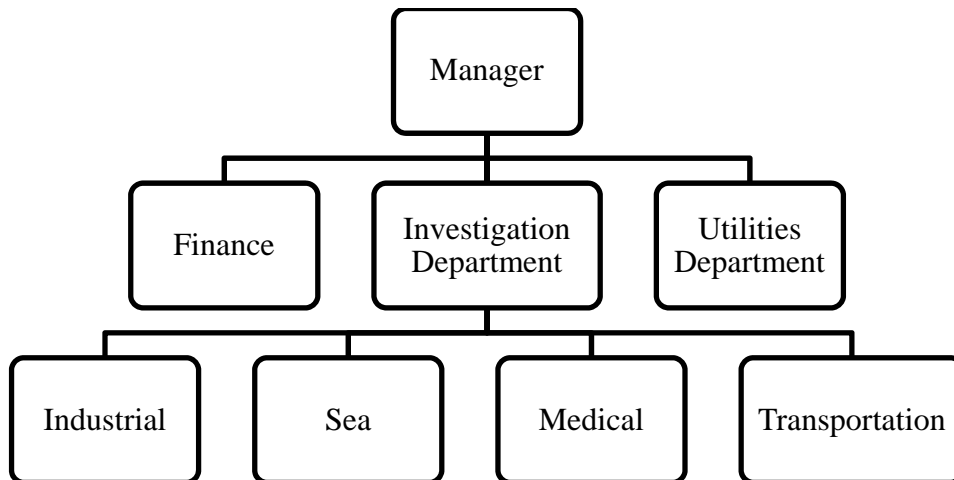


Figure 9: The Structure of the Qatar Proposed CSB Chapter

The full time employees of the chapter would be the manger, four investigation coordinators (one for each department), one financial analyst, and two utilities consultant. They are responsible for the day-to-day activities and investigations, and they usually prepare the recommendation reports. The chapter staff may also include attorneys, mechanical and chemical engineers, safety experts and other specialists with expertise in the public and private sectors.. These staff may be coordinated with other companies' employees to come and serve as delegates in case of an investigation, instead of having full time employees.

The QSB work flow will be synchronized with the Qatari government, as well as the industry involved in the investigation incidents. After recommendations have been submitted, they should be followed and reviewed to prevent similar incidents from occurring in the future.

4.1 Medical Department

Objectives

The medical department is mainly concerned with maintaining a clean, free-of-error environment in the medical sector. This may involve periodic inspection of medical facilities and organizations. QSB will investigate incidents of misconduct and provide instructions and guidelines on how to have a healthier and safer medical environment.

The most significant areas for a hospital or any medical facility is the team work and patient safety. Both of these can be used as an indicator of how successful a medical organization is.

This part of the organization here in Qatar may serve as framework by which doctors, patients, hospitals and other health care providers may voluntarily report information to the organization. This will be done on a confidential basis for the analysis and advancement of patient safety events. Therefore, the objectives of the medical department can be summarized as follows:

- Prioritize the patient's health and safety
- Treat everyone equally and ethically
- Respect others' background, traditions, religion, and ethnicity respectively
- Maintain clean and hygienic equipment and tools
- Maintain a cooperative and supportive working environment
- In case of misconduct, notify responsible authorities and groups involved

Guidelines

The most important guideline of the organization is the definition of the term Common Formats, which refers to the standardized reporting formats in which health care providers must follow when collecting and submitting information regarding events involving patient safety.⁸

The Common Formats apply to all patient safety concerns, including:

- Incidents — events in which patient safety has been reached, whether or not there was harm
- Near misses — patient safety events almost reached the patient
- Unsafe conditions — circumstances of an event that increases the probability of harming patient safety

Such common format may include descriptions of the event involving the patient safety and the unsafe conditions associated with it. Furthermore, it contains explanation of the types of data elements needed to be collected for different types of events.

4.2 Industrial Sector Department

Recently, there has been a boom in the industry sectors in Qatar. They contributed 67% of Qatar's GDP in 2005, which means that Qatar's main source of income is from the industry.⁹ Qatar's leading industry sectors include: automotive, defense and security, food and drink, freight transport, infrastructure, oil and gas, pharmaceuticals and healthcare, and telecommunications.¹⁰ Every person's life is affected by those departments either directly or indirectly, which is why it is very important to maintain a healthy environment that is free from accidents and losses in those departments. However, accidents happen in those industries very frequently. As of 2008, the vehicular accident rate in Qatar exceeded 100,000 per annum.¹¹

It is necessary to have a board similar to CSB in Qatar that covers the industrial sector as well, because this sector contributes to such a great percentage of the economy of Qatar. It is necessary to investigate the accidents that take place in that sector in order to learn from them and avoid them happening again.

Objectives

The objectives of the industrial sector department in CSB-Qatar are the following:

- Investigate on all accidents in the industrial sector in Qatar
- Identify the causes behind the accidents
- Write a report on each accident that encloses all the details of the accident and that gives advice on how to avoid such accidents
- Increase awareness among all the people within an industry of accidents that might occur by publicizing the reports and making them available, free of charge, for everyone

Guidelines

- The department will be in contact with all the companies in the industrial sector in Qatar
- It will have a few (3-5) members that will examine each accident
- The CSB members responsible for investigating a certain accident will talk to witnesses and file a report that includes its causes as well as ways to avoid them
- The report will be written as soon as all the information is available and distributed to all the companies in the industry in order to avoid similar accidents

4.3 Sea Department

The sea department is mainly concerned with people's safety especially the fishermen and workers on ships. It also deals with the reduction of sea accidents that have caused death of many people as shown in Figure 10. This department will investigate incidents that harm the people in any way and amount. Those incidents will be reported back to the department, where a group of experts in this field will study the accidents and come up with solutions. This will contain reasons behind the incident, safety precautions that were taken at that time, and recommendations to improve the safety and avoid reoccurrence of the incident.

F/V Fatalities* by Cause 1995-1999

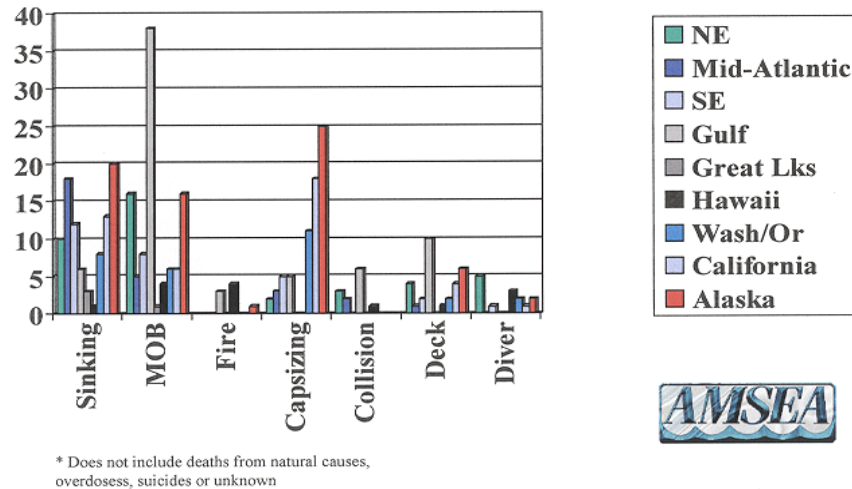


Figure 10: Fatalities Statistics from 1995 – 1999 ¹²

Objectives

- Provide all people in sea with information about the weather at all times
- Reduce the probability of polluting the sea, either from industries waste or fuel ships explosion
- Improve the communication between the sea patrol and all people in sea
- Increase the knowledge and skill of sea workers and fishermen about the safety and life saving equipments

How to achieve objectives

- The department will work along with the sea patrol, Ministry of Environment, and the industrial department in the organization. This will help the department to provide safety equipments for fuel ships to reduce the probability of accidents and increase the workers safety.

- Provide solutions and plans to put in action when fuel spills happen, or to prevent them from happening in the first place. For example, a solution might be to have an empty tank in the ship, so that if a crack or leak happens in one tank, the fuel can be directly transferred to the empty tank.
- In order to keep the people in sea updated with the weather condition at all times, a direct and stronger communication is needed. Thus, building stations for telecommunication in sea will improve the signal and also provide shelter for people in case something happens.
- Approval is needed to set regulation and laws regarding the safety of people in sea. This will help the department to enforce laws regarding the dumping of waste in seas and enforce fuel ships to take all required and necessary precautions to prevent fuel spills in sea. By doing so, the department will keep the people safer from being poisoned from eating polluted fish.

4.4 Transportation Department

The transportation department is mainly concerned with the safety of people using any vehicles. The department will concentrate on reducing the number of deaths of people especially by car accidents. The road fatalities per 100,000 inhabitants for the State of Qatar are about 23.7, which is relatively high compared to the other countries, especially when considering how small the population of Qatar is. According to the traffic department in Qatar's website, statistics show that there is an increase in the number of car accidents and consequently, the number of deaths caused by them, as shown in Table 1. Therefore, the department will come up with solutions and recommendations through research and investigations of incidents.

Table 1: A Comparison for Car Accidents from 2000 – 2008 ¹³

Year	Number of cases	Number of death	Vital injuries	Small injuries
2000	1670	77	289	312
2001	1832	99	336	394
2002	2134	100	342	488
2003	2215	130	291	395
2004	2362	126	219	415
2005	2972	168	301	461
2006	3897	226	291	534
2007	4784	174	398	849
2008	4816	199	419	1009

Objectives

- Reduce the road fatalities per 100,000 inhabitants for the State of Qatar.
- Improve the road construction plans in order to keep the workers and drivers safe.
- Increase the awareness of people on the proper way of driving.

How to achieve objectives

- The department will work along with the authorized authority responsible for building and constructing the roads in the State of Qatar. The department will provide recommendations on how to construct roads that will reduce car accidents. For example, avoid constructing a two way road without a median between the two lanes.
- Conduct research on how to reach the accident place faster, because at the present time, for example, it takes the police about 30 minutes to arrive at the place where the accident took place. Reducing that time will save many lives by having the medical department responds faster.
- Enforce strict laws and regulations about the following:
 - Using mobile phone while driving, which increases the risk of accident by a factor of four
 - Wearing a seatbelt, which will decrease the probability of getting injured

- Speeding
 - Make brochures and arrange a conference to make people aware of the dangers of speeding and not obeying the laws of driving
 - Trucks should have their own roads outside the city, especially the crowded places

4.5 Utilities or Service Department

The service department's main objective is to provide all the other departments of the chapter with the necessary equipment for the best performance and practices.

Objectives

- Develop a comfortable workplace environment for the staff by providing fully furnished offices and arranging for new furniture if needed
- Provide any needed office related services when desired by the staff in an effective time manner
- Handle any matter with technology related aspects, such as internet, and provide programs considered necessary by any department, and chapter web page
- Provide all staff and their families with health insurance and make sure they are applicable for it
- Provide translation services

4.6 Finance Department

The finance department is mainly concerned with the budget of the organization. It will estimate the needed budget for the activity of the organization, such as salary, equipments, and program costs. It will also invest money in order to have an income to support the activities. Thus the department will submit a planning report at the beginning of each year that includes the estimated budget needed for the next year. By the end of the year, the department will submit a performance report that includes details of income, outcome, and whether there is profit or loss.

Budget**Table 2: The Income Details for the Organization**

Income source	Amount
workshop	500,000 \$
Selling merchandise	500,000 \$
Registration fee	500,000 \$
Investments	6,000,000 \$
Government	10,000,000 \$
Other sources	4,000,000 \$
Total	21,500,000 \$

Table 3: The Expenses Details for the Organization

Expenses source	Amount
Salary	9,000,000 \$
Equipment cost	8,000,000 \$
Programs cost	750,000 \$
Office furniture and equipment cost	630,000 \$
Other expenses	1,000,000 \$
Total	19,380,000 \$

Table 4: The Net Profit

Total Income	21,500,000 \$
Total expenses	19,380,000 \$
Net profit	2,120,000 \$

5. Conclusion

CSB is a very important organization in the United States. It constantly investigates accidents in the chemical industry and makes recommendations to plants, regulatory agencies such as OSHA and EPA, industry organizations, and labor groups. By that, CSB makes sure accidents that have happened in the past can be avoided in the future. With every new investigation being completed, new safety recommendations are made by the Board, which always results in a healthier and safer work environment.

Starting an organization similar to CSB in a country with one of the highest rates of growth in the world, like Qatar, is crucial. However, since Qatar's main industries are not only chemical, QSB will include the chemical, industrial, medical, sea and transportation industries. Like CSB, QSB's main responsibility will be to investigate accidents, report findings and make recommendations. This way, the work environment in Qatar will be safer and healthier.

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