

Internal Civil Protection Program: Case Study

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Abstract: Today Safety and hygiene at work is one of the most important aspects to take into consideration to take care of the integrity and productivity of employees, as well as the building and equipment used in order to mitigate risks and learn to react in the event of an accident and/or natural disaster. The internal program allows establishing and carrying out the measures that are implemented to avoid or mitigate the destructive impact of an emergency, incident or disaster, based on the analysis of the internal and external risks to which the population is exposed. The present study was carried out in the company dedicated to the distribution of water in the Yaqui Valley, located in Ciudad Obregón, Sonora. As part of the diagnosis, a tour of the facilities was carried out, identifying the corresponding terms of reference to apply the internal program necessary for said company. Thus, the objective of implementing TRES-002-UEPC-2009 in this company was proposed, with the aim of ensuring that they have an updated internal program and thus increase safety, avoid accidents and know how to act in the event of a contingency. As a result, the areas of greatest risk were identified, as well as those of least risk, the necessary brigades were created for said dependency where the functions of the internal unit and brigade members were also described, with this and to have more control a directory of brigade members was created. . In order to have greater control, a calendar of activities was drawn up. As part of the tours that each of the materials, equipment and signs were carried out in a meticulous and exhaustive manner to detect dangers that could affect in one way or another the property or personnel who are in the dependency. To finish, a contingency plan was generated to know how to act at the time of a contingency. And finally, training was given to the staff with the aforementioned points and part of the safety and hygiene.

Keywords: Security, program, internal and contingency

Introduction

According to the National Institute of Cybersecurity (INCIBE, 2015), security has existed since the annals of history and its evolution has been linked in one way or another to that of the human being in all its scope of action. In ancient times, man faced various dangers that put his survival at risk, in such a way that he focused his efforts on putting all the necessary means to safeguard it. Due to this, he generated protection tools against the dangers that lay in wait for him, mainly natural hazards, such as fire, floods, animal attacks, etc. Giving rise to the first weapons to protect themselves, created with natural elements such as stones, wood, etc. Naturally I was developing the first security: physical.

In the modern era, with the arrival of the steam engine and with it the industrial revolution, new transport needs arise to connect large cities, ceasing to depend on the sea. Given this, the construction of the railroad tracks begins thanks to the locomotive capacity generated by steam and the use of coal, observing terrible working conditions in the workers and carbon monoxide poisoning derived from the lack of ventilation and/or exposure to gases. combustion systems (Cavanzo, and Fuentes, 2003).

According to Rodriguez (2022), industrial safety and hygiene in Mexico helps to avoid accidents in the work area, when working in plants of any industry that do not incur safety programs, the consequences are usually fatal or serious. Every day 6,300 people die from work-related accidents or illnesses – more than 2.3 million deaths per year. More than 317 million workplace accidents occur annually, many of these accidents result in absenteeism.

In this context, the International Labor Organization (2019) asks governments to guarantee that companies, both multinational and national, offer their workers adequate standards in terms of safety and hygiene. Mexico has safety legislation that comes from the Political Constitution of the United Mexican States, the Federal Labor Law and the Federal Regulations on Safety and Health at work. The country has the Ministry of Labor and Social Welfare, which is in charge of regulating safety issues, occupational health and labor policies.

The Federal Labor Law (LFT, 2012) establishes that the employer is the one who has the obligation to guarantee the safety and health of the workers, in this case, also to provide them with the safety equipment to carry out their daily activities. On the other hand, it is in the Federal Regulation on Safety and Health at Work

where the general obligations regarding safety and health for the employer and the organization's workers are defined.

As part of the preventive measures, civil protection programs are promoted, which are action plans in the event of contingencies or disasters and have become more important as a result of various natural phenomena that have caused serious damage to society. According to the Shgarmich Consulting Firm (2017), all companies should have a civil protection program that helps them to come out well in any adverse situation.

In Sonora, Mexico there is a company that has shown interest in the design and implementation of programs of this type, said company offers solutions to the agricultural community to solve the need for water (irrigation): service of operation, conservation and administration of the network largest canal, drainage network, their respective roads and other hydro-agricultural infrastructure in the region.

In relation to the degree of risk according to a quick assessment, the company presented a **Medium risk**, highlighting aspects related to the firefighting equipment, maintenance, the age of the facilities and the influx of people (see table 1).

Table 1. Classification of the degree of risk.

	PARAMETERS	SUPPOSED	POINTS	QUALIFY
1.1	REPORT AMOUNT	NO	0	0
		<	3	
		≥	4	
1.2	PROCESS	NO	0	0
		YES	4	
1.3	MAINTENANCE	YES	0	1
		DEF	1	
		NO	two	
1.4	TRAINING	YES	0	0
		DEF	1	
		NO	two	
1.5	FIRE FIGHTING EQUIPMENT	YES	0	1
		DEF	1	
		NO	two	
1.6	BOILER 70°	NO	0	0
		<	1	
		≥	two	
1.7	PRESSURE VESSELS 5KG/CM2	NO	0	0
		<	1	
		≥	two	
1.8	AGE OF THE FACILITIES (Years)	5<	0	two
		5-9	1	
		9>	two	
1.9	AFFLUENCE (No. people)	25<	0	two
		25-49	1	
		50 ≥	two	
1.10	HAZARDOUS AND HOSPITAL WASTE	NO	0	0
		SC	1	
		NC	two	
1.11	BUILDING	RME	0	0
		TOTAL AMOUNT		6

In an interview with the personnel manager of the company under study, he stated the lack of an internal civil protection program, which, according to the Civil Protection Law of the state of Sonora in its Article 2 point XXVII is mandatory according to the corresponding field of application.

In this context, the following research question is established : *What document should the company under study develop that complies with the regulations and safeguards the physical integrity of the workers?*

To answer the question, the objective is to: **Establish a civil protection program that allows compliance and safeguards the integrity of workers in risk situations.**

Materials and Methods

A. Object of Study

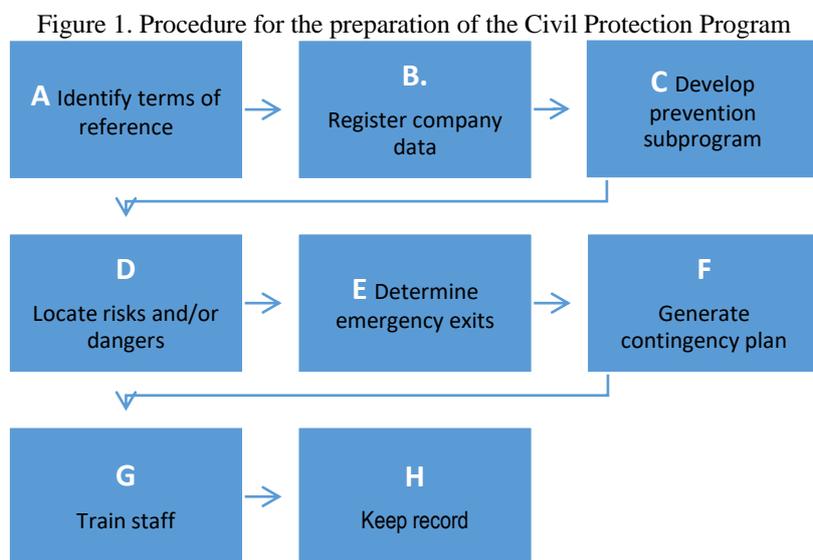
Internal civil protection program based on the terms of reference TRES-002-UEPC-2009 in the building of the company under study.

B. Materials

- Formats according to the material of the terms of reference, guidelines and specifications for the formation of the internal civil protection unit, preparation, implementation and revalidation of the internal civil protection program.
- Microsoft Office Software: Office package programs (Word, Excel, Visio and PowerPoint) were used as tools for the preparation of visual aids, material registration formats, warehouse entry and exit logs and staff training.

C. Process

Next, the procedure for the implementation of the internal civil protection program is presented according to the Guidelines and the specifications for the formation of the internal civil protection unit, preparation, implementation and revalidation of the internal civil protection program (2009) and whose steps are shown in figure 1.

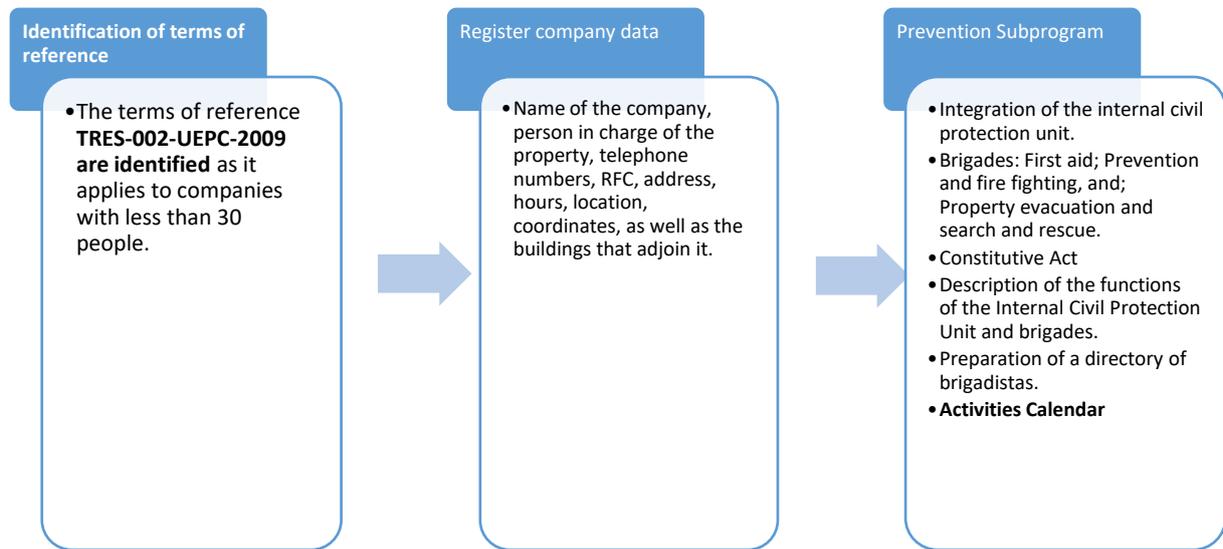


The figure shows the steps to fulfill the objective of the study based on the identification of terms of reference, data registration and the prevention subprogram (phase 1). Risks and emergency exits are then located and a contingency plan is generated (Phase 2). As a final part, the staff is trained and the newly developed civil protection program is documented (Phase 3).

Results and Their Discussion

As an initial initial phase, the different types of terms of reference that exist to carry out an internal civil protection program were investigated, resulting in the one called TRES-002-UEPC-2009 that applies and will be used given the number of personnel working in the company. under study (less than 30 people). Following this, a description of the company was made in general from the name of the company, person in charge of the property, telephone numbers, registration, address, hours, location and buildings that adjoin the company (see figure 2).

Figure 2. Results of phase 1



As part of the creation of the prevention subprogram, the internal civil protection unit was integrated and with it the first aid, fire prevention and combat, and property evacuation and search and rescue brigades. To give formality to the internal unit, to the completion of the constitutive act, the description of functions and the registration of a directory. The calendar of activities, in accordance with Article 16 of the Regulations of the Civil Protection Law for the State of Sonora, breaks down a specific, responsible, periodicity of meetings and exercises and drills corresponding to the year as shown in table 2.

Table 2 Activities Calendar

. OF THE ACTIVITY	DESCRIPTION OF THE ACTIVITY	RESPONSIBLE FOR THE EXECUTION OF THE ACTIVITY	PERIODICITY											
			JAN	FEB	SEA	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
CALENDAR OF PREVENTIVE ACTIONS														
1	UIPC sessions	Responsible for the property			X									
two	Drills (considering the DEVELOPMENT, EVALUATION AND REPORT activities). Includes: awareness campaign for staff to carry out drills and review of the drill control log	Head of the Internal Civil Protection Unit										X	X	X
3	Fire extinguisher maintenance	Head of the Internal Civil Protection Unit												X
4	Review and Maintenance of emergency lamps, smoke detectors, First Aid Kit, Personal Protective Equipment for emergency care	Head of the Internal Civil Protection Unit												X
5	Updating of the Human Resources inventory (POPULATION CENSUS)	Substitute for the person in charge of the property							X					
6	Updating of the Support Institutions Directory	Head of the Internal Civil Protection Unit							X					
7	Review and update of procedures: for access control by registering people, review of the procedure for the regulation of electrical appliances, restriction of entry to high-risk areas, contingency plan	Responsible for the property								X				
8	Updating of the catalog of safety data sheets for hazardous materials used as raw material and/or process inputs, finished products that have CRETIB characteristics	Head of the Internal Civil Protection Unit												X
TRAINING AND DISSEMINATION														
9	Training of UIPC members	Responsible for the property											X	

In the figure, the red color indicates areas of greater risk and the green color represents areas of lesser/null risk. Continuing with phase 2, the following was to indicate the number of emergency exits after analyzing the capacity of the building, which, being from 50 to 100, the use of the access doors as emergency doors is considered as long as their opening is towards the outside.

For phase 3, response actions were developed for both personnel and brigades for any possible contingency (see table 3).

Table 3. Contingency plan.

Contingency	Before	During	After
Hurricane	<ul style="list-style-type: none"> - reassure people - Make sure your site is protected. - Have your basic emergency kit handy. -Maintain full communication with the personnel of the Brigades. - Stick adhesive tape on the glasses. - Make sure the doors and windows are well closed. - Stay away from windows 	<ul style="list-style-type: none"> - Keep calm. - If a window or door is broken: <ul style="list-style-type: none"> * Communicate it to your immediate boss. * Protect yourself from objects thrown by the wind. * Try to dislodge the damaged area. * Try to isolate the area * Go to another part of the property * Do not go out. 	<p>The responsibility of indicating the moment of return to normal conditions is in charge of the head of the Internal Civil Protection Unit.</p> <ul style="list-style-type: none"> - Check that nothing has been damaged - Do not touch any power cables. - Cooperate in everything you can or are requested by your immediate superior or members of the Brigade. - Help those who are injured. - Indicate through cords, posters or objects those places where there is danger. - Undertake the search and rescue of the trapped in an orderly manner, follow the instructions of the Brigades.
earthquake	<ol style="list-style-type: none"> 1 Develop a safety, security and evacuation plan. 2 Basic knowledge about first aid and emergency kit. 3 Secure tall items like shelving 4 Know the location of gas and water taps. 5 Remove obstacles from evacuation routes. 6 locate and signpost safety zones and evacuation routes. 7 Keep doors open to facilitate evacuation. 8 Conduct evacuation drills, 	<ol style="list-style-type: none"> 1 Remain calm. 2 Locate yourself in safe places. 3 Lie on the floor with your knees together and your back towards the windows. 4 Hold both hands tightly behind your head. 5 Hide your face in your arms 6 If it is necessary to evacuate the place, use the stairs, not elevators. 7 If you are in the yard, stay away from buildings. 8 If you are traveling by car or bus, the driver must slow down and stop in a safe place. 	<ol style="list-style-type: none"> 1 Observe if someone is injured and practice first aid. 2 Go to the protection zones 3 Do not touch power cables 4 Close the gas cocks 5 Control the flow of water. 6 Close the electrical power circuits. 7 Do not return to damaged areas without prior authorization. 8 Use the phone only for urgent calls. 9 Tune in to the radio for emergency measures.

The table above shows what to do before, during and after the presentation in the case of disasters such as hurricanes and earthquakes. Finally, the staff was trained in relation to the internal Civil Protection Program.

Conclusions and Recommendations

With the development of the activities and procedures that were followed, the objective of implementing the internal civil protection program in the building of the company under study was fulfilled, with the above it will be possible to have a maintenance in all the equipment, to have scheduled the activities, avoid accidents, know how to act under any contingency or natural disaster.

The staff was provided with training on safety and hygiene issues, proper handling of furniture, identification of work risks, levels of responsibility, culture of prevention, continuous improvement and self-care, which will undoubtedly contribute to avoiding the occurrence of accidents and its associated costs.

It is recommended to give constant maintenance to the prevention equipment (fire extinguishers, signs, water sprinklers, smoke detectors), continue training the personnel and prepare visual aids or signs specifying what and how the activity has to be done.

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