

# "IDENTIFICATION, ASSESSMENT, PREVENTION AND CONTROL OF OCCUPATIONAL RISK FACTORS ON STAFF OPERATIONAL AREA PUBLIC COMPANY MUNICIPAL WATER AND SEWER IBARRA"

Author-Santiago IZA V.

[santivig-93@hotmail.com](mailto:santivig-93@hotmail.com)

Tutor- Ing. Marcelo PUENTE C.

[pmpuente@utn.edu.ec](mailto:pmpuente@utn.edu.ec)

**Summary.** This project was conducted in order to detect risk conditions present on each job and identify prevention and control measures, to be applied in the operational staff-Emapa- Ibarra against the various risks to which they are exposed.

To identify and detect risks to which workers are exposed, we proceeded to conduct tours and detailed inspections in the different jobs of the operational area, which proved to be a source of valuable information critical to the description of activities implemented in each job and the detection of potential risks to them, the causative agents, possible consequences and / or damage to health.

Based on the results of the risk assessment was raised prevention and control measures, reflecting the same optimal working conditions, serving also as a factor to increase the collective productivity and increase confidence and self-esteem of each of the workers.

## Keywords

Health and Safety Regulations at work, Health and Safety Unit at work, occupational risk factors, Personal Protective Equipment.

## 1. Introduction

Since the origin of the human species and due to the innate need to provide food and livelihoods, they started working and consequently the existence of accidents and diseases arising from work activity.

One of the main concerns of a company should be controlling risks that threaten the health of their workers and against their material and financial resources. Occupational accidents and diseases are factors that interfere with normal development of the business, negatively impacting productivity.

Against this background, it acquires value individual actions, collective, institutional, national or international law which made a real effort to collaborate in the improvement of safety and occupational health.

Source: (FOUNDATION Iberoamericana of Occupational Health, 2008).

The present research was conducted in the Public Enterprise Municipal Water and Sewer Ibarra located at:

## LOCATION:

Province:	Imbabura
Canton:	Ibarra
Parish:	San Francisco
Sector:	Urban-San Miguel de Ibarra
Address:	Sucre 7-77 and Pedro Moncayo.
Phone:	06 2951670 -06 2957965
Email:	siza@emapai.com.ec
Website:	www.emapaibarra.gob.ec

The human factor is essential in any system of work you want to develop, what knowledge they have staff on the risks caused by working conditions is decisive agent, so it is necessary to identify, evaluate and take action to decrease control or eliminate, as much as possible, allowing the development of work in no accidents or diseases causing economic losses, social and human especially in the organization.

## Objectives:

- Determine the theoretical basis - providing a reference scientific development and achievement of the issue raised.
- Analyze the current situation of the EMAP-I to determine labor and environmental conditions in which it is operating personnel working in the company.
- Identify and assess the risks associated with jobs in the operational area, applying

appropriate methods which allow to assign a rating of risk factors.

- Implement measures to prevent risks to the source, the transmission medium and the worker privileging the collective control to individual Personal Protective Equipment and related tools reducing the causes of accidents and the likelihood of recurrence.

## Chapter 1

### 1.1 Background

The first traces of the concern for the welfare of workers in the workplace, we find them in the year 400 BC when Hippocrates, known as the father of medicine, performed the first observations of occupational diseases that information is received. Other scientists and researchers in later centuries made valuable studies related to working conditions, the characteristics of working environments and disease afflicting workers and their families

Fuente: Fundación iberoamericana de Salud Ocupacional , 2008)

### 1.2 Objectives of the occupational health and safety

THE primary objective of industrial safety is to maintain high levels of quality of life in the work environment, ensuring the safety and life of personnel work there.

Some of the objectives of occupational health and safety can be summarized as:

- Avoid injury and death from accidents and occupational diseases.
- Reduced production operating costs
- Improve the image of the company, therefore worker safety, influencing this in a higher job performance.
- Ensure that you implement appropriate procedures to control risks to maintain low rates of accidents and occupational diseases.
- Identify incidents / accidents / emergencies most likely and assess their consequences.
- Integrate the action plan containing suggestions and guidelines for improving the work environment under prioritized technical criteria for the control of risks to ensure the safety of workers.
- Promoting and maintaining the highest possible level of physical, mental and social workers, whatever their occupation.
- The protection of workers in their workplace against risks that may give rise to the negative health factors.

Fuente: Fundación iberoamericana de Salud Ocupacional , 2008)

### 1.3 Important Definitions

- **Industrial Security.** - Set of measures used to eliminate unsafe work environment by educating people about the need to implement preventive practices.

Fuente: IESS, 2010

- **Occupational Safety and Health.** - Conditions and factors affecting well-being of employees, temporary workers, contractor personnel, visitors and any other person in the workplace

Fuente: IESS, 2010

- **Risk.** - A measure of the potential economic and human losses in terms of the probability of occurrence of an unwanted event, along with the extent of their adverse consequences.

Fuente: IESS, 2010

- **Risk Factor.** - Element, phenomenon or human activity that involves the potential to cause damage to the physical integrity and health of workers, machinery, equipment and environment.

Fuente: IESS, 2010

- **Risk Assessment.** - Is the process to estimate the magnitude of the risks, obtaining information necessary for the organization to be able to make an appropriate decision on the need for preventive measures.

Fuente: IESS, 2010

- **Incident.** - An undesired event that under different circumstances, could have resulted in injury to people or facilities. That is ALMOST AN ACCIDENT. Such as a trip or slip.

Fuente: Simonds, 2007

- **Work accident.** - It's all sudden, unexpected event that causes the employee bodily injury or functional disturbance, during labor or consequential running for others.

Fuente: IESS, 2010

- **Occupational diseases.** - It caused acute or chronic conditions in a straightforward manner by the exercise of the profession or work performed by the worker and incapacitating.

Fuente: IESS, 2010

## CHAPTER II

### 2.1 General concepts of occupational hazards

The term risk, used in areas of life very different, always connotes the existence of damage, future and hypothetical, that is, whose production is not completely determined by events or causal conditions we are able to identify and characterize. Such conditions, is the damage of whatever kind, are always of two classes: personal and environmental.

Fuente: Simonds, 2007

### 2.2 Classification of risk factors

- **Mechanical factors.** - Are understood as those caused dangerous conditions in a mechanism, equipment or object, which on contact, hit or catch a person you can cause physical damage

Fuente: Simonds, 2007

- **Physical Factors.** - The heading environmental factors of a physical nature, which when in contact with people can have adverse health effects depending on its intensity and exposure.

Fuente: Simonds, 2007

- **Chemical Factors.** - They consist of elements and substances in contact with the body by inhalation, skin absorption or ingestion, can cause poisoning, burns, irritation or systemic lesions, depending on the degree of concentration and exposure time.

Fuente: Simonds, 2007

- **Biological Factors.** - They consist of a set of microorganisms, toxins, biological fluids, tissues and organs in human body, animals and plants, present in certain work environments, which when in contact with the body can trigger infectious diseases, allergic reactions or also poisoning.

Fuente: Simonds, 2007

- **Psychosocial Factors.** - This type of risk factor is characterized by being in those aspects of the work process and administrative modalities that can cause psychological burden, which in turn can lead to mental fatigue as a result, changes in behavioral and physiological-type reactions.

Fuente: Simonds, 2007

- **Ergonomic Factors.** - Here we consider all elements related to physical workload with working postures, with movement, with efforts to moving loads and generally those who can cause physical fatigue or injury to the musculoskeletal system .

Fuente: Simonds, 2007

### Management risk prevention

The overall objective of the Occupational Health and Safety is to protect workers from the risks arising from their work, therefore, a good performance in Occupational Risk Prevention involves avoiding or minimizing the causes of accidents and work related illnesses . This must be achieved by encouraging first makers or leaders and then all workers a genuine culture of prevention, which should be reflected in the planning of prevention from the initial

Fuente: Etxebarria, Manual para la formación en prevención de riesgos laborales , 2008

### Types of risk assessments

- **Risk assessment imposed by specific legislation**

In many cases much of the risks that may occur in the workplace resulting from their own facilities and equipment for which there is national legislation, regional and local Industrial Safety and Fire Prevention and Protection.

Fuente: Etxebarria, Manual para la formación en prevención de riesgos laborales , 2008

- **Risk assessment for which there is no specific legislation**

There are risks in the workplace for which there is no legislation or Community or national level, to limit exposure to these risks. However, there are technical standards or guidelines governing the procedure of evaluation and even, in some cases, the maximum recommended exposure levels.

Fuente: Etxebarria, Manual para la formación en prevención de riesgos laborales , 2008

- **Risk Assessment that requires specific methods of analysis**

There are laws for the control of major accident hazards (CORAG), aimed at the prevention of major accidents such as fires, explosions, emissions resulting from failures in the control of an industrial activity and can have serious consequences for insiders and outside the plant.

Fuente: Etxebarria, Manual para la formación en prevención de riesgos laborales , 2008

## CHAPTER III

### 3.1 Description of the company

EMAPA-I is a company that provides potable water and sewerage services to the population of Canton Ibarra, projecting always customer satisfaction.

Our aim is to have a sewage system with 100 percent coverage, and have a water system to ensure quantity and quality 24 hour service and 100 percent coverage. Misión

The public company EMAP-Ibarra, aims at uptake, processing, distribution, production and sale of drinking water and provision of sewerage services to the community of Ibarra and rural parishes, ensuring efficiency and effectiveness, with equity and justice, committed to a green that preserves watersheds and protects the environment.

#### view

The Public Company EMAPA-I pair in 2014, will be recognized in the country as a leader, for excellence, social and environmental responsibility in the provision of their services

- **Security Policy and Health at Work**

The EMAPA-I is a public municipal drinking water supplies, sewerage, and sanitation to the people of Canton Ibarra, through planning, project execution engineering, procurement and construction services.

For EMAPA-I, Safety and Health at Work and Environmental care are a priority to contribute to improving the quality of life of its employees and achieve organizational excellence.

Senior Management, Directors, Officers and Employees are required to provide the resources required to ensure secure jobs and healthy, as well as comply with current legislation and policies Security and Health at Work of the EMAPA-I.

The continuous improvement of our Safety Management System and Health at Work is an organization wide commitment, for which the SG-SST socialize permanently to all its employees.

### 3.2 Analysis of the current state of occupational health and safety in the company

The occupational health and safety in the EMAPA-IBARRA is in the process of development, in 2010 was created the area of industrial security thereafter has done what has been available to the professional in charge of this area, but no give necessary attention and importance as requiring engulfs the physical, mental and health especially the workers who are the most important resource that has any business regardless of the activity they engaged.

#### ➤ Safety and Operation:

- The staff does not consider any precautions when handling loads of considerable weight. No are met or traffic laws inside and or outside the facility.
- Many of the equipment and machinery do not have a maintenance program so before their useful life are obsolete.
- In the cellar Alpachaca meeting point of workers before moving to their working day there is a substantial disorder of all that is written off), there is no signage of any kind and the transit zone of vehicles, machinery and workers land is potentially causing an accident at work in chain especially during winter.
- Do not take the respective safety measures when handling, handling or performing work near ocorrosivas toxic chemicals, especially in the treatment plants.
- In the cellar and treatment plants are not Urban and Rural implemented fire prevention measures, such as fire extinguishers, smoke detectors, pushbuttons, emergency lamps, plus the lack of warning signs, prohibition, obligation, rescue or relief, or fire fighting
- Do not perform field inspections where they can identify actions / sub standard conditions, number of workers exposed, sensitive and vulnerable groups, etc..
- Chemicals are not stored in a secure, well that do not have safety data sheets (MSDS) or emergency cards and the containers of chemicals are not labeled in accordance with regulations.
- When performing work on highly traveled roads was not defined or ensures the work area using security fences, cones or tape reflectivos danger.

### 3.3 Statistics of accidents and occupational diseases in the operational area

During the period 2010 - 2012el industrial safety area of EMAPA-Ibarra recorded four accidents including 1 accident has caused death and three accidents have been serious and minor injuries to workers in the operational area.

### 3.4. Assessment of accident costs

It is important and essential to estimate the cost of accidents in each of the accidents which have records in the area of Industrial Safety EMAP-I, as it will allow the analysis of cost - benefit to be held in Chapter V of this investigation.

Accident costs of the 4 accidents in the period 2010-2012 in the operational area of the EMAP-I is found in the following table:

ANO	N° de accidentes	Costo de accidentalidad (\$)
2010	2	8.496,50
2011	1	7.689
2012	1	718.742
<b>TOTAL</b>	<b>4</b>	<b>734.927,50</b>

TABLA1. Resumen de costos de accidentalidad

## CHAPTER IV

### 4.1 Identification of risks

Data collection for the identification of risks was carried out in three ways: first by direct observation, became familiar with the work area and processes are carried out in the operational area, identifying while the most obvious risks present in each job.

After site inspections were conducted, in order to maintain a general record of the processes, activities and tasks of different operational positions, and establish a system of continuous monitoring of the security to avoid industrial accidents and occupational diseases.

With all this information acquired proceeded to perform manual functions of the operational area in which details: the job title, number of workers exposed, nature and activities performed at each workstation operating area which is of great importance for the next step which is the occupational risk assessment.

### 4.2 Description of the job

With the information gained through risk identification methods are determined, the manual functions of the operational area in which details: the job title, number of workers exposed, nature and activities performed in each job you which is very important for the next step which is occupational risk assessment based on the strategic direction (vision, mission and institutional objectives).

### 4.3 General methodology of risk assessment

Already identified hazards in the work areas, the next step forward in a process of quantitative risk analysis is precisely quantify these risks.

Assign a value allows us to classify them according to the results obtained, is based on these results that routes the proposal to improve working conditions.

## ➤ Risk Assessment

CUALIFICACIÓN O ESTIMACIÓN CUALITATIVA DEL RIESGO - METODO TRIPLE CRITERIO - PGV											
PROBABILIDAD DE OCURRENCIA			GRAVEDAD DEL DAÑO			VULNERABILIDAD		ESTIMACION DEL RIESGO			
BAJA	MEDIA	ALTA	LIGERAMENTE DAÑINO	DAÑINO	EXTREMADAMENTE DAÑINO	MEDIANA GESTIÓN (acciones puntuales, aisladas)	INCIPIENTE GESTIÓN (protección personal)	NINGUNA GESTIÓN	RIESGO MODERADO	RIESGO IMPORTANTE	RIESGO INTOLERABLE
1	2	3	1	2	3	1	2	3	4Y3	6Y5	9,8Y7

ESTIMACIÓN DEL RIESGO
<p><b>Moderado (M)</b> Se deben hacer esfuerzos para reducir el riesgo, determinando las inversiones precisas. Las medidas para reducir el riesgo deben implantarse en un período determinado. Cuando el riesgo moderado está asociado con consecuencias extremadamente dañinas, se precisará acciones posteriores.</p>
<p><b>Importante (I)</b> No debe comenzarse el trabajo hasta que se haya reducido el riesgo. Puede que se precisen recursos considerables para controlar el riesgo. Cuando el riesgo corresponda a un trabajo que se está realizando, debe remediarse el problema en un tiempo inferior que los moderados.</p>
<p><b>Intolerable (IN)</b> No debe comenzar ni continuar el trabajo hasta que se reduzca el riesgo. Si no es posible reducir el riesgo, incluso con recursos ilimitados, debe prohibirse el trabajo.</p>

FUENTE: Matriz de evaluación de riesgos del MRL

TABLA2. Método triple criterio

**4.4 Evaluation of occupational risk factors in jobs in the operational area**

Throughout the different jobs that make up the operating personnel EMAP-I have identified several risk factors that affect workers through site inspections during the same time everyday to be valued using the method previously mentioned in each post as follows:

		EMPRESA MUNICIPAL DE AGUA POTABLE Y ALCANTARILLADO DE IBARRA						Elaborado por Santiago Iza Valencia	
		UNIDAD DE SEGURIDAD Y SALUD EN EL TRABAJO						Fecha: 10/10/2012 N° de expuestos: 4 Puesto de trabajo: ALBANIL	
MATRIZ DE VALORACIÓN Y ESTIMACIÓN DE RIESGOS LABORALES - METODO TRIPLE CRITERIO									
ÁREA	PROCESO	TIPO DE FACTOR DE RIESGO	RIESGO	ESTIMACIÓN CUALITATIVA			SUMA	NIVEL DE TOLERABILIDAD	
				PROBABILIDAD	DAÑO	VULNERABILIDAD			
AGUA POTABLE RELLENO DE ZANJAS	Mecánicos		Desplazamiento en transporte terrestre	3	2	1	6	RIESGO IMPORTANTE	
			Circulación de maquinarias y vehículos en áreas de trabajo	3	2	1	6	RIESGO IMPORTANTE	
			Piso irregular resbaladizo	1	2	1	4	RIESGO MODERADO	
			Caida de objetos en manipulación	2	1	1	4	RIESGO MODERADO	
			Obstáculos en el piso	2	1	1	4	RIESGO MODERADO	
			Desorden	2	1	1	4	RIESGO MODERADO	
	Físicos			Manejo de herramientas cortante y/o punzante	2	1	1	4	RIESGO MODERADO
				Vibración	2	1	1	4	RIESGO MODERADO
				Temperatura Elevada	2	1	2	5	RIESGO IMPORTANTE
				Ruido	1	1	1	3	RIESGO MODERADO
				Radiación no ionizante (UV, IR, electromagnética)	2	1	1	4	RIESGO MODERADO
	Químicos			Polvo inorgánico	2	1	1	4	RIESGO MODERADO
				Manipulación de químicos( cemento)	2	2	2	6	RIESGO IMPORTANTE
	Biológicos			Consumo de alimentos no garantizados	2	2	1	5	RIESGO IMPORTANTE
				Animales peligrosos (salvajes o domésticos)	2	1	1	4	RIESGO MODERADO
				Animales venenosos o ponzoñosos	2	2	1	5	RIESGO IMPORTANTE
				Presencia de vectores, roedores, moscas y cucarachas	2	2	1	5	RIESGO IMPORTANTE
Insalubridad agentes biológicos ( microorganismos, hongos, parásitos)				2	1	1	4	RIESGO MODERADO	
Ergonómicos			Levantamiento manual de objetos	2	1	1	4	RIESGO MODERADO	
			Movimiento corporal repetitivo	1	1	1	3	RIESGO MODERADO	
Psicosociales			Posición, forzada ( de pie, sentada, enconada, acostada.)	2	2	1	5	RIESGO IMPORTANTE	
			Minuciosidad en la tarea	2	1	1	4	RIESGO MODERADO	
			Trabajo monotonó	1	1	1	3	RIESGO MODERADO	

Elaborado Por: Santiago Iza Valencia

**TABLA4. Matriz de Valoración y estimación de riesgos laborales**

**4.5 Analysis of Results**

Once detected, analyzed and quantified the risks in the operational area of EMAP-Ibarra, were classified the same for purposes of establishing a priority order for improvements to be implemented according to the study

**CHAPTER V**

**5.1 Policies and objectives of the management system and occupational health safety**

Before implementing the measures of prevention and control of occupational risk factors in the operational area of the EMAP-I was required to update and approval of the OSH policy was defined by the author of this work considering the main lines of the mission and vision of the

organization, senior management commitment to provide resources to ensure the welfare of workers and stressing the importance of continuous improvement of the Safety Management System and Health.

OBJETIVO	INDICADOR	META	RESPONSABLE
Cumplir con la legislación Ecuatoriana vigente, referente a la seguridad y salud ocupacional.	$\frac{\text{No. Requisitos legales cumplidos}}{\text{No. Requisitos legales}}$	100%	Analista 3 de SST
Organizar y desarrollar eventos relacionados con el Sistema de Gestión de S&SO que fomenten la participación del personal operativo de la EMAPA-I	$\frac{\text{No. Tra. Operativos capacitados en S&SO}}{\text{Total de Tra. Operativos de la EMAPA-I}}$	80%	Analista 3 de SST
Realizar capacitaciones que incentiven el uso de los Equipos de protección personal, y de esta manera minimizar los riesgos a los que se exponen los trabajadores operativos de la EMAPA-I.	$\frac{\text{No. Tra. Opera. capacitados en el uso de los EPP}}{\text{Total Tra. Opera. de la EMAPA-I}}$	90%	Analista 3 de SST
Establecer acciones preventivas que mejoren las condiciones de seguridad y salud del personal operativo de la EMAPA-I.	$\frac{\text{No. Acciones preventivas implementadas}}{\text{No. Riesgos identificados}}$	80%	Analista 3 de SST
Establecer un programa de salud ocupacional con el propósito de mantener un clima organizacional adecuado, garantizando el buen	$\frac{\text{Total de objetivos cumplidos del programa de S.O}}{\text{Total objetivos del programa de S.O.}}$	80%	Medico de la

➤ **Objetivos del sistema (S & SO)**

Elaborado Por: Santiago Iza Valencia

**TABLA5. Objetivos del SST**

**5.2 Measures for prevention and control job**

The system of occupational hazards in the operational area of the EMAP-I is made with the purpose of establishing the guidelines, objectives, actions and methodologies necessary to prevent, control and mitigate accidents and occupational diseases, with the aim of ensuring the integrity and health of workers meeting the requirements of the internal politics of SST and legal aspects of security laid down in the laws and regulations.

**Mechanical Risk Mitigation**

➤ **Desplazamiento en transporte terrestre**

FUENTE	MEDIO DE TRANSMISION	TRABAJADOR	COMPLEMENTO
1.- Cumplir con el programa de mantenimiento preventivo vehicular programado.	1.- Garantizar la cantidad y funcionamiento adecuado de cinturones de seguridad de acuerdo a la capacidad del número de pasajeros de cada vehículo.	1.- Campaña de concienciación sobre el uso de cinturones de seguridad. 2.- El conductor no debe comenzar la marcha hasta que todos los trabajadores hayan subido o bajado del vehículo, se prohíbe subir o bajar del vehículo cuando éste se encuentre en marcha.	1.- Elaborar e implementar un programa de inspecciones periódicas de vehículos  2.- Verificar diariamente si los conductores se encuentran en capacidad de conducir (bajo efectos del alcohol o de alguna sustancia psicotrópica).

Elaborado Por: Santiago Iza Valencia

**TABLA6. Prevención y control de riesgos**

**5.3 Technical Specifications of the Personal Protective Equipment**

After having determined the preventive and control measures in each workstation's operating area EMAP-I, which indicates the need for provision of Personal Protective Equipment as there are risks that can not be avoided at the source or in the transmission medium, the EPP must meet technical specifications to ensure effective protection against risk.

**5.4 Cost-benefit analysis**

Given the proposed improvements in the aspect of safety and occupational health in the present investigation is necessary to know the investment you will ever make the EMAP-I in the operational area to implement preventive and corrective measures in the short, medium and long term.

➤ **Benefit of proposals**

The benefit will bring the implementation of the proposed improvements in the operational area of the EMAP-I will be reflected both in the achievement of corporate goals and in the welfare of their workers, because if security conditions are inadequate, cause negative effects such as decreased productivity, increased errors, increased accident rates and staff turnover.

You can also add that the union of all these proposals will help the EMAPA-I in achieving its objectives as it will prevent breakdowns of machinery, cancellation of lost man-hours, diminution of productivity and other hidden. Hence the degree of importance of them, whose investment

amount is much less than the cost at which the company will incur at the time of an accident, as evidenced in Chapter III Section 3.4 "Evaluation of cost of accidents "where the total cost of accidents in the years 2010, 2011 and 2012 dio a total of \$ 718,927.50.

**2. Conclusions**

- ✚ Was identified and the risks assessed in all operational positions, thereby creating a support tool for planning safe work risk prevention.
- ✚ The evaluation demonstrates the existence of risk factors in all facilities and all activities and also take very few or no measures to mitigate and control risks, that's why they made the approach to prevention and control measures in the short, medium and long term.
- ✚ Through training in areas such as use of fire extinguishers, safe working in trenches, safe handling of chlorine gas cylinders, first aid, signage in high-traffic routes, defensive driving, proper use and maintenance of EAF OSH policy and health and safety regulations at work, risks identified in the workplace of the operating personnel, among other issues was achieved create an environment of trust, security and greater responsibility in each of the activities of the operating staff of EMAPA-I.
- ✚ In coordination with the medical unit was placed First Aid kits in each of the treatment plants of urban and rural water also gave crew chiefs portable kits.
- ✚ CO2 extinguishers are installed and PQS, emergency lights and signs, treatment plants in urban and rural Alpachaca cellar.
- ✚ It actualizoel internal rules of safety and health at work, approved by the Ministry of Labor Relations dated April 9, 2013.
- ✚ The present research was evaluated in the audit conducted by the general risk insurance IESS work on March 27, 2013 in which the EMAP-I reached a score of 86.84% ranking among the best in the province and the north.
- ✚ Procedures were implemented in the area of industrial safety which annexes in the present investigation.
- ✚ The emergency and contingency plans are updated and approved, which will prevent implementing appropriate preventive and corrective measures in case of accidents and major accidents.

**Gratitude**

I express my sincere thanks to North Technical University, Faculty of Applied Science Engineering, School of Industrial Engineering for receiving me during the time of study. To each and every one of the teachers who shared their knowledge and experiences.

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### About the Author

Author – Santiago IZA

I was born on October 20, 1986, in the city of Otavalo, My Parents are Gladiz Valencia Segundo Iza and I am the first of 2 brothers.

My primary studies conducted in Father Domenico School Leonati from the city of Otavalo, then enter the Technological Institute "Otavalo" in which I obtained a bachelor's degree in Physical-Mathematical specialization, perform military service which served me well to form my character, then enter the North Technical University in order to obtain the degree in Industrial Engineering.

**"Many of our dreams at first seem impossible, then may seem improbable, and then when we are strongly committed, become inevitable."**

– Christopher Reeve