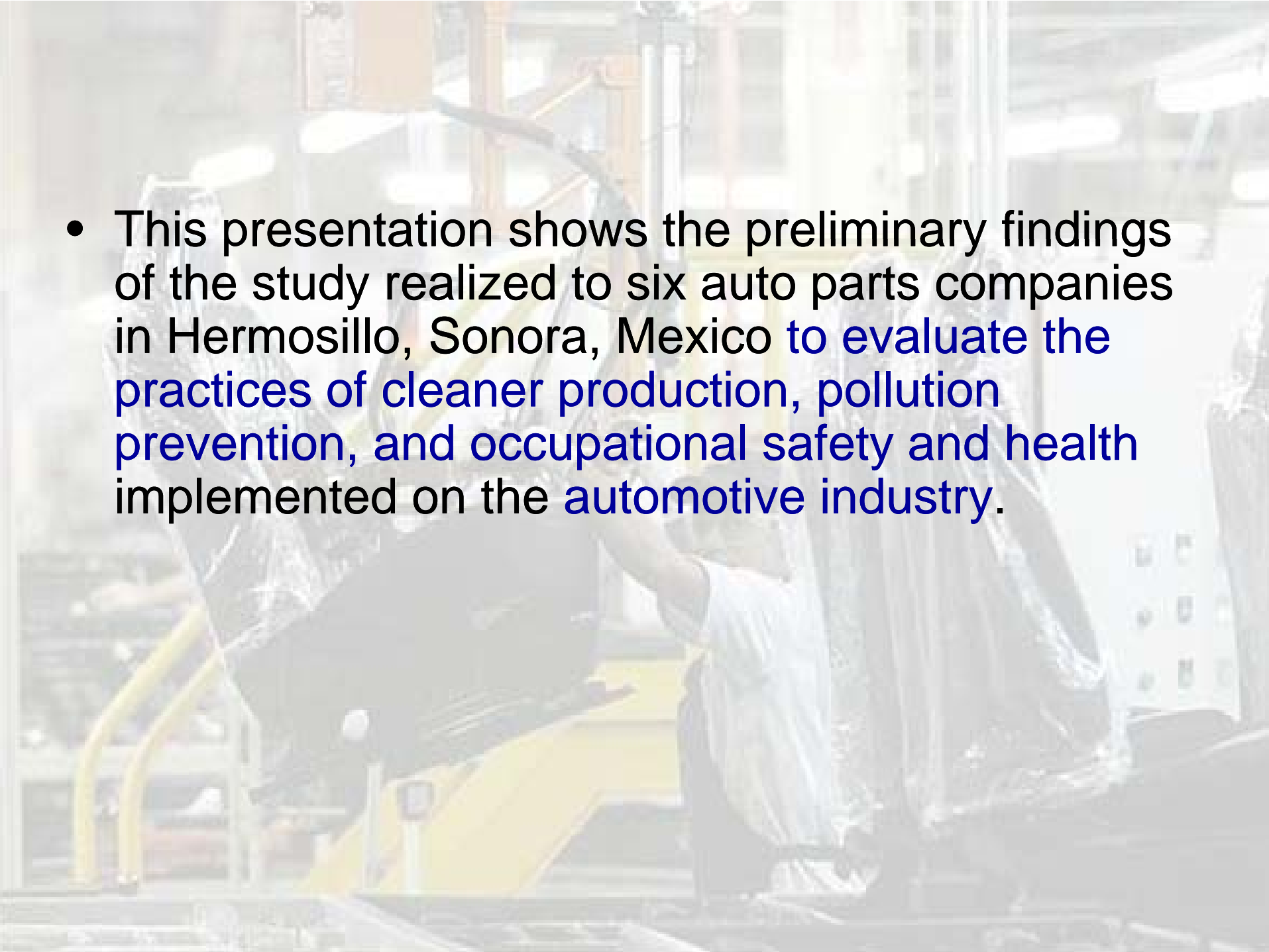




# Sustainable production: an approach of occupational health and safety in the auto parts industry in Hermosillo, Mexico

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- This presentation shows the preliminary findings of the study realized to six auto parts companies in Hermosillo, Sonora, Mexico to evaluate the practices of cleaner production, pollution prevention, and occupational safety and health implemented on the automotive industry.

# Introduction

- The International Labour Organization (ILO) in 2008 estimated that annually **337 million accidents** occur on the job worldwide and near **two million** people suffer from **occupational diseases**.
- In the United State the automotive industry presents **one of the higher accidents and occupational diseases index**: 1 of every 3 workers gets hurt a year being the injuries in 1 of every 10 cases serious enough to provoke loss of work time

(US Bureau of Labor Statistics, 2007).

# Introduction

- Although industrialized countries have seen decreases in the numbers of occupational accidents and diseases, is not the same case in countries that are experiencing rapid industrialization like **Mexico** or those too poor to maintain national Occupational Safety and Health Systems, including proper enforcement of legislation.

(International Labour Organization , 2007).

# Introduction

- In Mexico the automotive industry heads the principal technological transformations experienced to industrial level.
- It has had a significant impact in the employment, the investment and the economic regional growth (INEGI, 2008).
- The project Ford was located in the third place in generation of employment and in fifth worldwide in capital investment.

# Introduction

- Nowadays the automotive industry is immersed in one of his **worse crises worldwide**.
- The exportation in Mexico of units in the second month of the year contracted 44.6 %, and during the **first two-month** period of **2009** the **production of vehicles** in the country and the exports **accumulated a reduction of 44.4 and 50.2 %** respectively.
- The previous thing **must not be a reason in order that neglects the health of the workers** who are kept in this work camp.

# Introduction

- The need to preserve the environment for the future generations not only forces to the analysis of the environmental emergent problems, but also to trying to design effective strategies depending on the cost and which are environmentally correct.
- To achieve the sustainable production in the industry of auto parts is a challenge since it must consider inside his economic long-term strategies, **reduce the environmental and occupational risks** that its activities generate besides all the needs imposed by the market;

# Methodology

## Methodological design

- There was used the Case Study and the Multiple Triangulation.
- The case study was realize in Hermosillo, Sonora, Mexico from September to December, 2008, using the not probabilistic sampling for given convenience the difficulty to achieve the revenue to the companies

# Methodology

## Sampling

- It was used the directory of the "National Industry of Autoparts A.C." INA.
- It was requested to the Original Equipment Manufacturer OEM(Ford Motor Company) in Hermosillo the list of his suppliers Installed in the city.
- A physical tour by the industrial park was done to check the information and to obtain the name of the safety and health and environment coordinator in charge in each for the companies list.

# Methodology

## Sampling

- formal invitations were writing to the companies in order to all the members of the population had the same opportunity to take part in the sample.
- **Six companies** of the 21 installed in Hermosillo city **accepted the invitation** to take part in the research

# Methodology

## Instruments

- The **Program Evaluation Profile (OSHA PEP)**, was used to evaluate the programs of health and safety in the places.
- The **Cleaner Production and Pollution Prevention Survey** was used to identified the cleaner production and pollution prevention practices.
- A **Worker Survey**, was used to know occupational safety and health conditions from their perspective.

# Methodology

## Subject of study

- The Program Evaluation Profile OSHA (PEP) and the cleaner production and pollution prevention Survey, were applied to the **safety and health and environment coordinators or to the manager** of the plant;
- The worker survey was applied **to operators and or technical personnel** to five of six companies that decided to take part in this research.
- All the surveys **were applied** to the safety and health coordinator in the company and/or workers **at his work place.**

# Analysis and results

Once applied the instruments and after a walk through by the company, we proceeded to capture the information in the Microsoft **Access Database** and finally analyze them using the **SPSS v.13** program.



# Results

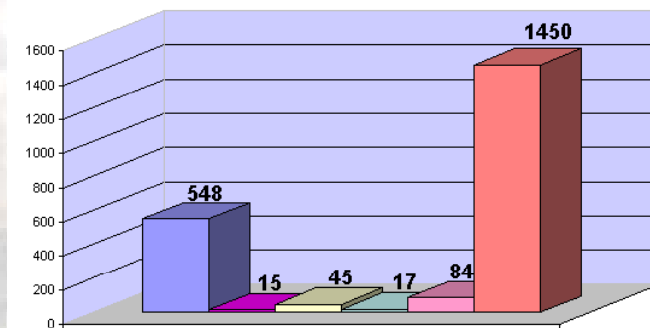


# Results

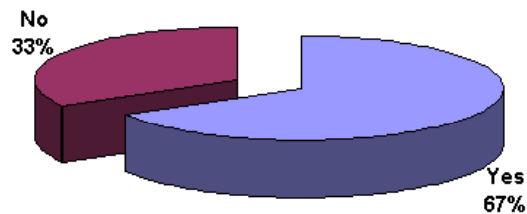
**Table 1 the descriptive profile of the studied companies.**

	Employees	ISO 14000	OHSAS 18001	Goods, services and systems
<b>Company 1</b>	548	Yes	In Process	Exhaust System
<b>Company 2</b>	15	No	No	Liquid Paint
<b>Company 3</b>	45	Yes	No	Transport and Storage of goods
<b>Company 4</b>	17	No	No	E-coat Paint
<b>Company 5</b>	84	Yes	No	Parts for Seats
<b>Company 6</b>	1450	Yes	In Process	Plastic Components

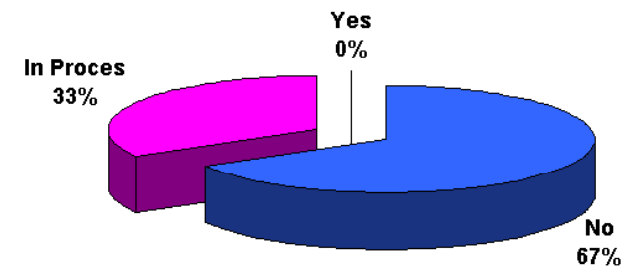
**Workers by company**



**ISO 14000**



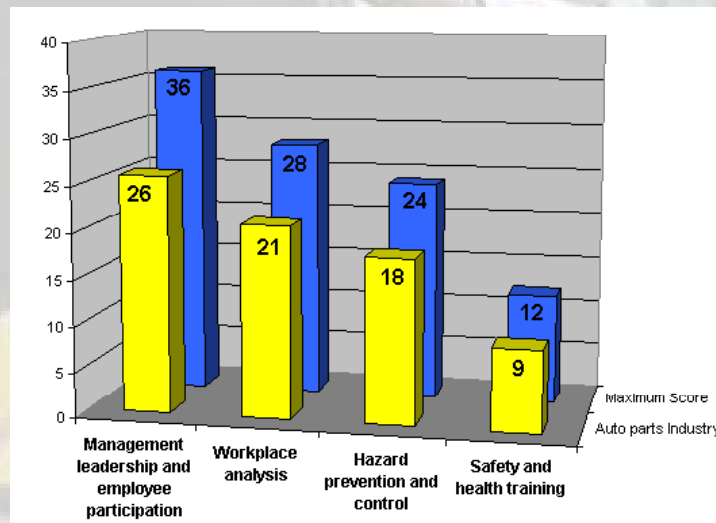
**OHSAS 18001**



# Results

**Table 2 Program Evaluation Profile OSHA (PEP)**

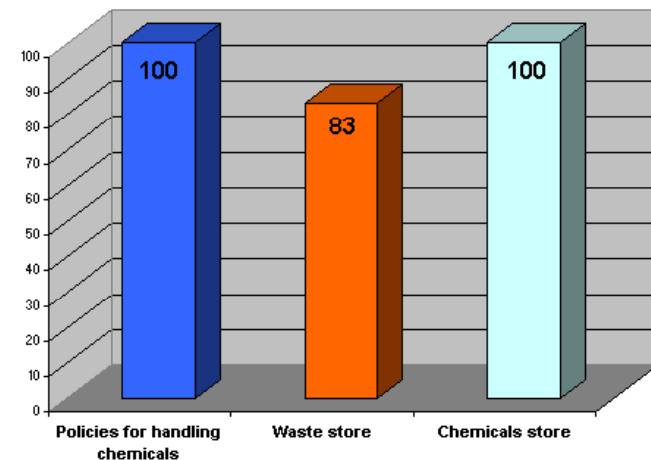
	Management leadership and employee participation	Workplace analysis	Hazard prevention and control	Safety and health training	Total
<b>Auto parts Industry</b>	26	21	18	9	74
<b>Maximum Score</b>	36	28	24	12	100
<b>Percent</b>	72	75	75	75	74



# Results

**Table 3 cleaner production and pollution prevention practices**

	<b>Policies for handling chemicals</b>	<b>Waste store</b>	<b>Chemicals store</b>	<b>Type of waste</b>
<b>Company 1</b>	Yes	Yes	Yes	Liquid and impregnated Solids
<b>Company 2</b>	Yes	No	Yes	Liquid and impregnated Solids
<b>Company 3</b>	Yes	Yes	Yes	Solids
<b>Company 4</b>	Yes	Yes	Yes	Liquids
<b>Company 5</b>	Yes	Yes	Yes	Solids
<b>Company 6</b>	Yes	Yes	Yes	Solid, Liquid and impregnated Solids



# Results

**Table 4.1 survey to workers on safety and health condition**

	No exposure		Part of the shift		All shift	
	Count	%	Count	%	Count	%
Noise	4	11.1	8	22.2	24	66.7
Vibration	21	58.3	4	11.1	11	30.6
Excessive Heat	7	19.4	18	50.0	11	30.6
Bad Ventilation	13	36.1	18	50.0	5	13.9
Chemicals in the air	12	33.3	14	38.9	10	27.8
Dust	8	22.2	11	30.6	17	47.2
Gas, fume and vapor	16	44.4	13	36.1	7	19.4
Chemical in the skin	21	58.3	11	30.6	4	11.1

# Results

**Table 4.2 survey to workers on safety and health condition**

	No exposure		Part of the shift		All shift	
	Count	%	Count	%	Count	%
<b>Bad Illumination</b>	18	50.0	11	30.6	7	19.4
<b>Eye Strain</b>	24	66.7	6	16.7	6	16.7
<b>Unconformable position</b>	16	44.4	7	19.4	13	36.1
<b>Repetitive motion of arm or hand</b>	15	41.7	7	19.4	14	38.9
<b>Heavy lifting or intensive physical activity</b>	15	41.7	6	16.7	15	41.7
<b>Forceful movement of the arm or hand</b>	23	63.9	8	22.2	5	13.9
<b>Monotonous work</b>	21	58.3	9	25.0	6	16.7
<b>Depend on the rhythm of a machine or assembly line</b>	23	63.9	4	11.1	9	25.0

# Results

**Table 4.3 survey to workers on safety and health condition**

	Yes		No	
	Count	%	Count	%
In the last year have you suffered from pain, tingling or numbness in one or both of your forearms or elbow	4	11.1	32	88.9
In the last year have you suffered from pain, tingling or numbness in one or both of your shoulder	8	22.2	28	77.8
Have you been awakened in the night by these symptoms of pain tingling or numbness	5	13.9	31	86.1
DO you suffer with frequency from other problems about which we haven't asked you	4	11.1	32	88.9
Do you smoke?	18	50.0	18	50.0
If no, have you smoked in the past?	8	42.1	11	57.9
Have you been informed by your company about the risk of your work and the method for preventing them?	34	94.4	2	5.6
Was the training a dequate enough for you to know how to protect yourself	34	94.4	2	5.6
Are the containers labeled to indicate their content and danger?	36	100.00	0	0

## Analysis

The total of all firms surveyed had hired a company that provides the service of waste management and specialized transportation and all claim to have implemented a control to eliminate workers' exposure to physical and chemical risk and they said have conducted studies of noise or lighting.

In all companies the workers are provided with personal protective equipment and the health and safety coordinator consider that security practices and environmental safety in the automotive industry in Mexico are good.

## Analysis

The 94% mentioned that it has been informed by his employer about the hazards of their work and the ways to prevent, another 94% believed that the training given is appropriate and 100% of interviewees mentioned that the permanent and portable containers have signs that indicate their contents and hazard.

## Conclusions

The efforts implemented by some companies on health and safety programs at job, **need to work on achieve a greater number of employees who accept the goals and objectives and seek their enforcement** since the lowest level of evaluation occurs in management leadership and employee participation, the score on it, tells us that only a **small part of the staff fully supports the goals and objectives and can explain the expected results and how to measure the achievements**

## Conclusions

The companies in the auto parts industry in Hermosillo, should implement strategies to ensure that the maximum number of employees feel they have a positive impact on identifying and solving health and safety aspects since the score on this indicates that only part of the staff feels it has a positive impact.



## Conclusions

Although working conditions have improved some production workers are still subject to uncomfortable conditions, heat, fumes, noise, and repetition, in this industry.

Employees also operate powerful, high-speed machines that can be dangerous.

Accidents and injuries can be avoided when protective equipment and clothing are worn and safety practices are observed.

## Conclusions

It is imperative that companies in the auto industry to implement a formal system of managing health and safety as it will encourage healthier and safer spaces at work and allow the organization to consistently identify and control risks, reduce the potential for accidents, support regulatory compliance and improve the overall performance.

A photograph of a worker in a white shirt and cap working on a car seat in a factory. The worker is positioned in the center-right of the frame, leaning over a car seat that is partially covered in silver protective plastic. The background shows a factory environment with yellow safety railings and industrial equipment. The word "Questions?" is overlaid in the center of the image in a bold, blue font.

**Questions?**