

# LATIN AMERICA

## Occupational Exposure Limits



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# Latin America General Information

**Official Language: Spanish and Portuguese are the most spoken languages**

**Number of Countries: 43**

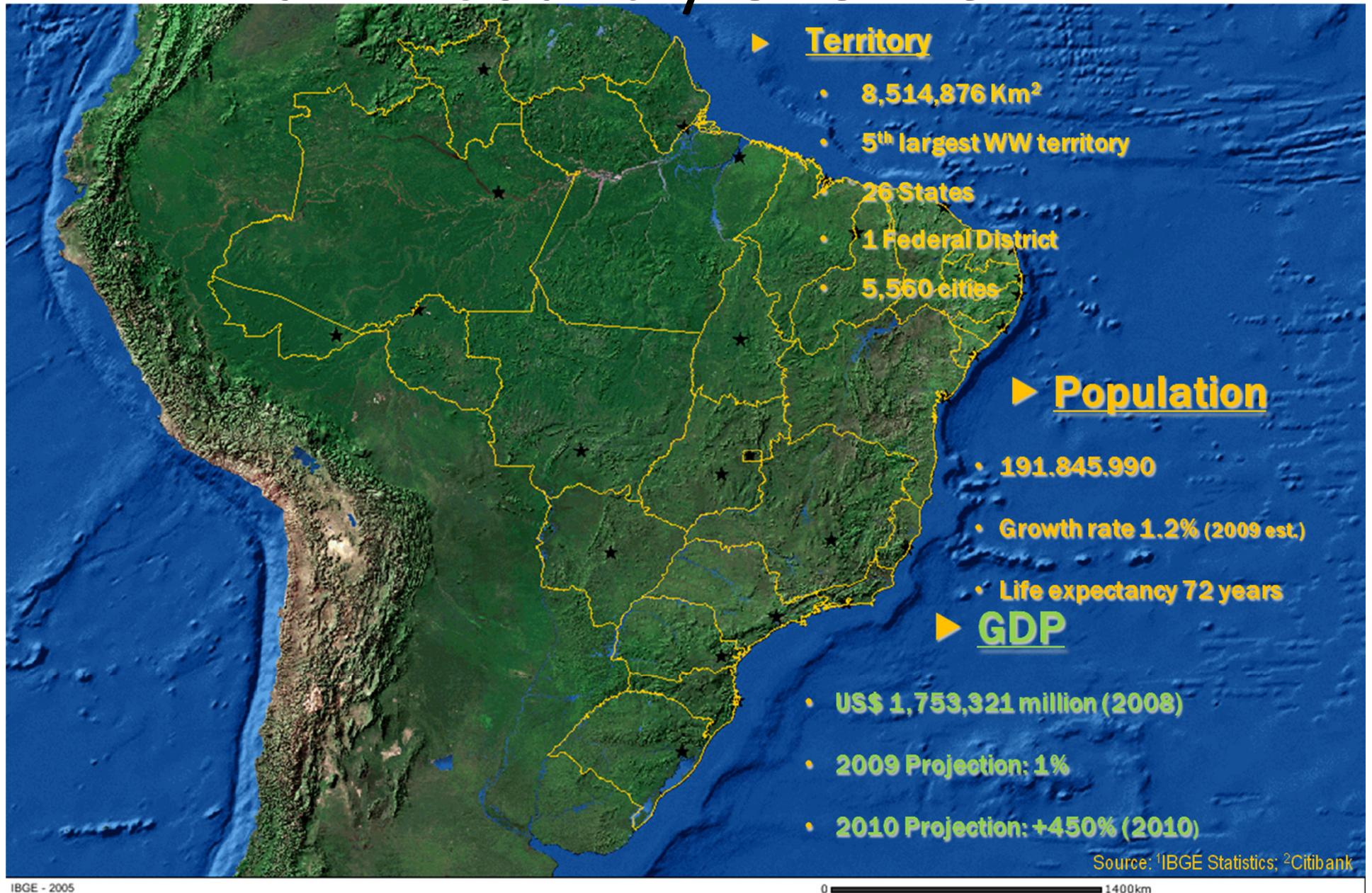
**Social Inequality is a major roadblock.  
25% of the population lives with less than \$2 / day.**

**Brazil is the leading country, followed by Mexico, Argentina and Colombia**

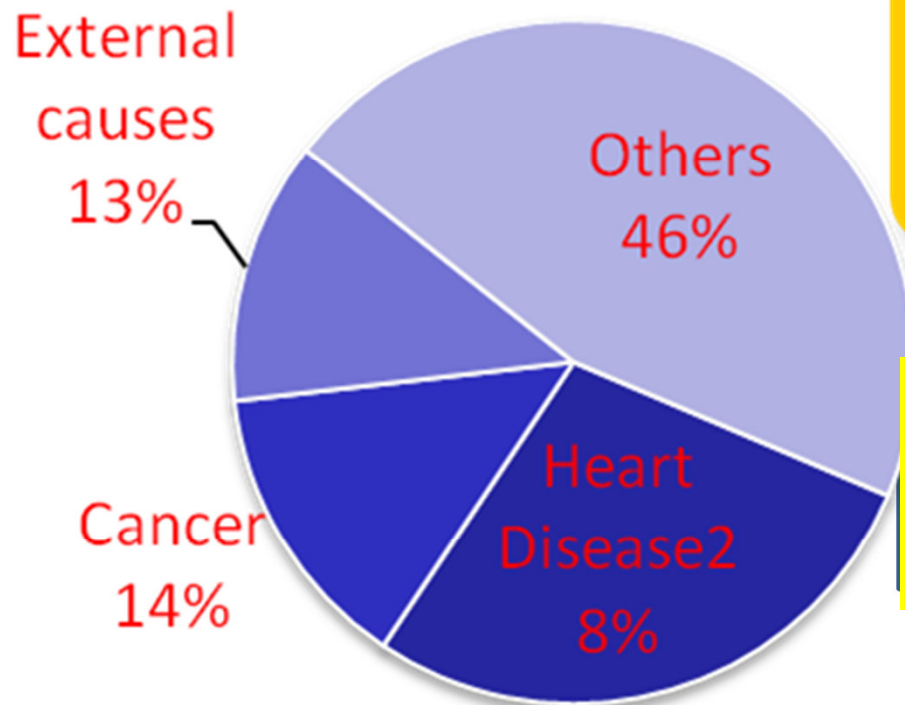
# Latin America Key Economic and Demographics

		2010 GDP (US\$ Tn)	'10 Real GDP Growth	Population (in MM)
	Brazil	\$1.9	5.5%	193
	Mexico	\$1.0	4.0%	108
	Colombia	\$0.4	2.8%	49
	Venezuela	\$0.4	-2.1%	29
	Argentina	\$0.4	3.8%	40
	Total LA	\$5.5	4.5%	553

# Brazil : Country Overview



## Main causes of death



**Convergence with  
Developed  
countries**

**2 million deaths -  
Occupational  
Problems Related**

# Glossary

ABHO – Brazilian Occupational Hygienists Association

CLT - Consolidation of labor laws

NR – Health & Safety Regulatory Standard

FUNDACENTRO – Governmental Labor Department such as  
NIOSH responsible to assist Ministry of labor with Occupational  
Health and Safety Issues

MINISTRY OF LABOR – Superior Authority for Labor Issues  
reporting to the country President

# Brazil: Occupational Exposure Limits Overview

Standard (Portaria) 3.214/78 was composed of 28 Regulatory Standards “NR’s” and is part of CLT (consolidation of labor laws):

When people want to refer about occupational health and safety (H&S), it is commonly referred to NR’s

- Each Regulatory Standard is related to a H&S subject
- Started in 1978 with 28 NR
- 2010 has already 33 Regulatory Standards
- **NR 15 – related Occupational Exposure Limits / Agents**

# Brazil: Occupational Exposure Limits Overview

NR 15 – Related Occupational Exposure Limits / Agents

NR 9 – Related to Industrial Hygiene Program

NR 7 - Related to Occupational Health

\* NR 4 - Related to H & S Department dimension (professionals)

according to Company size (n<sup>o</sup>. Workers) / risk grade

# Regulatory Standard Overview

- NR-15 has an important role that is to protect workers;
- Standards refers also to H&S (certified) professionals team:
  - Safety Engineer
  - Occupational Physician
  - Nurse
  - Safety Technician
  - Nurse Assistant

These professionals are responsible to keep the companies under a good Health and Safety condition, what means, free of accidents and also **free of occupational disease**.

# Regulatory Standard Overview

- H&S Inspections must be done by government inspectors
- NR – 15 has one article (15.4.1.1) saying:

During any inspection, if there is an evidence of any unhealthiness situation, it must be evidenced by the report as follow:

- a) notify the company, stipulating time limit for disposal or neutralization of the risk, when possible;
- b) establish additional payment for compensation due to any exposure when it is not practical its neutralization

**\* there is not enough inspectors for that purpose**

**\*\* situation is changing because goverment is establishing a new tax related to bad working conditions and this will change the scenario**

# Regulatory Standard Overview – OEL's

- The TLV ® s used as reference by Brazilian law, was from ACGIH ®, 1976.
- ACGIH ® TLV's took into account the working day of 40 hours / week.
- 1978 NR's OEL's had to be adjusted for 48 hours / week.
- TLV's had to be reduced for Brazil at that time and were 22% lower than ACGIH due to this adjustment in 1978.
- Example: for toluene which had a TLV of 100 ppm , when adjusted according to NR-15 it became 78 ppm.
- For special shifts Brief & Scala is recommended.
- For ceiling values, limits have remained the same established by ACGIH®

**For this reason, some people not very familiar with "Exposure Limits" said that Brazil wanted to be more rigorous than the U.S .**

# Regulatory Standard Overview – OEL's

- In 1976, ACGIH had at that moment for more than 500 (five hundred) chemical and physical agents TLV's
- Less than 150 compounds, had its OEL's established in the NR's
- From these TLV's, 7 were the only ones established in the NR's OEL's, that Fundacentro was able to analyze.
- It is important to mention that at that time, available resources and technologies were very limited in the country.
- The analysis were made selecting only those chemical agents that could be assessed by colorimetric tubes available in Brazil: Dragger and MSA.

## **Continuous or Intermittent Noise**

The OEL's adopted for occupational exposure to intermittent and continuous noise were the same from publication in ACGIH TLV ® s ® 1976.

The limit was 85 dB (A) and did not consider the contribution from exposures between noise levels from 80 dB (A) to below 85 dB (A).

For many years, noise dosimeter was not common in Brazil.

It was unusual, even for large companies, have dosimeters for the assessment of occupational noise exposure.

The exchange rate today is still 5 dB

## **HEAT STRESS**

NR's adopted the same recommended by ACGIH ® :  
the WBGT Index - Wet Bulb Globe Thermometer

## **Ionizing Radiation**

NR's recommends to follow our Nuclear Regulatory Commission values - CNEN.

Resolution CNEN-06/73: BASIC RULES OF RADIOLOGICAL PROTECTION“

## **For Non-Ionizing Radiation:**

It was limited to microwave, and ultraviolet lasers.

(not considered black light in the ultraviolet spectrum and also did not consider part of the longer wavelength spectrum (radio frequency)).

## **Vibration**

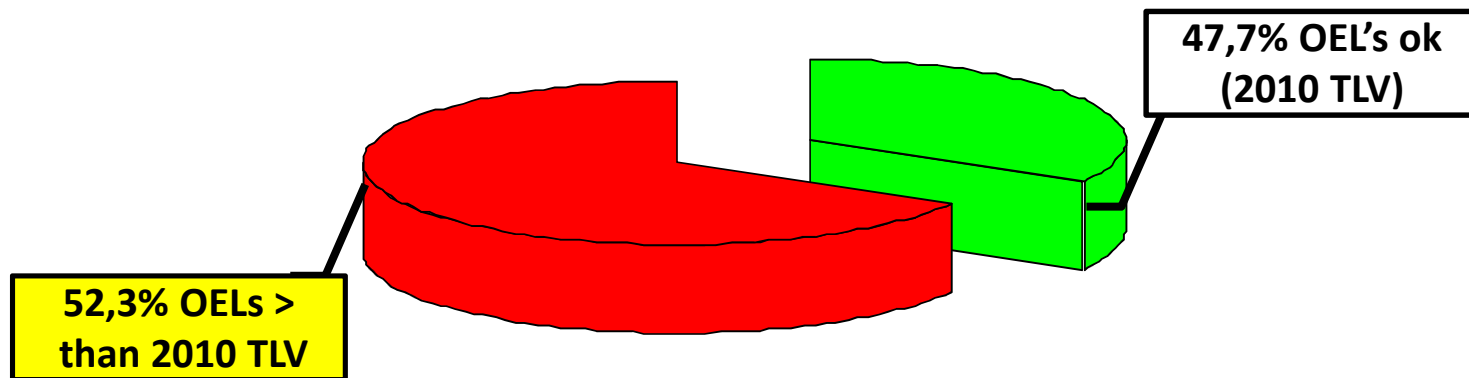
Limits set by the International Organization for Standardization - ISO, in its ISO 2361 and ISO / DIS 5349,

# GENERAL SITUATION - NR's OEL's

- NR's OEL have more than 30 years
- ACGIH ®TLV's have annual review
- After more than 30 years, just two chemicals had its NR's limits reviewed:
  - a) benzene
  - b) carbon black
- There are several substances with NR's limits higher than 2010 TLV
- Notation: When there is a process in the court, NR-15 states explicitly that the OEL is "the concentration or intensity maximum or minimum, related to the nature and duration of exposure to the agent, will not harm the health of employee during his working life". What means if the worker is exposed to an old OEL, law take in account the old NR's limit.

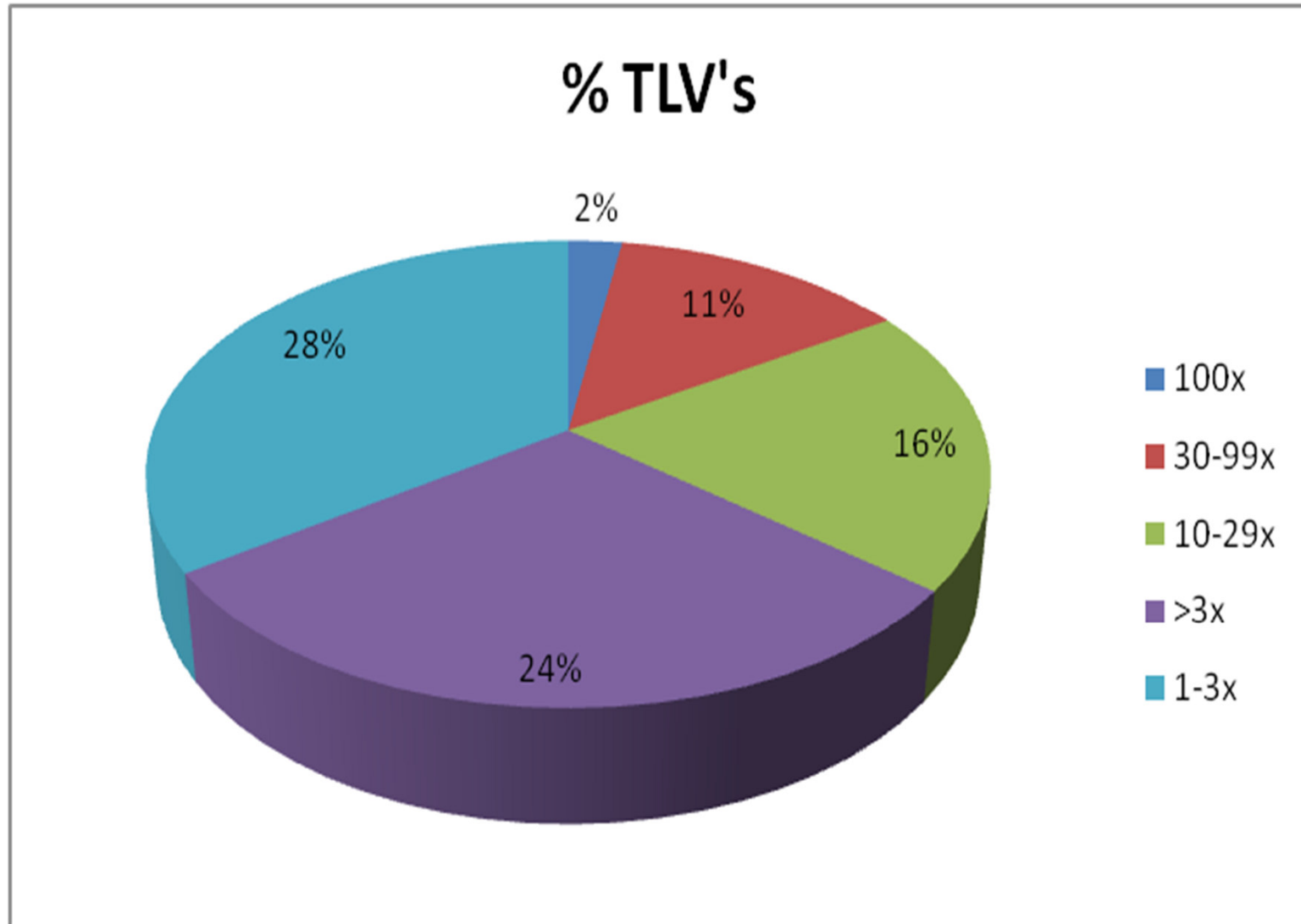
# GENERAL SITUATION – NR's OEL's

•More than 50% of the NR's limits are outdated.



# GENERAL SITUATION - NR's OEL's

The graph below shows the % of the NR's OEL's those are above 2010 TLVs ®



# OTHER LATIN AMERICA COUNTRIES

COUNTRY	EXPOSURE LIMITS	DATE
BRAZIL	ACGIH	1976
ARGENTINA	ACGIH	ACTUAL
CHILE	ACGIH	ACTUAL
COLOMBIA	ACGIH	ACTUAL
MEXICO	ACGIH	ACTUAL
VENEZUELA	ACGIH	2001 (Under review)

# CONCLUSIONS

- ACGIH TLV's is the reference in Latin America countries
- An immediately action must be taken in Brazil
- ABHO is working for this purpose and this year there is an opened discussion for this case
- During this week ABHO's Conference, this subject is under discussion and also ABHO is calling for people attention in order to get support to bring this issue to the Government

# **REFERENCES**

- ABHO, 2010 September Magazine
- e-mails to local Industrial Hygiene Association
- Personal contact with local EHS Professionals

**OBRIGADO**

**GRAZIE**

**THANK YOU**

**MERCI**

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