

Insights and Strategies for Global EHS Management

NAEM Conference – July 2004

**Brazil - Beatriz Rebolledo Haley &
Aldrich Global Team**

FMC Corporation



FMC – Assessing Operations in Uberaba, Brazil

- In-country specific information
- Pre-audit discussion
- Effective team to assess the facility
- Identify local EHS support
- EHS regulatory environment
- Cultural issues





Brazil – Country & Culture

- Geography: the 5th largest country in the world
- Total area of 8.5 million km² (covering approx. half of South America)
- Distances: 4,420 km from north to south and 4,328 from east to west
- Atlantic coastline of 7,408 km
- Brazil has a border with every country in South America except Chile and Ecuador.
- Brazil is divided into 5 regions:
 - The North: made up mainly of the Amazon Basin
 - The Northeast: the “bulge” that covers the area roughly east of 46° longitude and north of 16° latitude;
 - The Southeast: including the coastal states south of the Northeast as far as São Paulo;
 - The South: the area to the south of São Paulo; and,
 - The Central west: consisting of the states of Mato Grosso, Mato Grosso do Sul and Goiás.



Brazilian States

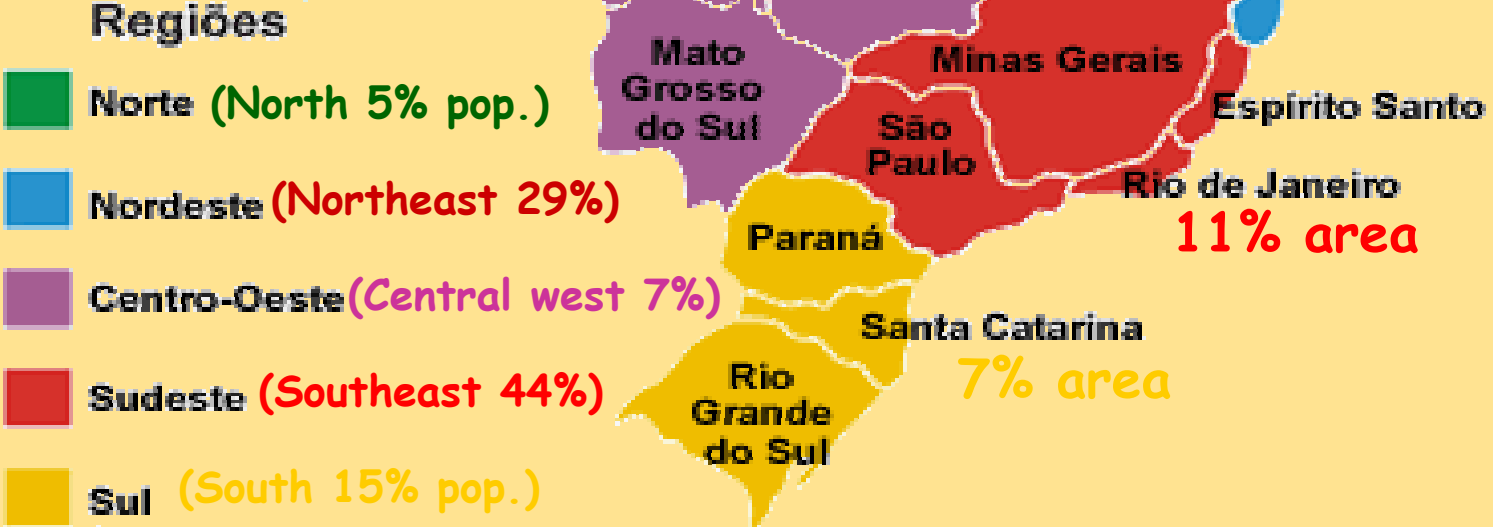
42% area

18% area

22% area

11% area

7% area



Brazil – Country & Culture

- Brazil is the only Portuguese-speaking country in South America
- Estimated population: 179 Million
- The literacy rate has increased over the past forty years from 50% to 75%, and the population living on less than \$2.00 per day is 44 Million (approx. 24.5%)
- Brazilian currency is the *Real* (1US\$ \equiv R\$3 approx.)
- Unemployment (May 2004): 12.2%
- IPCA (Extended Consumer Price Index): In the year, the index accumulated rate of 3.33%; in the last twelve months, 5.36%.
- 2002 Soccer World Champions!



Brazil – Industry Investment



- Industry total investment: 7 industrial sectors (from 27) invested US\$ 16 billion in 2003:
 - Petroleum and alcohol refinement (18%);
 - Food and beverage (13.8%);
 - Automobiles (9.6%);
 - Chemicals (9.6%);
 - Cellulose and paper (8.6%);
 - Basic metallurgy (7.2%);
 - Metal minerals extraction (6.4%)

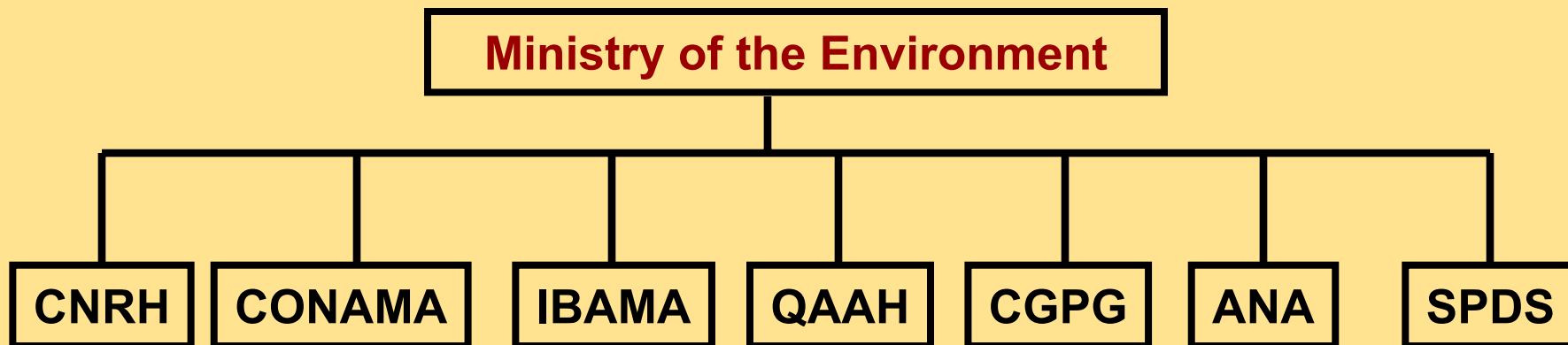


Political System

Level	Executive	Legislative	Judiciary
Federal	Presidency Ministries	Federal Parliament Senate	Supreme Court of Justice
State	State Govern State Secretaries	State Parliament	State Court of Justice
Local Authority	Local Authority Municipal Secretaries	Municipal Parliament	—

- Each State has its own Constitution with a Governor and Chamber of Deputies
- Each State has its own Environmental Protection Agency
- The States are divided into Municipalities, which have some degree of autonomy
- Municipalities deal with land use regulations, including restrictions for activities which may represent potential pollution sources or can cause environmental degradation in their territories
- State Environmental Agencies are independent
- States Agencies may set whatever measures they wish to accomplish the State legislation, as long as it complies with the provisions in the Federal legislation
- In Brazil, there are no regulatory requirements concerning the implementation of formal Environmental, Health & Safety Management Systems

Main Federal Environmental Entities



CNRH: Water Resources National Council

CONAMA: Environmental National Council

IBAMA: Brazilian Institute of Environment and Renewable Natural Resources

QAAH: Environmental Quality of Human Settlement Department

CGPG: Genetic Patrimony Administration Council

ANA: National Water Agency

SPDS: Sustainable Development Policies Department

Federal Ministry of Labor



- The *Brazilian Constitution* (1988), sets forth the following responsibilities for the Federal Government:
 - The exclusive authority of the Federal Government to legislate labor rights (Art. 22, I)
 - The responsibility of the Federal Government to organize, maintain and carry out workplace inspections
 - The right of workers to receive additional payment for unhealthy or hazardous operations (Art. 7, XXII).
- The **Ministry of Labor** is also responsible for coordinating, controlling, and supervising OH&S inspections within the workplace.
- It is the responsibility of the *Regional Labor Offices – DRT* to promote inspections to comply with OH&S



Occupational Health and Safety Department

- Determines regulations in the field of Occupational Health and Safety
- The main regulations on Occupational Health and Safety are the
- NR's - Ministry of Labor Regulatory Standards - approved originally by *Portaria 3214/1978* and amended further by other regulations.
- 30 NR's provide overall standards for occupational health and safety and address such topics as:
 - compensations for employees who conduct or are exposed to unhealthy or hazardous environment and activities
 - medical surveillance programs
 - explosion risks
 - personal protective equipment
 - ergonomics
- 5 NR's provide Occupational Health and Safety standards in the field of rural activities





Environmental, Health & Safety Legislation Enforcement

- In Brazil, there are several laws that define penalties for those that damage the environment.
- There are several others that determine preventive actions to avoid these damages.
- All these laws shall be complied with and applied to assure the quality of the environment that everyone, without exception, depends on.
- Strengthening Industrial Wastewater Control and Land Use Control, or requiring Environmental Education at schools are some of the important actions to be enforced by rules and regulations.
- Environmental Legislation enforcement falls under the responsibility of IBAMA and the State Agencies.
- It is the responsibility of the Regional Labor Offices –DRT– to conduct inspections of compliance with OH&S regulations and impose penalties for non-compliance.



Main States Environmental Agencies

SÃO PAULO – CETESB

- Licensing, Permitting and Regulatory Enforcement: potential sources of pollution, including industrial activities
- Air Quality Monitoring: 29 monitoring stations in the State. Daily reports available
- Sea Water Monitoring: 128 beaches monitored on a weekly basis
- Continental Water Monitoring: 22 water resources units (basic networking: 272 water sampling points/18 sediments sampling points)
- Chemical Emergency: 24 hours/day service
- Hazardous Chemicals Manual available in the website
- Soil and Groundwater Quality Monitoring: report publishing methodology and values to be used as guidelines to protect the quality of soil and groundwater in São Paulo State (ed. 2001 – In cooperation with USA, Germany and Holland agencies)



SAO PAULO – CETESB (cont')

- 2003 São Paulo Contaminated Areas Census: guidelines to evaluate the potential of soil contamination in areas identified for residential use. Contaminated areas are by activity and location. Status of areas: potentially contaminated/ confirmed contamination.
- Environmental Chambers of Productive Activity: consultative entities formed by industries representatives to assist the State Environmental Department and CETESB. Created by Resolution issued in September 1995.
- Pollution Prevention Program Implementation Manual: available at the Agency's website as guideline for companies
- 2002 Solid Waste of São Paulo State Inventory: 45.1% of the municipalities domestic landfills are operated adequately. In 1997, only 4.2% were operating properly.
- Submarine Outfalls: Design, Compliance and Environmental Monitoring Program to improve existing operations (Dec/03).



Main States Environmental Agencies

RIO DE JANEIRO – FEEMA

- Licensing, Permitting and Regulatory Enforcement: potential sources of pollution, including industrial activities
- Environmental Auditing: the State Law N° 1.898/91 requires that potential sources of pollution in RJ State must be audited yearly. Reports are available for public information.
- Air Quality Monitoring: 35 monitoring stations in the State. Daily reports available
- Coast Zone Management Program: includes 34 municipalities of Rio de Janeiro State located alongside the coast
- Continental Water Monitoring: 9 water resources units (basic networking: 120 water sampling points: water, sediments and biota sampling points)



RIO DE JANEIRO – FEEMA (cont')

- Basic Sanitation Program for the Guanabara Bay Basin: The general objectives of the program are: (a) clean up of Guanabara Bay and adjacent basin area; (b) improve the quality of life of the 7.3 million residents of the basin; and (c) strengthen local government institutions whose activities can positively impact the bay.
- Risk Analysis, Contingency and Emergency Plans: to be applied to industries that handle hazardous substances.
- Emergency Response: Accidental Pollution Control services 24 h/day.



Main States Environmental Agencies

MINAS GERAIS – FEAM

- **Licensing, Permitting and Regulatory Enforcement:** potential sources of pollution, including industrial activities. The agency allows the municipalities with environmental management system to license and inspect the local industrial activities.
- **Air Quality Monitoring:** 3 monitoring stations in the State, since 1995, acquired by Petrobrás refinery, as part of compensation measures in the licensing process . Daily reports available.
- **2003 Industrial Waste Inventory of Minas Gerais State:** waste generation sources and final disposal of hazardous and non hazardous waste.
- **Implementation of Controlled Landfills to handle domestic waste:** municipalities were convoked by the Agency to retrofit the existing landfills until July 30, 2004 (June/2001 D.N. No 52/2001).



ENVIRONMENTAL LICENSING AND PERMITTING APPLICABLE TO INDUSTRIES

Under States Responsibility

- EIA/EIR: Brazilian legal requirement for any new factory or other activities that may impact the environment
- Preliminary Permit (issued after project approval)
- Installation Permit (issued before construction)
- Operating Permit (may include air emissions limits / effluents monitoring / waste handling and disposal, and other requirements)
- Environmental permits, if processes are changed, facility is expanded or new facility is installed (equipment or building)
- Industrial Waste Destination Certificate Approval issued by the State Environmental Agency
- Surface Water/Groundwater Usage Grant (wells/effluents discharge/deactivated deep water supply wells must be sealed)
- License for Chemical Products Use requested by Federal Police Department
- Certificate of Registration issued by the Brazilian Ministry of Defense
- License from the State Secretary of Hygiene



ENVIRONMENTAL LICENSING AND PERMITTING APPLICABLE TO INDUSTRIES

Under Municipalities Responsibility

- Land Usage Municipal Permit - Industrial Zoning Classification
- Fire Department Approval - Certificate of Inspection issued by the Local Fire Department
- Installation Approval Certificate – issued by the Regional Office of the Ministry of Labor

Others (to be reviewed during Environmental Audits)

- IBAMA License – Federal Registration as a Potential Pollution Source or Environmental Resources Usage Activity
- Water & Energy Supply / Potable Water Quality / Wastewater discharges
- Material Storage and Handling /Underground & Aboveground Storage Tanks (UST's/AST's) / Chemicals Storage / Asbestos-Containing Materials (ACM's)
- Polychlorinated Biphenyls (PCB's) / Ozone-Depleting Substances
- Radioactive Materials (Federal licensing, control and inspection)
- Environmental Noise (Federal & States requirements)
- Emergency Planning and Fire Protection / Housekeeping
- Soil and Ground Water Contamination



Contaminated Areas In Brazil: Managing And Regulating

- Specific requirements for the clean-up of spills and contaminated disposal sites are not addressed in the Federal or State Regulations.
- Historically, State Environmental Agencies have the authority to require clean-up of spill and contamination and have negotiated agreements with industries regarding remediation efforts.
 - The remediation of contaminated soil and groundwater has become an issue for companies and State Agencies, because the environmental liabilities and related penalties can be imposed on both.
 - International Standards such as the Dutch Standards for soil clean-up have been used as a reference when the Agencies are negotiating soil remediation.



Contaminated Areas In Brazil: Handling And Regulations

- Existing environmental legislation refers indirectly to aspects such as preservation or pollution control.
- Federal relevant legislation:
 - 1988 Federal Constitution: establishes the right of the Brazilian people to a healthy environment and protection from unnecessary hazards generated by pollutants.
 - Law 6938/81: National Environmental Policy, defines penalties for causing environmental degradation.
 - Law 7347/85: identifies the instrument of public civil suits concerning environmental damage.
 - Law 9605/98: Environmental Crimes Law, dictates that activities which have caused any kind of pollution to the environment will be fined or have partial or total suspension of their activities.



Waste Management Option for Industrial Sector

- Brazilian industries produce an estimated quantity of 2.9 million of ton of hazardous waste/year.
- Only 22% of it –around 600 thousand ton– has adequate treatment or proper final disposal (16% industrial landfill / 1% incinerated / 5% co-processed)
- According to Brazilian Association of Waste Treatment Companies (ABETRE), the rest of the waste (2.3 million of ton) is disposed incorrectly.
- The potential market of industrial hazardous waste final disposal is estimated at around US\$ 330 million/year.
- Exporting companies have been endured market pressure to improve their operations as per the ISO 14001 standard.



Waste Management Option for Industrial Sector

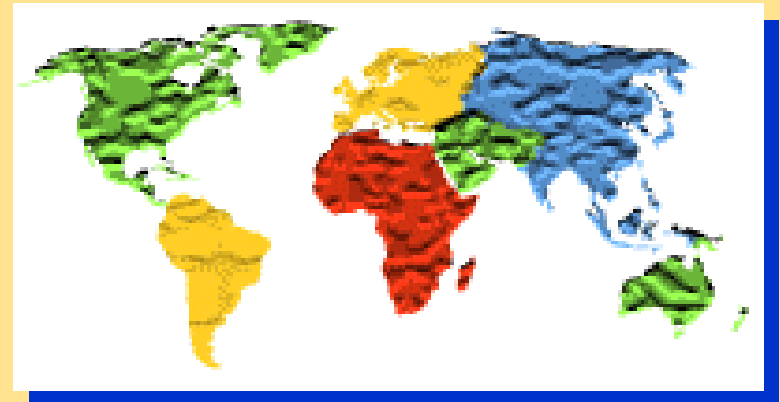
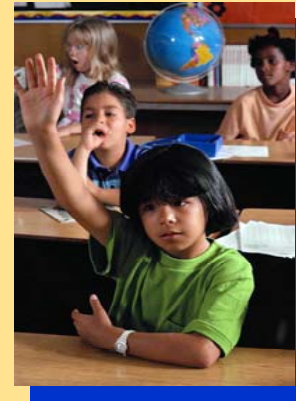
- The available options for industrial waste are:
 - the 3R's: reducing/reusing/recycling
 - industrial landfill
 - incineration and co-processing
 - blending
 - inertness
 - biological treatment

- Incineration process has been increased during the last decade:
 - reduction of toxicity and volume of solid waste
 - modern technologies have significantly reduced air emissions
 - different kinds of waste (solids, liquids and sludge).

Trends....

What's new and forthcoming?

- De-forestation in the Amazon
- Ground water and soil contamination
- Sustainable Development – 21 Agenda
- Water & energy resources





Our Changing Environment: Rondônia – Brazil

**Ref.: GEO-Global
Environment Outlook 3- UNEP**