The Business Case for

EHS FIRST™

as Applied to Alcan’s New Joint Venture Smelter in Ningxia, China

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Alcan at a Glance

Founded in 1902

Today:

- A global leader in bauxite, alumina and aluminum
- A top-ranked provider of engineered solutions and specialty/flexible packaging
- US$23.6 billion (2006)
- Dow Jones Sustainability World Index since 2003
Global Presence

- 65,000 employees
- 61 countries and regions
- EHS FIRST Policy in 11 languages
Alcan Process Map with Key Issues


Biodiversity
- Bauxite residue, PM, Haz. Energy

Energy
- Energy, So₂, GHG, PM, SPL, PFC, Haz. Energy

PAH

OPI, Product Stewardship, Mobile Equip.

VOC, OPI, Product Stewardship

Scrap/Recycling Preparation
- Aluminum and Packaging Recycling

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EHS FIRST
The Case for Why?
84% Reduction in Recordable Cases
87% Reduction in Lost Time Cases Since 2001

Recordable Case Rate - AIRS Total
Alcan Inc.
Sites Operating >= 50% or Managed in any month between 01.2005 and 04.2007
Data for Alcan Operating Periods Only

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Rapid Growth: Distinct Challenges

- **October 2000**: algroup Combination
- **April 2003**: VAW Acquisition
- **December 2003**: Pechiney Acquisition
- **January 2005**: Novelis Spin-off
- **2006**: Net operating revenues
EHS FIRST
Why Common Foundation?

- Common language to drive continual improvement
- The leadership practices to deliver excellence as well as the technical knowledge
- Leverage common processes and best practices where appropriate; invent once not (n) times
- Leverage learning across entire organization and move to best practices quickly
- Ability to move people more easily within the organization
A World of Benefits

- Reduced accidents, occupational illnesses and environmental incidents
- Greater employee health, morale and well-being
  - Reduced absenteeism
- Increased productivity and profitability
- Enhanced reputation, market share and stakeholder relationships
- Reduced liabilities and insurance premiums
- Satisfy investor criteria for EHS and improve access to capital
- Stimulate development and sharing of EHS solutions and best practices
- Contribute to our corporate governing objective of Maximizing Value
The Results Status as End of 2006

Milestones

- 2006 best ever performance in safety for all metrics and in all regions of the world
- 30M US$ compensation costs avoided through H&S incident rate reduction 2001-2005
- BG, BS, BU President & Sr. Leaders participation in serious event communications, follow up and other EHS FIRST activities
- 2003-2006 formally trained 15,000 employees in Alcan global training programs
- 20% of CI Black Belt projects are EHS FIRST projects
- Since 1990, reduced emissions of 3.5M tonnes of CO₂ (equiv)
- All Alcan sites certified ISO14001 and OHSAS 18001
Awards 2006-2007

One of Fortune Magazine’s 2006 MOST ADMIRED COMPANIES

2006 International Stevie® Award for BEST CORPORATE SOCIAL RESPONSIBILITY PROGRAM

Global 100
Most Sustainable Corporations in the World

WEC GOLD MEDAL
for INTERNATIONAL CORPORATE ACHIEVEMENT IN SUSTAINABLE DEVELOPMENT
How We Created *EHS FIRST*

Call to Action
EHS FIRST — Building on Our Foundation of EHS Capabilities

Benchmark

Company 1

Company 2

Company 2

- Establishes a common foundation and framework for managing EHS in line with values, policies and objectives
- Spells out key EHS requirements (why and what) - Make links with the how
- Prescribes requirements for integration of EHS with organizational processes
- Sets expected core competencies, behaviours, roles and responsibilities regarding EHS (focus Executive to Site Manager)
- Establishes EHS expectations, deliverables and accountability
- Serves as an educational and developmental tool

EHS FIRST — Building on Our Foundation of EHS Capabilities
What is *EHS FIRST*?
Proven Management System to Create Business Sustainability

AIMS — Alcan’s Integrated Management System four components *EHS FIRST, CI, VBM, APA*

- *EHS FIRST* Steadily improving EHS performance
- CI — Accelerating CI benefits
- VBM guiding methodology
- New people component — Alcan’s people advantage
- Integrating environmental, social and economic externalities to understand risk and develop new opportunities

Business Sustainability
Maximize value for our stakeholders
EHS FIRST — More Than a Management System
**Management**

What we do!

- Engages the mind
- Gets the right things done
- Based on “transactions”
- Produces product

**Leadership**

How we do it!

- Engages the heart
- Gets things done the right way
- Based on commitment to values
- Produces change
EHS FIRST People in Action
Advanced simulation techniques and role play used in training for Executives to shop floor
EHS FIRST Training

Advanced simulation techniques and role play used in training for Executives to shop floor

Aware, trained & committed workforce

EHS integrated into day-to-day life
Facilitates and accelerates integration during M&As
- Powerful unifying force
- Rallies employees around shared EHS values, objectives and goals

Apply same high standards everywhere

Learn from each other and build respect

Pechiney success story in EHS
The Case

Yang Xiaoping was a wagon pusher working for a contractor at the Alcan smelting complex in Ningxia, China. Before the creation of the joint venture, environment, health and safety (EHS) practices at the facility were poor and record-keeping was virtually non-existent. Alcan’s EHS FIRST system was implemented with the initiation of the joint venture: important changes in work practices and improvements in health, safety and environmental indicators followed soon after. However, on January 12, 2006, Mr. Xiaoping suffered a fatal injury when he was crushed between two loaded wagons being pushed by hand into the combined pedestrian and vehicular entrance of the complex.
Case Objectives

- Change management: systematic process
- The challenge of international joint ventures: ethnocentrism, geocentricism
  - Contractor management
  - Cost and benefits of managing stakeholders’ expectations
- Linkage between EHS and business performance: EHS FIRST in a complex internal and external environment
- Approach to addressing both short term business priorities and the longer term goals of EHS FIRST
Alcan Business Environment

- Business strategy: “Maximizing Value”
- Long term decline in the real price of aluminium
- Pressure to improve return on investment
- Competition for other materials such as plastics and steel
- Changing demand of global customers
- China: aluminum companies adding smelting capacity: could lead to drop in aluminum price
Alcan Ningxia Joint Venture

- Alcan Ningxia joint venture: inception 2004
- Investment of $150 million for 50% participation in an existing pre-bake smelter
- Strategic business move to enhance Alcan’s position in the world’s fastest growing economy
Ningxia Smelter
1,300 employees. Young workforce.

At inception, low efficiency (as measured by aluminum produced/electricity consumed)

Typical jobs in the smelter:
- Pot room attendant
  - Pot tending
  - Pot lining
  - Crucible transporters
- Crane and vehicle drivers
- Anode operator
- Casting operators
- Electrical technician
- Mechanical technician
- Pipe fitter
Ningxia Work Organizational Chart

Chief Executive Officer
Alexandre Gomes

CEO Assistant
Amanda Sun

Deputy CEO
Shengyu He

Logistic Center Manager:
Yanwen Li

CFO
Ian Briggs

Finance Deputy CFO
Zhang Nan

IT Manager
Shuling Li

CI Manager
Xuewei Liu

EHS Manager
Liu Liping

Environment Supervisor
Xiaping Li

Health Supervisor
Tian Miao

Safety Supervisor
Guy Meng

CTO
Claude Tousignant

Anode Manager
Weiguowu

Reduction Manager
Qinghua Zhou

Auxiliary/Utilities Manager
Hongbing Mu

Engineering Manager
Li Guochang

Commercial Director
Foster Lee

Sales and Marketing Manager
Guangdong Pan

Procurement Manager
Dianlin Chen

Imp. Exp. & RM Procurement Manager
George Zhang

HR Director
Morris Mu

HR Manager
Haibin Liu

Administration Supervisor
Winnie Wang
Environmental aspects related to smelting:

- Energy use and GHG emissions
- Air emissions
  - PAH
  - SO₂
  - Fluorides
- Water use (in an arid zone)
- Wastewater disposal
- Waste
Health issues related to smelting:

- Respiratory exposures to PAH, SO\textsubscript{2} and hydro-fluoric acid
- Heat stress
- Noise from pneumatic pot operations, and anode production
- Asbestos exposure
- Skin exposure to PAH
- Ergonomics of difficult postures, heavy lifting
Ningxia — Safety Issues

Safety issues related to smelting:

- Mobile equipment and pedestrian safety
- Falls from heights
- Confined space
- Burns, explosions
- Equipment failure
Joint Venture Leadership

Leadership effectiveness — Ningxia plant manager

Global leadership:
- Global mindset
- Tolerate high levels of ambiguity
- Cultural adaptability: emotional connection to people from different cultures

Transformational leadership:
- Provided employees with a new vision that instilled true commitment

Reference: Organizational Behaviour, Pearson, 322-323
Leadership, *EHS FIRST* and Staffing in Ningxia

- **Alcan: Learning Organisation**
- **EHS FIRST**: Geocentric
  - “To be a recognized leader of environment, health and safety excellence in everything we do and everywhere we operate”.
  - Best practices from Alcan, ISO 14001, OHSAS
  - Based on: “Plan – Do – Check – Act” methodology
- **Leadership**: Ethnocentric
- **Staffing**: Polycentric

*Dilemma: transferability of best practices?*
Dilemma: transferability of best practices?

- *EHS FIRST* as a driver of integration
- Assumption of universality
- Cultural differences: Confucian dynamism
- Countries differ in their readiness to adapt or adopt foreign model or to manifest NIH syndrome

Reference: Managing Across Cultures 2003 109-114
Joint Venture as an EHS Challenge

- No EHS culture/values before joint venture
- Lack of environment management and monitoring system
- Lack of health management system: No information on past injuries
- Lack of basic personal protection equipment:
  - Safety glasses and proper respiratory protection
  - Lack of plant air conditioning or cool water in the workshop
Alcan Joint Venture

Benefits of joint venture

- Global reputation, brand image
- Leader in corporate citizenship
- Environmental and social sustainability
- Quality
- Decrease injuries
- Developing employee’s capabilities
- Increasing efficiency
Ningxia Joint Venture

Issues to address going into the joint venture

- Chinese culture
- Language: high vs. low context culture
- Particularist vs. universalist
- Employees level of skills
- Higher tolerance to risk
- Joint venture partners’ values are profitability and low cost
- Managing contractors
- Line managers considered EHS a “safety department job”

Reference: Managing across cultures, 2003, 109-114

Dilemma: How can Alcan succeed in installing an EHS culture as part of a joint venture in Ningxia?
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Reference: The New Managing Human Resources, McGill University, 2004
Ningxia Joint Venture

**Dilemma: How can Alcan succeed in installing an EHS culture as part of a joint venture in Ningxia?**

- Can be incremental, radical, planned
- Driving and resisting forces of change
- Systematic approach to change
- Employee involvement
Some actions:

- Training 59,356 person-hours of EHS in 2004 and 72,394 hours in 2005 or 4% of training time per employee.
- Improvement of furnace operations: elimination of frequent fires
- Distribution of PPE and training in its use
- Working on a Behavioural Accident Prevention Process (BAPP)
Competing priorities:

- Productivity, quality, operating costs, profitability and EHS needs, lack of strong technical employees since Ningxia is in a remote location

*Dilemma: given these competing priorities, to what degree can EHS be FIRST?*
How can EHS be given competing business priorities?

- Having a vision
- Line management fonction
- *EHS FIRST* in strategic planning and decision making
- EHS is a leadership competency: integrated into Alcan’s Performance and Career Management
- Each employee given specific EHS objectives
- Compensation and recognition based on EHS performance
How can EHS be given competing priorities?

- The belief that quality, productivity, profitability and EHS excellence are mutually supportive objectives, and align behaviours around that belief.
Managing stakeholders’ expectations:
- Employees, shareholders, customers
- Public interests’ groups, union, government
- Contractors, Maison Alcan (due diligence requirement), communities

Continuous improvement in health and safety not totally in management’s hands

Dilemma: cost and benefits of managing stakeholders’ expectations?
Dilemma: cost and benefits of managing stakeholders’ expectations?

- Reduction in worker’s compensation costs
- Reduction in employee’s grievance
- Reduction of days lost
- Reduction of insurance premium
- Saving in productivity due to reduction of lost time incident
- Reduction of environmental footprint with improvement of resources use and reduction of emissions
Contractors Workers

**Contractors workers: 30% at the time of joint venture**

- Lack of training, low educational level, local culture of giving “hard manual work” to contractors, high turnover rate, particularly for special projects such as construction
- Above factors increased risk of accidents to themselves and others
Contractors Workers

Contractors workers:

- Contractor employees are not aware of plant routines, safety rules or emergency procedures
- Contract employees often lack skills and experience due to frequent job rotation and turnover
The Contractor Dilemma

- Rates of severe workplace injuries are more common in contractors than regular employees at aluminum smelters. However, overall injury rates appear similar (could this be due to reporting bias?)

- Using contractor employees provides flexibility and lower costs

Suggest an optimal contacting policy in a smelter where EHS is FIRST

*Reference: The aluminum industry in Brazil, M.Arruda
The Contractor Dilemma

Suggest an optimal contacting policy in a smelter where EHS is FIRST:

- Contractor selection should be based on an evaluation of their past EHS performance and capabilities
- EHS rules and expectations must be communicated to the contractor
- Look at each contractor’s EHS performance: should be monitored and feedback reported to the contractor
- Employee training
- Requirement to conduct hazard identification and risk assessment prior to beginning work
Ningxia Actions and Results

- Call to action: inciting employees to report incidents
- Measurement of EHS FIRST performance with EHS metrics
  - Lagging: lost-time injury, worker’s compensation costs
  - Leading indicators:
    • Number of trained observers
    • Numbers of safety observations carried out per week/month
    • Percentage of safe behaviour, according to standard, for each observations
Ningxia Actions and Results

- Obtained ISO 14001 and OHSAS 18001 certification within 11 months
- Physical changes made to the plant:
  - Fencing the facility
  - Redesigning entrances and corridors to keep pedestrians away from moving equipment
- Started measuring gaseous fluoride emissions on the smelter roof with Alcan’s standards
- GHG reduced to 66% from pre-JV levels
Ningxia EHS FIRST Policy
Ningxia Actions and Results

2006 Highlights
- Achieved 2,2 million hours without recordable accident in Feb 07, first ever in APMG history
- 3,2 million hours without lost time accident (April 07)
- Strong employee-involvement BAPP initiative implementation started