SURALCO L.L.C.

Environment & Technology

Topics

- Alcoa Vision
- EHS Strategy
- Evolution EHS Programs
- EHS Principle
- ABS & EHS
- Management Systems
- Environmental Achievements
  - Well Water Consumption
  - Mercury
  - Landfill Waste
  - CO2 Neutralization
  - Alumina Dust
  - Developments
- ISO 14001 Certification
- Target Condition
- Strategic Framework for Sustainability

Vision

Alcoa aspires to be the best company in the world.

EHS Strategy

Sustainable Development is the foundation for Alcoa's Environmental Strategy

Sustainable Development is the basis for the Alcoa Environmental Strategy . . .

Respect for our neighbors and respect for the generations that will follow

Elimination of All Waste

Products Designed for the Environment

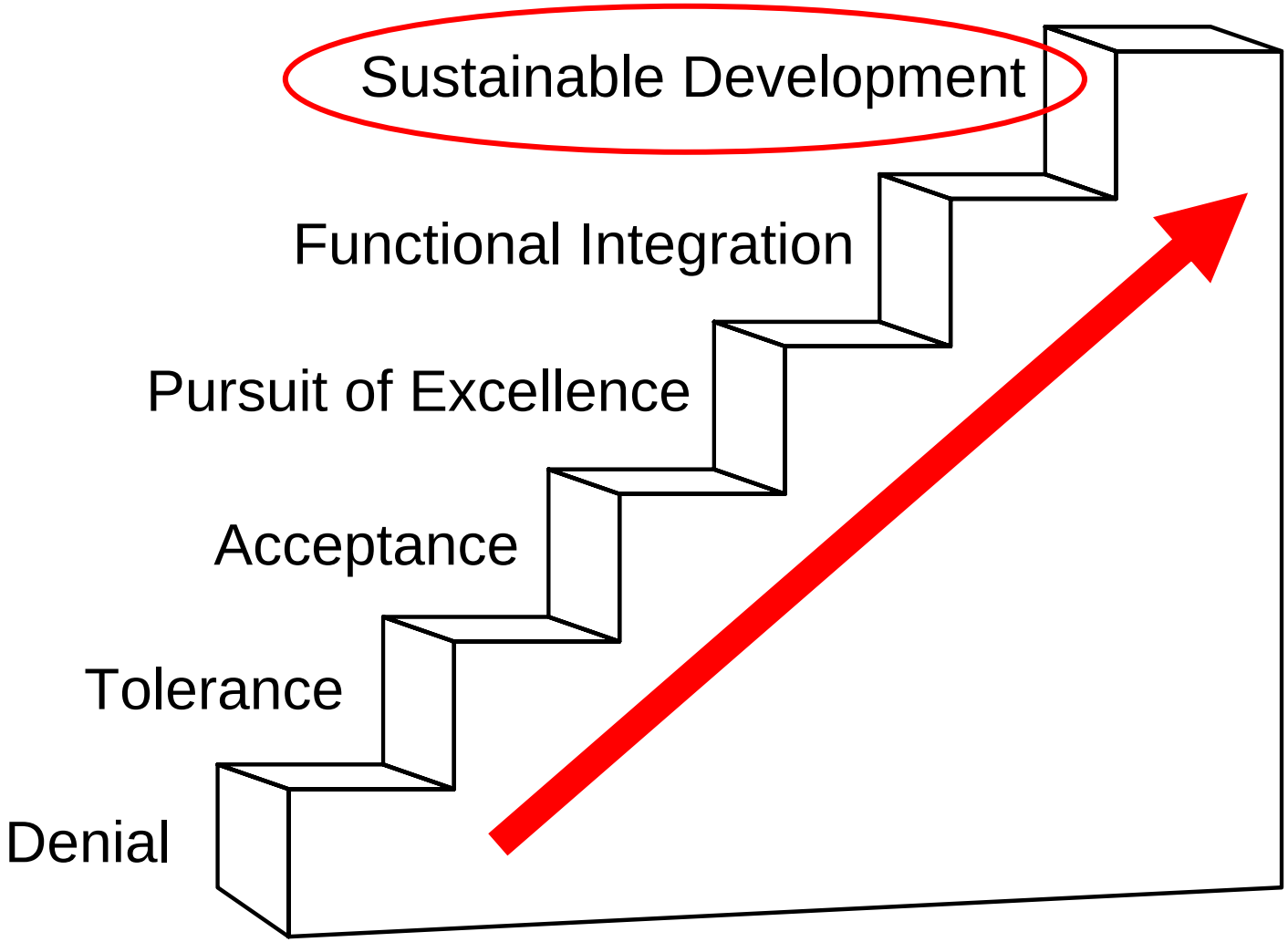
Integration of Environment with Manufacturing

Incident-Free Workplace

Reputation

Environment as a Core Value

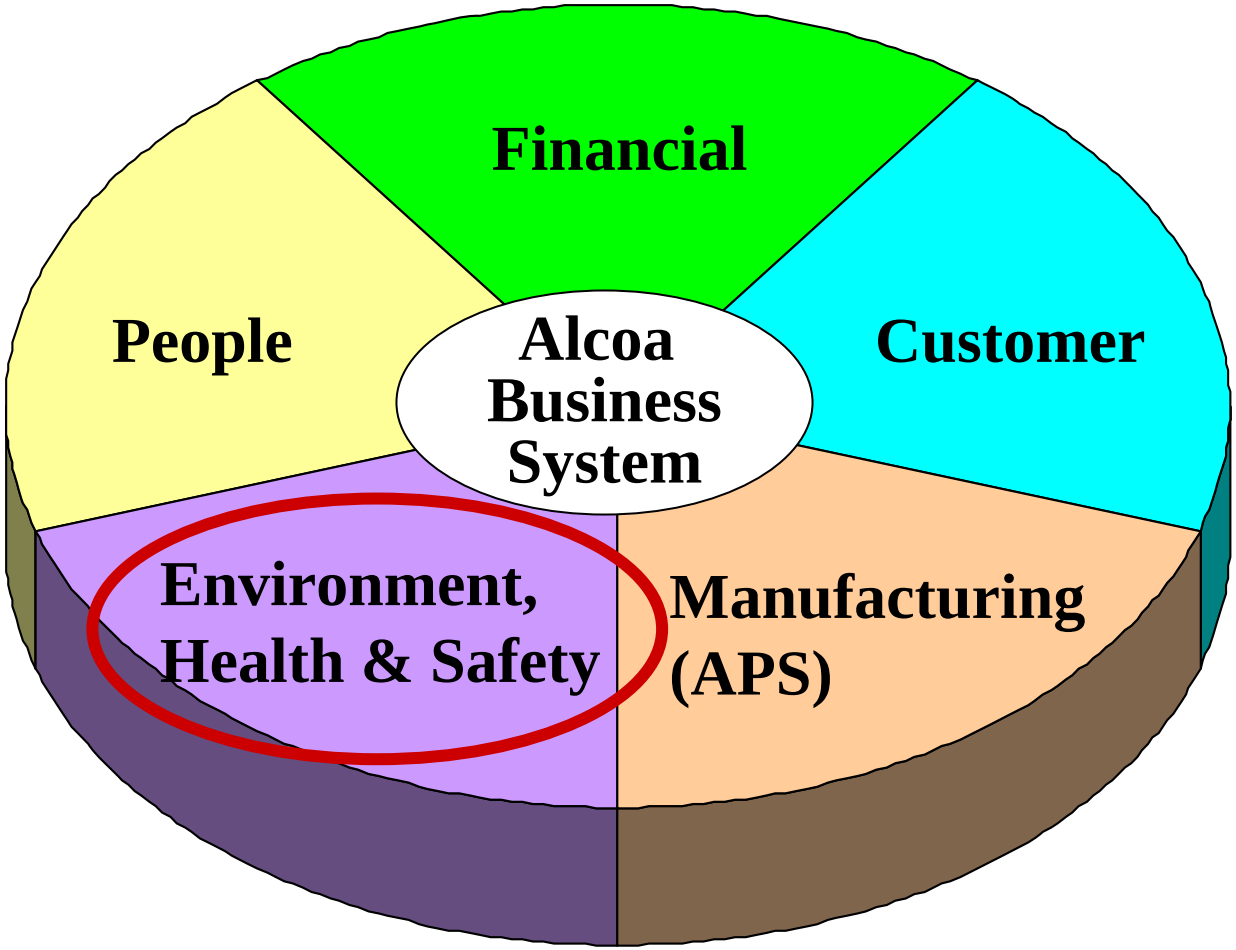
Evolution of EHS Programs



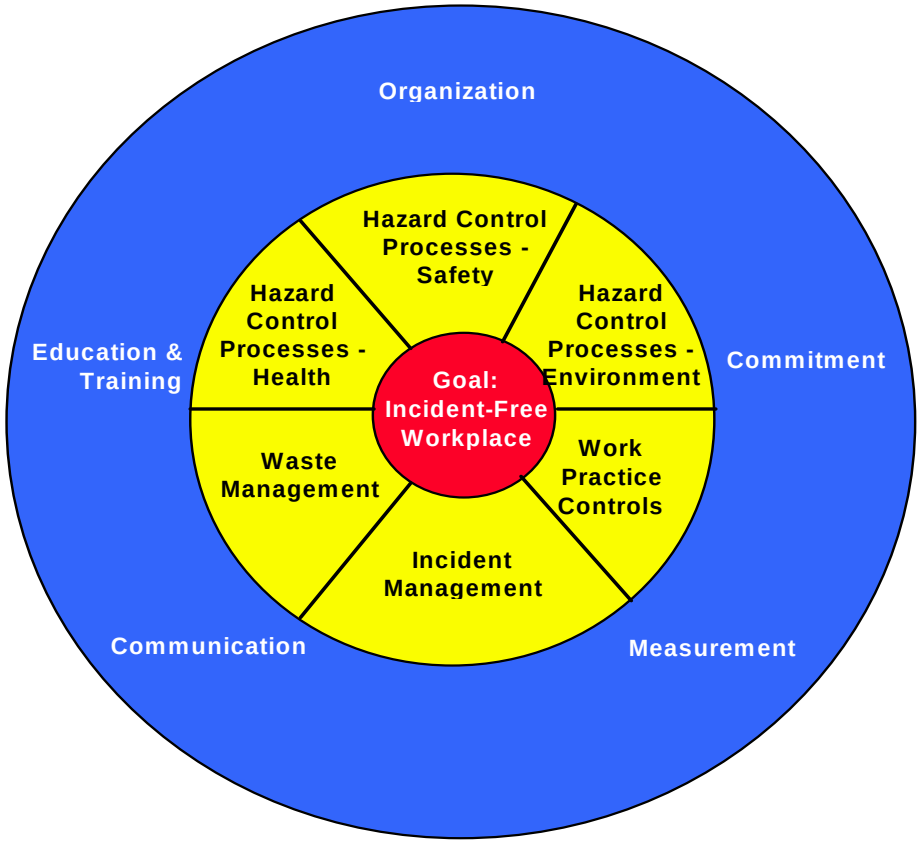
EHS Principle

- We support pollution prevention and sustainable development, by incorporating social responsibility, economic success and environmental excellence into our decision-making process.

Alcoa Business System



EHS Management System

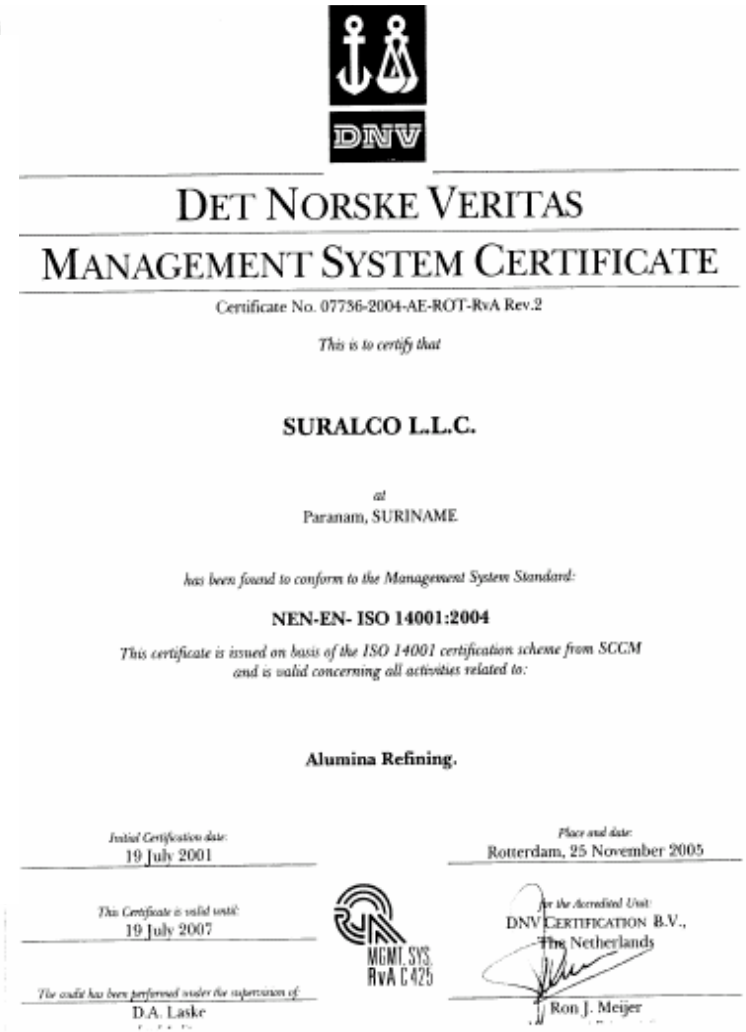


Environmental Achievements

Other Environmental Achievements

- Air emissions from bauxite drying eliminated in 1998 Q1. Wet bauxite grinding system installed.
- Implemented Residue Dry Stacking in 1998. Impacts environmental foot print
- Installation of a system to capture CO_2 out of lime kiln stack gases and use this gas stream to treat alkaline wastewater
- Implementation of an environmental monitoring system
- Solid waste reduction
- Improved discharge water quality
- Overall improvement of air emissions
- ISO 14001 Certification

ISO 14001 Certificate



DET NORSKE VERITAS

MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 07736-2004-AE-ROT-RvA Rev.2

This is to certify that

SURALCO L.L.C.

at
Paranam, SURINAME

has been found to conform to the Management System Standard:

NEN-EN- ISO 14001:2004

This certificate is issued on basis of the ISO 14001 certification scheme from SCCM and is valid concerning all activities related to:

Alumina Refining.

Initial Certification date:
19 July 2001

This Certificate is valid until:
19 July 2007

The audit has been performed under the supervision of:
D.A. Laske

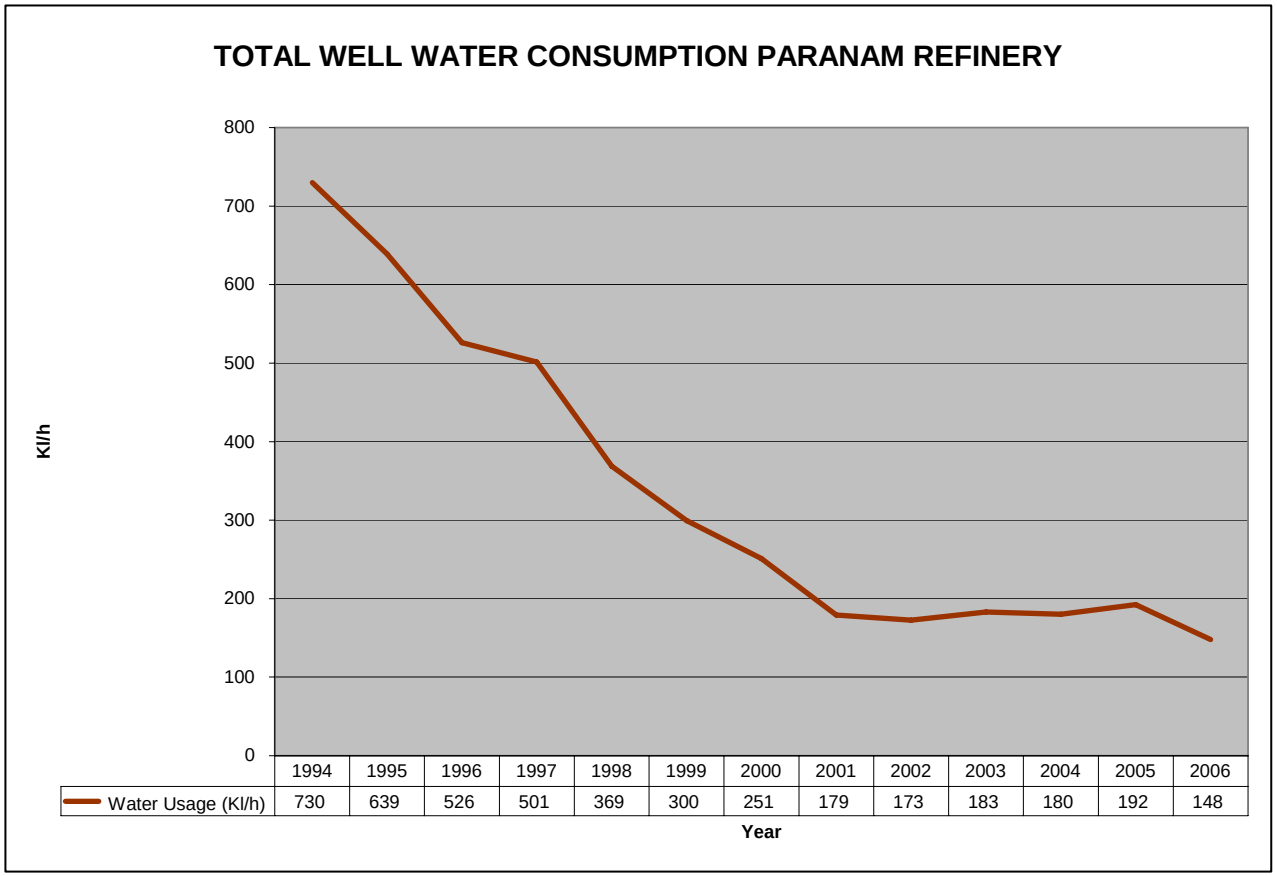
MGMT. SYS.
RvA C 425

Place and date:
Rotterdam, 25 November 2005

for the Accredited Unit:
DNV CERTIFICATION B.V.,
The Netherlands

Ron J. Meijer

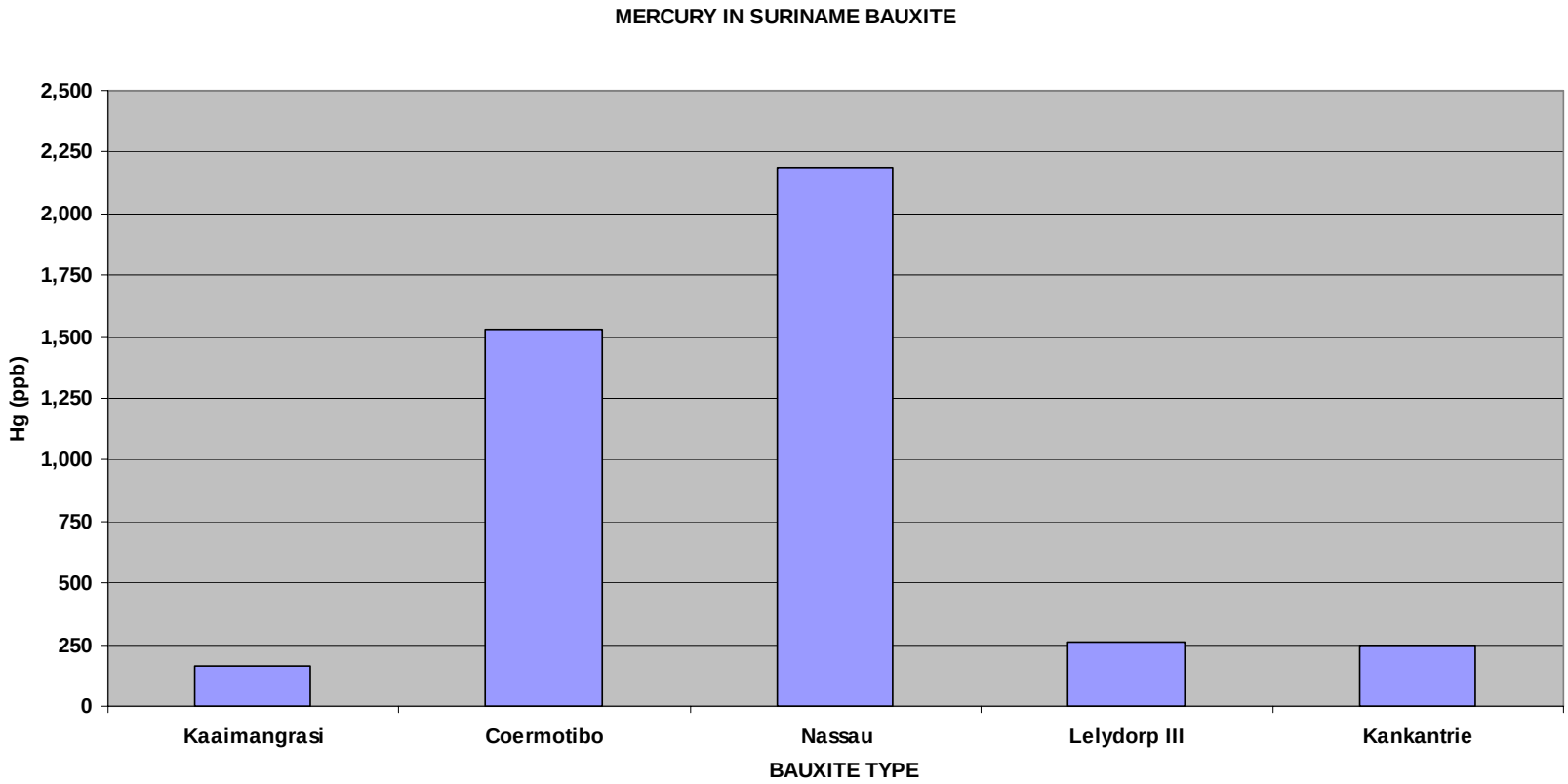
Total Well Water Consumption



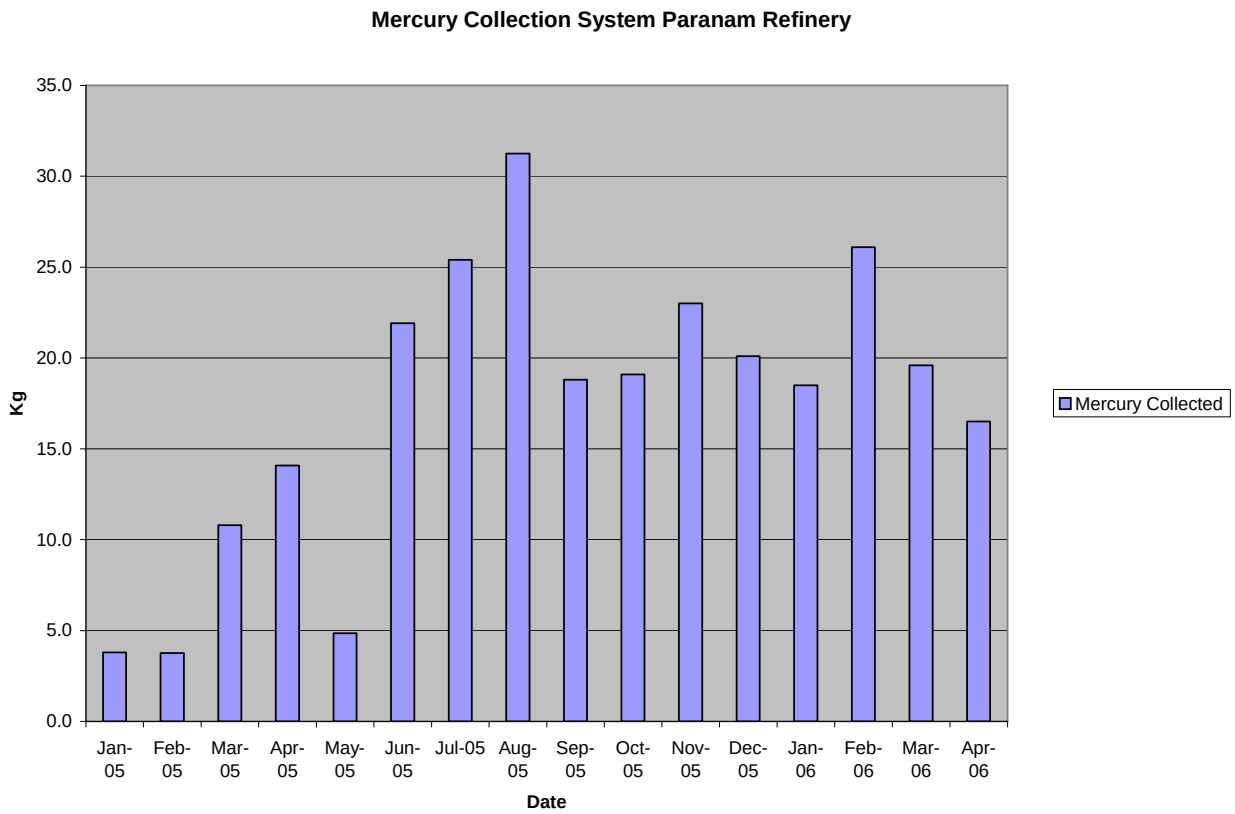
Mercury Collection

- 99.98% of Mercury input to the refinery comes from bauxite
- Current Output:
  - 70% with Residue
  - 7% with Waste Water (solids)
  - 15% collected (was 9% in 2003)
  - 8% in emissions (was 16% in 2003)
- Surveys conducted in 1999, 2002, 2005. Plans for follow up survey in 2006

Mercury in Bauxite



Mercury Collection



Mercury Collection System

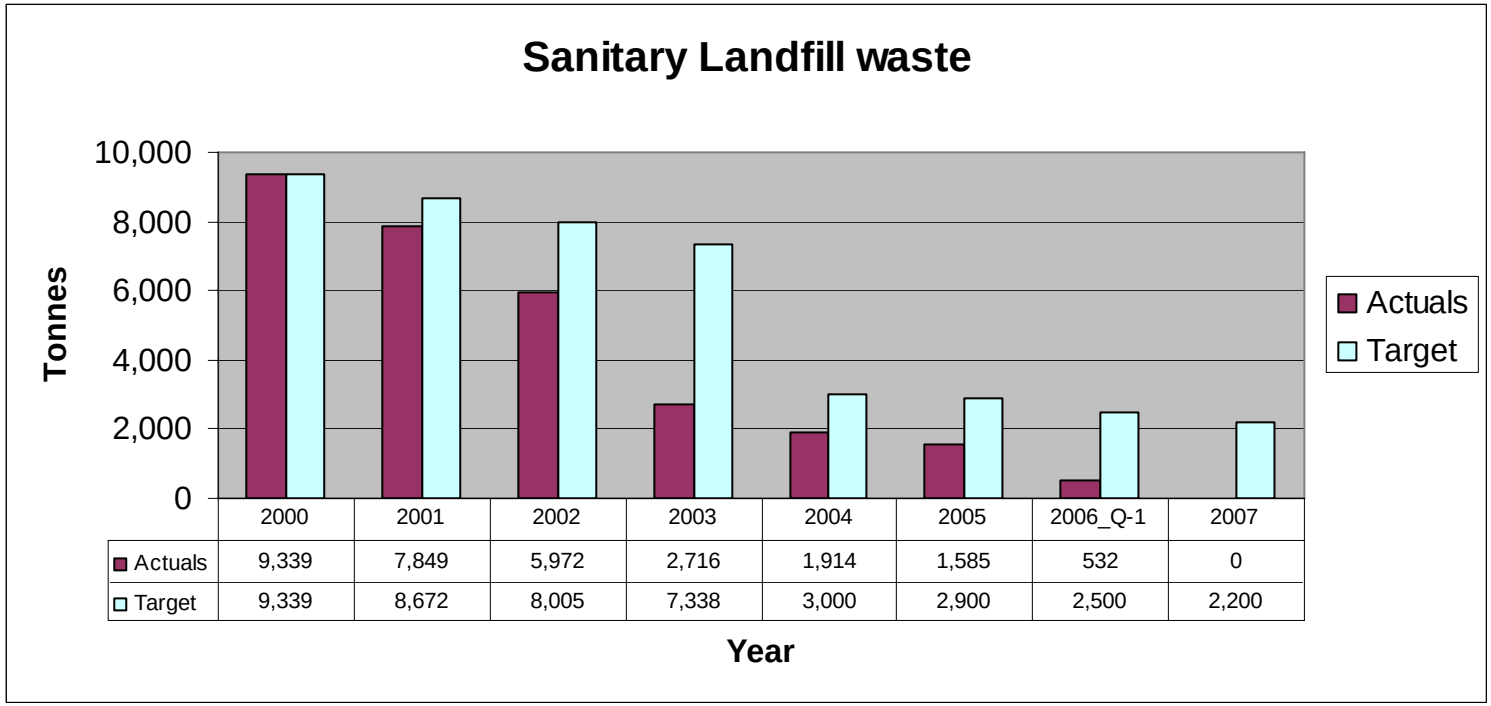
Mercury Separator

Mercury Analyzer

Landfill Waste

- BU commitment: 50% reduction of landfill waste (based on 2000)
- Suralco internal target: reduction with ~ 80% in 2007, to be achieved by:
  - Source Reduction:
    - Double-sided printing, etc.
    - Use of portafeed containers and returnable drums have contributed in a significant waste reduction.
  - Recycling
    - Lead - acid batteries
    - Tires
    - drums and containers
    - scrap wood
    - scrap concrete, etc.
    - Computer components
  - Waste separation

Sanitary Landfill Paranam Refinery



	2000	2001	2002	2003	2004	2005	2006_Q-1	2007
Actuals	9,339	7,849	5,972	2,716	1,914	1,585	532	0
Target	9,339	8,672	8,005	7,338	3,000	2,900	2,500	2,200

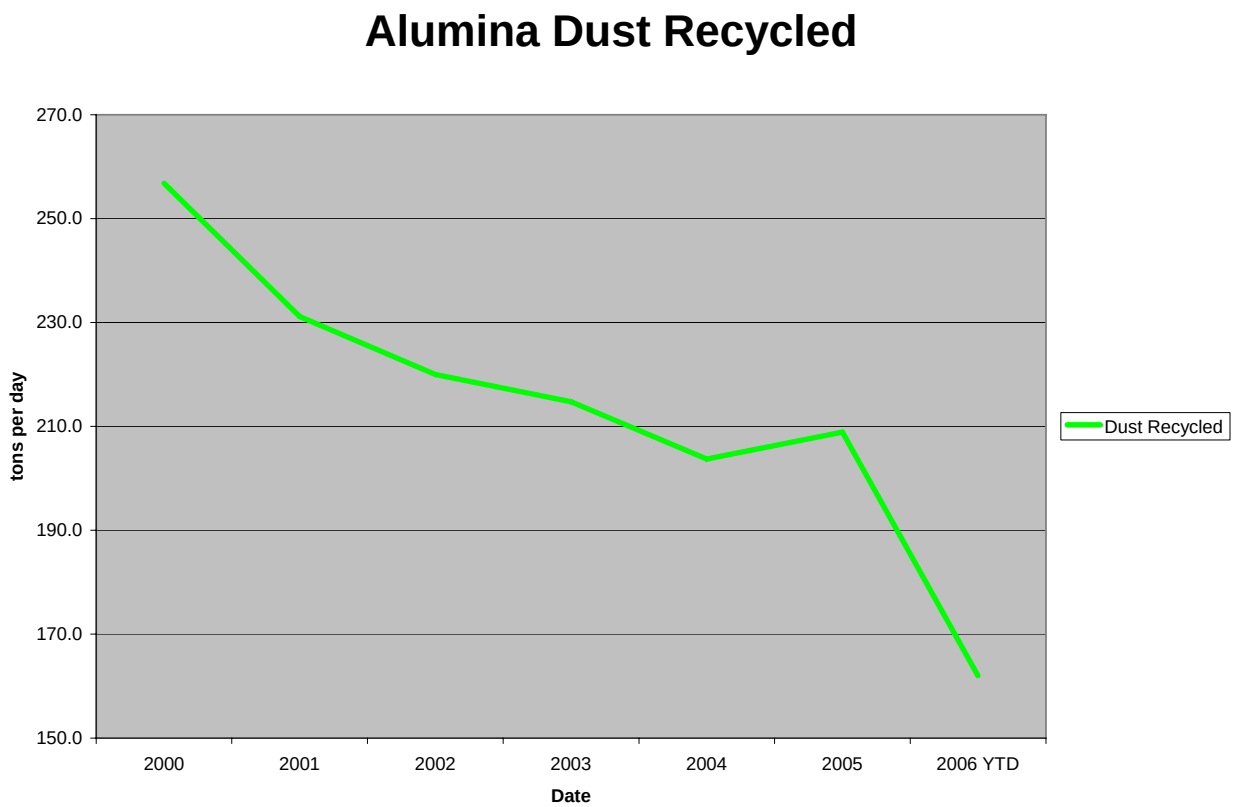
CO_2 Neutralization

- Currently, 7 – 9% of CO2 emissions are converted due to reaction w/ alkaline waste water.
- Potential to double, w/ increased capacity of CO2 neutralization plant
- Upgrade scheduled for completion by Feb. 2007
  - Eliminate the use of Acid for neutralization

Alumina Dust Recycle

- ESP Dust Recycle reduced from 260 t/d in 2000 to ~ 170 t/d April 2006.
  - Improved Precipitation Control resulting in tougher product
  - Calciner modifications resulting in less attrition, hence less breakage

Alumina Dust Recycle



Towards Sustainable Development

- Incorporate Strategic Framework goals into Operating Plan.
  - Technology Development
    - Use of CO2 and/or brines to neutralize bauxite residue; will help prepare the residue for long-term disposal or re-use
    - Sodium Oxalate Landfarming (bio-remediation)
    - Power Generation
      - Decrease reliance on fossil fuels by increasing use of natural, renewable energy sources
      - Use of natural gas
    - Application of High Rate Thickening Technology

Developments

- High Rate Thickeners
  - Will reduce future footprint refinery
    - Higher solids to Residue Dry Stack Area
    - Improved slope > more material can be stacked on same area
  - Positive impact on Refinery Cost: higher u'flow solids > lower soluble soda losses

Towards Sustainable Development

- Waste Minimization
  - Zero waste disposed in landfills by 2015
  - Short-term goal of a 50% reduction in landfilled waste by 2007 from a base year of 2000.
- Residue Re-Use
  - Identify opportunities to apply bauxite residue as source material
- Compliance
  - Operate in compliance with all applicable environmental laws and regulations

Strategic Framework for Sustainability

- Economic benefit
- Respect and protect people: employees
- Respect and protect people: communities
- Safe and sustainable products
- Meet the needs of current and future generations through efficient resource use
- Accountability and governance

Target Condition in 2020

- **Proud, yes . . . Content, no**
- **We have achieved much, but challenge is to continually improve systematically**