THE CASE OF BRAZIL

by

Celso Foelkel

RIOCELL S.A.

MAN ON EARTH

SINCE THE EARLY DAYS ...

MOTIVATION

IS A FUNCTION OF:

PENALTIES

INCENTIVES

EXAMPLES

1. *KIDS' EDUCATION*

2. *THE TEN COMMANDMENTS (WHEN MOSES WAS TOLD THE LORD´S RESTRICTIONS)*

ONE OF THE COMMANDMENTS

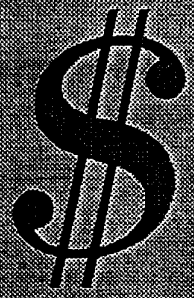
"YOU SHALL NEVER DESIRE NEIGHBOUR´S SPOUSE (ORIGINALLY, WIFE)"

PENALTY ⟶ *HELL*

INCENTIVE ⟶ *HEAVEN*

THE OTHER INCENTIVE IS

MONEY



AND GOVERNMENTS DISCOVERED VERY SOON THE LINK-

MONEY + RESTRICTIONS

MANAGEMENT BY TAXATION

ENVIRONMENTAL LEGISLATION IN MOST COUNTRIES IS RESTRICTIVE,

BASED ON — *RESTRICTIONS*, *PENALTIES*

YOU ARE NOT ALLOWED TO ...
YOU PAY FINES FOR ...
YOU ARE FORBIDDEN TO ...
YOU GO TO THE JAIL IF ...

AND ...

RESTRICTIONS ARE BECOMING MORE

RESTRICTED

IN MANY CASES WITHOUT TECHNICAL AND SCIENTIFIC BASES

WHY NOT TO USE ?

⇒ INCENTIVES

⇒ JOINT DEVELOPMENT PROGRAMS

⇒ NEGOTIATED AND AGREED CONTINUOUS IMPROVEMENT PROGRAMS WITH COMMON TARGETS

MANAGEMENT BY

RESTRICTIONS

IN OPPOSITION TO

MANAGEMENT BY INCENTIVES
MANAGEMENT BY TARGETS
MANAGEMENT BY POLICIES
MANAGEMENT BY CONSTRUCTIVE AUDITS

BRAZILIAN ENVIRONMENT NETWORK

1. *GOVERNMENT SYSTEM*

- AT THE LEVEL OF FEDERAL GOVERNMENT:

→ *ENVIRONMENT MINISTRY*

→ *NATIONAL ENVIRONMENTAL COUNCIL - CONAMA (NATIONAL POLICIES; GENERATION OF STANDARDS AND BRAZILIAN WIDE OVERALL RESTRICTIONS)*

BRAZILIAN ENVIRONMENT NETWORK

- AT THE LEVEL OF STATES

LOCAL STATE AGENCIES TO ANALYSE ENVIRONMENTAL IMPACTS AND TO PROVIDE PERMITS WITH RESTRICTIONS

POLICY IS CASE BY CASE

PERMITS ARE VALID FOR ONE, TWO OR MAXIMUM THREE YEARS

BRAZILIAN ENVIRONMENT NETWORK

2. *LEGISLATION*

CONGRESS AND HOUSE OF REPRESENTATIVES ARE ALWAYS FEEDING WITH NEW ENVIRO-LAWS

"IT'S CHARMING TO PROPOSE ECO-LAWS "

THEY USUALLY COVER FORESTRY, AIR, STREAM AND POLICIES.
THEY ARE MORE CONCEPTUAL AND ALSO PENALIZE INSTEAD OF STIMULATING

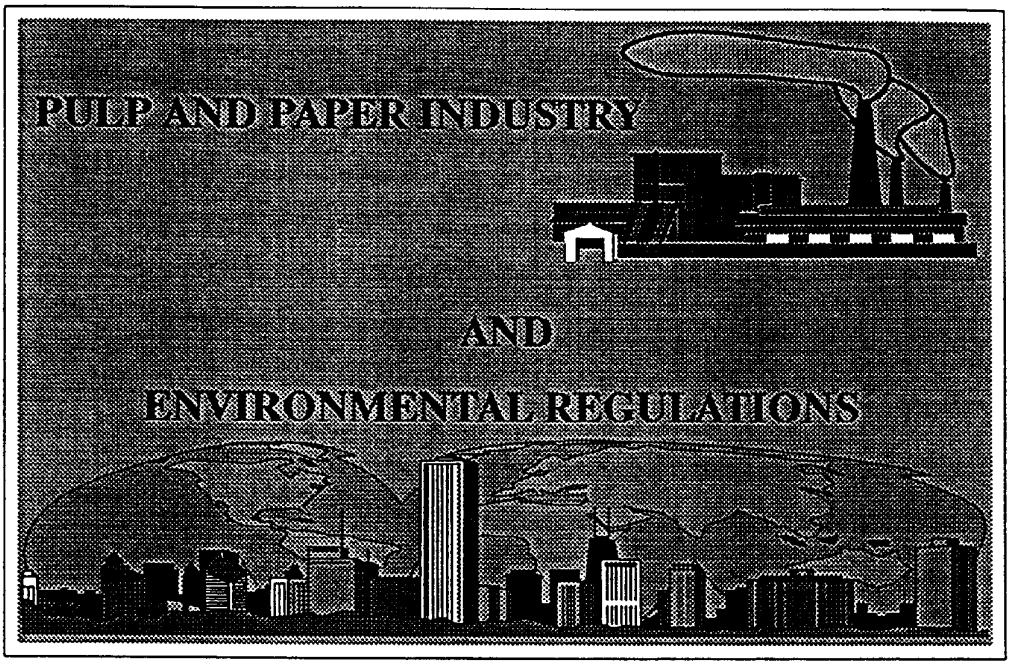
BRAZILIAN ENVIRONMENT NETWORK

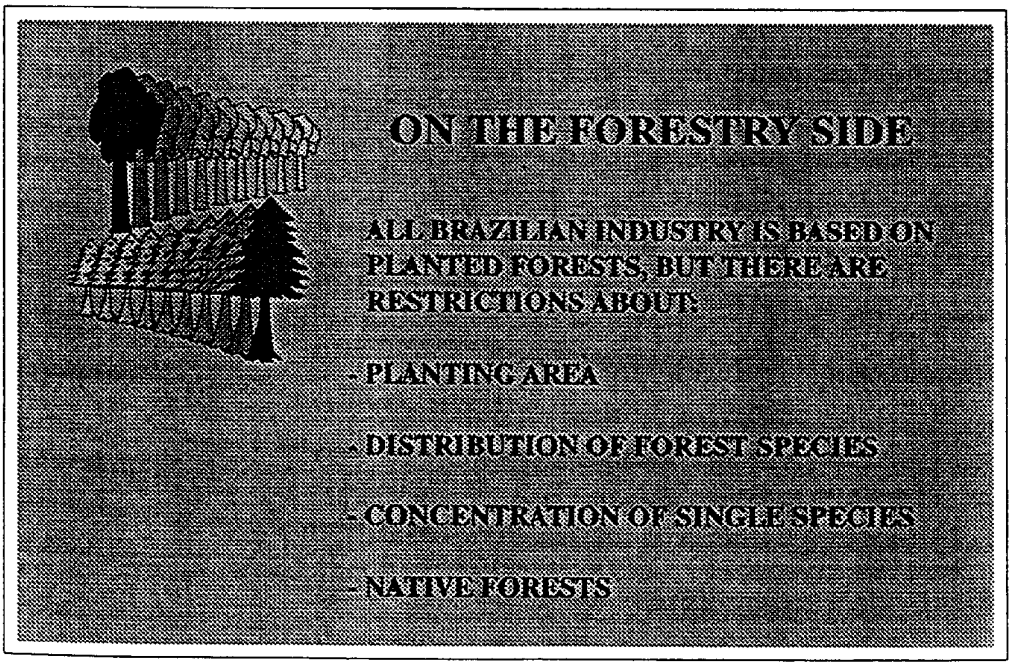
3. *JUSTICE*

- *PUBLIC HEARINGS*

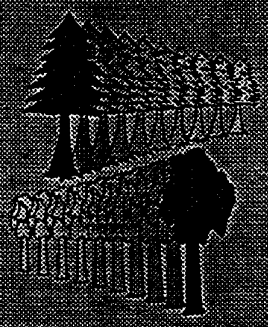
- *THE POWER OF PUBLIC ATTORNEYS*

- *PROSECUTIONS ARE ALWAYS THREATS*


PULP AND PAPER INDUSTRY
AND
ENVIRONMENTAL REGULATIONS

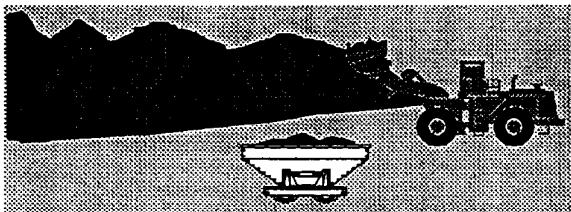

ON THE FORESTRY SIDE
ALL BRAZILIAN INDUSTRY IS BASED ON PLANTED FORESTS, BUT THERE ARE RESTRICTIONS ABOUT:
- PLANTING AREA
- DISTRIBUTION OF FOREST SPECIES
- CONCENTRATION OF SINGLE SPECIES
- NATIVE FORESTS

ON THE FORESTRY SIDE



COMPANIES ARE OVERCOMING THIS BY:

- SUSTAINABLE DEVELOPMENT MANAGEMENT
- FORESTRY POLICIES
- FORESTRY CERTIFICATION
- INTENSE RESEARCH



ON THE SOLID RESIDUES SIDE

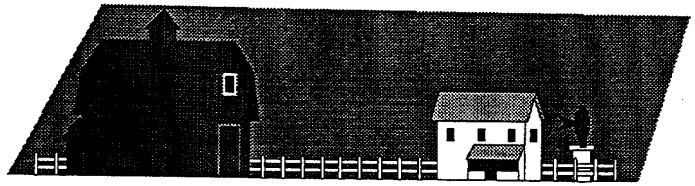
- LAND-FILLING (FOREVER RESPONSABILITY)
- DISPOSAL IN THE FORESTS (MOST COMMON APPROACH)
- CONVERSION TO BY-PRODUCTS:
  - GOVERNMENT AGENCIES ARE BEING COOPERATIVE IN THIS PARTICULAR SUBJECT
  - RECYCLING IS THE NATURAL SOLUTION
  - DUMPING IS LIKE THROWING GARBAGE UNDERNEATH THE RUG

DIOXINS IN SLUDGE FOR AGRICULTURAL USES

FOLLOWING GERMAN RECOMMENDATION:

- **LOWER THAN 20 ppt TOTAL TOXIC EQUIVALENT (ALL DIOXINS AND FURANS)**

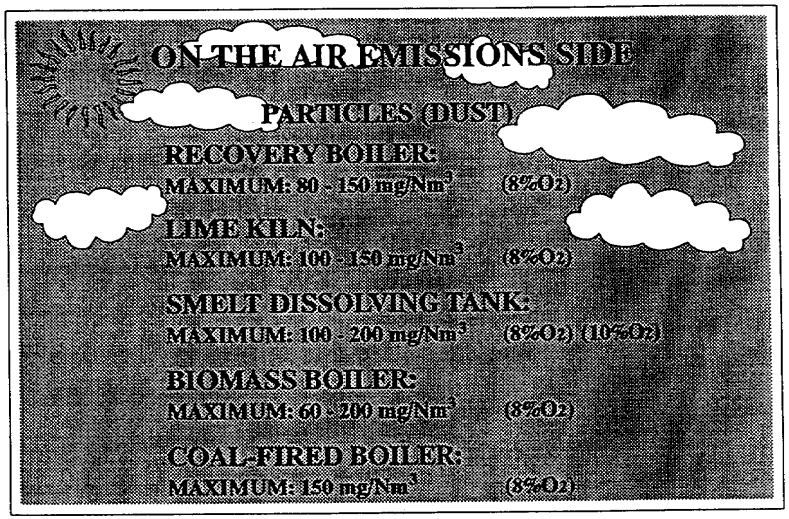
- **2,3,7,8 TCDD NOT DETECTED PREFERABLY**

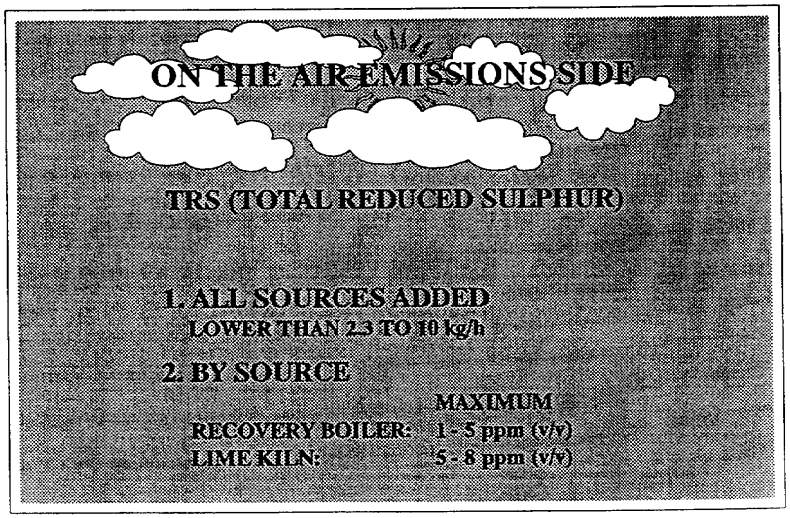


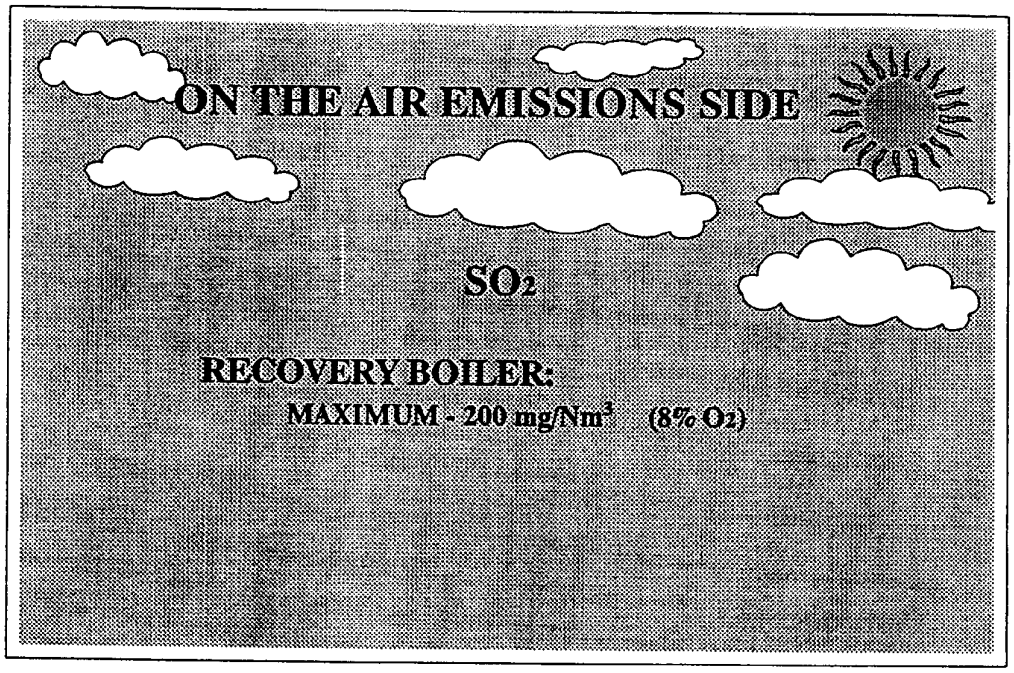
"BE RESPONSIBLE AND SOME WHAT CONSERVATIVE, BUT NOT SCARED ABOUT DOING (OR NOT DOING) THINGS TO IMPROVE THE FUTURE "

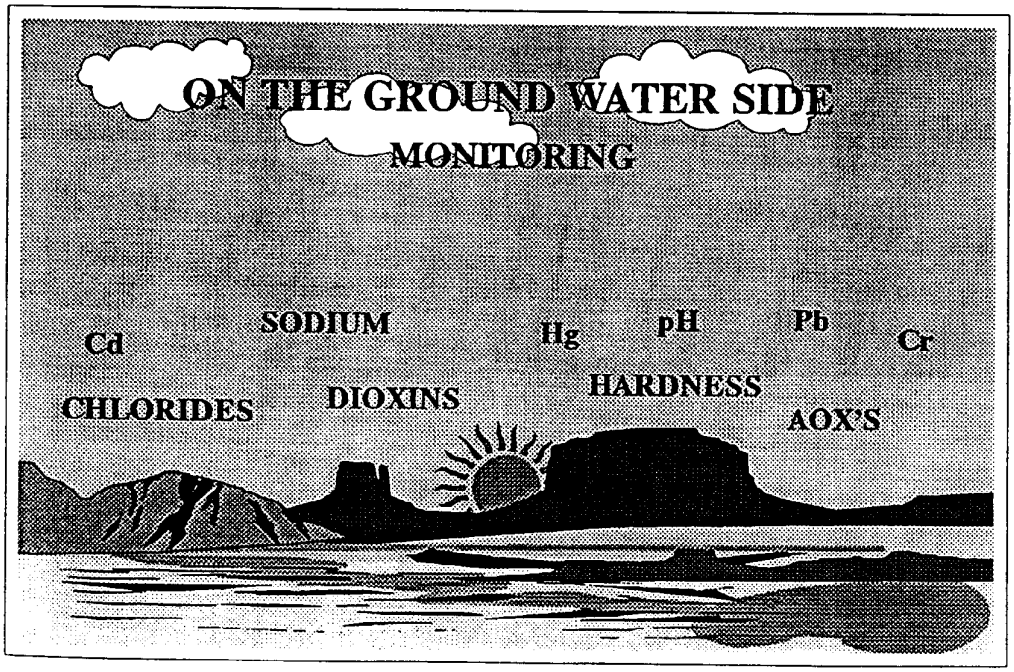
IT'S IMPOSSIBLE TO RESTRICT ALL.

DOES IT MEAN THAT WHAT IS NOT RESTRICTED IS ALLOWED ? ! ? !


ON THE AIR EMISSIONS SIDE
PARTICLES (DUST)
RECOVERY BOILER:
MAXIMUM: 80 - 150 mg/Nm3 (8%O2)
LIME KILN:
MAXIMUM: 100 - 150 mg/Nm3 (8%O2)
SMELT DISSOLVING TANK:
MAXIMUM: 100 - 200 mg/Nm3 (8%O2) (10%O2)
BIOMASS BOILER:
MAXIMUM: 60 - 200 mg/Nm3 (8%O2)
COAL-FIRED BOILER:
MAXIMUM: 150 mg/Nm3 (8%O2)


ON THE AIR EMISSIONS SIDE
TRS (TOTAL REDUCED SULPHUR)
1. ALL SOURCES ADDED
LOWER THAN 2.3 TO 10 kg/h
2. BY SOURCE
MAXIMUM
RECOVERY BOILER: 1 - 5 ppm (v/v)
LIME KILN: 5 - 8 ppm (v/v)


ON THE AIR EMISSIONS SIDE
SO_2
RECOVERY BOILER:
MAXIMUM - 200 mg/Nm^3 (8% O_2)


ON THE GROUND WATER SIDE
MONITORING
Cd
SODIUM
Hg
pH
Pb
Cr
CHLORIDES
DIOXINS
HARDNESS
AOX'S

ON THE ECO-TOXICOLOGICAL SIDE

TODAY'S TREND

SHORT - TERM BIO-ESSAYS

ACUTE AND CHRONIC TOXICITY

DAPHNIA SIMILIS

CERIODAPHNIA DUBIA

MICROTOX / MUTATOX

AMES TEST

ALGAE

FISHES (MINNOWS OR BRAZILIAN NATIVE FISHES)

ON THE ECO-TOXICOLOGICAL SIDE

IMPACT ON THE RECEIVING STREAM

- **PLANKTON**
- **BENTHOS**
- **SEDIMENTS**
- **FISHES (BAD FORMATION IN VERTEBRAE, BONES, SKIN, JAW, FINS, EYES, GILLS, ETC)**

ON THE WASTEWATER SIDE

	MAXIMUM
COD:	5 - 50 kg/admt
BOD:	1.5 - 8 kg/admt
AOX:	0.2 - 1.0 kg/admt
DIOXINS:	NOT RESTRICTED, BUT MONITORED
COLOR:	80 - 500 mg/l
SUSPENDED SOLIDS:	0.2 - 6.0 kg/admt
CHLORINATED ORGANICS:	0.05 mg/l (CONAMA 20 : FEDERAL BRAZILIAN LAW FOR WASTEWATERS)

ON THE CHLORINE-FREE PROCESS

GRADUAL SUBSTITUTION OF Cl2 BY ClO2 (NEGOTIATED SCHEDULES)

SOME MILLS HAVE DEAD LINE TO SWITCH

ONE MILL WAS NOT ALLOWED TO USE ELEMENTAL CHLORINE SINCE LATE 1992

ON THE *TEF* TREND

IT WILL BE SPEEDED-UP BY THE NEW LEGISLATION COMING:

- **TAXATION ON USE OF NATURAL RESOURCES (PAYER USER): 1994-1995 IN SOME STATES**
- **TAXATION ON THE POLLUTION LOAD (PAYER POLLUTER): ON DISCUSSIONS**

OTHER TRENDS:

- **VOC'S**
- **NOx**
- **GROUND BIO-INDICATORS, NOT ONLY IN WATER STREAMS**
- **BRAZILIAN ECO-LABELLING**
- **THE "85% REDUCTION PRINCIPLE" FOR AIR EMISSIONS: A NEW CONCEPT IN PARANÁ STATE**

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Dr. Thomas R. Govers, Air Liquide, France

Session 5: Panel on Mill Experience with Ozone Bleaching Worldwide

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Session 6: On-Site Generation of Oxygen, Ozone, and Peroxide Bleaching Chemicals

6-1 Mill Experience with Ozonia System
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Michael A. Dimitriou, Ozonia North America, USA

6-2 High Concentration Ozone Generators Installed in Swedish and Finnish Pulp Mills
Greg R. Leist, Emery–Trailigaz Ozone Co., USA

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Session 13: Panel on Worldwide Emerging Trends in Chlorine-Free Bleaching in the 21st Century

No papers were required of Session 13 speakers and panelists.

INTERNATIONAL NON-CHLORINE BLEACHING™ CONFERENCE, 1994

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