



Implementation of an Integrated Safety, Health, Environment, and Quality Management System

ZOCHEM

Division of Hudson Bay Mining and Smelting Co. Limited



OVERVIEW OF PRESENTATION

- **COMPANY BACKGROUND**
- OVERVIEW OF INTEGRATED MANAGEMENT SYSTEM
- SYSTEM PROCESSES
- ACHIEVEMENTS
- KEY SUCCESS FACTORS

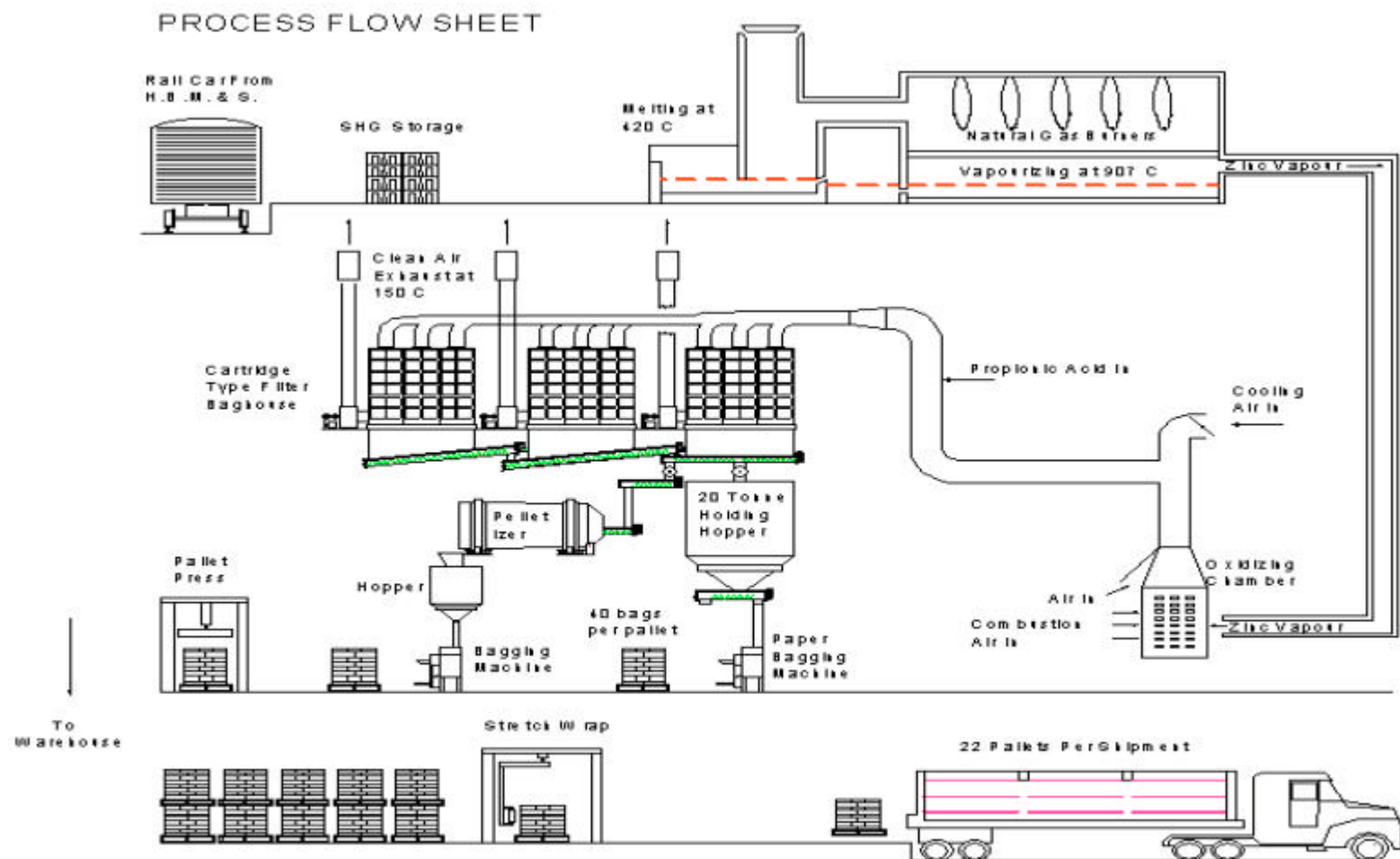


COMPANY BACKGROUND

- Zinc oxide manufacturer
- Division of Hudson Bay Mining and Smelting Company Ltd.
- Largest single site producer in North America
- Located in Brampton, ON
- 40 employees
- > 40, 000 MT / year



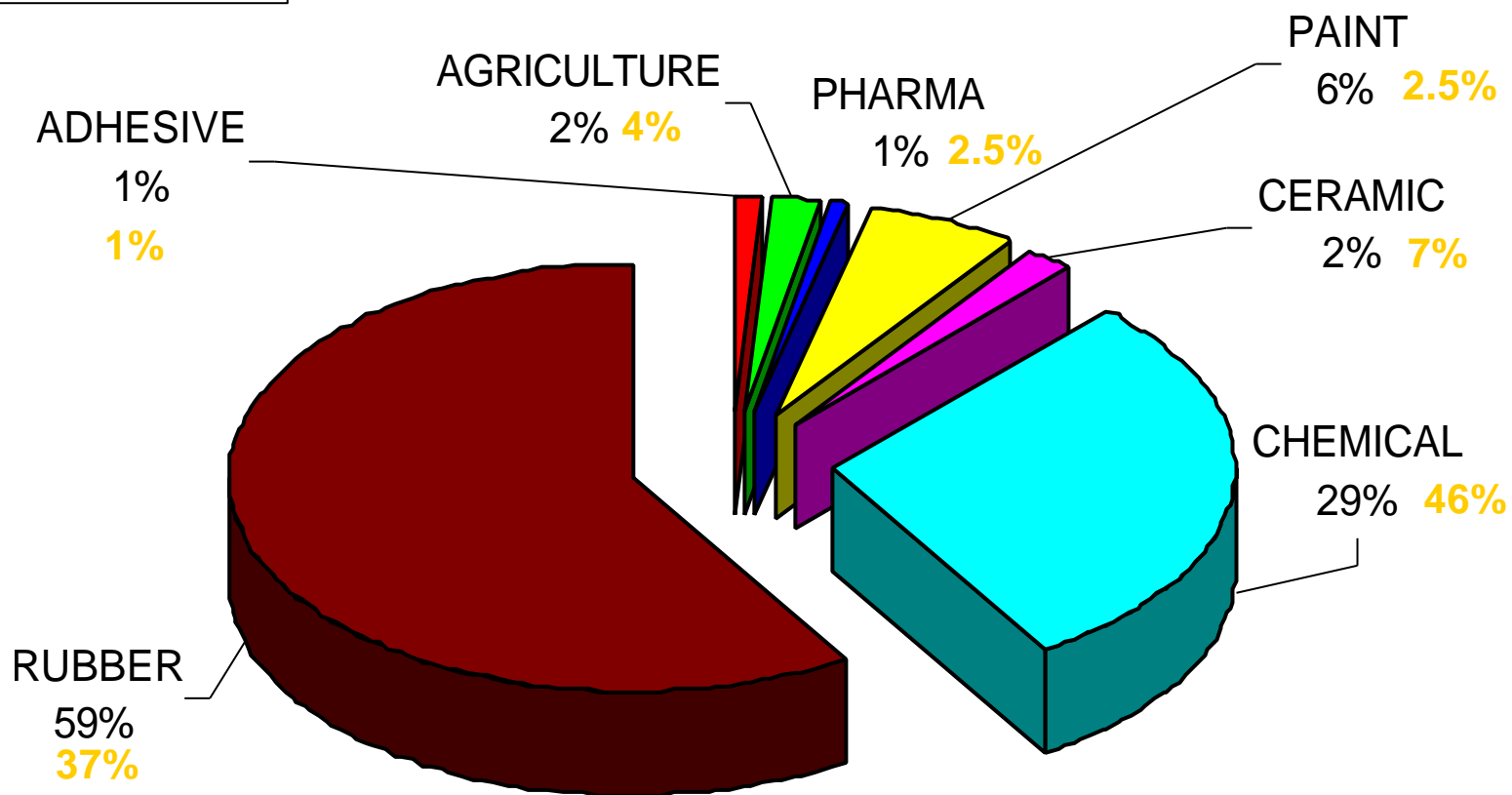
SCHEMATIC OF A PRODUCTION LINE





NORTH AMERICAN ZINC OXIDE CONSUMPTION

Zochem % - ■





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INTEGRATED MANAGEMENT SYSTEM

- ISO 9001:2000 (Quality Management System)
- ISO 14001:1996 (Environmental Management System)
- OHSAS 18001:1999 (Occupational Health and Safety Management System)

Scope of registration:

- facility wide



PATH TO INTEGRATED MANAGEMENT SYSTEM

Spring 2002: Set objective to achieve registration to ISO 14001 and upgrade to ISO 9001:2000 by the end of 2003.

Hurdle: Turn existing management system from “paper chase” to “value added management system”

| | <i>From →</i> | <i>To</i> | <i>Hurdles</i> |
|-------------------|---|---|--|
| Aug. 2003 | ISO 9002 (since 1997) | Upgrade to ISO 9001:2000 | <ol style="list-style-type: none"> 1. Additional requirements / documentation 2. process vs. elemental audits |
| Nov. 2003 | No environmental management system | ISO 14001:1996 implementation - no non-conformance in the registration audit | <ol style="list-style-type: none"> 1. Additional requirements / documentation 2. Integrating with existing ISO 9001 3. Management involvement 4. Auditing new system |
| Sept. 2004 | OHSAS 18001 built into ISO 14001 system | OHSAS 18001:2000 implementation – no major nonconformance in the registration audit | <ol style="list-style-type: none"> 1. Fine tune requirements / documentation 2. Integrating with existing ISO 14001 and ISO 9001 |
| Mar. 2005 | | 1st integrated internal audit | <ol style="list-style-type: none"> 1. Ensuring all clauses are covered |
| Apr. 2005 | | 1st integrated external audit | |



OVERVIEW OF INTEGRATED MANAGEMENT SYSTEM

- Three tier system
 - ✓ Tier I – policy
 - ✓ Tier II – procedures and work instructions
 - ✓ Tier III – forms and records
- Risk based approach
 - ✓ Safety
 - ✓ Health
 - ✓ Environment, and
 - ✓ Quality
- Integrated policy, objectives and targets, internal audits, external audits, management reviews for quality, safety & health and the environmental management system



SAFETY, HEALTH, ENVIRONMENT AND QUALITY POLICY

Zochem is a production and distribution facility that produces zinc oxide. Our product is sold worldwide, with the majority of sales being within North America. We are committed to the supply of high quality product that is manufactured in a safe and environmentally responsible manner.

In pursuit of this policy, Zochem maintains systems that meet the requirements of ISO 9001, ISO 14001 and OHSAS 18001. These systems encompass the following principles:

COMPLIANCE

Zochem is committed to meeting its responsibilities through compliance with all customer and corporate requirements, as well as applicable environmental, and safety and health legislation.

PREVENTION

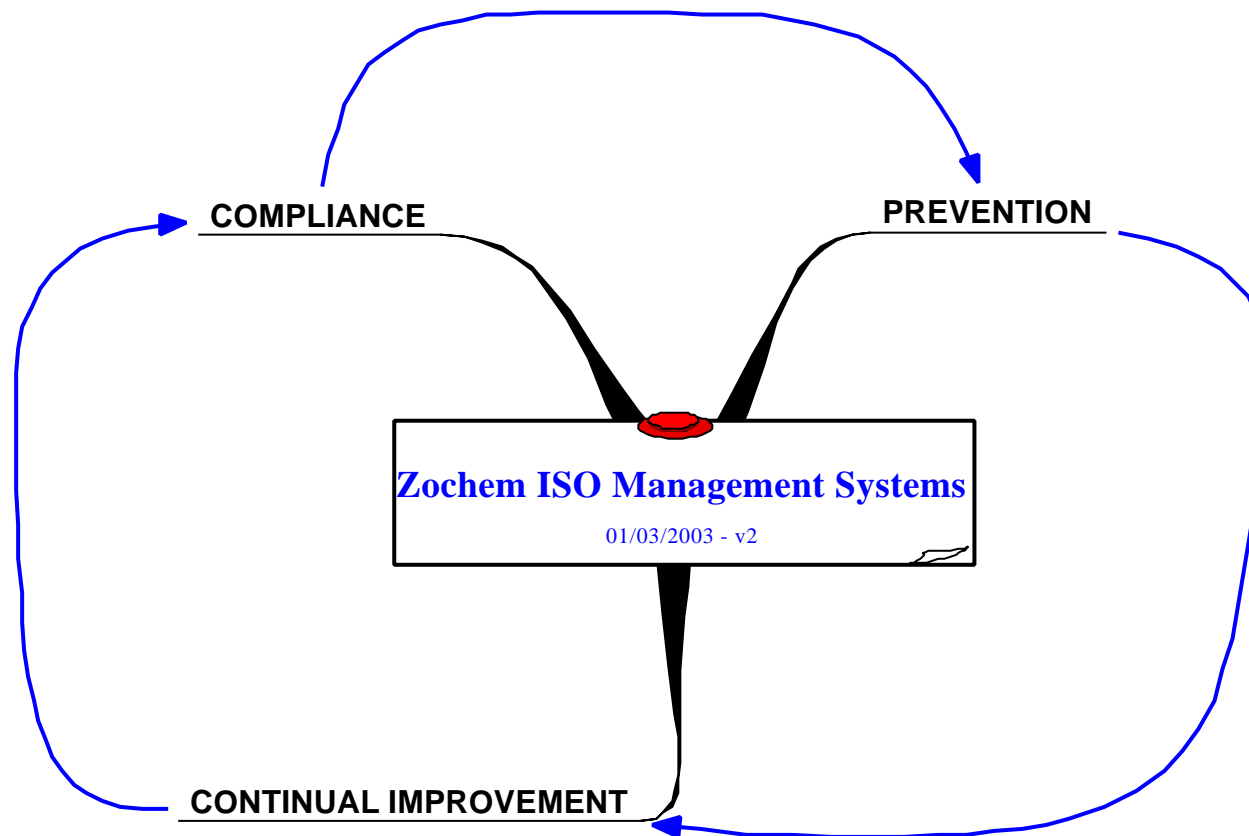
By monitoring key performance indicators and customer satisfaction, Zochem is able to identify and rectify negative trends. Our commitment to a safe and healthy workplace is achieved through engineered solutions, personal protective equipment (PPE), and standards/procedures. Zochem strives to operate in a manner that minimizes any adverse effect of its operations on the community and the environment. This is achieved through pollution prevention, energy conservation, and waste minimization.

These activities are the responsibility of every employee and are supported by training whenever appropriate. Employees are encouraged to report activities that could have a negative impact on quality, the environment and/or health and safety.

CONTINUAL IMPROVEMENT

To ensure continual improvement within all systems, matters of significance are considered when setting annual objectives. As part of this process, we assess and prioritize hazards and risks and review this policy and objectives regularly.

This policy is communicated to all employees and contractors and is also available to the public.





PROCESSES

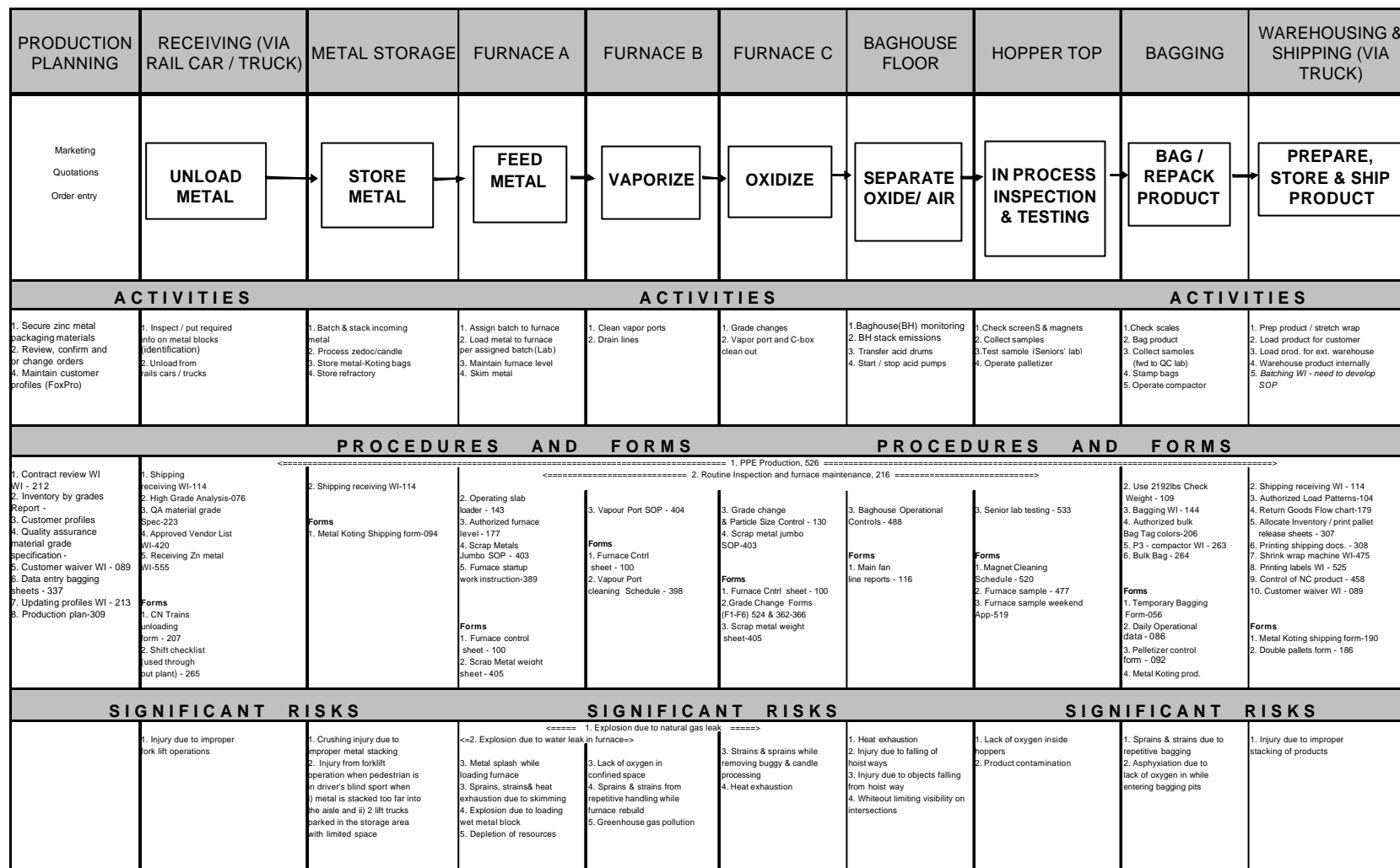
SIX MAIN PROCESSES

- PRODUCTION PLANNING
- SHIPPING / RECEIVING / WAREHOUSING
- PRODUCTION
- MAINTENANCE & UTILITIES
- FINAL INSPECTION & TESTING
- MANAGEMENT SYSTEMS



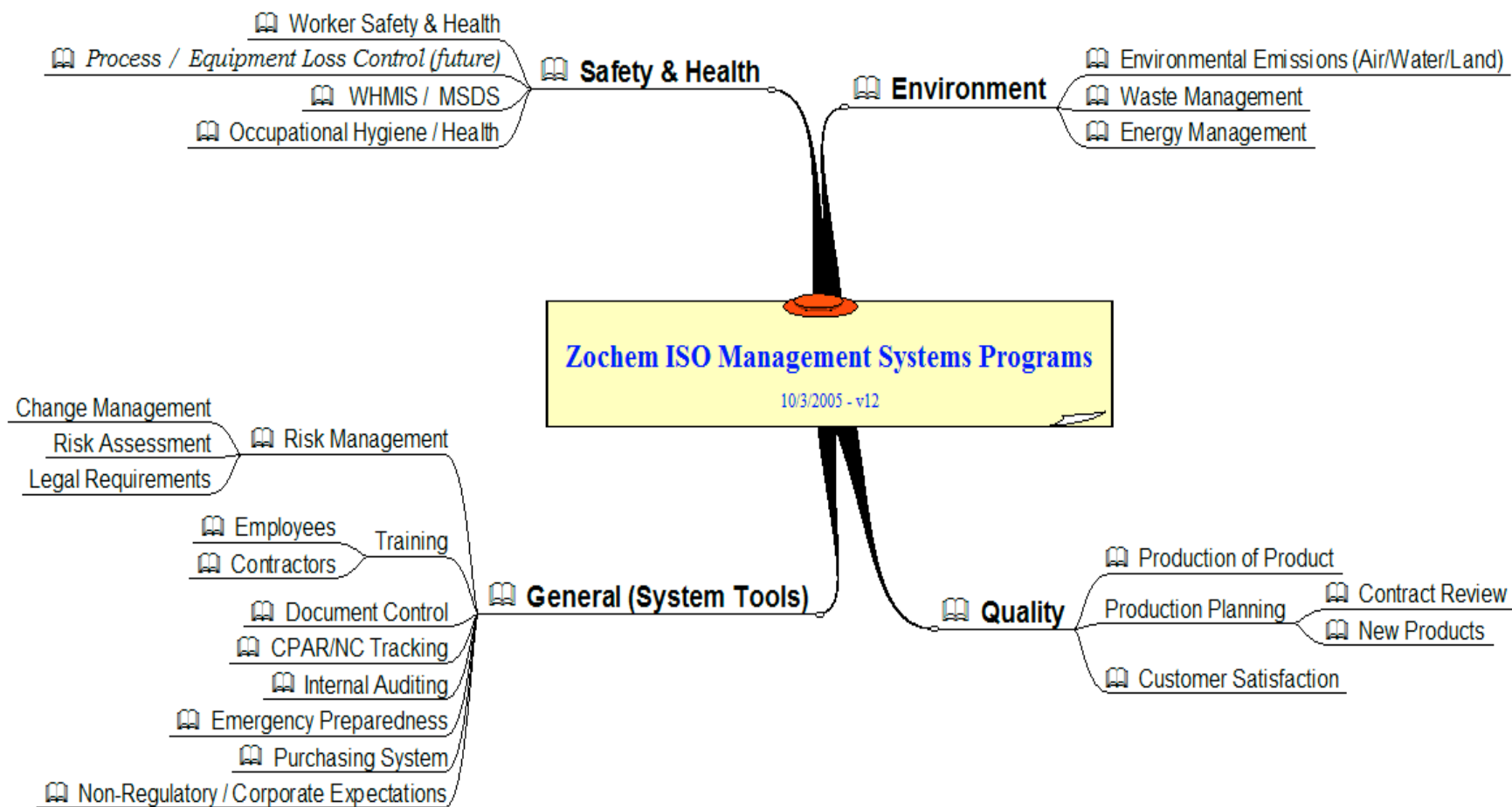
OPERATIONAL CONTROL

(OVERVIEW)





SHEQ “Program” Leaders





“Program” Leaders

Generic Roles and Responsibilities

- Understand and anticipate requirements
- Communicate changing requirements
- Go-to for external and internal audits
- Ensure effective and efficient operation of program/process
- Suggest changes to management system, work instructions etc. when appropriate
- Address non-conformances and corrective, preventive actions
- Create non-conformances and corrective, preventive actions when appropriate
- Maintain awareness of KPIs affecting process
- Make recommendations regarding training requirements

All “programs” are reviewed annually during Management Review Meetings



OVERVIEW OF PRESENTATION

- COMPANY BACKGROUND
- OVERVIEW OF INTEGRATED MANAGEMENT SYSTEM
- **SYSTEM PROCESSES**
 - RISK ASSESSMENT
 - OBJECTIVES & TARGETS
 - CHANGE MANAGEMENT
 - DOCUMENT CONTROL
 - TRAINING
 - CPAR & Non-conformance
 - AUDITS
 - MANAGEMENT REVIEW
- ACHIEVEMENTS
- KEY SUCCESS FACTORS



RISK ASSESSMENT PROCESS

Severity x Probability = Exposure

Steps:

- Business Activity or Process
- Specific Equipment / Task *(When you do this activity)*
- Hazard / Aspect Description *(As this happens)*
- Business Risk or Impact *(This could result)*

Considerations:

- Involvement of contractors, employees or both?
- Legal and other requirements?
- Normal or abnormal situations?

Outcome:

- Significant or not significant risk
- Operational control required for significant risks
 - Objectives
 - Procedures
 - Monitoring and measurement activities



APPLICATION OF RISK ASSESSMENT PROCESS

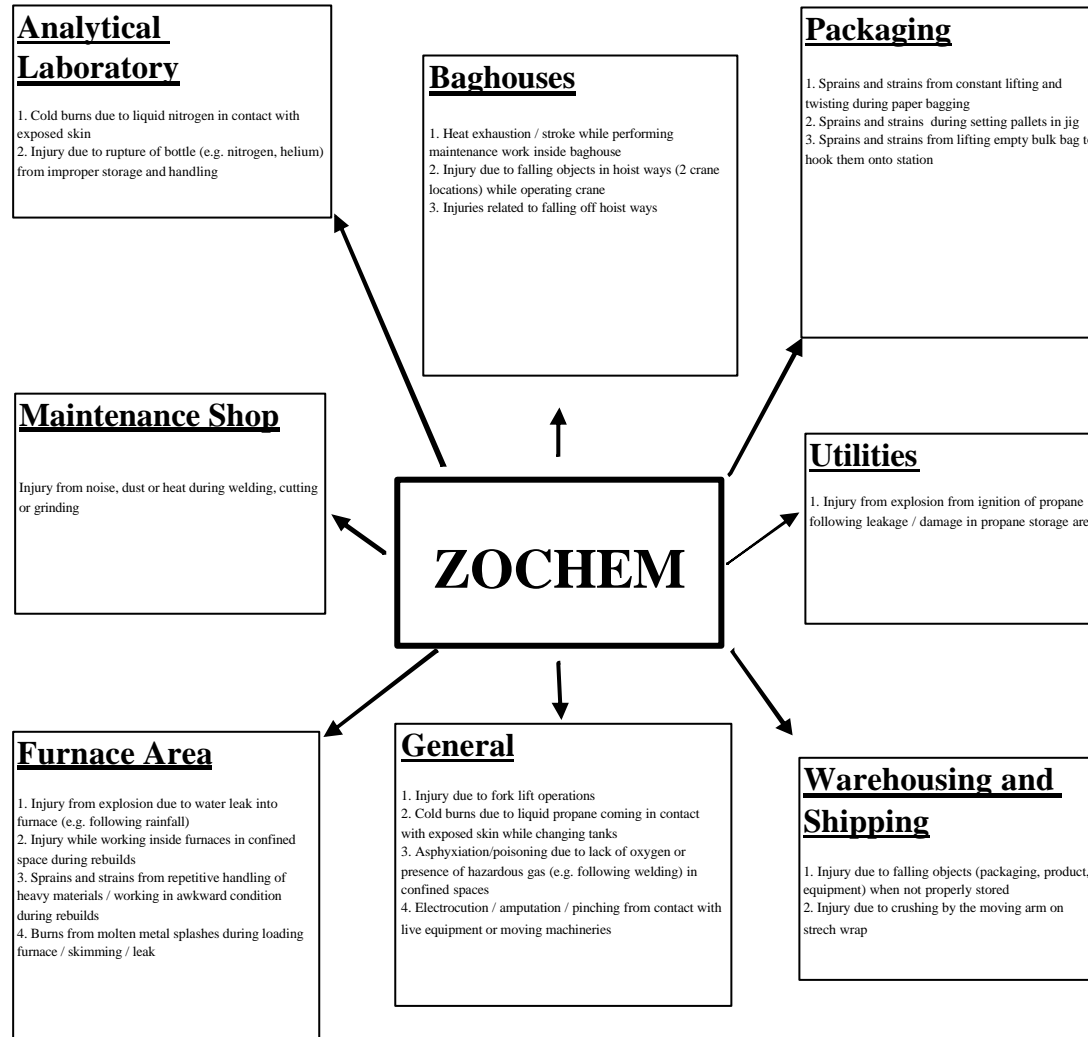
- INCIDENTS AND ACCIDENTS
- CORRECTIVE / PREVENTIVE ACTIONS
- CHANGE MANAGEMENT

Risks are reviewed by

- Joint health and safety committee monthly (new ones only)
- Management review committee quarterly (new ones only)
- Employees annually (applicable risks)
- Management annually (all risks)



SAFETY & HEALTH HAZARDS, ENVIRONMENTAL ASPECTS AND QUALITY RISK DIAGRAM





OBJECTIVES AND TARGETS

- Integrated objectives are set within each category:
 - compliance
 - prevention and
 - continual improvement
- Formally reviewed every quarter
- Change management process used
- Monitored by key performance indicator where applicable



CHANGE MANAGEMENT

Integrated change management system

- Safety and health
- Environmental
- Quality
- Business

Program leader manages this program

Key elements reviewed for each project

- Hazards, aspects & impacts and risks
- Procedural changes
- Emergency preparedness plan
- Training needs
- Legal requirements
- Validation requirements
- “Pre-start safety review” requirement
- “Notice of project” requirement
- Customer notification requirements



DOCUMENT CONTROL

- Management system documents are available in electronic format only (with the exception of posted documents)
- Electronic approval system
- Most records are maintained electronically
- Program managed by “document control” program leader



TRAINING

- Training data base used for maintaining training information
- E-mail alerts are automatically sent when training updates are needed
- “Absolutes” in most procedures
- Program managed by “training” program leader



CPAR & NC SYSTEMS

CPAR (corrective/preventive action report)

- Includes such things as major customer complaints, medical aids or loss time injuries, incidents resulting in significant risk classification and non-conformance trends
- Maintained electronically
- Updated by supervisors and managers responsible
- Managed by program leader
- Accessible by all employees
- Discussed formally at weekly / monthly meetings

NC (non-conformance)

- Separate from the CPAR system but with same features
- Used mainly to collect data
- Basis for trend analysis / KPI
- Incident / accident reports are tracked in NC log
- Triggers CPAR or Objective for Continual Improvement where needed



INTERNAL AUDIT PROGRAM

- Follows ISO 19011 guidelines
- Audit program leader (separate from the IMS Coordinator) manages the audit program
- 12 internal auditors
- 3 lead auditors
- All processes are audited at least once a year.
- Also various program leader responsibilities audited



EXTERNAL AUDITS

- Twice yearly “Continuing Assessment” audits by Registrar
- Customer audits
- Supplier audits
- SHE Compliance audits
- Other audits (e.g. IAPA Audit)



MANAGEMENT REVIEW

Agenda Topics:

- Policy
- Objectives and targets
- Audits
- Corrective and Preventive actions (CPAR)
- Key performance Indicators (KPI) review & Process performance
- Program leader updates
- Hazard identification and risk assessment processes
- Change management
- Recommendations for improvement / updates
- Review Supplier Performance Evaluation Report
- Summary of regulatory review
- External visitations and communications
- Review JHSC recommendations
- Follow up actions from previous management reviews

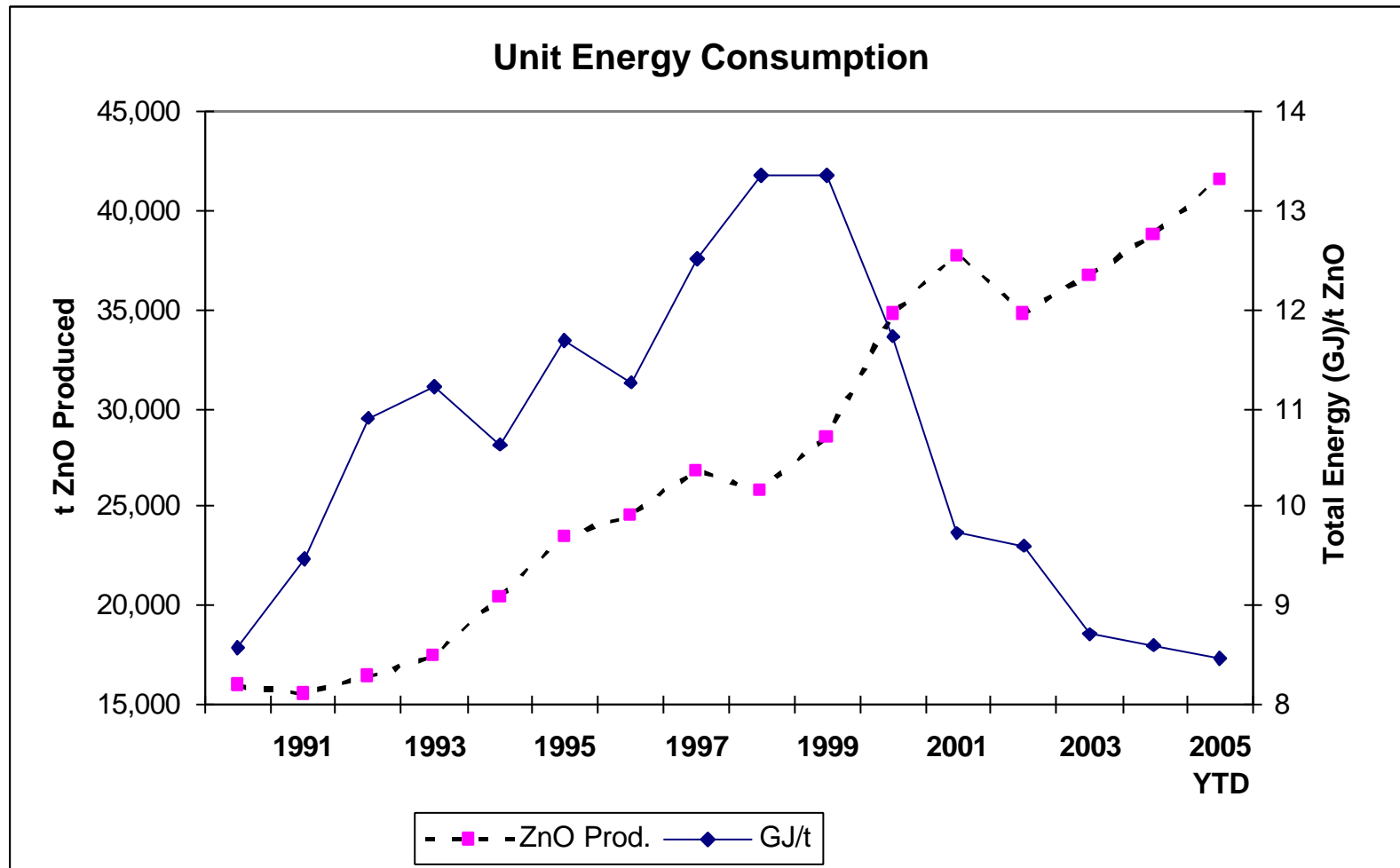


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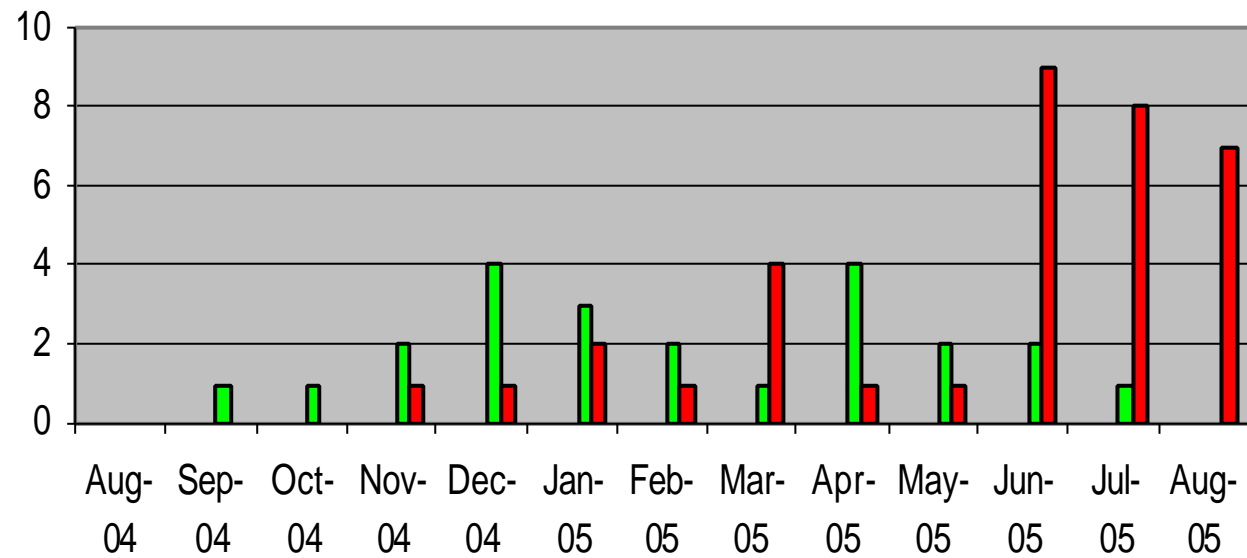




ACHIEVEMENTS

Safety Statistics 2004/2005

■ LTA ■ DI ■ MA ■ FA ■ Incidents

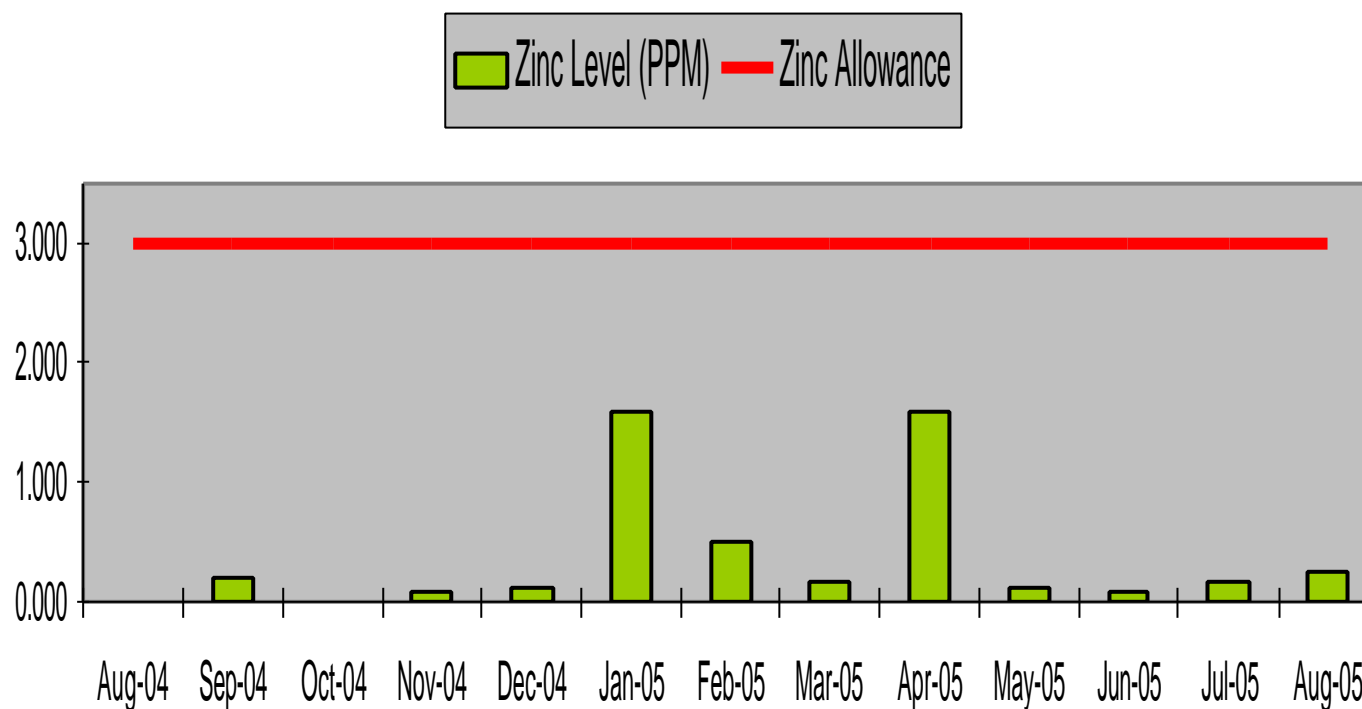


*Information gathered by Melissa



ACHIEVEMENTS

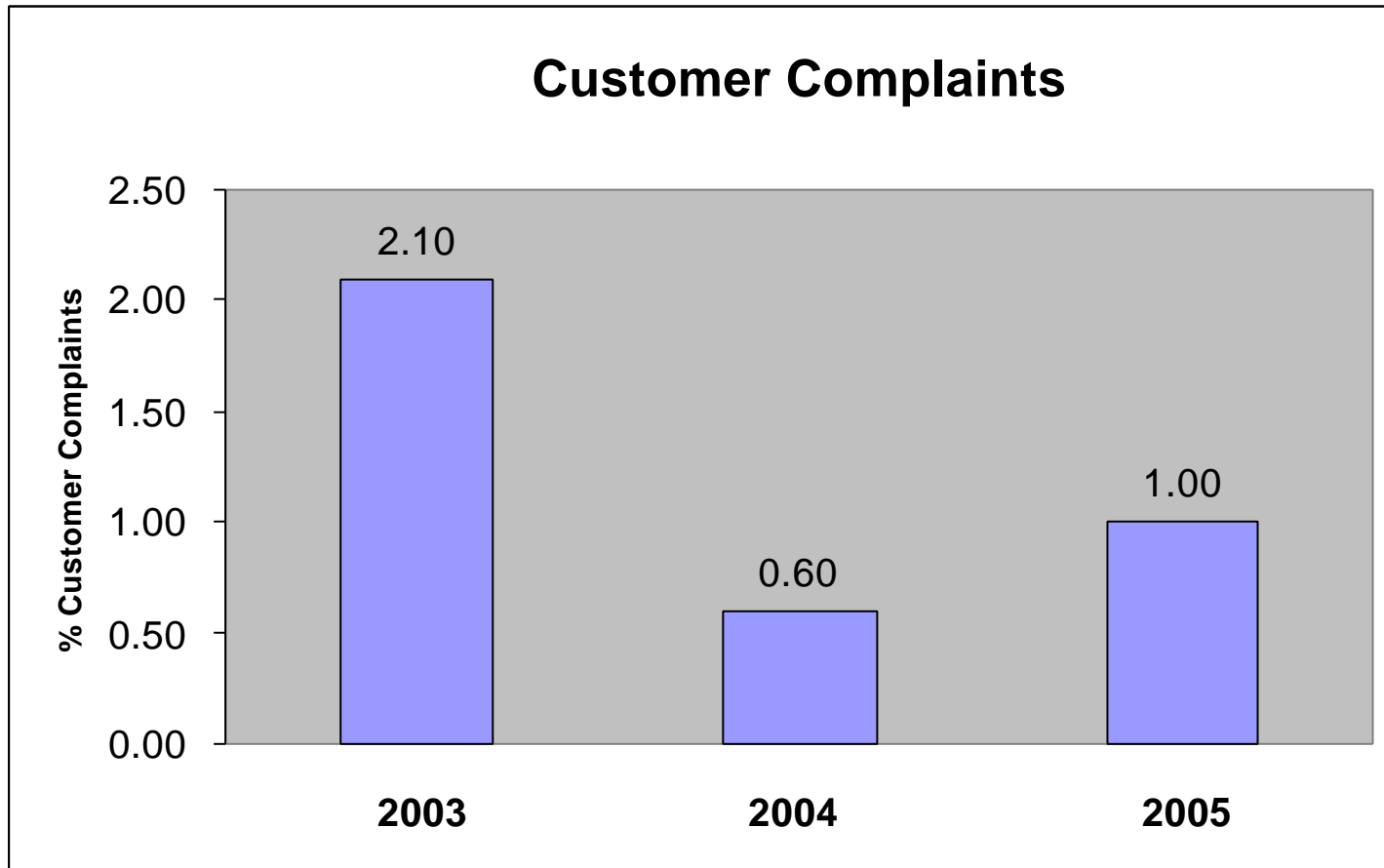
Zinc Level in Treated Effluent Sanitary Sewer - 2004/2005



*Information gathered by Tamara

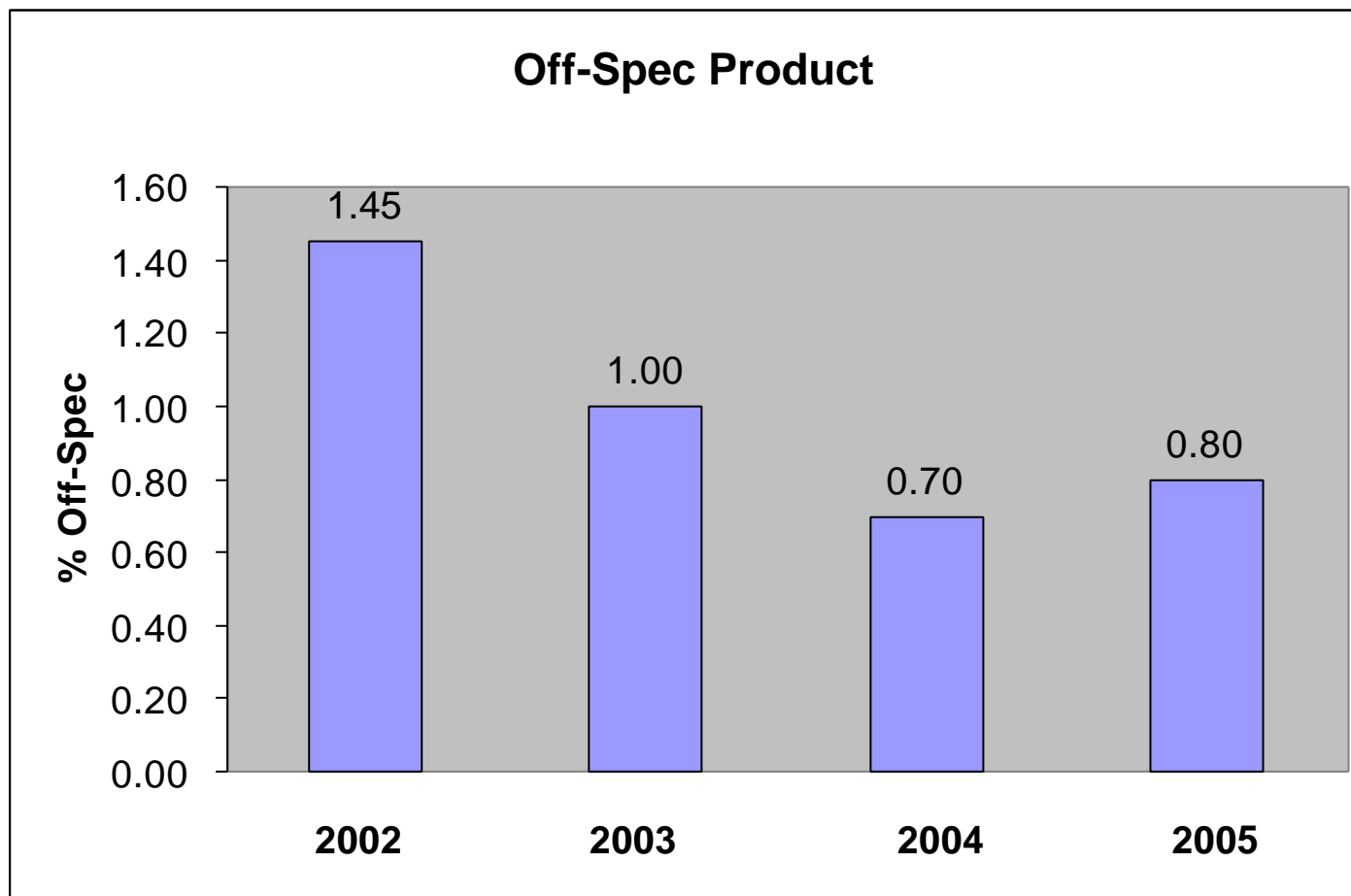


ACHIEVEMENTS





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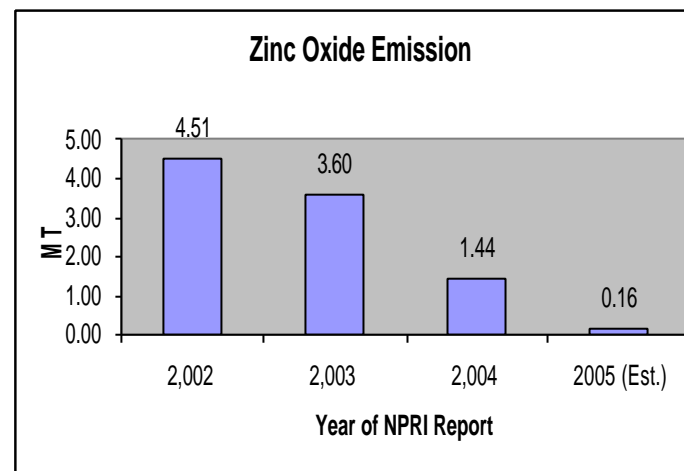




ACHIEVEMENTS (Others)

- Recipient of IAPA Health & Safety Award (Level 1)
- Property clean up (pond & septic tank removal)
- Others (water, noise etc.)

Reduction in zinc oxide emission reported to NPRI





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KEY SUCCESS FACTORS

- Appropriate resources in place
- Strong internal audit program
- Active Management team involvement
- Program leader concept
- Strong NC / CPAR system
- Change management system
- IMS Coordinator



Questions ?