Industrial Auditing in a World Scale Organization

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Summary

- The Air Liquide Group
- Genesis of IMS - The Industrial Management System
- IMS Group Procedures
- Organization of the audit function
- Selection and Qualification of auditors
- Audit levels
- Evolution of the audit approach
- Challenges
- Contribution of the Audit Function to the Reduction of the Risk Level
- Conclusion

The Air Liquide Group

- Founded in 1902
- Headquarter in Paris
- Hubs in Houston, Shanghai, Frankfurt and Dubai
- 68,000 employees in more than 80 countries
  - Over 250 different subsidiaries
- Quoted on the Paris Stock Exchange (CAC40)
  - 400,000 individual shareholders
  - Revenue of approximately 20 Billion Euros
- Four major business lines
  - Large Industries
  - Industrial Merchant
  - Healthcare (including fine chemicals)
  - Electronics
- Other activities
  - Welding
  - Diving
  - Engineering
  - Aerospace

Genesis of IMS – The Industrial Management System

- 2003-2004
  - Incidents around the world showed that procedures and processes varied significantly between subsidiaries
  - Lessons learned were not always communicated between countries
  - Unacceptable in a world scale organization: increased liability
  - International IMS Project Development team assembled
    - Tasked with developing a system applicable to all subsidiaries and activities

- 2005-2006
  - IMS deployed around the world
    - IMS states what are the mandatory minimum requirements to be met by all subsidiaries
    - Subsidiaries develop their local system by determining how to apply IMS, taking into account their regulatory environment, organization, and local certification requirements (ISO-9001, FSSC 22000, GMP, etc.)

- 2007
  - Audits started

IMS – Group Procedures

GP 00 - IMS principles
GP 01 - Industrial regulatory compliance

GP 02 - Documentation implementation & control

GP 04 - Industrial Risk Management
GP 05 - Industrial Emergency Management
GP 06 - Occupational HSE Management
GP 12 - Procurement
GP 13 - Management of Change (MOC)

GP 07 - Training
GP 08 - Qualification

GP 03 - Development, design, manufacturing & Installation
GP 09 - Ready for Start-up Review (RFSR)

GP 10 - Production Management
GP 11 - Maintenance Management

GP 14 - Accident & Incident Reporting and Analysis
GP 15 - Industrial Reporting

GP 16 - Industrial Audit

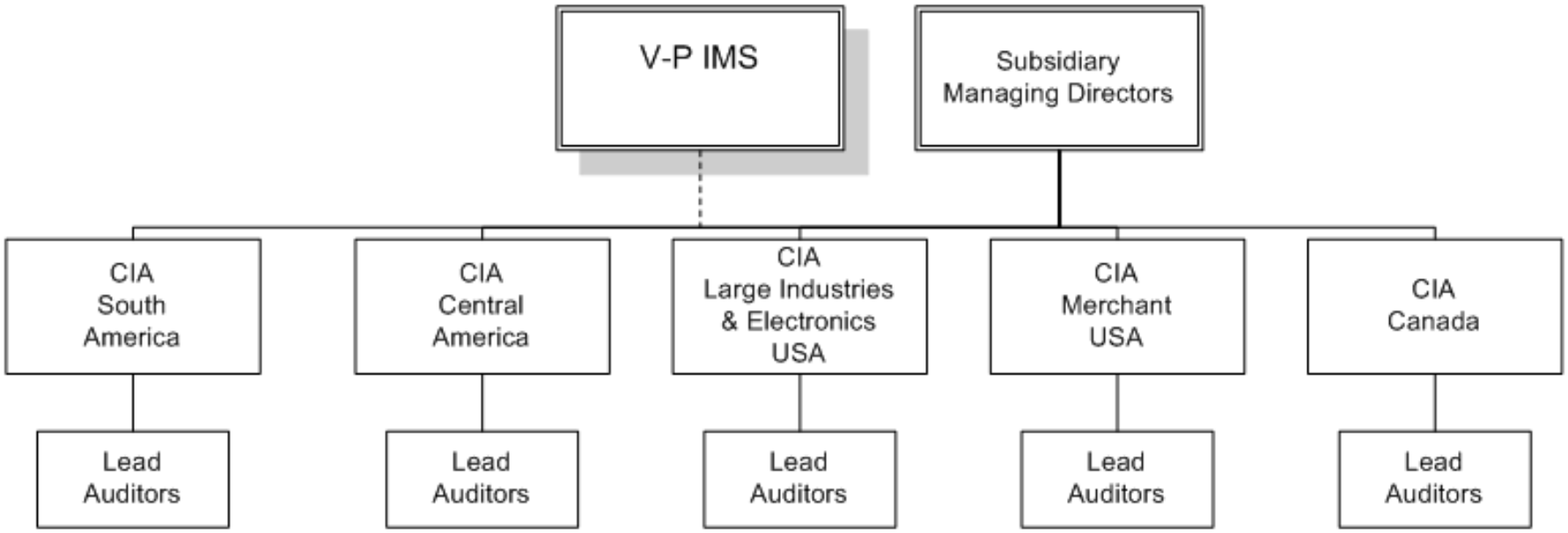
GP 17 - Management Review

Organization of the Audit Function

- At Group Level
  - Group Chief Industrial Auditor
    - Reports to the Group Vice President, Safety & Industrial Systems
    - Manages a small team of Group Lead Industrial Auditors
    - Relies on a network of experienced lead auditors located around the world auditing “on his behalf”
    - Sets the annual Group audit schedule

- At Subsidiary Level
  - Subsidiary Chief Industrial Auditor (CIA)
    - Appointed by and reports directly to the Subsidiary Managing Director
    - Reports functionally to the Zone VP, Industrial Management Systems
    - Must be totally independent from the audited activities
      - May not have any other functions related to operations in the subsidiary
    - May act as CIA for more than one subsidiary
      - But always reports to the Managing Director of the subsidiary being audited
    - Relies on a network of lead and HSEQ/Technical auditors supplied by various departments
    - Sets the annual Subsidiary audit schedule
    - Must be available 20% of his/her time to assist the Group audit function

Organization of the Audit Function (Americas)



Selection and Qualification of Auditors (Subsidiary)

- Chief Industrial Auditor (CIA)
  - Engineering or other technical university level degree
  - 10+ years of relevant experience in engineering, process safety management, industrial operations, HSE, etc.
  - Formal CIA training by the Group Safety & Industrial System department
  - Formal training in auditing techniques
  - Thorough knowledge of the subsidiary IMS
  - Good understanding of the technologies being audited
  - Knowledgeable in process safety management and HSE

- Lead Auditors and HSEQ/Technical Auditors
  - Associate Technology or Technologist degree. Bachelor degree preferred
  - 7+ years of relevant experience in engineering, process safety management, industrial operations, HSE, etc.
  - Formal training in auditing techniques
  - Familiar with the subsidiary's industrial operations and the main risks
  - Intimate knowledge of the technologies being audited
  - Understand internal requirements pertaining to HSE and reliability

Audit Level 1 – Facility Self Audits

- Purpose is to make the site manager aware of deficiencies early, reducing the number of Corrective Action Reports officially reported by higher level audits
- Performed at facility level by the facility manager, peer manager or local supervisory staff
- Based on self audit checklists
  - Technical and procedural
  - Topics chosen based on experience, suspected deficiencies or specific requests from CIA or management

Audit Level 2 – Subsidiary Audits

- Purpose is to check that all plants and sites conform to the subsidiary IMS
- Typically performed by a team of 3 (depending on plant size):
  - CIA or other lead auditor
  - HSEQ auditor
  - Technical auditor
- Based on audit protocols prepared by the CIA, taking into account
  - Magnitude of risk
  - Accident/Incident history
- Critical facilities (determined by risk assessments) audited every 2 years
- All facilities audited at intervals no greater than 5 years

Audit Level 3 – Group Audits

- Purpose is to verify how the subsidiary IMS works and if it meets the Group's IMS requirements
  - Evaluation of the quality, quantity and qualifications of technical personnel
  - Timeliness and completeness of the incorporation of Group Standards into subsidiary procedures
- Performed by a team led by the Group CIA or designee
- Typically performed every 5 years, but spot audits may take place if deficiencies are suspected
  - Follow up done one year after audit

Audit Findings: Terms & Definitions

Finding	Symbol	Description of Finding
Good Practice	●	The facility/department has implemented a process, practice, or methodology that should be shared and put into use across similar facilities.
Comment	○	Compliant with IMS requirements, but the suggested action would improve or strengthen the existing system. Corrective and preventive actions are Optional.
Remark	▲	The system/process/procedure in place is generally IMS compliant but a few evidences of non-compliance in field application have been noted. The system/process/procedure in place is partially or generally IMS compliant but safety/reliability risks remain. Corrective and Preventive actions required.
Gap	▲	Non-compliance and/or safety/reliability risk identified; IMS process partially compliant - Corrective and Preventive actions required.
Critical Gap	■	Major non-compliance and/or major safety/reliability risk identified; Urgent Corrective and Preventive actions required.

Evolution of the Audit Approach

- For the first 4-5 years audits tended to be confrontational
  - Progress in the subsidiaries was slow at start
  - Subsidiary audits identified hundreds of findings
    - Plants were audited on requirements they had not implemented yet
    - Initial auditors had a “bad cop” confrontational attitude
      - Playing “good cop” to help the subsidiary develop the system was not in their job description…
      - They were instructed to identify all possible deficiencies: be careful what you wish for!
    - Led to a lot of backlash coming from the subsidiaries and slowed down IMS implementation in some countries

- A more collaborative approach is now in place
  - The auditor is still looking for compliance but the role has evolved towards coaching and problem resolution by
    - Providing explanations as to why things must be done in a certain way
    - Identifying and spreading best practices between subsidiaries and facilities
    - Helping the sites and facilities identify priorities by better categorizing the findings

Challenges

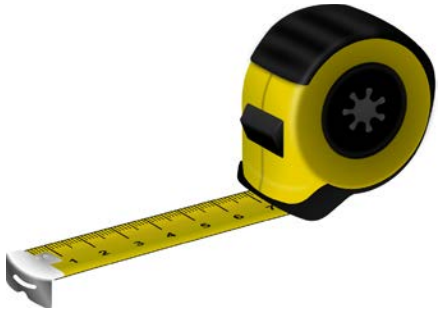
- Availability of resources
  - Due to work load, subsidiary CIAs are unable to make 20% of their time available to support the Group audit function
    - Group audit plans must be adapted carefully
  - A lead auditor can make a maximum of 12 audits per year
  - Difficulty to identify auditors in sufficient number and with appropriate technical knowledge who are independent from the audited operation
    - Continuously looking for auditors due to departures, internal moves, changes in responsibilities, etc.
  - Availability of auditees in a reduced staffing context
    - Importance to build system around processes rather than people
- Growing number and complexity of sites
  - Audits last from 1 to 7 days depending on complexity, excluding pre-audit preparation and writing report (up to 3 weeks)

Challenges

- Pressure to maintain the prescribed 2 years/5 years frequency
  - Disconnect between frequency and auditor availability
  - Under review based on experience and industry trends
  - Considering a merit approach as opposed to a time based approach
- Multiplication of audits: IMS, ISO-9001, GMP, Food Safety, customers, government agencies
  - Attempting to combine audits but objectives/approach/requirements are sometime diverging
  - IMS audits are evolving towards assessment of effectiveness rather than strictly compliance
- Cost constraints
  - Audit costs highly dependent on location and travel required

Contribution of the Audit Function to the Reduction of the Risk Level

- IMS was implemented as a means to reduce the level of risk within the operations
- Competent engineers design all types of safety mitigation systems to keep our processes and people safe, and our plants running
- But are you sure that these systems
  - Were designed based on the proper conditions, and that these conditions are still valid?
  - Are installed properly?
  - Are maintained properly?
  - Are calibrated properly?
  - Are operated properly?
  - Are not by-passed?



- This is the contribution of audits to risk reduction: to provide an independent, unbiased measure of the true condition of the plants at a given point in time
- Remember: You can't improve what you don't measure !

Conclusion

- A successful industrial audit program requires
  - A high level of focus by dedicated resources
  - Commitment from leaders who
    - Understand that auditors are their eyes in the field and realize that audits are one of the few methods they have to know what is really happening in the operations
    - Believe that audits can help reduce the risk exposure for the corporation
    - Participate actively in the resolution of issues uncovered during audits as opposed to relying only on the auditees to fix everything

End of presentation
Thank you for your attention