



ISO 14001:2015
Environmental Management Systems
Awareness Training Course

(E202.15 E)

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Learning objectives

To promote understanding of the principles and operation of the environmental management system complying with ISO 14001.

SESSIONS

- 1 ENVIRONMENTAL ASPECTS
- 2 ISO 14001 REQUIREMENTS
- 3 U MACAU IMS
- 4 RELEVANCE AND INT AUDIT

SESSION 1 **ENVIRONMENTAL** **ASPECTS**



Examples of historic disaster

Country	City	Cause	Loss
Japan 1932 - 56	Minamata	Mercury	3000 victimized
UK 1952	London	SO2	4000 died
USA 1989	Alaska	Oil spill	US\$3 bil in cleaning US\$1 bil in settlement

Environment (ISO14001 3.5) ***Surroundings in which an organization operates***



Examples of environmental issues

- Air
- Water
- Waste
 - Solid waste (municipal)
 - Chemical/biological/nuclear
- Noise
- Flora and fauna
- Land/sea (contamination)
- Depletion of resources



Air

- Pollution
 - Dust
 - NO_x, CO_x, SO_x
 - Global warming
 - Acid rain
 - Ozone depletion substance
- Activities
 - Construction
 - Burning (eg Power generation, cooking)
 - Engine exhaust (cars, generators)



Global Warming

- Greenhouse effect
 - Imbalance of the carbon cycle
- + 0.6 deg C in last 100 yrs
 - + 0.3 deg in last 40 yrs
- Impact on
 - Weather (floods, drought)
 - By 2100 (est.)
 - + 1.4 to 5.8 deg C
 - + 9 to 88 cm sea level
 - Insects and rodents



CO₂ Emissions

1 litre petrol	2.315 Kg
1 litre diesel	2.630 Kg
1 Kwh (1990 UK)	0.77 Kg
1 Kwh (2005 UK)	0.5348 Kg

Stern Report 2006

Croissant production 1t

CO₂ emission (Kg)

Farming (inc transport)	459
Flour milling (inc transport)	107
Manufacturing	370
Distribution	57
Consumer	41
Disposal (20% not sold)	166
TOTAL	1200

Kyoto Protocol (Dec 1997)

- Tabled by the Clinton Administration
 - Concept of carbon trading
- 38 Industrialized countries to cut emissions from 2008 to 2012 to levels 5% below 1990 levels
- No commitment from China, India and Brazil
- Bush Administration refused to ratify
 - US accounts for 25% of global emission

Hong Kong

- Committed to APEC in Sept 2007 to reduce emission by 25% from 2005 to 2030.
- 60% emissions related to electricity, of which 89% used in buildings
- 16% transportation

UNCCC COP 15

Copenhagen 7 – 18 Dec 2009

193 countries

Post Kyoto global agreement on emission reduction

(US introduce carbon tax from 2020)

Water

- Pollution
 - Suspend solids (mud water)
 - Chemicals
 - Oil
- Activities
 - Construction site
 - Manufacturing
 - (eg Circuit boards, textile)
 - Restaurants



Noise

- Pollution
 - Vibration
 - Explosion
 - Piling
 - Engine running
- Activities
 - Construction
 - Equipment operation
 - (eg piling)
 - Transportation equipment



Solid Waste

- Pollution
 - Construction materials
 - Scraps
 - Domestic
 - Obsolete equipment
- Activities
 - Construction/demolition
 - Equipment replacement
 - Household



Flora & fauna

- Loss of bio-diversity
 - Loss of habitat
 - Extinction of species
- Activities
 - Human consumption
 - Building construction
 - Deforestation
 - Construction of dams



Land/Sea Contamination

- Pollution
 - Oil spill
 - Chemicals
- Activities
 - Manufacturing
 - Transportation
 - Storage
 - Accidents



Heritage Sites

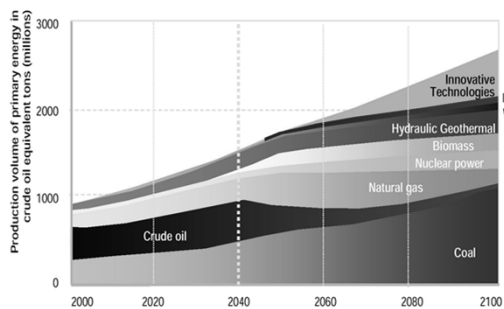
- Protection of antiquities
- Activities
 - Real estate development
 - Infrastructure construction



Depletion of resources

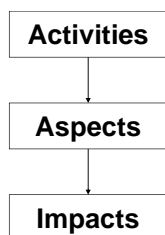
- Oil
- Water
- Hardwood
- etc





Source : New Energy and Industrial Technology Development Organization, NEDO, Japan

Identification of aspects and impacts



Elements of an organization's activities, products and services which can interact with the environment

Any change to the environment whether adverse or beneficial wholly or partially resulting from an organization's activities, products or services

Aspects & Impacts

Aspects	Impacts
SOx discharge	Acid rain
CO2 discharge	Global warming
Hot water discharge	Ecological habitat
Use of marble	Depletion of resources
Leakage of eng oil	Soil contamination
Heavy metal discharge	Bioaccumulation of toxins

What to look for ?

- Site history, neighborhood
 - Plant layout
 - Flow of products
- Organization, authorities and responsibilities
 - Ownership for environmental performance
- Discharge, drainage locations (requirements)
 - Monitoring records
- Treatment facilities, filters
- Use of resources

What to look for ?

- Applicable 'requirements'
- Recent years major incidents/accidents
 - Leakages ?
- Permits by the authorities
 - Tickets, prosecutions
- Input
 - Raw materials, chemicals
- Output/intermediate materials
 - Contaminations/waste types, treatment
- Chemicals involved (input and output)

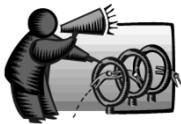
What shall be considered in the review ?

- Activities, products AND services
 - **Life cycle considerations** (2015)
 - Procurement and contracting activities
- Past, existing, planned
- Normal and abnormal operating conditions
- Emergency situations and accidents
- (seasonal factors, peak hours)

Sources of aspects

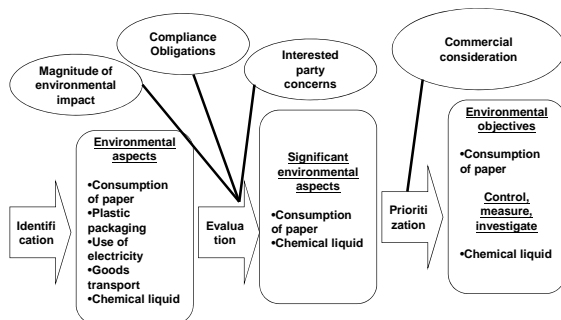
- Emission to air
- Releases to water
- Waste management
- Contamination of land
- Use of raw materials and natural resources
- Other local environmental and community issues (e.g. noise)

Determination of significant aspects



- Compliance obligations
- Stakeholder interest
- Costs
- Scale and duration of impact
- Probability of occurrence

Determination of Significant Aspects



GROUP EXERCISE

"G2 Env. Aspects"



Objective(s)	Time	Roles
Select a U Macau function that your group is familiar with, work out the environmental aspects based on their activities. Be prepared for a presentation. Consider different scenarios (eg abnormal, emergency).	30 min. (max)	<ul style="list-style-type: none"> • Spokesman (Leader) • Time keeper • Script writer

SESSION 2

ISO 14001

REQUIREMENTS



Why ISO 14000 series

- Increasing awareness of environmental issues (customers, investors etc)
- Government is acting
 - Environmental Agencies established
- Legislation and discharge limited
- Influence of pressure groups growing
- Increasing environment related risk

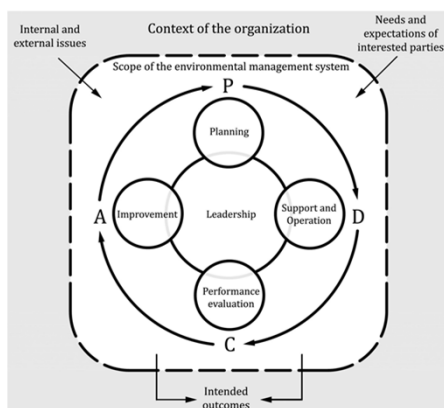
A solution is needed to give Directors and Top Management Peace of Mind

At the ISO level

- (1991) ISO Strategic Advisory Group on Environment (SAGE)
- (1992) TC207 established
- (1996) ISO 14001 published
- (2004) ISO 14001 2nd Edition
- (2015) ISO 14001 3rd Edition
 - **Annex SL**

TC207 Consists of Subcommittees (SC)

SC1	EMS (ISO 14000)
SC2	Environmental Auditing (ISO 14010)
SC3	Environmental Labeling (ISO 14020)
SC4	Environmental Performance (ISO14030)
SC5	Life Cycle Assessment (ISO 14040)
SC6	Terms & Definitions (ISO 14050)
SC7	GHG Mgmt. and related (ISO 14060)



EMS Process

Identify aspects and impacts



Determine if significant



Determine objectives



Control thru program



Continual improvement

What is ISO 14001:2015 ?

- EMS – Requirements with guidance for use
 - Prescriptive 80 ‘SHALLs’
 - Generic in nature
 - (third party certification)
- A management system standard (not product)
- Deming PDCA Cycle

Purpose of ISO 14001

- Specifies requirements for EMS
 - International platform
 - Generic application (SME, 3rd world)
- Offers assurance on environmental performance
 - Compliance with **Obligations**
- Supports organization to demonstrate sound environmental performance within an increasingly stringent context
- Remains a voluntary standard

ISO 14001 does NOT

- Specify env. performance levels
 - Test methods
 - Initial goals or terminal goals (zero emissions)
- Apply to products
- Specify certification requirements
- Specify which technology to use
- Include 'Exclusion' flexibility

Benefits

- Management platform (facilitate control)
 - Prepared for incidents
 - Facilitate discharge permits
- Public image (corporate citizen)
- Demonstrate due diligence
 - Compliance obligations
- Financial
 - Reduced use of energy (resources)/waste
 - Reduced insurance premium
 - Avoid huge cost of mistakes (clean up costs)

Contents (no change from Annex SL)

1. Scope
2. Normative references
3. Terms and definitions
4. Context of the organization
5. Leadership
6. Planning
7. Support
8. Operation
9. Performance evaluation
10. Improvement



SESSION 3

U OF MACAU

INTEGRATED MGMT SYSTEMS

http://www.umac.mo/staff_qm.html



SESSION 4

RELEVANCE AND

INTERNAL AUDIT

Part of daily life 工作的一部份

- Not something separate 不是分割的
- Not something for the auditor 不是為審核員而設
- Integrated with operation, harmoniously
與正常管理結合, 和諧的
- Adds value 增值
- Platform for management control 管理控制平台
- Improves end product quality 改進產品品質
- Improves customer satisfaction 改進顧客滿意
- Improves bottom line 改進財務結果

Think of customers 考慮顧客

- What are their needs and expectations
他們的要求是什麼
– (from my perspective (each position))
以自己的崗位來看
- What's relevance of my work to customer satisfaction
我的工作和顧客滿意有何關係
- How can I do better to make them more happy
我怎樣可以做得更好
- What are compliance obligations ?
有什麼法例法規要求嗎？

Control your processes 控制你的流程

- What are my processes 我管轄怎麼流程
- What are objectives 目標為何
- Where are limits 規限為何
- How confident are you (as the owner) in performing within limits
有否信心在規限內操作
- If not, what ? 如果不可以, 又怎樣？
- What are risks (and what ?) 有什麼風險？

Objectives 目標

- Cascaded to support quality policy framework 不同層次目標以支持品質政策
- SMART (meaningful and challenging)
- Coverage (100%) 覆蓋
- Reviewed 評審
- Continual Improvement 持續改進

Being audited 被審核

- Audit is a common technique to gauge compliance and effectiveness 審核是一種常用的方法以確定符合性和有效性
- Audit to determine system performance and not the performance of a person. Tell the truth 以確定系統而不是一個人的表現。說實話
- Non-conformity is a basis for improvement. Think positive 不符合是改進的機會，以平常態度面對
- Area manager is responsible for improvement, NOT auditee 地區經理負責跟進，不是被訪者
- Take it easy when being audited 審核可以輕鬆些
- It does more harm if NC s are hidden 把不符合隱瞞可能禍害更大
- The right culture shall be cultivated 要培育合適的組織文化

Improvement 改進

- Many certified organizations miss the point on improvement 很多獲頒證書的公司錯過改進的機會
- Internal audit and management review as the prime driver 內審和管理評審為主要推動工具
— (PDCA)
- Preventive actions 預防措施
- System is not engraved in stone 系統不是刻在石頭上



Wish that you have enjoyed the session !

Tell your friend if you like it,
Tell us what you don't like !
