

Internal Environmental Audit Program at BC Hydro

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Evolution and Scope

- Background and context
 - Environmental Integrity Reviews
- Operational Environmental Reviews
 - John
- Environmental Management System Audits
 - Piotr

In The Beginning...

...there was only darkness.

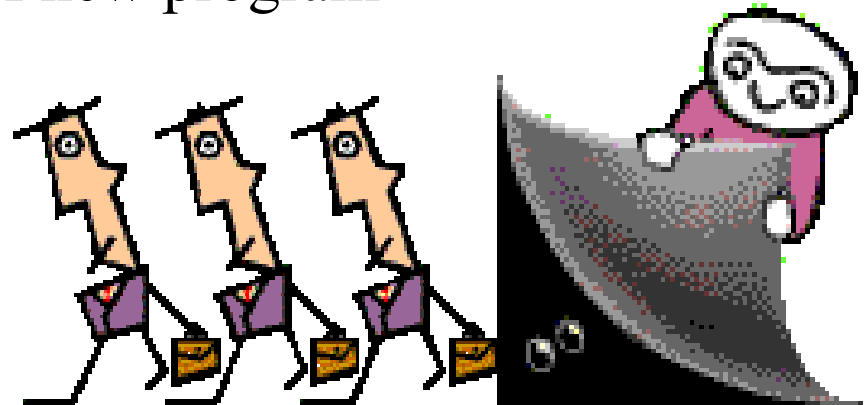


And when the dawn of environmental enlightenment created containment, engineers checked the structural integrity of the containment, and it was called an Environmental Integrity Review



EIRs Expanded and Improved

- Adopted Arthur D Little style of audits
 - expert for each topic
 - comprehensive scope
 - compliance with all regs
- Expensive, slow, scary
 - few completed
 - re-organization prompted re-think and design of new program





Operational Environmental Reviews

- Program designed by task team
 - environmental specialists
 - client managers
- Designed for local managers in area-based T&D organization
- Focused on providing feedback to improve environmental performance
- An intermediate level of performance assessment between routine inspections and formal audits for the Board of Directors



Operational Environmental Reviews

- Small team
 - leader from outside area for independence
 - environmental specialist for topic
 - member of local organization
- Scope focused on operational risks
- Included transfer of best work practices between areas
- Results conveyed at site, finalized with 2 weeks
- Report in format of draft corrective action plan for immediate use by local manager
- Target 1 per area per year



Results

- Completed about 50 OERs over 5 years
- Most relate to substations
 - fixed objects easy to locate
 - larger volumes of oil and other risks
 - established review checklists
- Identified several trends in findings which have resulted in programs to improve performance
 - chronic leaks tolerated
 - now included in regular inspection and maintenance priorities



1. Typical OER team:
waste specialist, env
coord., local manager

OER Results Stations



2. Increased mtce
to reduce leaks



4. Increased
use of
containment

3. Improved work practices
to prevent spillage



More results

- District headquarters material storage
 - inconsistent inspection and yard maintenance
 - improved coordination between business units
- Wood pole test and treat program
 - qualification and performance of contractors
 - non-compliance with Pesticide Control Regulation
 - improved management of test and treat program and documentation of contractor performance



What's in those drums?

What drums?



Line contractors checked for spill preparedness



Storage yards containment inspected





Shortcomings

- Inconsistent coverage
 - voluntary requests for OERs by managers, some areas were not reviewed
 - some lines of business were not reviewed
- Results not shared systematically
- Area-based program no longer reflected T&D managers' responsibilities
 - changed to Process-Based Organization
 - environmental management developed along lines of 5 major processes, 25 sub-processes



The New OERs

- Centrally managed, aligned with Environmental Management System
 - review portion of checking and corrective action
- Retained small team, fast delivery, action-oriented report
- Allocated between areas
 - no longer voluntarily requested
- Allocated between Process organizations
 - challenging environmental staff to develop new review protocols (e.g.. road maintenance, environmental competency)

Operational Environmental Review Schedule for 2001-2002

Stations	Assess environmental compliance, risk management, practices	North and South Interior (8 stations)
Transmission	Assess access management practices incl road planning, maintenance, emergency response	South Interior locations
Distribution	Assess environmental compliance, risk management, practices by line contractors	North and South Interior
Vegetation	Examine use of inventory info in preparing ROW vegetation maintenance work	South Interior
Materials	Review of special waste management in Store 12, Surrey	Lower Mainland
Grid Operations	Assessment of site and material/work mgmt. practice at Lower Mainland Control Center	Lower Mainland
Contract Mgmt	Assess work/materials and site management Practices at two new feeder projects	Lower Mainland
Prot'n & Control	Assess access, site mgmt, work practices at 2 radio repeater sites	North Interior
Resources	Assess env competencies, training and needs	South Vancouver Island
	Assess pole removal practices	North Vancouver Island

EMS Today



learning from the
previous jobs and
improving

Management Review

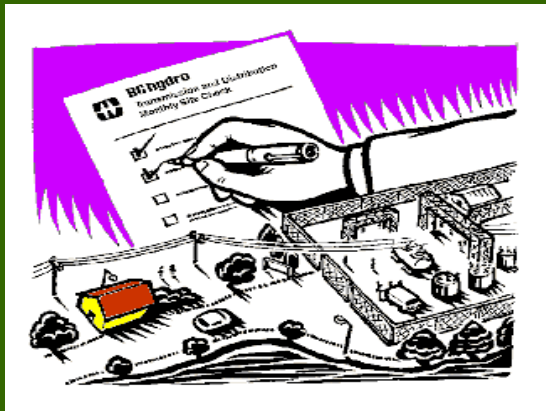
Continual Improvement

Environmental Policy

Planning

Checking & Corrective Action

Implementation



Checking environmental
performance

Formal Environmental Audits

- Part of the Corporate Environmental Audit Program [CEAP]
- Commissioned by Corporate Environment for Board of Directors
- Between 1-2 audits at T&D yearly
- T&D an auditee in 19 audits performed by external consultants
- Audit topics primarily driven by issues

Strengths and Weaknesses of CEAP



- + **Audit program responsive to concerns**
- + **Audit topics selected through weighing of risks**
- + **Provided thorough picture of issues at risk**



- **ISO 14001 auditing criteria not always fit to audit issues**
- **Cross-department focus often rendered CAPs challenging**
- **Offered little information about environmental “big picture”**



Emergence of BCH Environmental Audit Program

Need for a new approach to EMS audits at T&D due to:

- 1. emergence of Process-based organization**
- 2. formalization of T&D EMS**
- 3. delineation of environmental responsibilities**

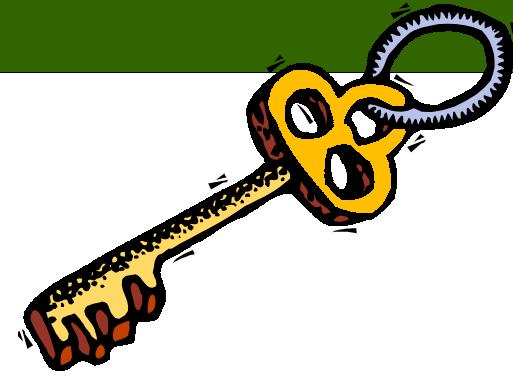
Emergence of BCH Environmental Audit Program [cont.]

BCHEAP created:

- through dialog between CGS, PS and T&D
- in recognition of key stakeholders: BOD, senior management, auditee
- to satisfy ISO 14001 requirements
- to test the status of EMS as means for managing risks



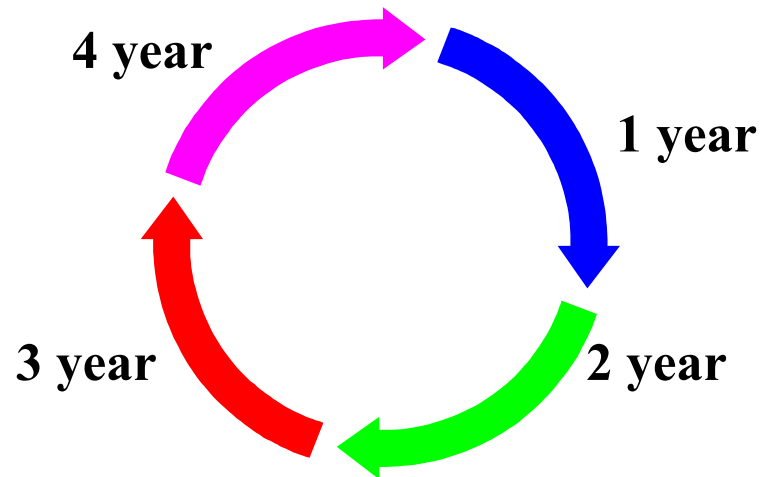
Key Principles of BCHEAP



- Audits test EMS status in defined business entities
- Issues audited in special circumstances
- BHCEAP coordinated by reps from a CGS, PS and T&D
- Audit schedule and annual audit plan

BCHEAP Audit Schedule

- All of BCH audited in a 4-year cycle
- Equal level of audit effort each year
- Audits of units with operationalized EMS
- Entities with similar activities audited in the same year



T&D Process	2000	2001	2002	2003	2004	2005
Add and Improve						
Network Performance Planning, Regional Integrated Planning		✓				✓
Telecommunications					✓	
Construction Management Division			✓			
Stations					✓	
Transmission				✓		
Distribution, Engineering and Planning		✓				✓
Project Management				✓		
Protection and Control			✓		✓	
Maintain Assets						
Stations	✓				✓	
Transmission Lines				✓		
Distribution Lines		✓				✓
Vegetation Management			✓			
Grid Operations						
Grid Operations		✓				✓
Customer Projects and Installations						
Customer Projects and Installations		✓				✓
Ops. Support Services						
Materials Management Business Unit	✓				✓	
Vehicle Services			✓			
Purchasing		✓				✓
QA/Meter			✓			
Facility Management		✓			✓	
Security				✓		
Survey and Photogrammetry			✓			
Resources						
Surrey Oil Operations	✓	✓	✓	✓	✓	✓
Construction Business Unit			✓			
Non Integrated Areas		✓				✓

Annual Audit Plan

- **6-10 audits annually**
- **Distinction between Tier 1 audits [Board] and Tier 2 audits [senior management]**
- **Tier 1 versus Tier 2 criteria:**
 - 1. Potential for environmental impact**
 - 2. Influence of decisions**
 - 3. Past performance as an indicator of due diligence**
 - 4. Level of public perception/trust**

Auditor Selection

- **Tier 1 audits led by certified external auditors**
- **Comprehensive EMS expertise a must**
- **BCH internal auditors on audit teams**
- **Qualified BCH employees potential lead auditors for Tier 2 audits**

BCHEAP at Work - Results to Date

- **BCHEAP approved in 2001**
- **2000/011 audits follow BCHEAP, four T&D audits completed**
- **CAPs complete within 6 month after audit**
- **Lessons learned reflected in implemented management decisions**

Will it Work?

- **Both OERs and EMS audits enter new era**
- **We learnt from past victories and defeats**
- **Maturation of systemic approach**
- **Premature to judge pros and cons**

