



Key Note - Can We Do Better ?

4th Annual Symposium on Contaminated Site Risk
Assessment in BC
Finding Solutions to Risk Assessment Challenges

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Vancouver, BC

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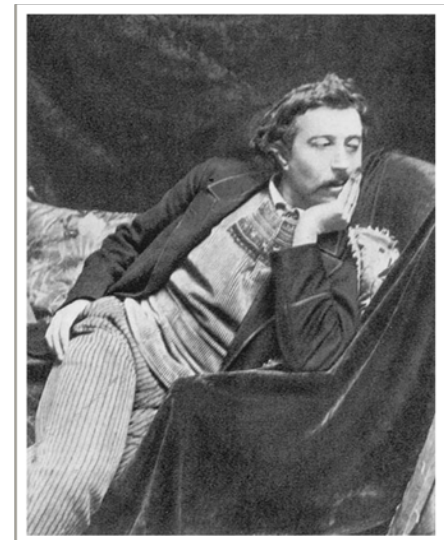
Context of Discussion



Where do we come from?

What are we?

Where are we going?



Paul Gauguin ca. 1897

Where Do We Come From?

People:

- No degrees in Env'l Risk Assessment!
 - We've evolved – some cases of “spontaneous generation”
 - Primordial subset of related skills
 - “Organic growth” within interdisciplinary team
 - Poaching, immigration of assessors, emigration of work
- Rarely from undergrad or graduate programs!!
 - We can do better:
 - Increased academic exposure to hands-on risk assessment
 - Consultant/Regulators coop exposure to real world experience
 - Coops more knowledgeable in HHERA, favourable coop duration
 - Good news – UBC/SFU have the academic infrastructure in place

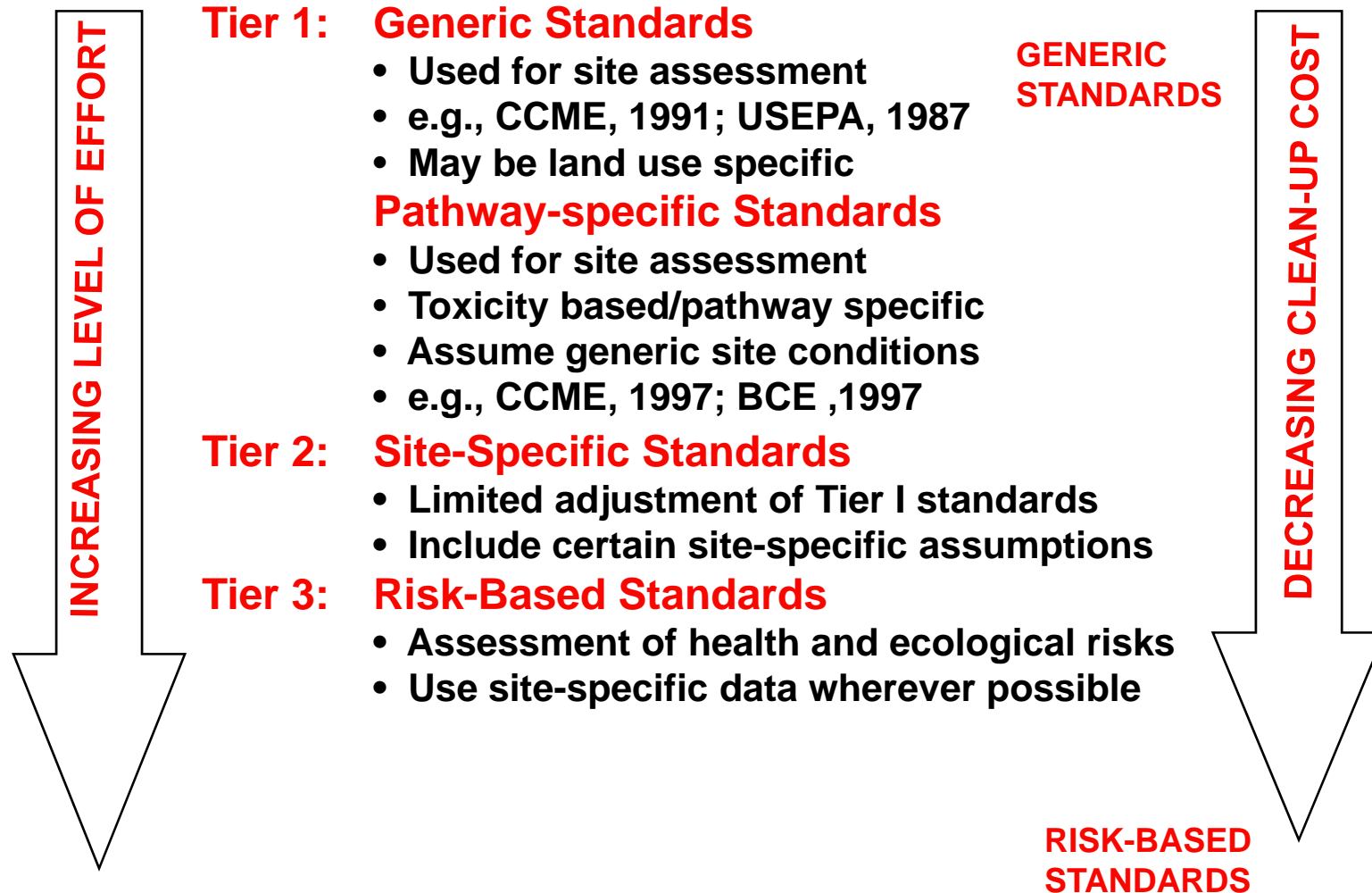


Where Do We Come From?

Regulatory Regime (some milestones):

- 1992/3 – BCE contracted Review of Int'l RA Frameworks and Recommendations
- 1993 – BCE Contracted Wells, BC Risk Assessment – real application of probabilistic HHRA, RMgt., Risk Communication, Risk Mitigation
- Petroleum Hydrocarbon RBCs and Matrix concept
- CSST – Matrix Standards
- CSR Regulations (BC Reg 375/96), Eco-Tier I, Protocols, Technical Guidance, EcoTier II, EMA (SBC 2003), Science Advisory Board, DERA, CSAP designation

Where Do We Come From?

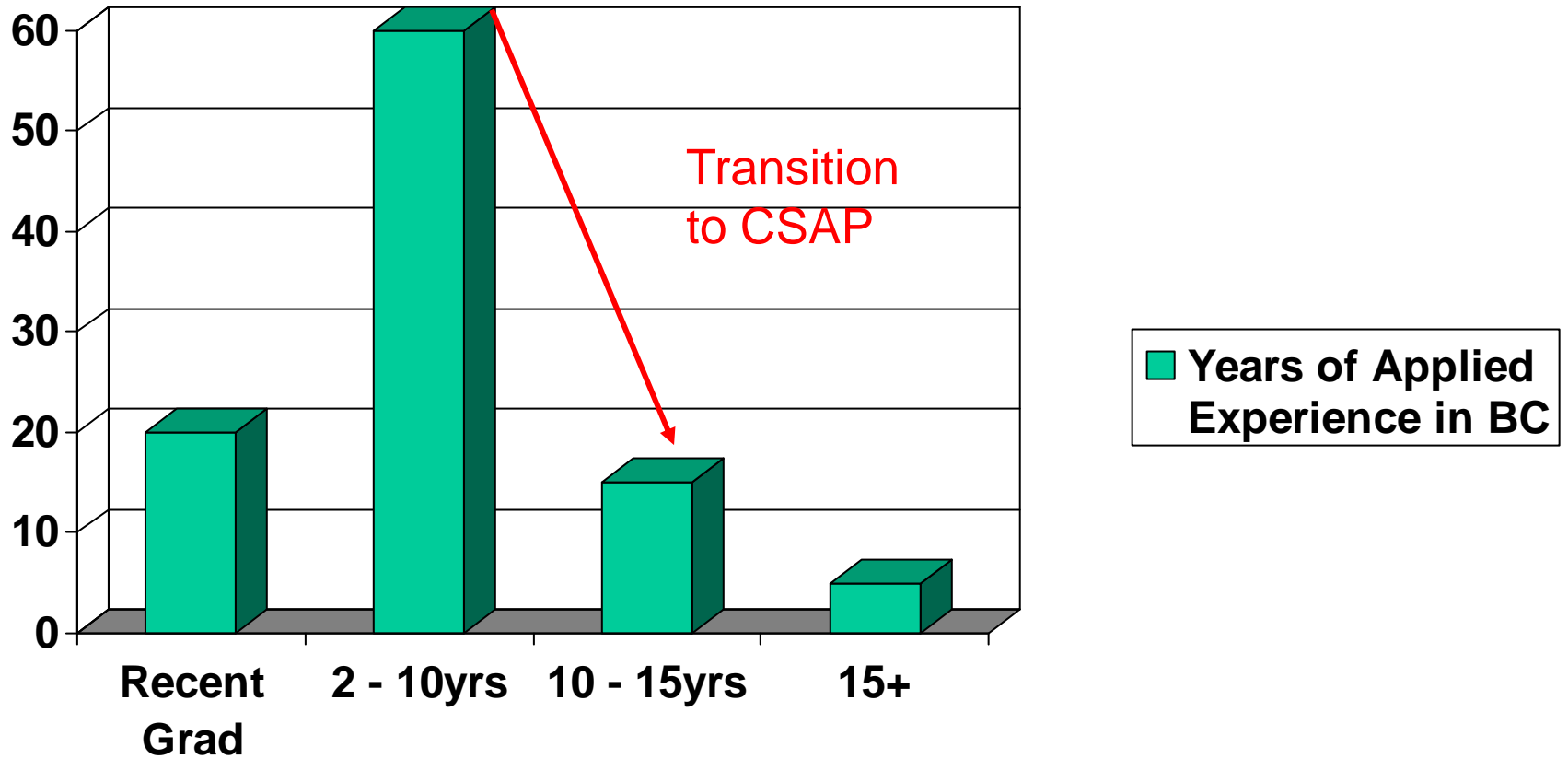


Training slide on CSR Risk Assessment for BCE circa 1997 (Golder 1997)

What are we [doing]?

- Ecologist, toxicologists, enviro-engineers, biologists, soil scientists, hydro[geo]logists, plant scientists, public health scientists, air scientists, statisticians, “big picture people”
- Site investigator
- Risk assessor
- Risk manager – *decision maker*
- Risk communicator
- Remediation design
- Consultant
- Regulators & Policy Makers – *decision maker*
- Corporate EHS managers – *decision maker*

Speculative Demographics for RA/RM Practitioners in BC



What are we [doing] - Risk Modelling

- We are more standardized – Technical Guidance, more technical guidance to come
 - Good - intent to yield consistent level of RA quality
 - Bad - too prescriptive guidance can become constraining to meaning RA/RM (e.g., US EPA RAGs)
 - “Scientifically defensible” was the original “guidance”... do not lose sight of this
 - **We can do better:** New and existing policy/regs should be scrutinized for unnecessary and constraining guidance;



What are we [doing] – Complex Instructive Reporting

Report Format:

- Executive Summary. (consider separate layperson document)
- Introduction
- Preliminary Considerations and **Key Questions**
- Problem Formulation
- Exposure Assessment
- Toxicity (Effects) Assessment
- Risk Characterization
- Conceptual Risk Reduction Considerations
- Conclusions
- Appendices (e.g., glossary, technical details of exposure modelling, toxicological reviews, results of toxicity tests)



We can do better:

- Easy to be complex, wordy, and disjointed...
- Facilitate the review and risk management process
- Eliminate text book writing
- Technical details and methods in Appendix or separate report for reviewer

What are we [doing] - Risk Reviews

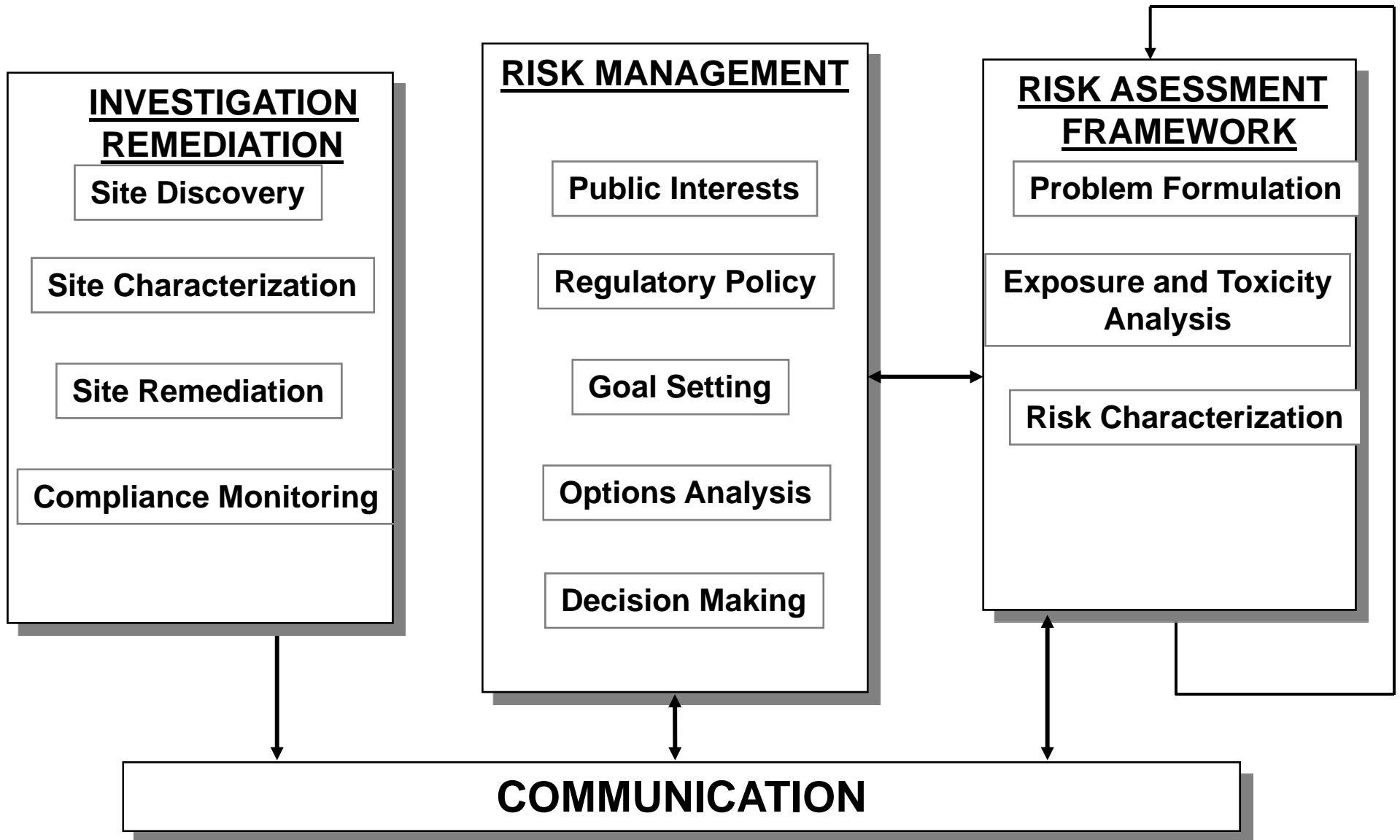
- CSAP risk reviews are becoming more central to CSR process and subject reviewer to scrutiny/liability
 - More weight on consultants shoulders, less on BCE
 - More timely reviews
- Need to monitor success and flow of the reviews
 - Potential for excessive debate/disagreement
 - Verify improved turn around time
- Can objectivity/bias of review arise to avoid liability to reviewer?



But It's Not about Risk *Assessment!*

- What matters is the Risk Management *Decision*
- Good risk assessments do not preclude excessive or mediocre risk management strategies
 - Decision maker may be disconnected from risk assessor
 - Risk management decision may be avoided/delayed in lieu of more investigation on a protracted timeline
- Constrained risk assessments do not necessarily preclude good risk management decisions
- **We can do better:** More scrutiny on rationale for decision and better timeline controls (policy?) to achieve risk management where risks are excessive.

INTEGRATED RISK MANAGEMENT PROCESS FOR CONTAMINATED SITES



What are we [doing] – Mitigation of Projected Risks

- Proposed new projects which trigger BCEAA and CEAA do not fall in to CSR practices
- Requirement to perform an HHERA in context of BCEAA and CEAA appears to be inconsistent;
- Key question: what effect will the proposed new project have on human health and ecological health?
- **We can do better:**
 - Implement HHERA to answer key question
 - Using HHERA to refine the project design to mitigate excessive forecasted risks

What are we [not doing] – FMECA

- Failure Mode Effects and Criticality Analysis (FMECA) could assist in CSR and ESIA risk assessment processes but has virtually no profile
- Useful for contaminant and physical/safety risks
- Risk = Probability of event and nature of consequence
- Especially for SLRAs
- Especially for multiple site priority

		CONSEQUENCE SEVERITY				
		A) Low	B) Minor	C) Moderate	D) Major	E) Critical
I	H & S					
II	Environment					
III	Community					
IV	Operation					
V	Cost					

LIKELIHOOD						
Index	Events/Year					
5) Almost Certain	>1					
4) Likely	1 - 1/10					
3) Possible	1/10 – 1/100					
2) Unlikely	1/100 – 1/1000					
1) Rare	1/1000 – 1/10000					

We're doing well...but we can do better



- Reporting – streamline, simplify
- More timely risk management decisions/actions
- More effective risk mitigation for the Province as a whole rather than just isolated contaminated sites
- Avoid overly prescriptive process to assess/mitigate existing risk (contaminated sites)
- More assessment/mitigation of forecasted risk (ESIAs, BCEAA, CEAA)
- Develop BC risk assessment practitioners
- Multiple site risk management – policy needed?
- Engage other forms of risk assessment to augment HHERA

Where are we going? - Topic for the day



- Greater technical complexity versus more intelligent big picture risk management
- Clear guidance on select topics - Risk Forum Groups to report direction on Top 5 issues
- New Protocol for CSST
- Federal direction on HHRA and contaminated site program

- Sit back, listen and participate!

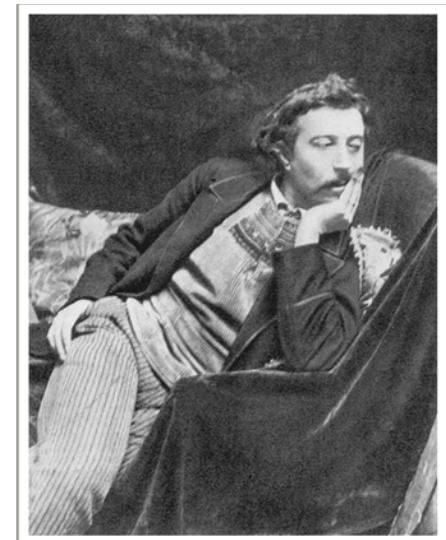
Questions and Discussion



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