



Desktop Remediation™

Site Specific Risk Evaluation

Daniel Gorsic, P.Chem., CEO

GOOD = ✓
BAD = ✗

Our Purpose?

- To protect and improve the environment



What Do We Do?

- Mostly achieve the above stated purpose
- Sometimes, we do more environmental harm than good



How we do more Environmental Harm?

- False contamination is not identified.
- We're too conservative in the identification of risk conditions (e.g. DW applies when it doesn't).



The Regulations

- History
- Generic
- Prescriptive

Conditions Vary

- BC
 - Lower Mainland verses elsewhere
- Alberta
 - Southern verses Northern
- Soils
 - Mineral verses Muskeg

The BC Regulators

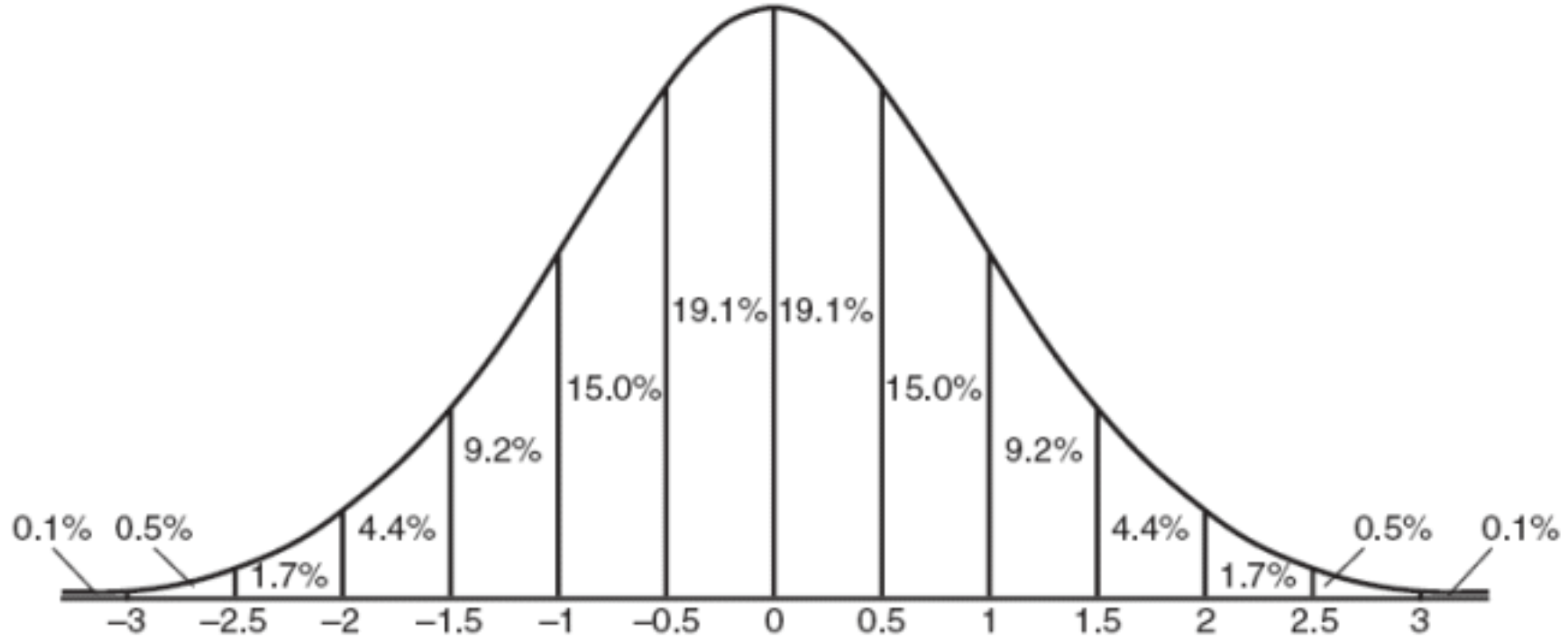
1. Ministry of Environment

- Rule Based
- Discourages Use of Professional Judgement

2. Oil and Gas Commission

- Principle Based
- Encourages Use of Professional Judgement
- Professional Judgement Requires Knowledge, Experience & Expertise!

Normal Curve Standard Deviation



Technician

Professional

Specialist

BC Regulations

- MOE's Approach

Alternatives

Alternative Approach
(Desktop Remediation™)



Site Specific Risk Evaluation (Desktop Remediation™)

- Site Specific
- Scientific Approach
- Focus on contaminant, pathway & receptor
- Not a toxicological study
- Accepted approach by OGC
- Use of professional Judgement
- Must have specialized expertise to use it.
(Practitioner & Regulator)

Standards Based Approach

- Generic
- Prescriptive
- Conservative
- Minimal professional judgement "Allowed".
- An inexperienced practitioner can use it at little to no risk!

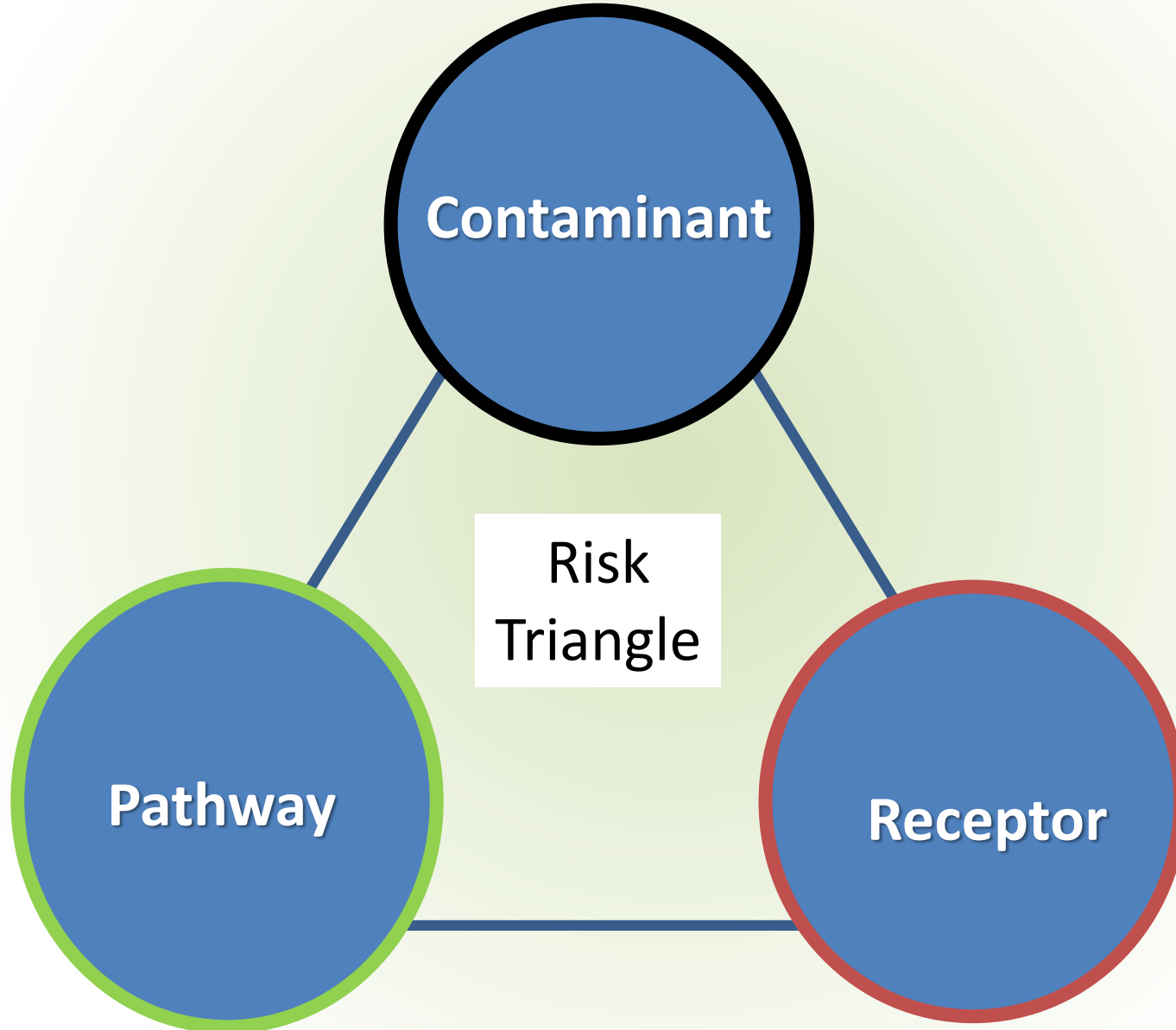
SLRA

- Prescriptive
- Generic (Entire Province)
- Focus Primarily on Pathway

Risk Assessment

- Science based (Toxicity)
- Focus on receptor
- Professional judgment

Environmental Risk Triangle



Risk Triangle: Contaminant Evaluation

- Existing Science
 - Background concentrations (false contamination)
 - Muskeg & recent science (Lab methods)
 - Mg/L
 - Wet Weight
- New science
 - Modified lab method(s)

Risk Triangle: Receptor Evaluation

- Old technology
- Field proof receptors
- Evolving technology
 - Aerial drones
 - GIS tools

Risk Triangle: Pathway Evaluation

- Existing Science
 - Monitoring wells
 - Shelby Tubes
- New science
 - Hydraulic Conductivity via GSA

Results;

Site Specific Risk Evaluation (Desktop Remediation™)

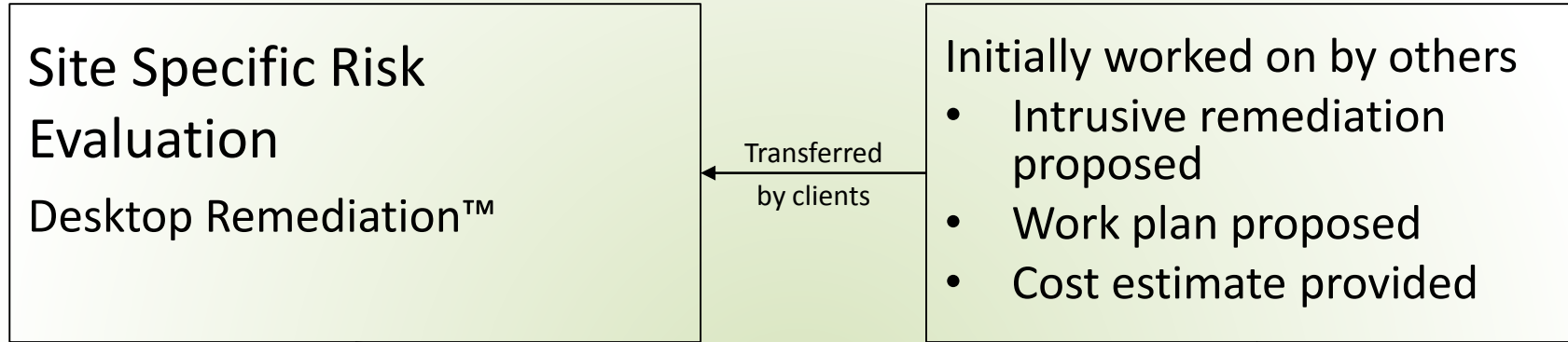
Description	Total COR Part 1s Submitted in BC	Total Submitted by SynergyAspen	Total Submitted by SynergyAspen with DTR™	Obtained by Others
COR Part 1s – Submitted to OGC	85 (100%)	48 (56%)	38 (45%)	37 (43%)

Let's look a little closer at these **results**

NOTE 1: APRIL 2016 TO FEB 1, 2017

Results

38 SITES



Description	Desktop Remediation™	Proposed “Traditional” Approach by Others
Intrusive Remediation – Soil excavation, Trucking and Landfill disposal.	No	Yes > 50,000 m ³
Costs	<\$1M (\$8M Cost Savings)	\$9M
Benefits to the environment	Yes	No

Conclusions

1. Being Too Conservative Does Environmental Harm

- Overly stringent risk conditions & standards are applied.
- False contamination and/or naturally occurring background conditions are not identified.
- Bad for the Environment. Bad for Environmental Budgets.

2. Site Specific Risk Evaluation

- Site specific risk conditions can vary from the regulatory generic and prescriptive approach.
- Requires professional expertise!
- Partnership Between the Industry & the Regulator

3. Procurement Paradox – What do you Want?

- Lowest Hourly Rate, which often results in the highest total project cost and may be the worse approach for the environment?
- The lowest total project costs, what may be best for the environment, but comes with a higher hourly rate?

Call to Action

1. Acknowledgment

- a. We have a variety of different situations requiring a variety of different solutions.

2. Allow Professional Judgement for Site Specific Risk Evaluation.

- a. Is there risk?
- b. How much risk?
- c. How do we best address the risk?

3. Partnership Between Industry & Regulators is Imperative.

Questions?

Site Specific Risk
Evaluation

Desktop Remediation™

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