

# Methanol, Amines, and Glycols Guidelines (MAGG) Project – Phase II

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Dr. James Sevigny, Iridium Consulting Inc.

Gordon Dinwoodie, Alberta Environment

Mike Morden, Petro-Canada



# Technical Steering Committee

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- Alberta Environment
  - Gordon Dinwoodie
- Industry
  - Mike Morden, Petro-Canada/CAPP/PTAC
  - Terry Rowat, Methanex
- Consultants
  - Miles Tindal, Axiom Environmental Inc.
  - Dr. James Sevigny, Iridium Consulting Inc.

# Project Rationale

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- Process chemicals detected in environmental soil samples
- Currently no soil quality guidelines (SQGs) for some of these chemicals
- AENV/PTAC/CAPP project to develop SQGs

# Project Overview

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- Phase 1 (Sept 2004 – Feb 2005)
  - Literature review and compilation
  - Identify data gaps
- Phase 2 (Sept 2005 – July 2006)
  - Additional toxicity testing
- Phase 3 (Fall 2006)
  - Develop guidelines

# Scope of Literature Review (Phase 1)

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- Background information
- Environmental fate and behaviour
- Toxicity
  - Human and mammalian
  - Terrestrial biota
  - Aquatic biota
- Data gaps

# Background

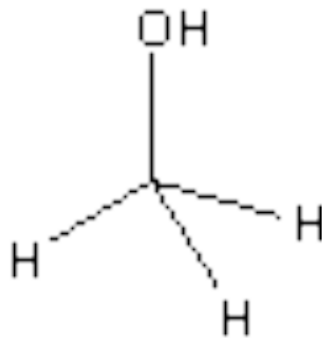
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- Methanol
  - hydrostatic testing
  - hydrate suppression
- Amines
  - gas sweetening
  - other uses
- Glycols
  - gas dehydration
  - hydrostatic testing

# Alcohols

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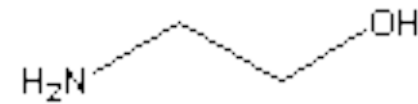
- Methanol



# Gas Sweetening Amines

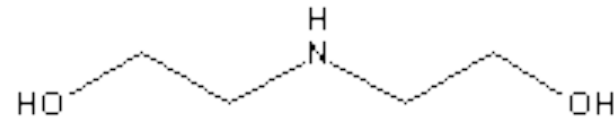
- Monoethanolamine

- (MEA)



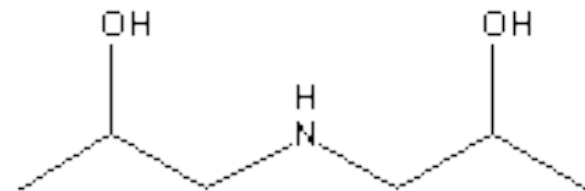
- Diethanolamine

- (DEA)



- Diisopropanolamine

- (DIPA)

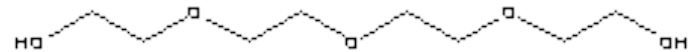
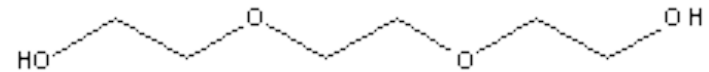
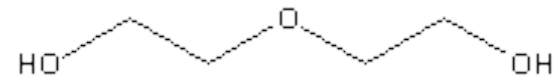
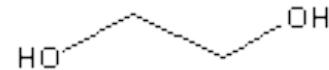




# Glycols

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- Ethylene Glycol
  - (EG)
- Diethylene Glycol
  - (DEG)
- Triethylene Glycol
  - (TEG)
- Tetraethylene Glycol
  - (TREG)



# Phase 2 – Summary of Critical Data Gaps

	Additional Studies Required			
	Terrestrial		Freshwater Aquatic	
	Plant	Invertebrate	Fish	Invertebrate
Methanol	3	2	-	-
MEA	3	2	-	1
DEA	3	2	1	-
DEG	3	2	2	2
TEG	3	2	-	1

# Terrestrial Toxicity Testing

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- Provider:
  - Stantec, Guelph ON
- Test Battery
  - Definitive plant growth tests:
    - northern wheatgrass, barley, alfalfa
  - Chronic invertebrate reproduction tests:
    - earthworm, springtail

# Status of Terrestrial Toxicity Testing

	Plants			Invertebrates	
	NWG	Barley	Alfalfa	Worm	Springtail
Methanol	D	D	D	T	D
MEA	D	D	D	T	T
DEA	D	D	D	T	T
DEG	A	A	A	A	A
TEG	A	A	A	A	A

**NWG = Northern Wheatgrass**

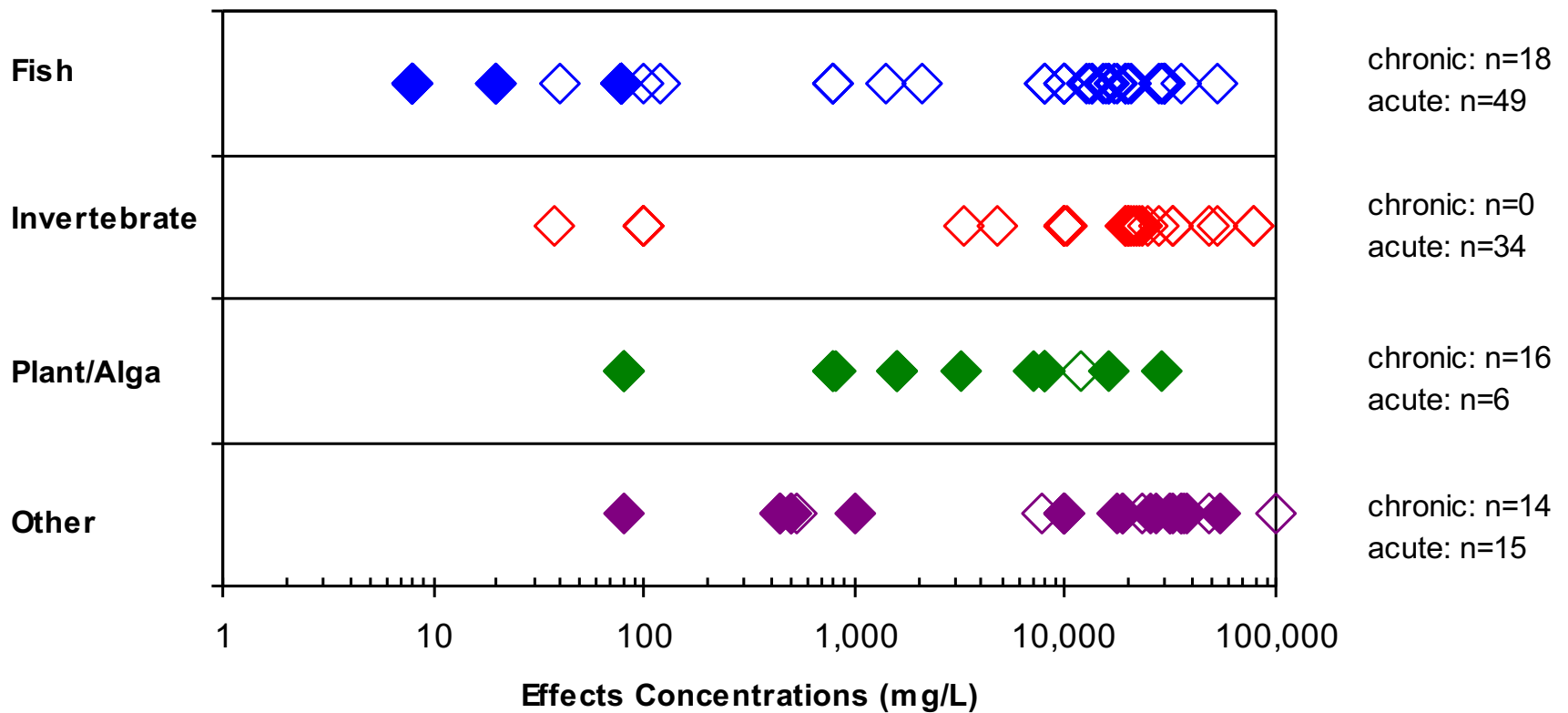
**Current Status:**

**A – Analytical Testing**

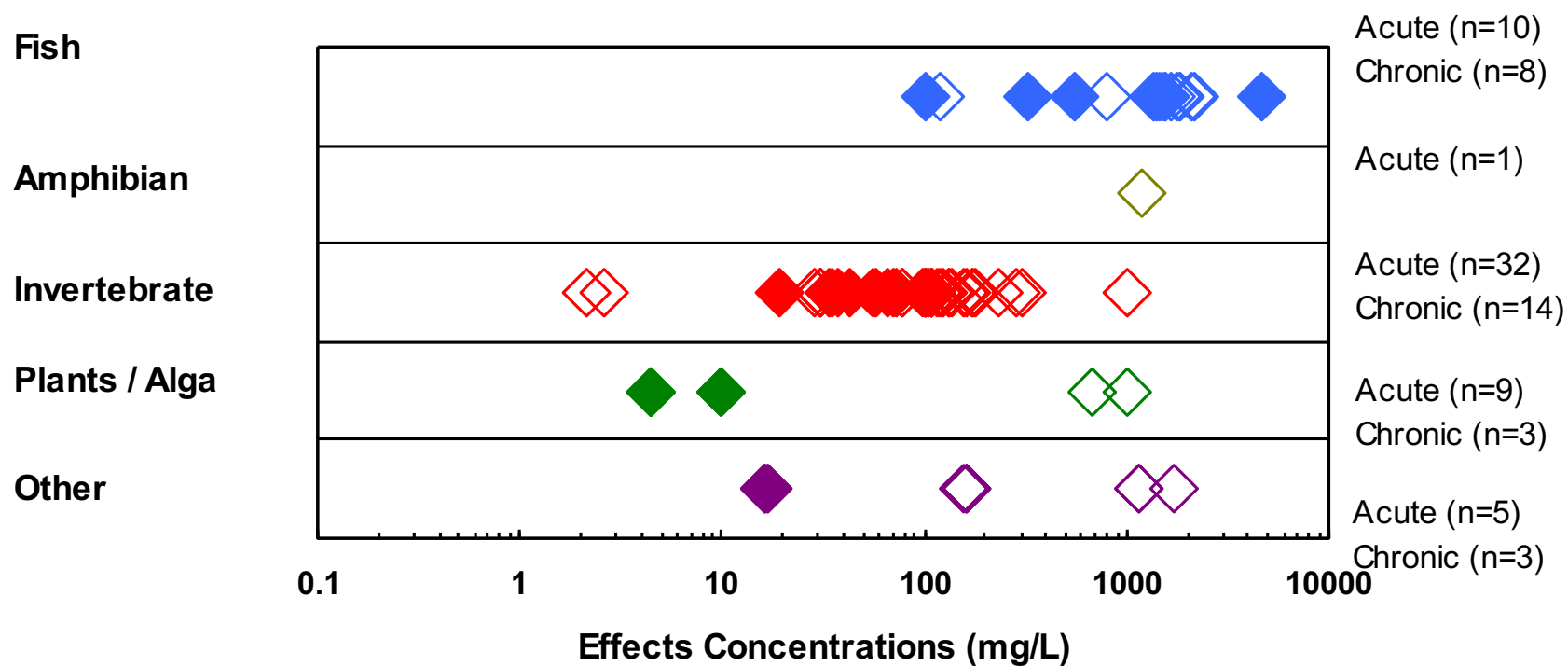
**T – Toxicity Testing**

**D – Data Analysis**

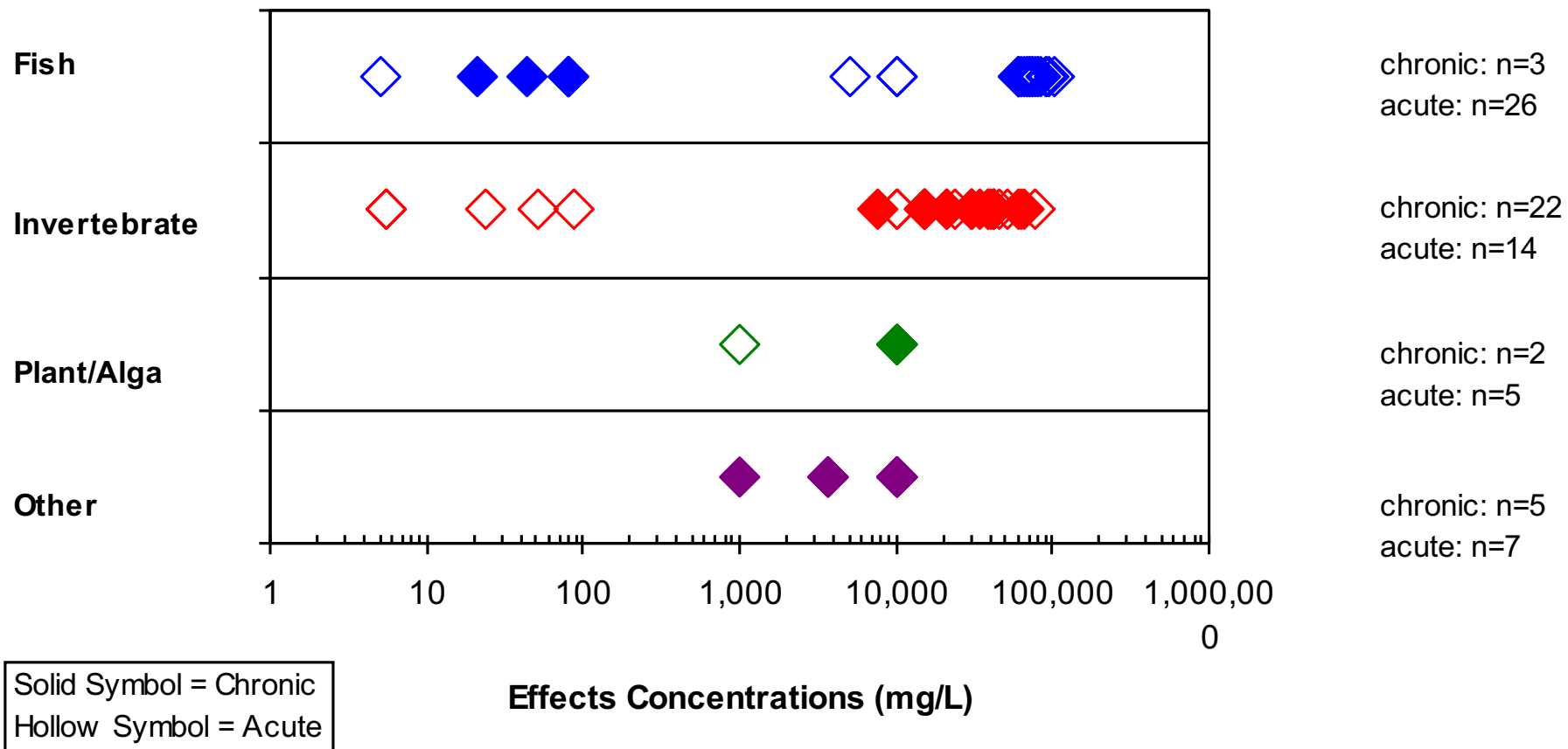
# Freshwater Aquatic Toxicity - Methanol



# Freshwater Aquatic Toxicity - DEA



# Freshwater Aquatic Toxicity - TEG



# Summary of Critical Data Gaps

	Additional Studies Required			
	Terrestrial		Freshwater Aquatic	
	Plant	Invertebrate	Fish	Invertebrate
Methanol	3	2	-	-
MEA	3	2	-	1
DEA	3	2	1	-
DEG	3	2	2	2
TEG	3	2	-	1



# Aquatic Toxicity Testing

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- Provider:
  - Vizon Scitec (formerly BC Research)
- Test Battery
  - 2 Fish Species:
    - rainbow trout; fathead minnow
  - 2 Invertebrate Species:
    - *Daphnia magna*, *Hyalella azteca*

# Status of Aquatic Toxicity Testing

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- Range-Finding Tests:
  - Complete
- Definitive Tests:
  - Underway

# Next Steps

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- Phase 2
  - Complete toxicity testing
  - Summer 2006
- Phase 3
  - Develop soil quality guidelines
  - Fall 2006