

# INTEGRATED REPORTING FOR ENVIRONMENTAL DATA MANAGEMENT

Improving laboratory data  
consolidation, analysis, and reporting.



Environmental Measurement  
Symposium ~ 2014

Promium

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PR̄MIUM

# An integrated approach



Streamlining the flow of information from laboratories to their clients.

- Reduce investment of time and effort to get to the end result.
- Consolidate data from multiple projects & labs.
- Provide a more interactive experience.

More connected

More efficient

More effective

# What happens to laboratory data when it leaves the lab?

Two traditional paths for managing laboratory results:

Manual  
Transcription



Comprehensive  
EDMS



# Manual Transcription - Using spreadsheets

## Obstacles and Hurdles

- Time consuming manual process
- Transcription errors
- No robust method of ensuring data QA
- No audit trail
- Hard to combine data from multiple laboratory reports
- Difficult to effectively share data

### Labor Intensive Process

1. Review Laboratory QA.
2. Compile tables for Field QA.
3. Compile Result Tables with Exceedances.
4. Review all compilations.
5. Integrate data with previous results (tables, maps, graphs).

# Comprehensive EDMS



Manages more than laboratory results  
—good for some, overkill for many.

## Obstacles and Hurdles

- Complex with steep learning curve
- Expensive to setup and maintain
- Requires IT staff
- High investment
- Only use a small percentage of functionality

# A Third Way

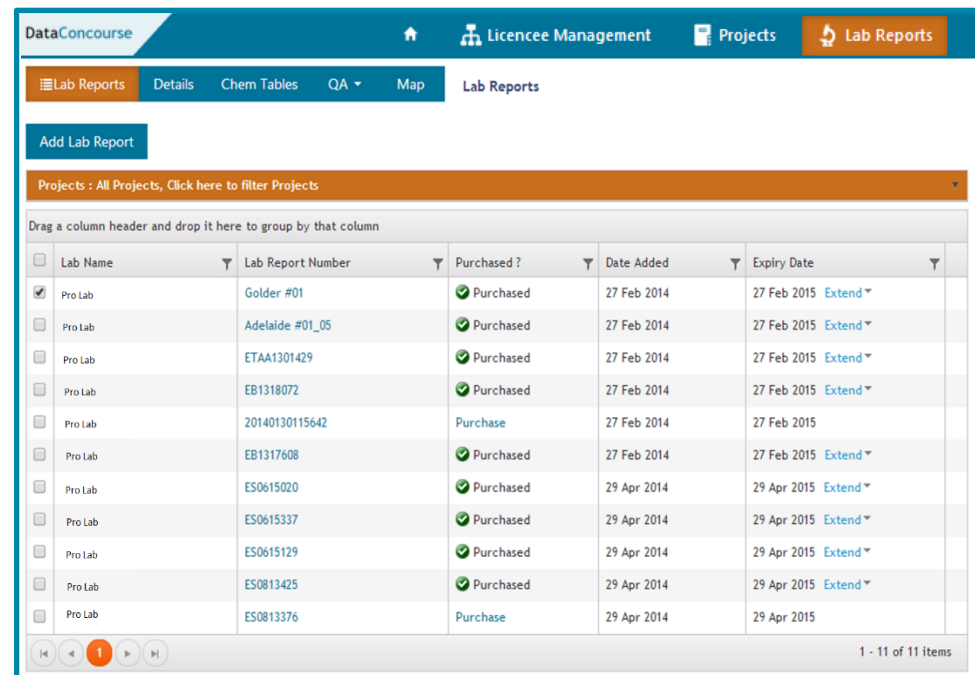
An interactive web-based service that automates data collection, and streamlines analysis and reporting.

- Hosted service (no internal setup or IT required)
- Pay per report (no software/hardware costs)
- Easy to use functionality (limited training required)
- Consolidate data from multiple laboratories
- Specify field data, enter qualifiers & comments

# Automated import of laboratory reports

DataConcourse™

- Tightly integrated with laboratories using Element LIMS.
- Import reports from labs not using Element LIMS.
- Consolidate laboratory reports across one or many projects or labs.



Lab Name	Lab Report Number	Purchased?	Date Added	Expiry Date
Pro Lab	Golder #01	✓ Purchased	27 Feb 2014	27 Feb 2015 <a href="#">Extend</a>
Pro Lab	Adelaide #01_05	✓ Purchased	27 Feb 2014	27 Feb 2015 <a href="#">Extend</a>
Pro Lab	ETAA1301429	✓ Purchased	27 Feb 2014	27 Feb 2015 <a href="#">Extend</a>
Pro Lab	EB1318072	✓ Purchased	27 Feb 2014	27 Feb 2015 <a href="#">Extend</a>
Pro Lab	20140130115642	Purchase	27 Feb 2014	27 Feb 2015
Pro Lab	EB1317608	✓ Purchased	27 Feb 2014	27 Feb 2015 <a href="#">Extend</a>
Pro Lab	ES0615020	✓ Purchased	29 Apr 2014	29 Apr 2015 <a href="#">Extend</a>
Pro Lab	ES0615337	✓ Purchased	29 Apr 2014	29 Apr 2015 <a href="#">Extend</a>
Pro Lab	ES0615129	✓ Purchased	29 Apr 2014	29 Apr 2015 <a href="#">Extend</a>
Pro Lab	ES0813425	✓ Purchased	29 Apr 2014	29 Apr 2015 <a href="#">Extend</a>
Pro Lab	ES0813376	Purchase	29 Apr 2014	29 Apr 2015

# Library of regulatory environmental standards

DataConcourse™

- U.S. EPA and other Federal and State agencies.
- Compare one or more reports against standards and exceedances on chem tables or map.

The screenshot displays the DataConcourse web application. The top navigation bar includes links for Home, Licence Management, Projects, and Lab Reports. Below this, a secondary navigation bar highlights 'Lab Reports', 'Details', 'Chem Tables', 'QA', and 'Map'. The main content area is titled 'Lab Reports: 20140130115642, Golder #01'. It features a table with columns for 'Env Standards', 'Results', 'Statistics', 'Sample Information', 'Chem Names', 'Excel Export', and 'Profile: Default'. The 'Env Standards' column lists various regulatory standards, such as 'North Carolina 2L Drinking Water' and 'OR DEQ LEVEL II SLV Surface Water Fresh: A'. The 'Results' column shows corresponding values, often with color-coded indicators (e.g., green for 'A', red for 'B'). The 'Chem Names' column is expanded, showing a detailed table of chemical concentrations for various metals and inorganics, including Sodium, Arsenic, Barium, Cadmium, Chromium (hexavalent), and Chromium (trivalent). The data is presented in a structured format with units like mg/L and NTU.

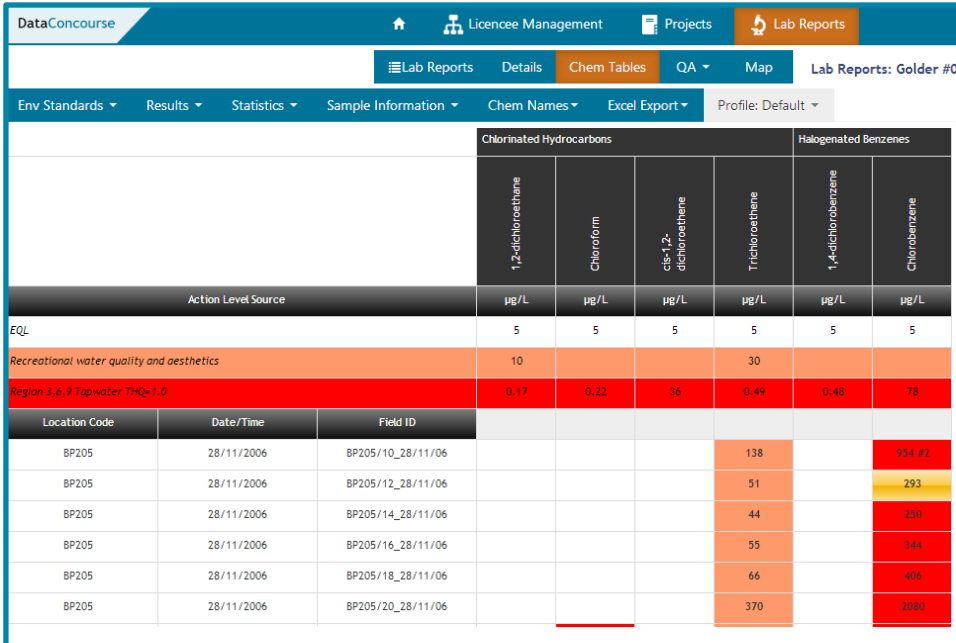
Env Standards	Results	Statistics	Sample Information	Chem Names	Excel Export	Profile: Default
<input type="checkbox"/> North Carolina 2L Drinking Water	A			Inorganics		
<input type="checkbox"/> OR DEQ LEVEL II SLV Surface Water Fresh: A	A			Metals		
<input type="checkbox"/> OR DEQ LEVEL II SLV Surface Water Fresh: B	B					
<input type="checkbox"/> OR DEQ LEVEL II SLV Surface Water Fresh: M	A					
<input type="checkbox"/> OR DEQ RBC Ground Water in Excavation	A					
<input type="checkbox"/> OR DEQ RBC Ground Water Ingestion & Inh	A					
<input type="checkbox"/> OR DEQ RBC Ground Water Volatilization to	A					
<input type="checkbox"/> OR DEQ RBC Ground Water Volatilization to	A					
<input type="checkbox"/> Region 3,6,9 Industrial THQ=1.0	A					
<input type="checkbox"/> Region 3,6,9 MCL Water THQ=1.0	A					
<input type="checkbox"/> Region 3,6,9 MCL-based SSL THQ=1.0	A					
<input type="checkbox"/> Region 3,6,9 Residential THQ=1.0	A					
<input type="checkbox"/> Region 3,6,9 Risk-based SSL THQ=1.0	A					
<input type="checkbox"/> Region 3,6,9 Tapwater THQ=1.0	A					
<input type="checkbox"/> US MCLs	A					

Sodium	Arsenic (filtered)	Barium	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (trivalent) (filtered)
NTU	mg/L	mg/L	mg/L	mg/L	mg/L
	0.001	0.16	0.001	0.001	0.001
-	0.021	-	<0.001	<0.001	0.012
-	0.025	-	0.012	0.013	0.054
-	0.023	-	0.014	0.0012	0.011
-	<0.001	-	<0.001	<0.001	<0.001
-	0.022	-	0.054	0.066	0.17
>98.9	-	>97.1	-	-	-
>8	-	>22	-	-	-
0	5	2	5	5	5
-	-	-	-	-	-



# Formatted chemistry tables

- Specify chemistry table layout, colors and other settings.
- Choose to only view detects, exceedances, or particular compound groupings.
- Export table to Microsoft® Excel.



			Chlorinated Hydrocarbons				Halogenated Benzenes	
			1,2-dichloroethane	Chloroform	cis-1,2-dichloroethane	Trichloroethene	1,4-dichlorobenzene	Chlorobenzene
Action Level Source			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			5	5	5	5	5	5
Recreational water quality and aesthetics			10			30		
Region 3,6,9 Tapwater THQ< 1.0			0.17	0.22	36	0.49	0.48	78
Location Code	Date/Time	Field ID						
BP205	28/11/2006	BP205/10_28/11/06				138		934.82
BP205	28/11/2006	BP205/12_28/11/06				51		293
BP205	28/11/2006	BP205/14_28/11/06				44		250
BP205	28/11/2006	BP205/16_28/11/06				55		344
BP205	28/11/2006	BP205/18_28/11/06				66		406
BP205	28/11/2006	BP205/20_28/11/06				370		2080

# Validation and final qualifier checks

- Enter qualifiers or comments against selected results.
- Select results and add comments or validation.

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Lab Reports: 20140130115642, Adelaide #01\_05, Golder #01

Env Standards ▾ Results ▾ Statistics ▾ Sample Information ▾ Chem Names ▾ Excel Export ▾ Profile: Default ▾ Unit Conversions Problems: 1 ▾

	Field	Inorganics	Metals			
	pH (field)	Sulfate	Ammonia (field)	Barium	Cadmium (field)	Chromium (field)
Action Level Source	pH Units	NTU	mg/L	mg/L	mg/L	mg/L
EQL			0.001	0.16	0.001	0.001
US MCLs			0.01	2	0.005	
Date/Time	Field ID					
	BH01_21/02/2014	7.2	-	0.011	-	<0.001
	GW01_7/02/2014	7.2	-	0.027	-	<0.001
	GW02_7/02/2014	5.6	-	0.025	-	0.013
	QA1	7.1	-	0.023	-	0.014
	Rinse	7	-	<0.001	-	<0.001
	SW01_7/02/2014	4.1	-	0.022	-	0.054
1/23/2014	DRAFT: DC Sample 1	-	>98.9	-	>97.1	-
1/23/2014	DRAFT: DC Sample 2	-	>8	-	>22	-
Statistics						
Number of Results		6	0	6	2	6
Number of Detects		6	0	5	0	3
Minimum Concentration		4.1		<0.001	>22	<0.001
Minimum Detect		4.1	ND	0.021	ND	0.012
Maximum Concentration		7.2		0.025	>97.1	0.054
Maximum Detect		7.2	ND	0.025	ND	0.054

Result Details Comments

Field ID: GW02\_7/02/2014

Sampled Date: -

Location Code: BH01

Well: -

Sample Depth Range: -

Sample Comments

Chem Code: 7439-97-6

Original Chem Name: Mercury

Filtered: ☒

Result: 4.5 ug/L

EQL: 0.1

Result Type: Reg

Method Type: Dissolved Mercury by FDMS

Method Name: EGO35F: Dissolved Mercury by FDMS

Lab Qualifier: -

Lab Comments (Result): -

Validation Qualifier:

Validation Comments: Background concentration

Final Qualifier:

Final Comments:

Save

# Quality Assurance reports

## Produce standard QA reports required

### Field QA

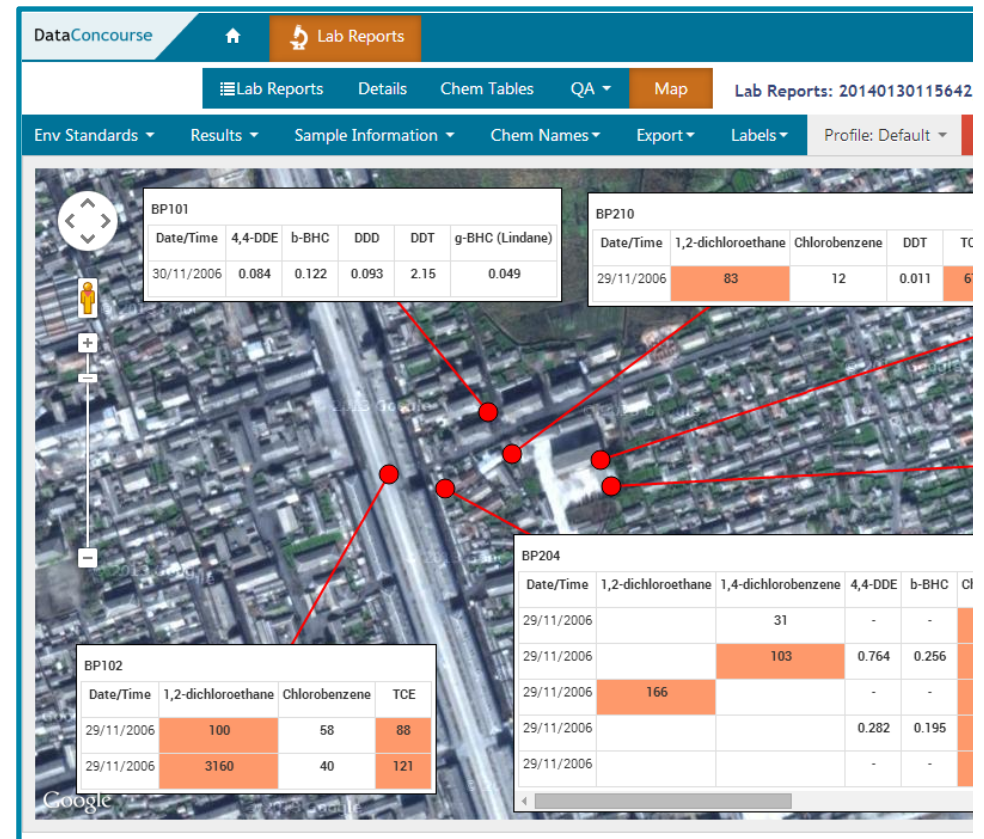
- Field duplicates and triplicates
- Field blanks, trip blanks, rinsates
- Trip spikes

### Laboratory QA

- Duplicates and blanks
- Holding times
- Inorganic logic checks
- Laboratory control samples/reference materials
- Matrix spikes and surrogates

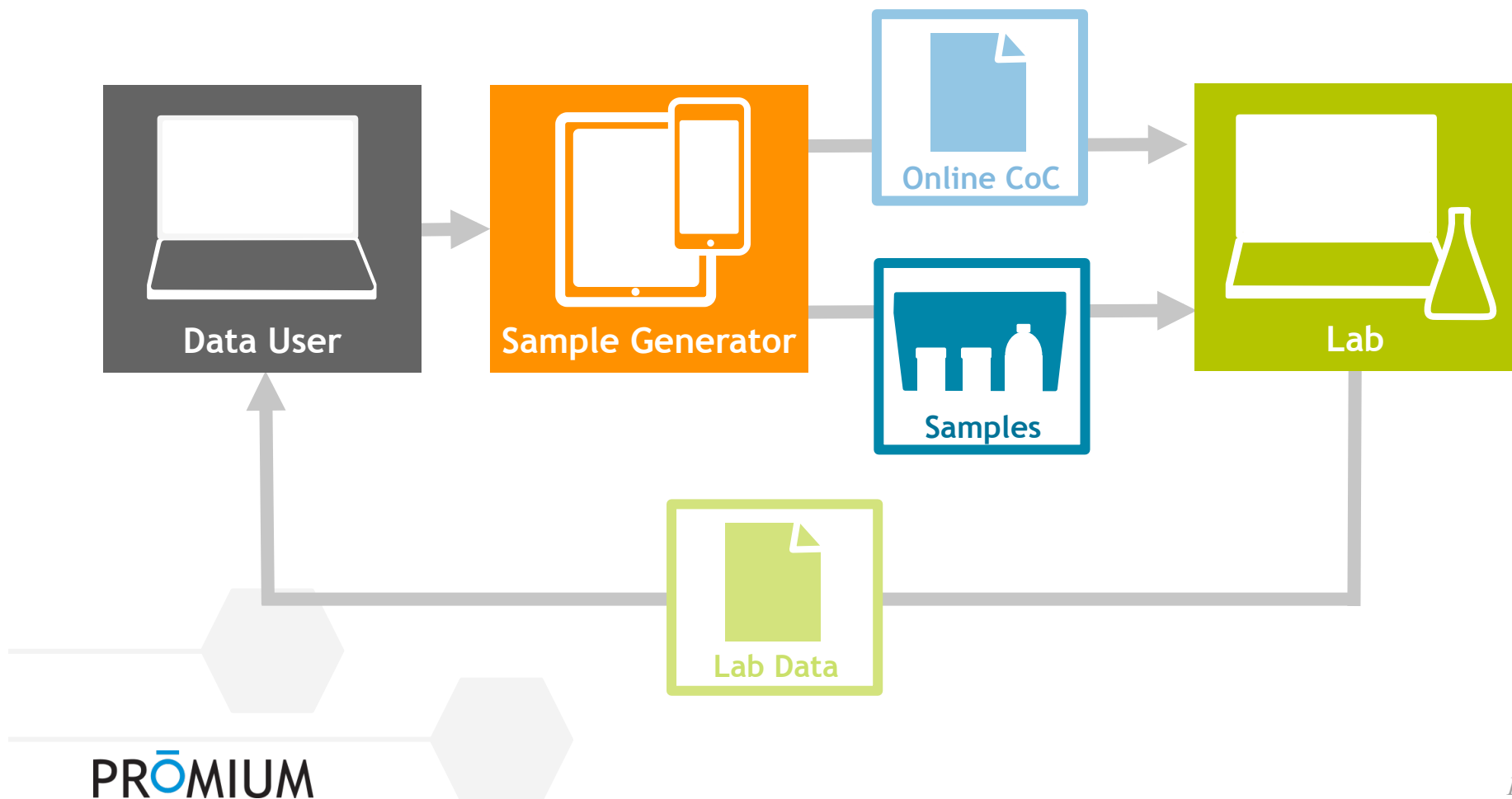
# GIS Mapping

- View results and exceedances with built-in GIS and Google Imagery underlay.
- Export to other mapping software.



# Accelerating the flow of information

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