



# **Understanding Toxic Chemical Releases to Surface Waters in the Mid-Atlantic Region**

2014 National Monitoring Conference  
Cincinnati, Ohio

April 30, 2014



## Objectives

- Improving understanding of toxic chemicals being discharged into United States surface waters
- Using both Toxics Release Inventory (TRI) and Discharge Monitoring Report (DMR) data provides the best picture of toxics data being discharged into our surface waters
- Demonstrating collaboration among different EPA offices to improve public access to toxic release data for surface waters



# Primary Sources of Toxic Chemical Discharge Data to Surface Waters

## 1. Toxics Release Inventory (TRI)

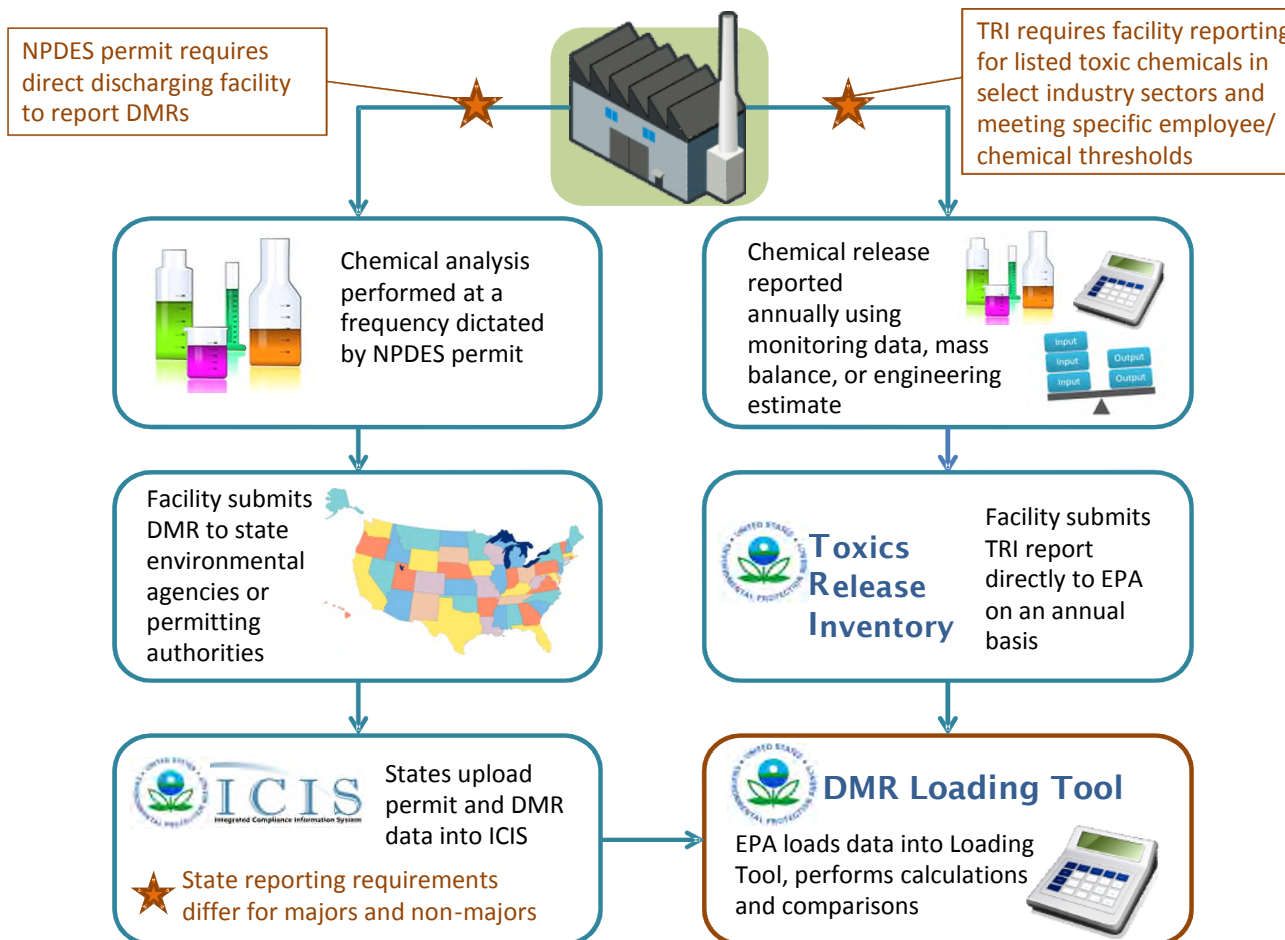
- Required by the Emergency Planning and Community Right-to-Know Act (EPCRA)
- TRI tracks the management of certain **toxic chemicals** that may pose a threat to human health and the environment.
- Facilities report data to EPA consisting of both measurements and estimates using best available methods

## 2. Discharge Monitoring Reports (DMRs)

- Required by the Clean Water Act (National Pollutant Discharge Elimination System – NPDES)
- NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States
- Facilities report data to states as required in their NPDES permit
- DMRs provide monitoring information from permitted facilities on the characteristics of their effluent discharges
- DMRs have both **conventional and toxic** pollutants

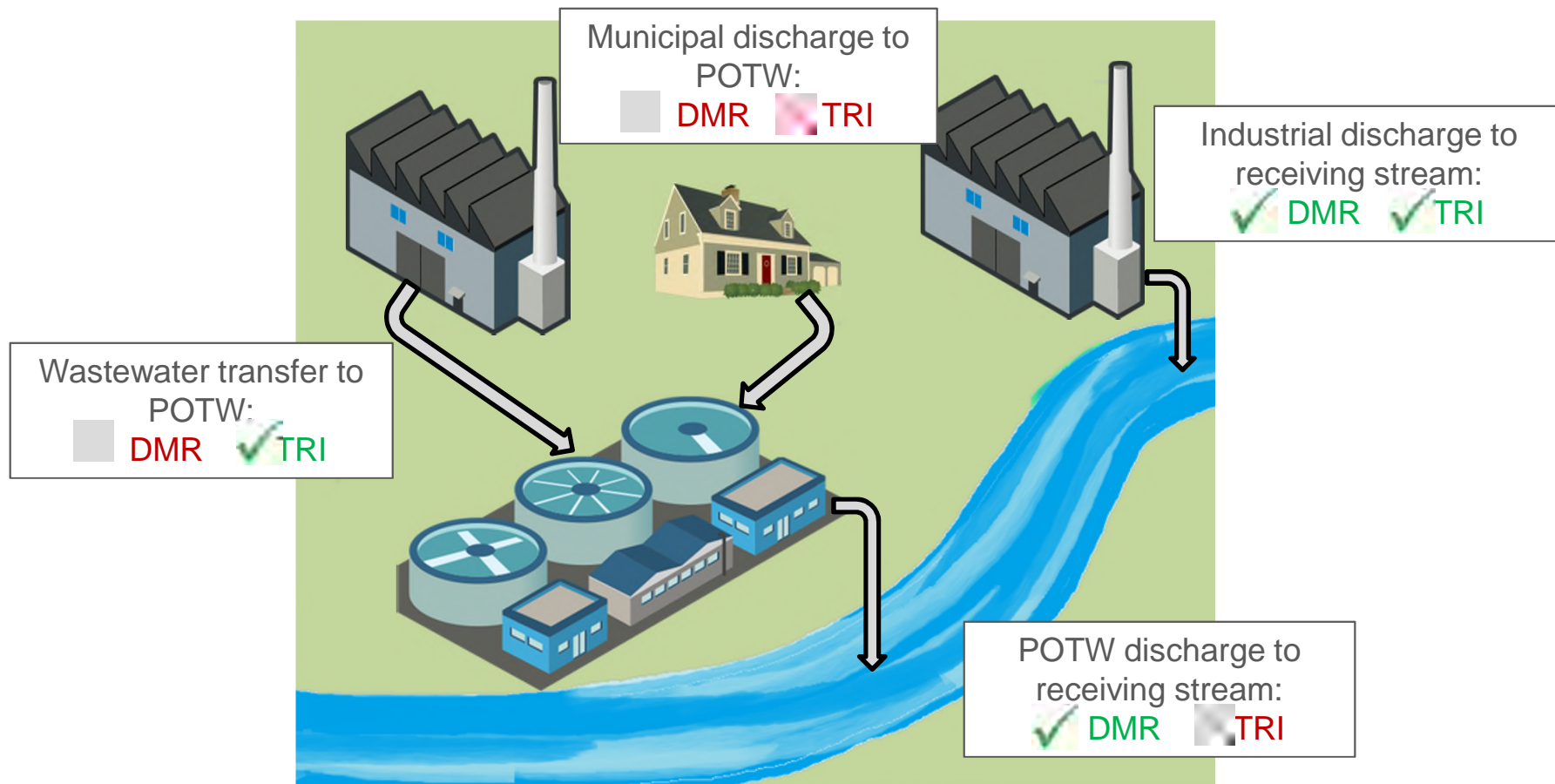


# Reporting to DMR & TRI





# Wastewater Streams for DMR and TRI Data



Images : Tracey Saxby. Integration and Application Network, University of Maryland Center for Environmental Science ([ian.umces.edu/imagelibrary/](http://ian.umces.edu/imagelibrary/))



# Understanding Toxic Chemical Releases - DMR Tool

- Provides information on discharges – Who? What? How Much? Where?
  - Calculates loadings from DMR and TRI data independently
  - Presents pollutant loadings as pounds per year and as toxic-weighted pounds (or TWPE) per year
  - Ranks dischargers, industries, and watersheds based on pollutant mass and toxicity
  - DMR loadings are dominated by non-toxic chemicals
  - TRI contains only listed toxic chemicals



US EPA DMR Pollutant Loading Tool | x

cfpub.epa.gov/dmr/ez\_search.cfm

### 1 Location or Watershed

Nationwide

Search by Location

Zip Code:

EPA Region:

[View EPA regional map](#)

OR

State:

City:

County:

Search by Watershed

Zip Code:

Watershed ID (12-Digit HUC):

[Find 12-digit HUC on a map](#)

Major U.S. Watersheds:

**Only include facilities that discharge:**

to impaired waterbodies

pollutants contributing to a waterbody impairment

to counties with ESA-listed aquatic species

If you would like more detailed information, try the [Advanced Search >](#)

### 2 Pollutant

All Pollutants

Specify Pollutant

Pollutant Name(s) (or partial name(s))

*Separate pollutants with a semicolon (;)*

Chemical Abstract Service Number (CAS) (without dashes)

Pollutant Categories

- Nitrogen
- Phosphorus
- Ocean Enrichment
- Salts
- Pathogen Indicator
- Metals
- Clean Water Act Priority Pollutants
- CERCLA Hazardous Substances
- TRI Chemicals
- Temperature
- Wastewater Flow

### 3 Industry

All Point Sources

Publicly Owned Treatment Works (POTWs) Only

Industrial Point Sources (non-POTW)

Point Source Category:

Industrial Sector ID (2-Digit SIC Code):

OR

Enter a Industrial Sector ID (4-digit SIC Code):

[SIC Code lookup](#)

2-digit NAICS code:

Only include facilities that link to TRI ID(s)

Limit to facilities that:

- Report TRI releases to surface waters
- DO NOT report TRI releases to surface waters

Only include facilities that DO NOT link to TRI ID(s)

Clear selection

Where?

What?

Who?



# DMR Tool: Comparing DMR and TRI Data

- Identify facilities with large differences in values reported to DMR and TRI
  - Pounds per year (raw pounds and toxic-weighted pounds)
  - Percentage difference between DMR and TRI

## Facility Multi-Year Loading Report

HONEYWELL INTERNATIONAL INCORPORATED - HOPEWELL, HOPEWELL, VA, 23860

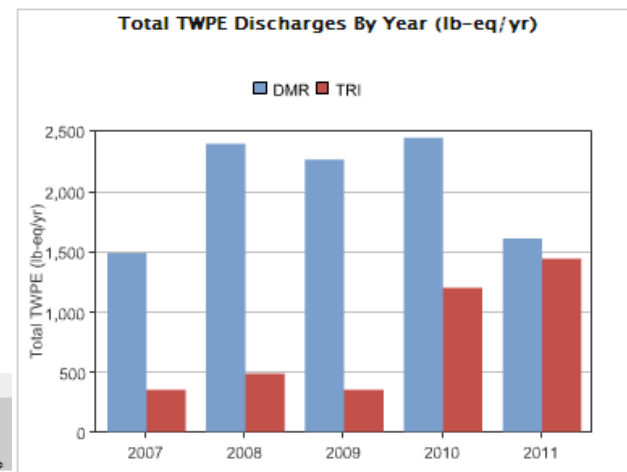
FRIS ID: 110000620221

NPDES ID(s): VA0005291 *Click a NPDES ID to view that facility's detail page.*

TRI ID(s): 23860LLDSGPOBOX *Click a TRI ID to view that facility's detail page.*

Discharges to Chemical Groups by Pounds (lbs)

Chemical Group	2007 DMR (lbs/yr)	2007 TRI (lbs/yr)	2008 DMR (lbs/yr)	2008 TRI (lbs/yr)	2009 DMR (lbs/yr)	2009 TRI (lbs/yr)	2010 DMR (lbs/yr)	2010 TRI (lbs/yr)		
NITRATE COMPOUNDS		93,095		82,300		68,010		75,415		110,900
AMMONIA		51,060	457,626	45,135	423,554	37,305	509,173	41,420	682,542	60,400
CYCLOHEXANOL		0		0			75,600	37,270		59,000
ZINC AND ZINC COMPOUNDS	-	-		10,420	1	9,125	2	9,190	2	10,430
TOLUENE		405		270	0	250	322	435	322	4,800
COPPER AND COPPER COMPOUNDS	-	-		2,320	0	2,160	0	1,965	0	3,074







## Mid-Atlantic - Region 3



- EPA used Region 3 as a pilot test to evaluate the use of the DMR Loading Tool to compare DMR and TRI discharge data
- Region 3 accounts for:
  - 9.2% of NPDES permitted facilities in the U.S.
    - 6.0% of facilities with discharge data in ICIS-NPDES
  - 9.5% of facilities reporting water releases to TRI in the U.S.



## Region 3 Facilities, Chemicals, and Pollutant Loads



	DMR (Total)	DMR (Non-POTWs)	DMR (POTWs)	TRI
Total Facilities	15,392	13,686	1,724	1,745



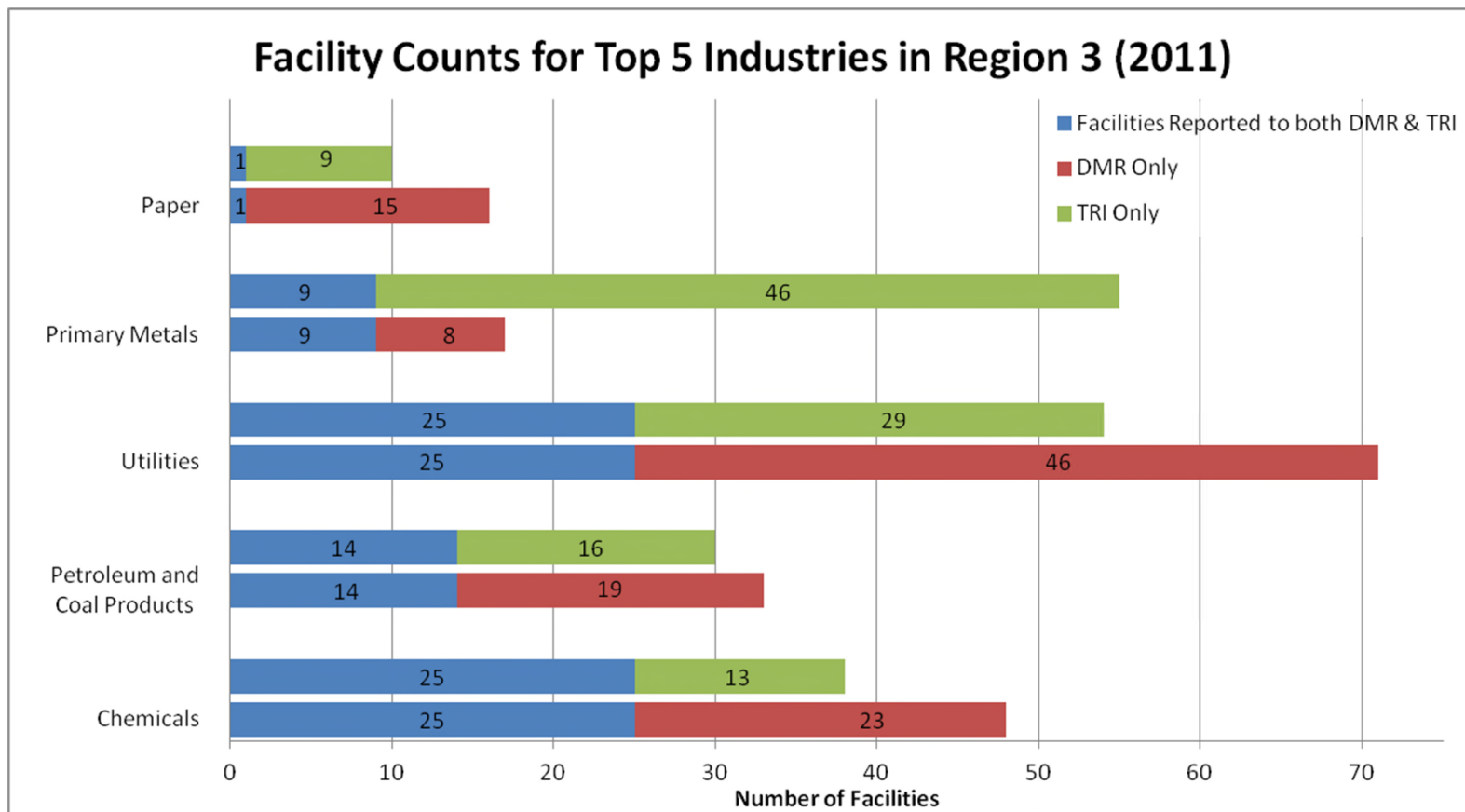
## Region 3 Facilities, Chemicals, and Pollutant Loads

	DMR (Total)	DMR (Non-POTWs)	DMR (POTWs)	TRI
Total Facilities	15,392	13,686	1,724	1,745
Facilities with DMR Data/ TRI Chemical Release Data	2,031/ 1,369	1,263/ 704	768/ 665	374*
DMR Chemicals / TRI Chemicals	185/ 98	183/ 97	47/ 23	95
TRI Chemical Load (lb/yr)	60.2 M	26.5 M	33.8 M	31.0 M
Toxic Weighted Load (lb-eq/yr)	5.22 M	3.53 M	1.69M	393,000

\* Includes facilities with direct discharges

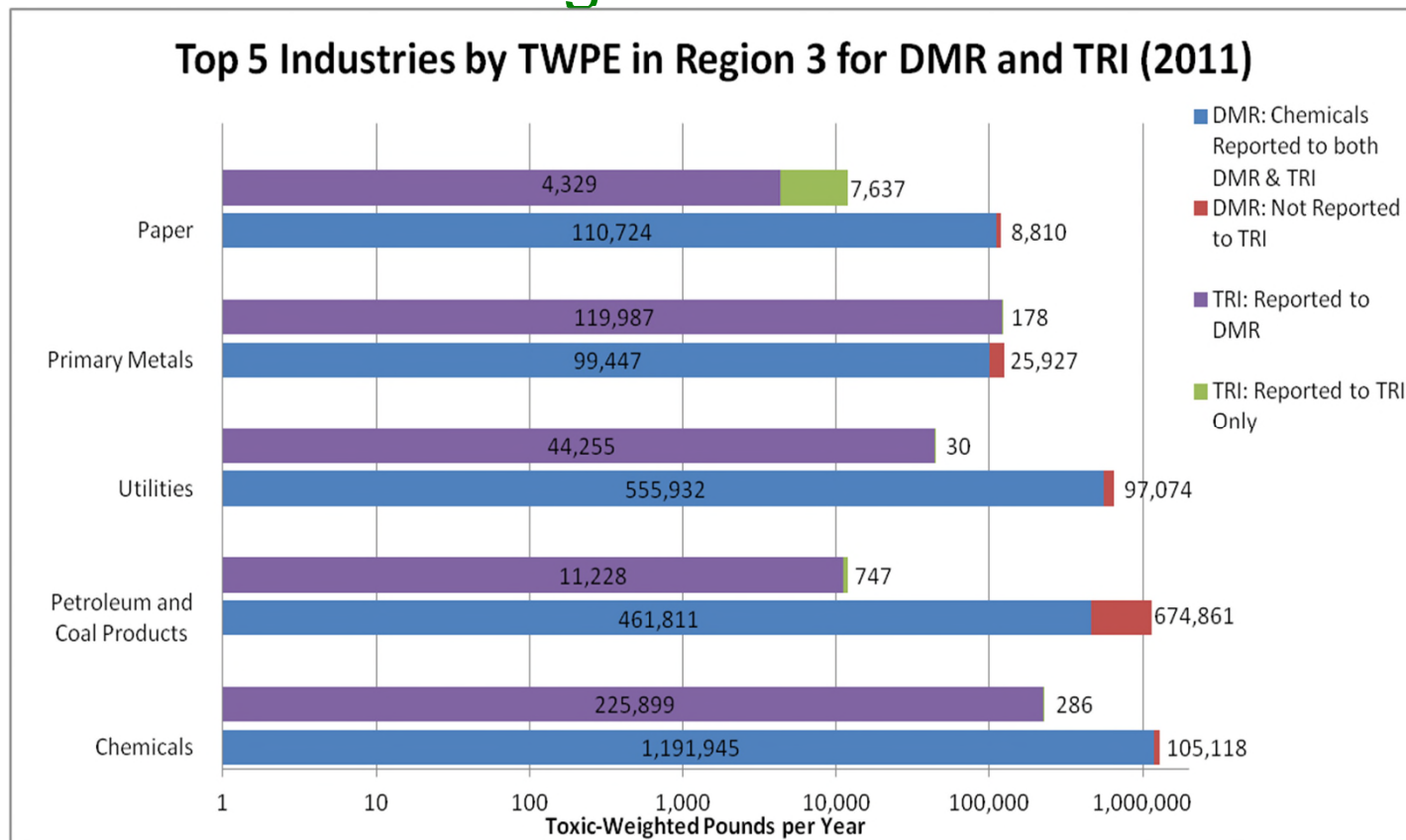


# Comparison of Facility Counts for Five Region 3 Industries





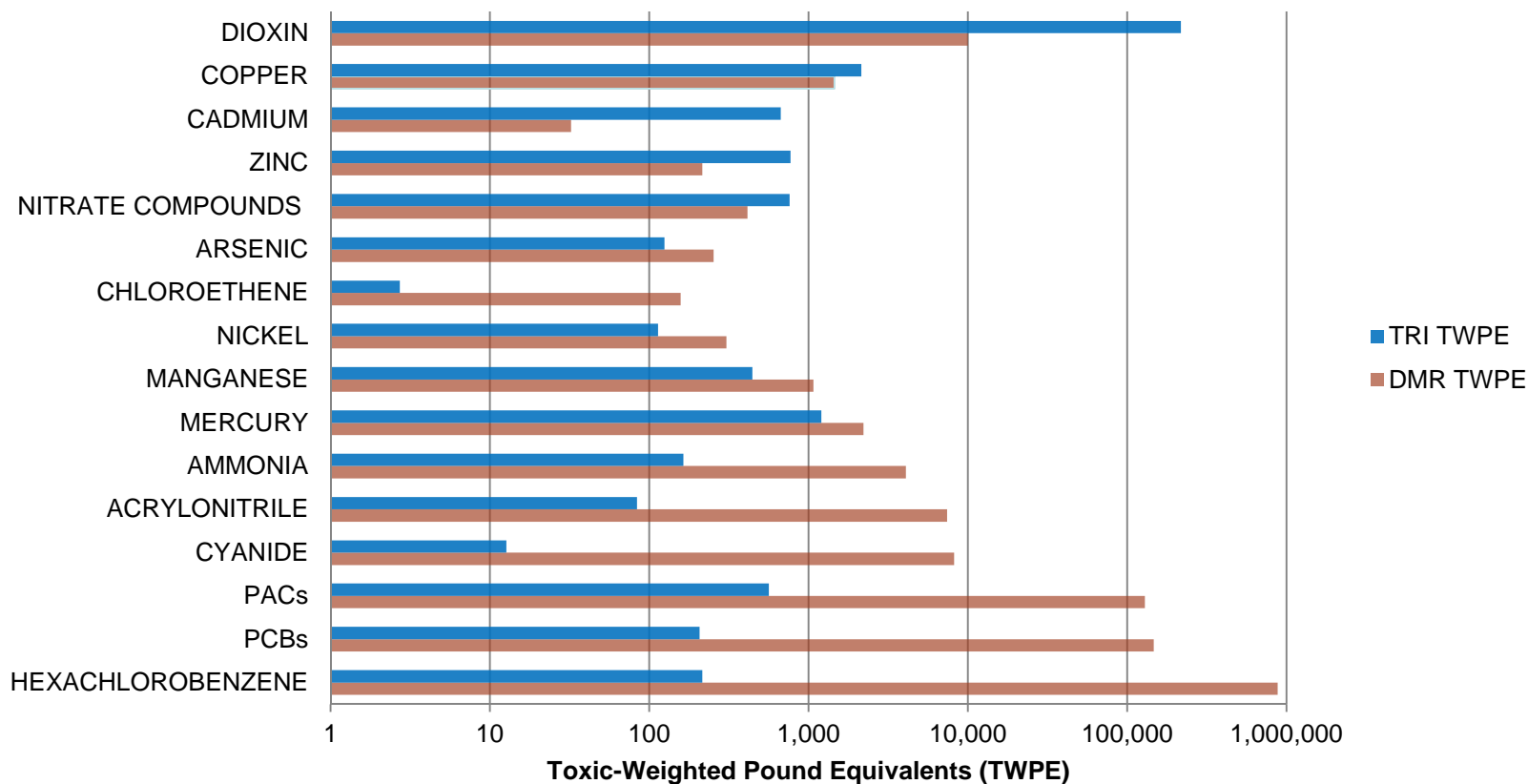
# Comparison of DMR and TRI Discharges using Toxic Weighted Pollutant Equivalents (TWPE) for Five Region 3 Industries





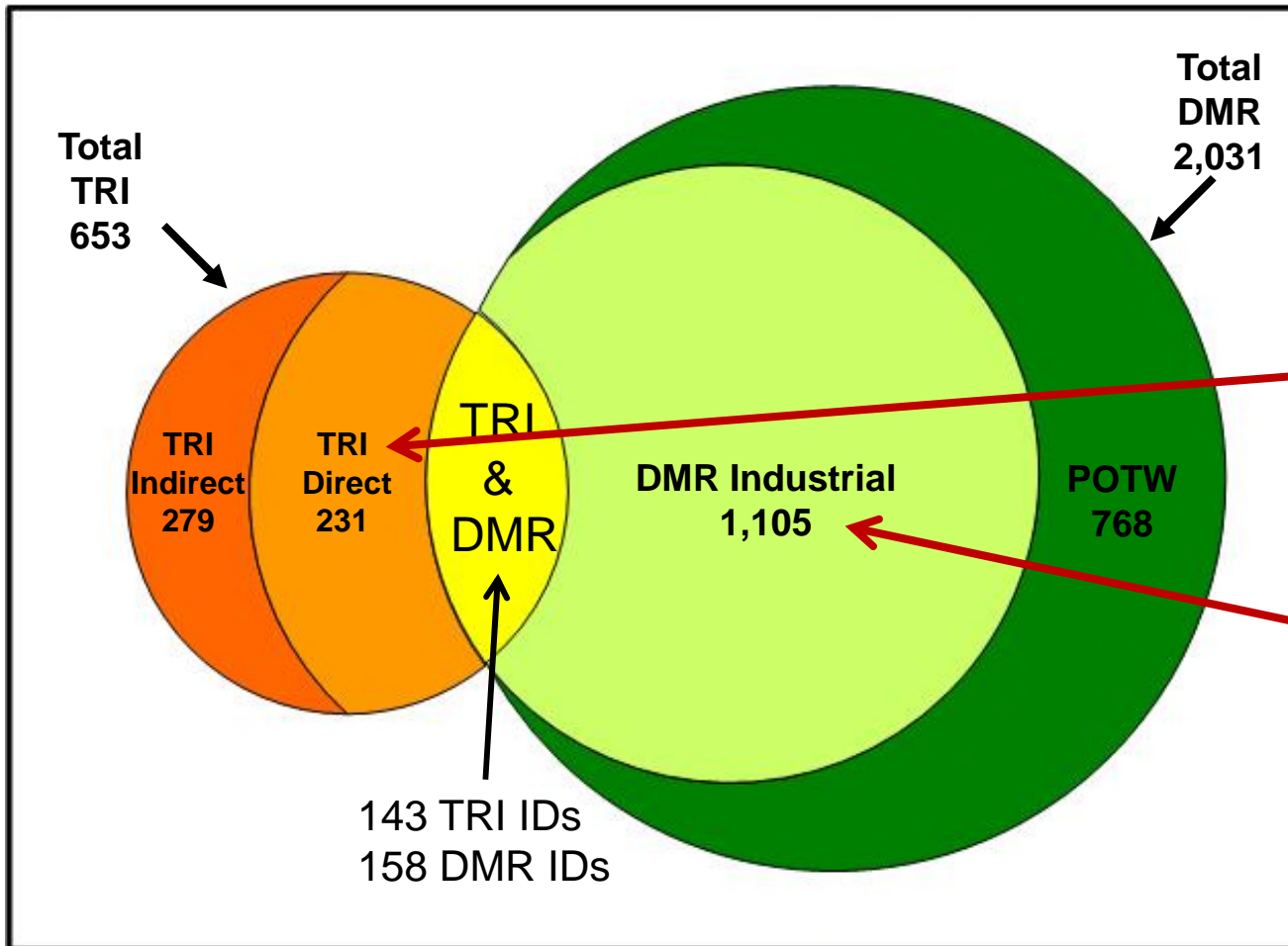
# Comparison of Discharge Magnitudes for Chemical Manufacturing Sector

(TWPE in DMR and TRI for Chemicals with > 100 lb-eq Difference)





# Region 3 Facilities with DMR in 2011



231 facilities report direct discharges to TRI but do not have DMR data in ICIS-NPDES

1,105 industrial facilities with DMR data in ICIS-NPDES do not report to TRI (100 of these have TRI facility IDs)



# POTWs

## (Publicly Owned Treatment Works)

- POTWs are not required to report to TRI, although they discharge TRI chemicals
  - Of pollutants discharged by POTWs, TRI chemicals account for half of the identified chemicals discharged, and the majority (93%) of the reported TWPE

	DMR Total	Portion of DMR Total Contributed by TRI-listed Chemicals	Percent of DMR Total Contributed by TRI-listed Chemicals
Chemical count	47	23	49%
Pounds (lb/yr)	551,313,661	61,372,994	11%
TWPE (lb-eq/yr)	1,692,782	1,566,780	93%





## Conclusions

- Combining TRI and DMR data provides a more complete understanding of toxic chemical releases to surface waters
  - DMR has a different facility universe and chemical universe
  - DMR discharge magnitude tends to be larger than TRI
  - POTWs add 4x the amount of toxics than reported in TRI alone
- The DMR Tool can help improve data completeness
  - Verify DMR loading calculations and find DMR reporting errors
  - TRI data can be used to identify possible data gaps
  - Identify potential omissions and under/over reporting to DMR and TRI



## Contacts

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