

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

National Training Conference on TRI
and Environmental Conditions in Communities

May 8, 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)

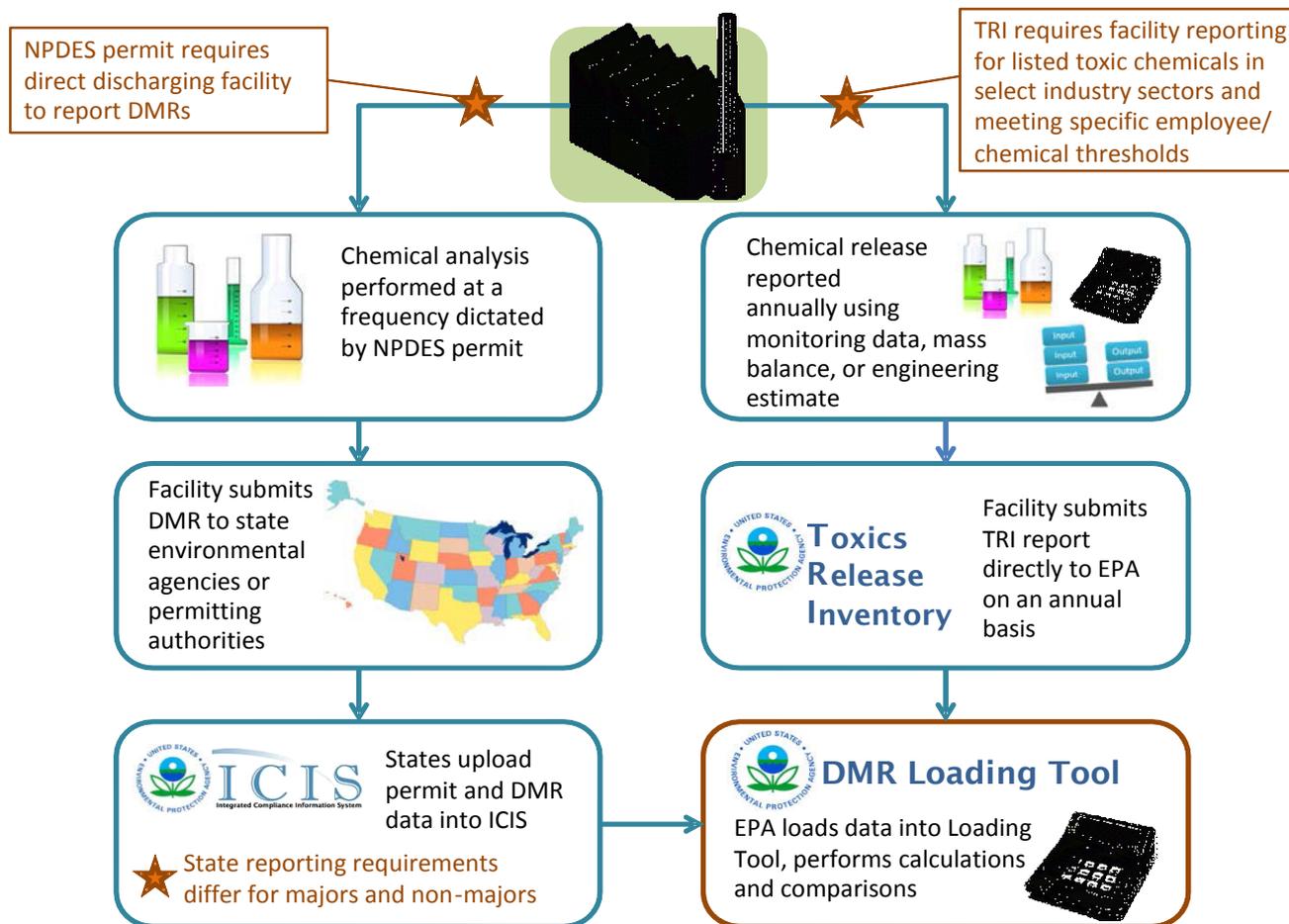
- Required by the Emergency Planning and Community Right-to-Know Act (EPCRA)
- TRI tracks the management of certain **toxic chemicals** that may pose a threat to human health and the environment.
- Facilities report data to EPA consisting of both measurements and estimates using best available methods

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

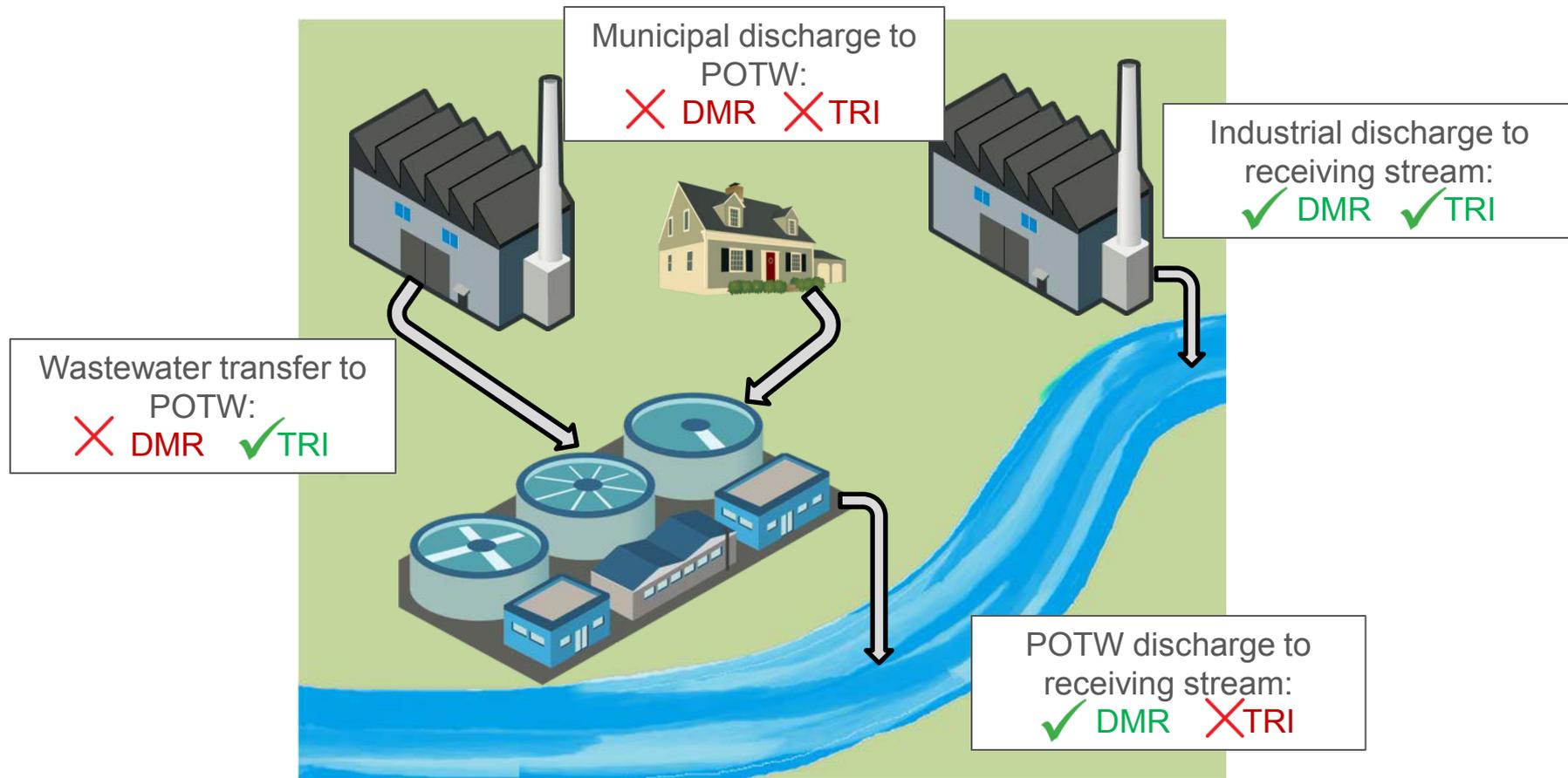


Reporting to DMR & TRI





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/)



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
- Solids
- Pathogen Indicators
- 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?

[About the Data](#) [Glossary](#) [Error Correction](#) [Contact Us](#)



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

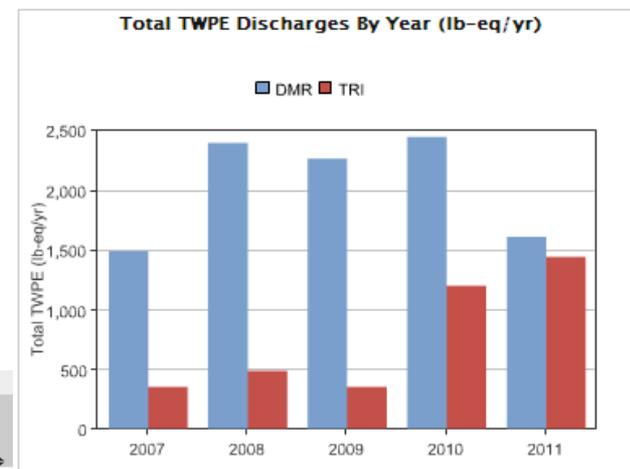
FRIS ID: 110000620221

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



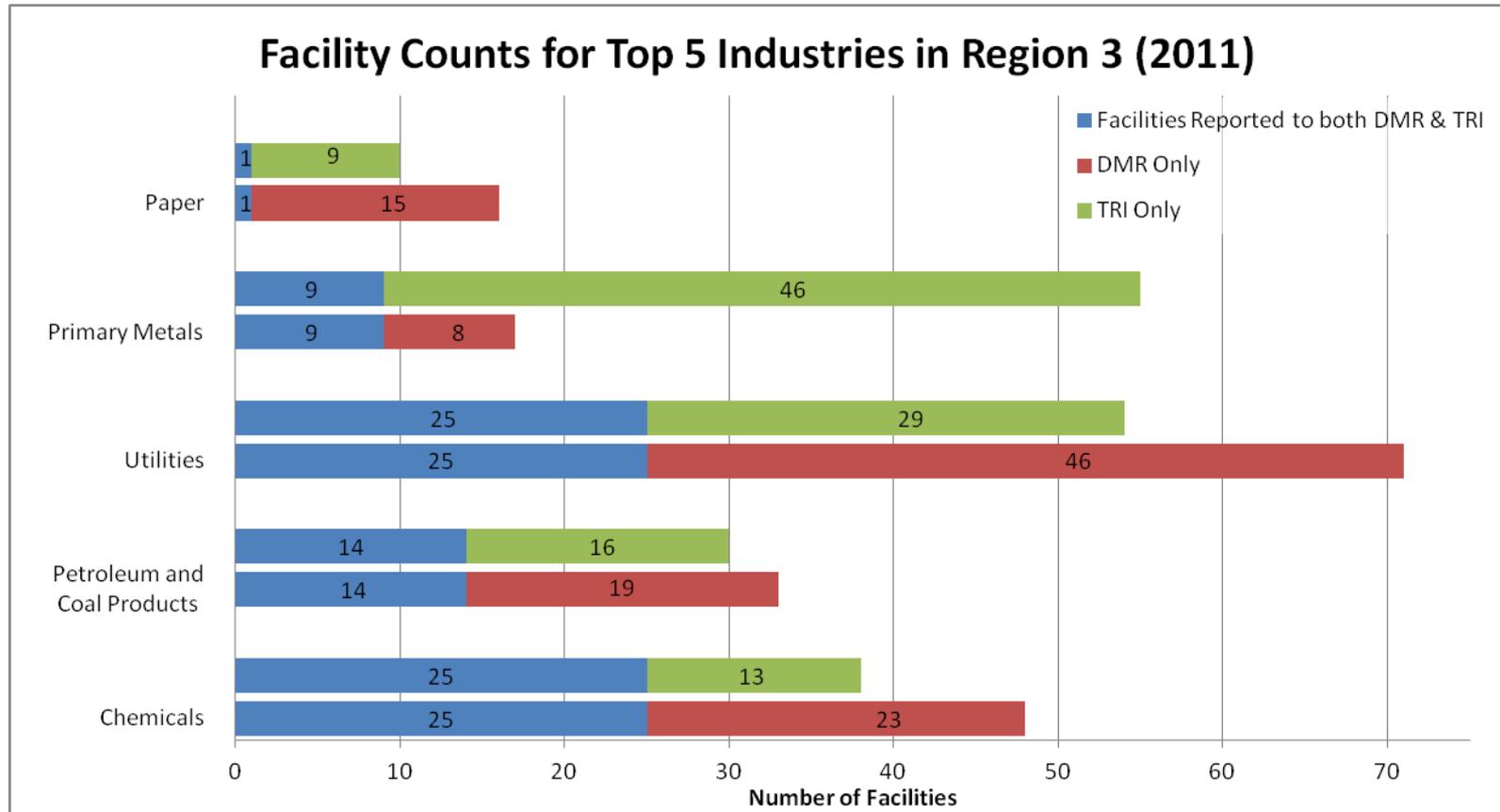
Region 3 Facilities, Chemicals, and Pollutant Loads

	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

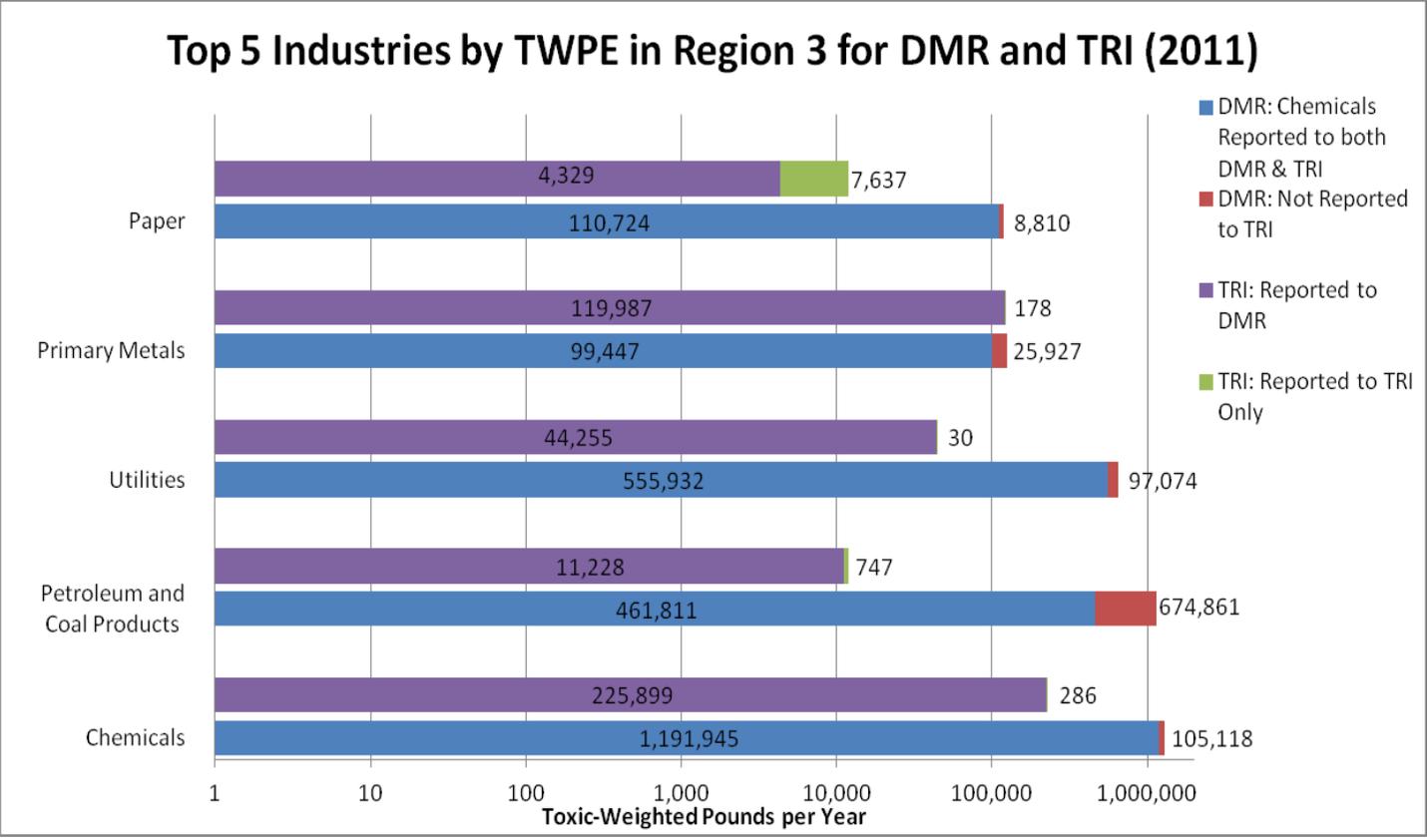
* Includes facilities with direct discharges



Comparison of Facility Counts for Five Region 3 Industries

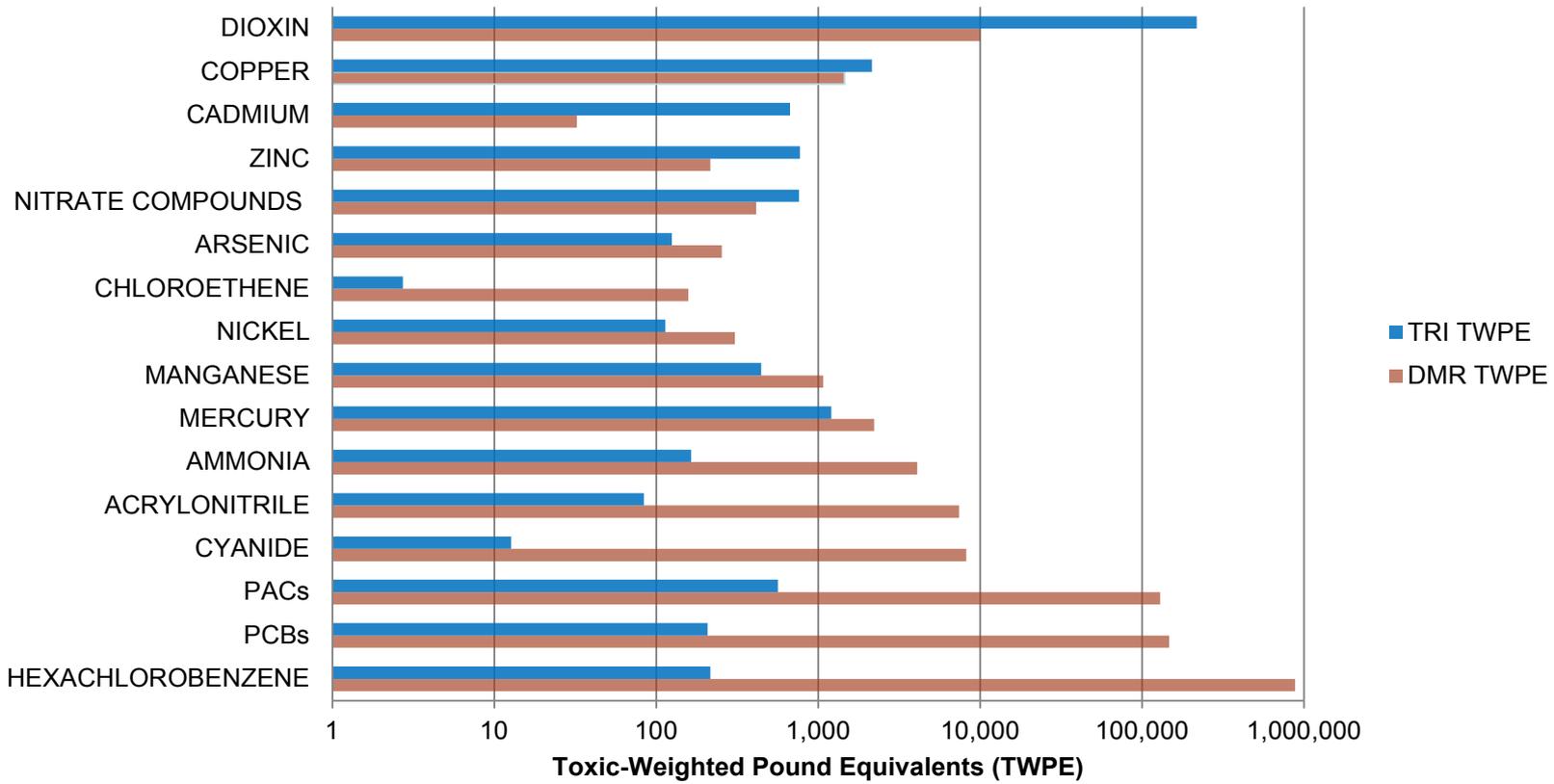


Comparison of DMR and TRI Discharges using Toxic Weighted Pollutant Equivalents (TWPE) for Five Region 3 Industries

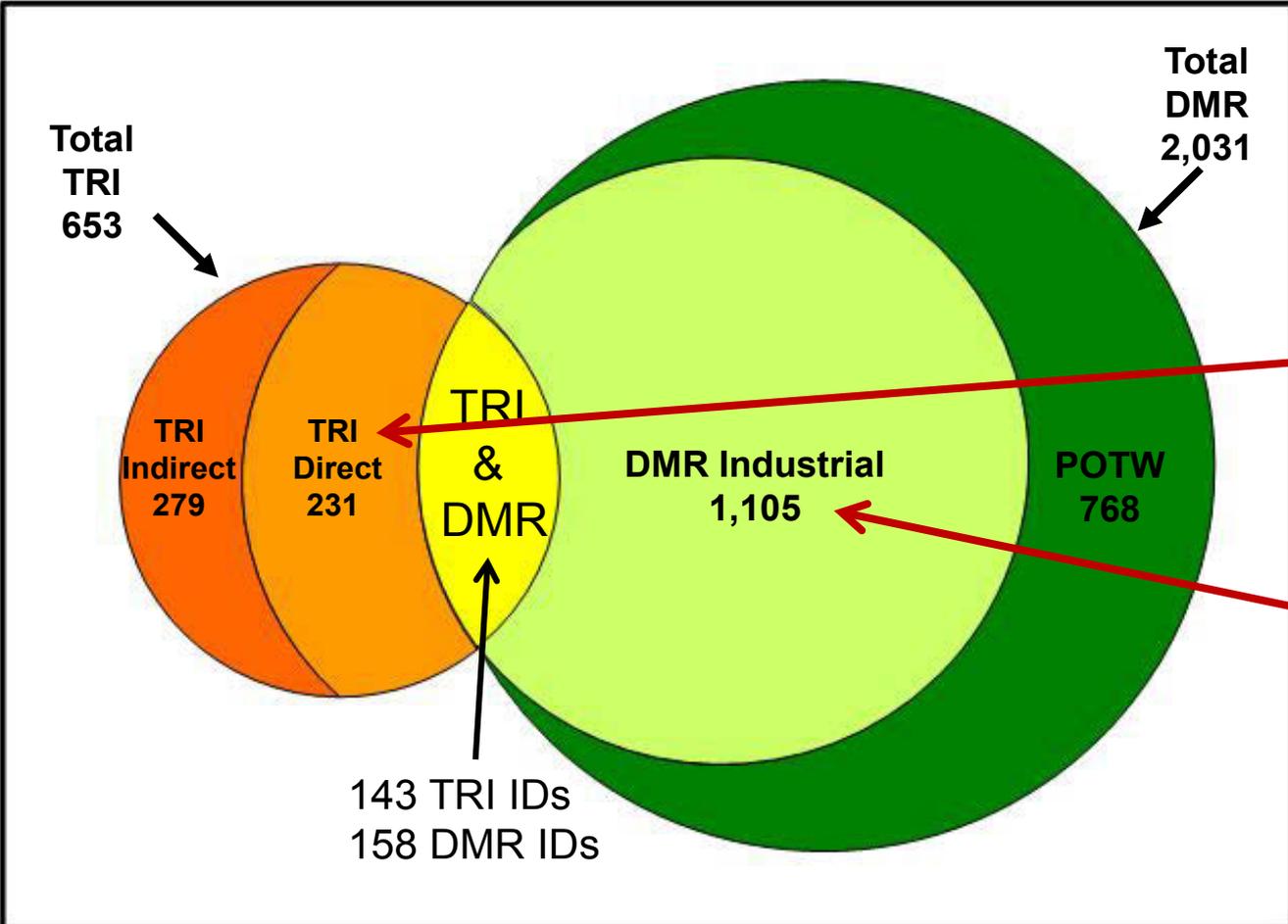


Comparison of Discharge Magnitudes for Chemical Manufacturing Sector

(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



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