Toronto Public Health | CHEMTRAC

The ChemTRAC Program: Increasing public awareness of priority chemicals and reducing pollution from industrial and commercial sources

Presentation to the
Occupational and Environmental Health Seminar

Toronto, Ontario, Canada
March 18, 2016

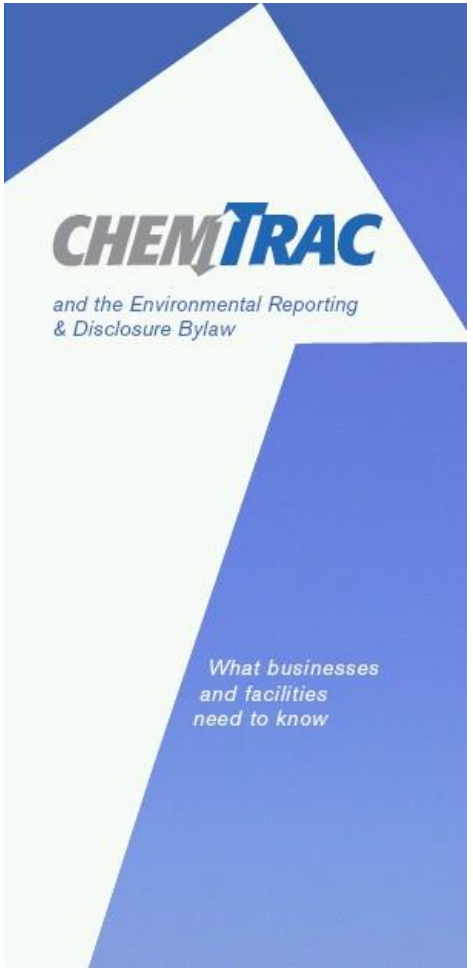
Marco A. Belmont, PhD
Health Research Specialist
Toronto Public Health
mbelmon@toronto.ca

Learning Objectives

- To learn what is the Environmental Reporting and Disclosure bylaw and the ChemTRAC program
- To identify the goals and elements of the ChemTRAC program
- To know how to access the data collected by ChemTRAC
- To understand the data collected by ChemTRAC

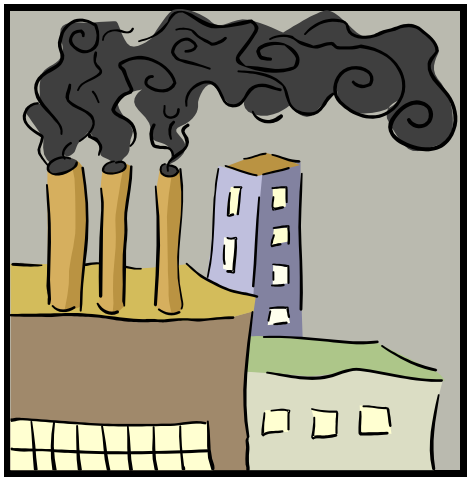
Agenda

- Introduction
- Elements of ChemTRAC
- Sources of the ChemTRAC data
- Summary of the Data collected by ChemTRAC



What's this?

- Toronto is the first municipality in Canada that developed a bylaw to collect and disclose information about use and releases of toxic chemicals by small and medium-size businesses



Why? Because …

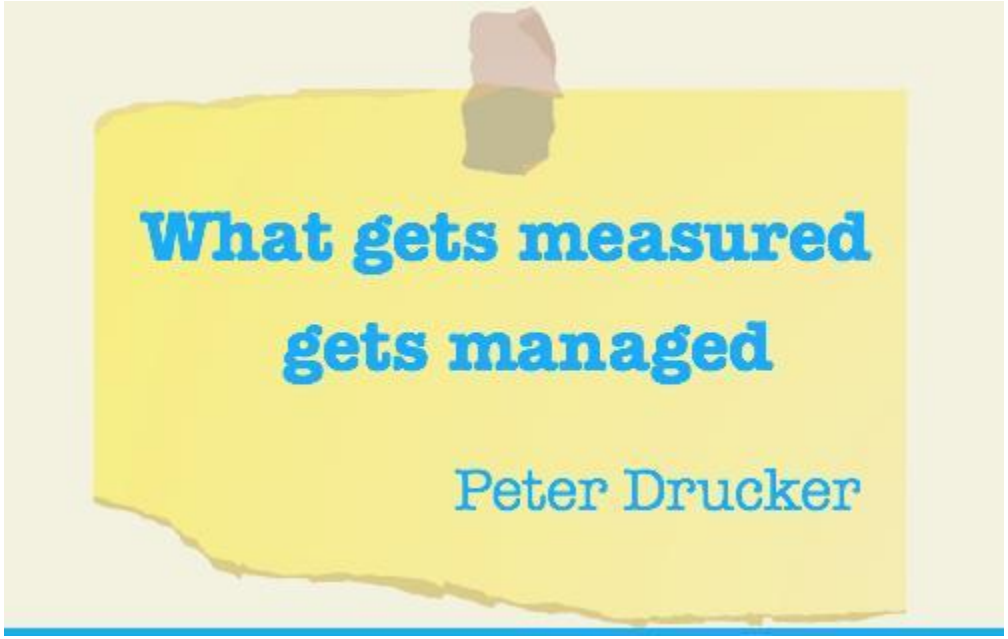
- Air pollution is a concern in Toronto

and …

- There are many small and medium-size businesses that use and release toxic chemicals in Toronto but do not report this information to other government agencies
- Many small contributors of pollutants may be as important as a few large ones

We needed to know …

- The public demanded the ‘Right to Know’



… to help drive change.

- Reporting environmental data and making information accessible benefits the public, workers, businesses and the City by:
  - Stimulating innovation and pollution prevention
  - Reducing exposure to toxic substances
  - Improving understanding of health and environmental risks

Environmental Reporting and Disclosure Bylaw (Municipal Code Chapter 423)

First such municipal bylaw in Canada

Came into effect January 1, 2010

Requires annual reporting on 25 toxic substances

Reported data is available to public

Applies to hundreds of Toronto businesses

ChemTRAC Goal and Objectives

Goal:

- To protect health through reduced exposure to toxic substances.

Objectives:

- Make facilities aware of their use & release of substances of health concern
- Collect information about hazardous substances used and released in the community and provide public access to it
- Stimulate pollution prevention, for example, through chemical substitution and improved processes
- Support “greening” and growth of local businesses

25 Priority Substances

Acetaldehyde
Acrolein
Benzene
1,3-butadiene
Cadmium
Carbon tetrachloride
Chloroform
Chromium (hexavalent)
Chromium (non-hexavalent)
1,4-dichlorobenzene
1,2-dichloroethane
Dichloromethane
Ethylene dibromide
Formaldehyde
Lead
Particulate Matter < 2.5 um ($PM_{2.5}$)
Manganese
Mercury
Nickel
Nitrogen Oxides (NO_x)
Polycyclic Aromatic Hydrocarbons (PAHs)
Tetrachloroethylene
Trichloroethylene
Vinyl Chloride
Volatile Organic Compounds (VOCs)

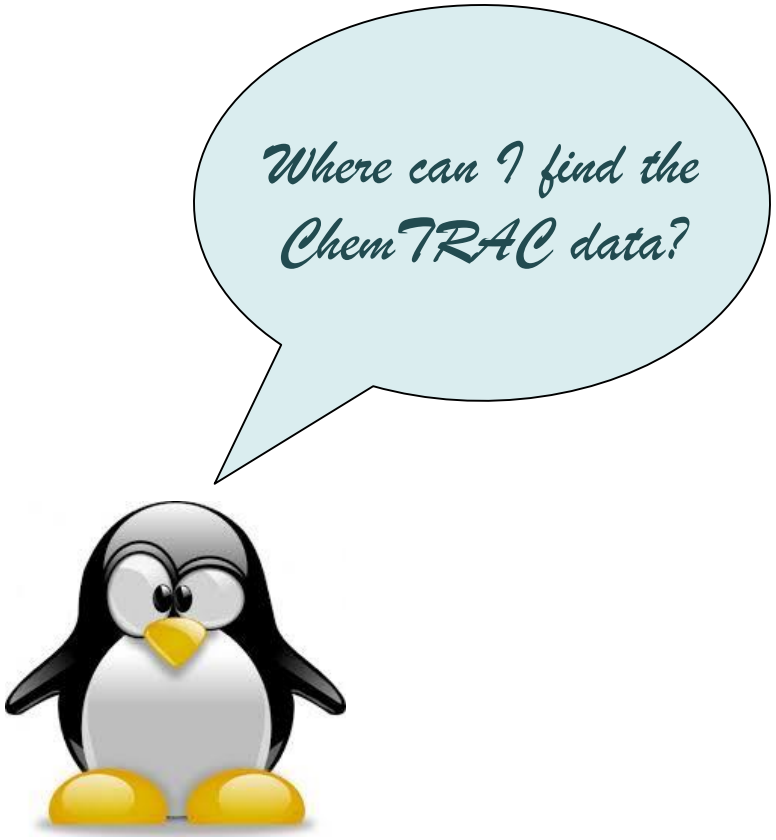
Environmental Reporting & Disclosure Bylaw vs. NPRI

- Reporting threshold set at about 1% of current NPRI threshold to capture data from small & medium sized facilities which do not report
- There is no exemption based on number of employees
- Some reporting exemptions, similar to NPRI

ChemTRAC program elements

Data Reporting (Bylaw)	Support Greening	Public Disclosure
• Requires local facilities to annually track and report on the use and release of priority substances.	• Supports local facilities with green business practice strategies such as pollution prevention	• Provides the public with information on the key chemicals in their community

Public Data Disclosure



- ChemTRAC's Public Disclosure web site
  - Annual report
  - Interactive map
- Toronto Open data
  - Free to download

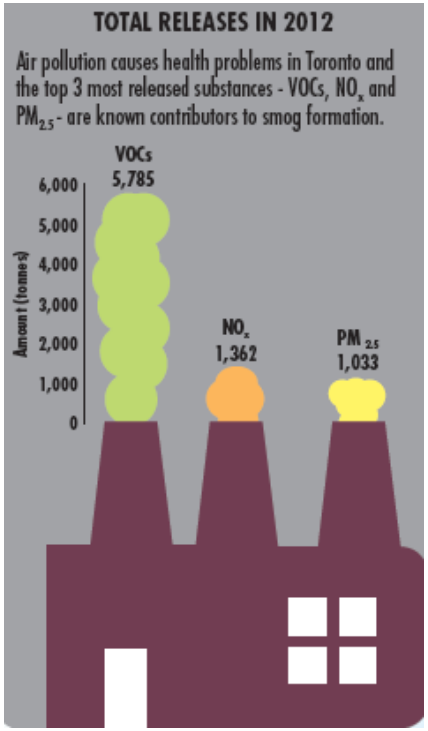
Annual Report

CHEMTRAC IMPROVING TORONTO'S AIR 2014 ANNUAL REPORT

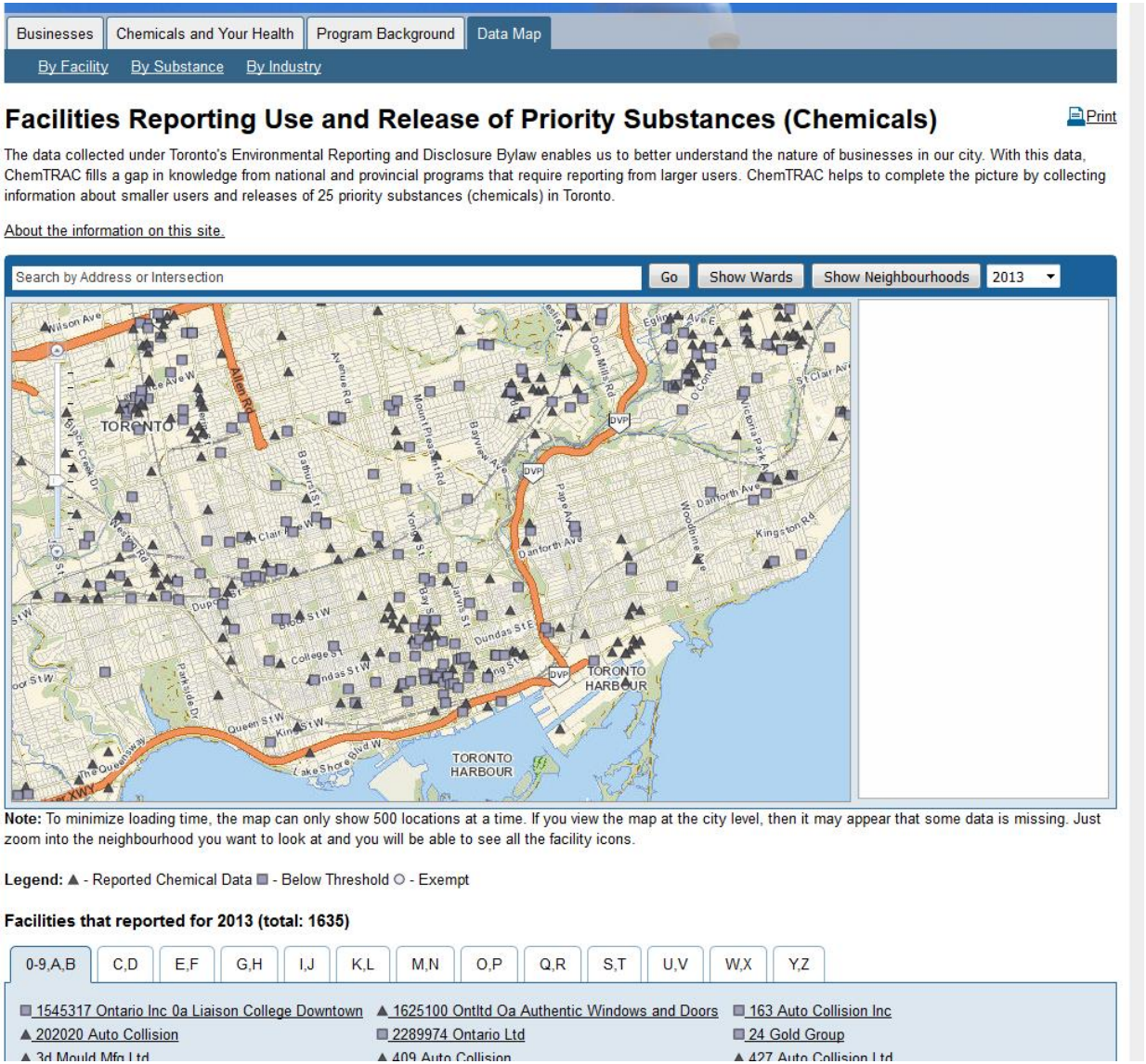
Tracking and Reducing Chemicals in Toronto

4th Annual ChemTRAC Report

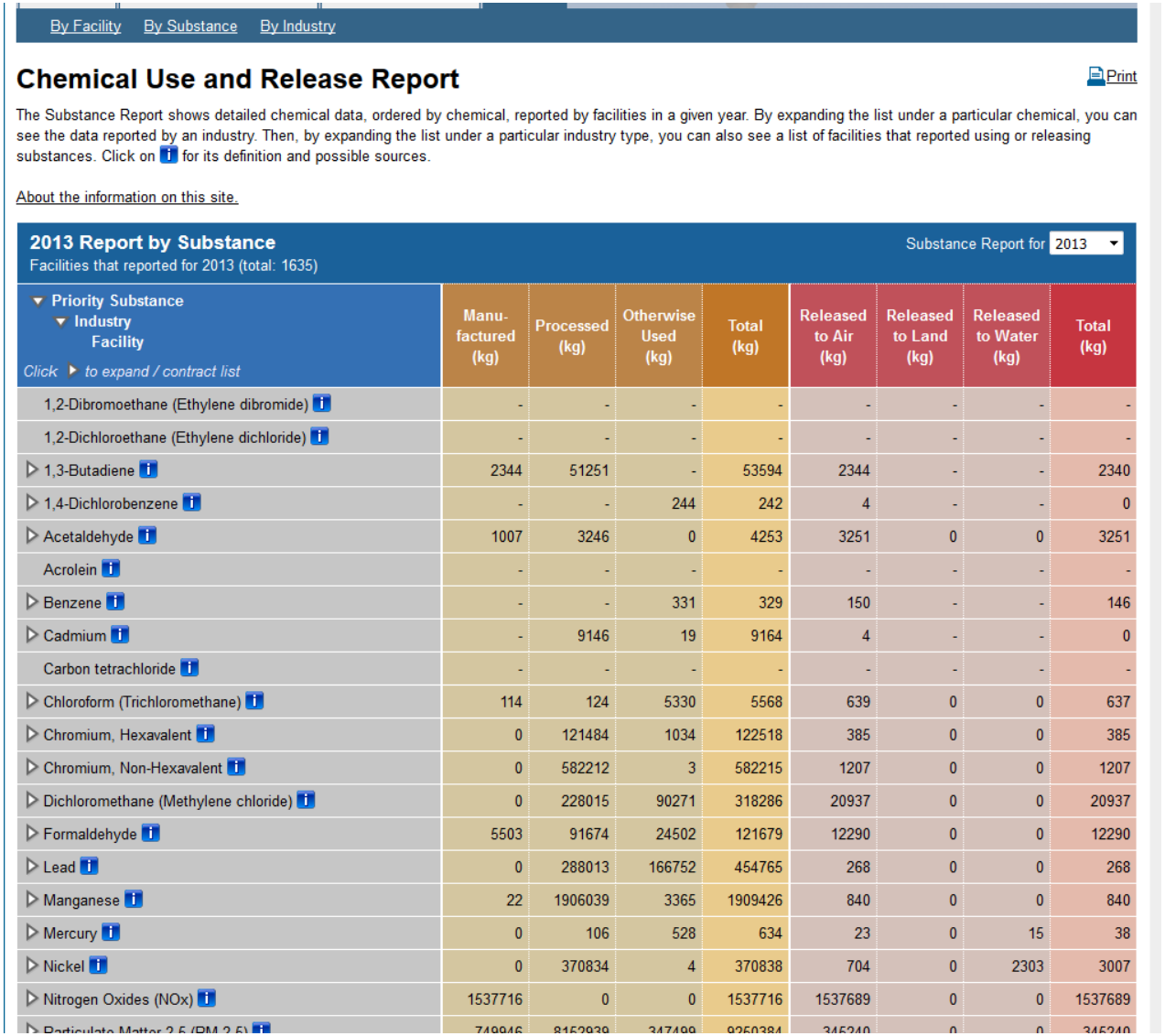
June 2015



Interactive Map



Data Disclosure Website



By Facility | By Substance | By Industry

Chemical Use and Release Report

Print

The Substance Report shows detailed chemical data, ordered by chemical, reported by facilities in a given year. By expanding the list under a particular chemical, you can see the data reported by an industry. Then, by expanding the list under a particular industry type, you can also see a list of facilities that reported using or releasing substances. Click on i for its definition and possible sources.

About the information on this site.

2013 Report by Substance
Facilities that reported for 2013 (total: 1635)

Substance Report for 2013

Priority Substance / Industry / Facility — Click to expand / contract list	Manu-factured (kg)	Processed (kg)	Otherwise Used (kg)	Total (kg)	Released to Air (kg)	Released to Land (kg)	Released to Water (kg)	Total (kg)
1,2-Dibromoethane (Ethylene dibromide)	-	-	-	-	-	-	-	-
1,2-Dichloroethane (Ethylene dichloride)	-	-	-	-	-	-	-	-
1,3-Butadiene	2344	51251	-	53594	2344	-	-	2340
1,4-Dichlorobenzene	-	-	244	242	4	-	-	0
Acetaldehyde	1007	3246	0	4253	3251	0	0	3251
Acrolein	-	-	-	-	-	-	-	-
Benzene	-	-	331	329	150	-	-	146
Cadmium	-	9146	19	9164	4	-	-	0
Carbon tetrachloride	-	-	-	-	-	-	-	-
Chloroform (Trichloromethane)	114	124	5330	5568	639	0	0	637
Chromium, Hexavalent	0	121484	1034	122518	385	0	0	385
Chromium, Non-Hexavalent	0	582212	3	582215	1207	0	0	1207
Dichloromethane (Methylene chloride)	0	228015	90271	318286	20937	0	0	20937
Formaldehyde	5503	91674	24502	121679	12290	0	0	12290
Lead	0	288013	166752	454765	268	0	0	268
Manganese	22	1906039	3365	1909426	840	0	0	840
Mercury	0	106	528	634	23	0	15	38
Nickel	0	370834	4	370838	704	0	2303	3007
Nitrogen Oxides (NOx)	1537716	0	0	1537716	1537689	0	0	1537689
Particulate Matter 2.5 (PM 2.5)	749946	8152939	347499	9260384	345240	0	0	345240

Open Data

City of Toronto / ... / Data catalogue / City government / Chemical Tracking (ChemTrac)

Open Data

- Data catalogue
  - Business
  - City government
  - Community services
  - Culture and tourism
  - Development and infrastructure
  - Environment
  - Finance
  - Garbage and recycling
  - Health
  - Locations and mapping
  - Parks and recreation
  - Permits and licenses
  - Public safety
  - Transportation
  - Water
- Tools and Help
- Licence
- Policy
- Frequently asked questions

Data catalogue

Chemical Tracking (ChemTrac)

Owner	Toronto Public Health, Healthy Public Policy
Currency	Current
Format	XML and CSV
Refresh rate	Daily
Website	http://www.toronto.ca/health/chemtrac/index.htm
Contact	Open Data Team opendata@toronto.ca

Municipal Code Chapter 423, Environmental Reporting and Disclosure By-law, requires that certain facilities that exceed the specified thresholds, report information each year about thel use and release of 25 "priority substances" (as identified in the by-law http://www.toronto.ca/legdocs/municode/1184_423.pdf). These priority substances are found as contaminants in Toronto's environment (mostly air) and are of concern for health.

The by-law came into effect on January 1, 2010 and the first deadline for reporting of 2010 data was June 30, 2011.

This ChemTrac data set contains chemical tracking information submitted directly online by staff from each facility and includes the facility type, address, number of employees, contact information, use and release of priority substances.

Some companies that are below the thresholds volunteered the chemical use information, even though they are not legally obligated to disclose.

The purpose of disclosing the data is to inform the public of these facilities and encourage businesses and the public to pursue environmental improvements to reduce the use and release of these 25 "priority substances". The first dataset to be disclosed through Open Data will cover the year 2010.

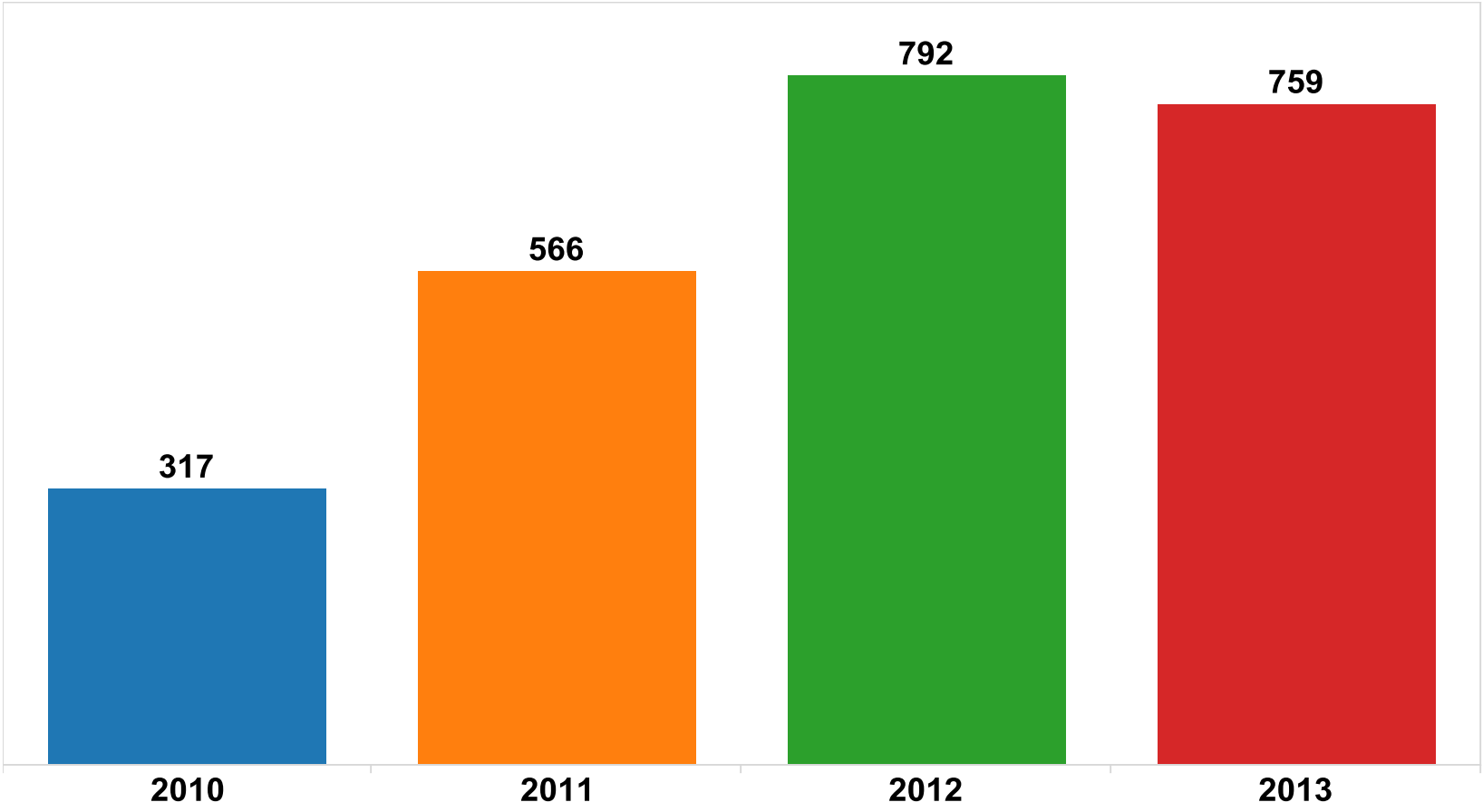
Data download

- Chemical Tracking Annual Report Readme
- Chemical Tracking Data API

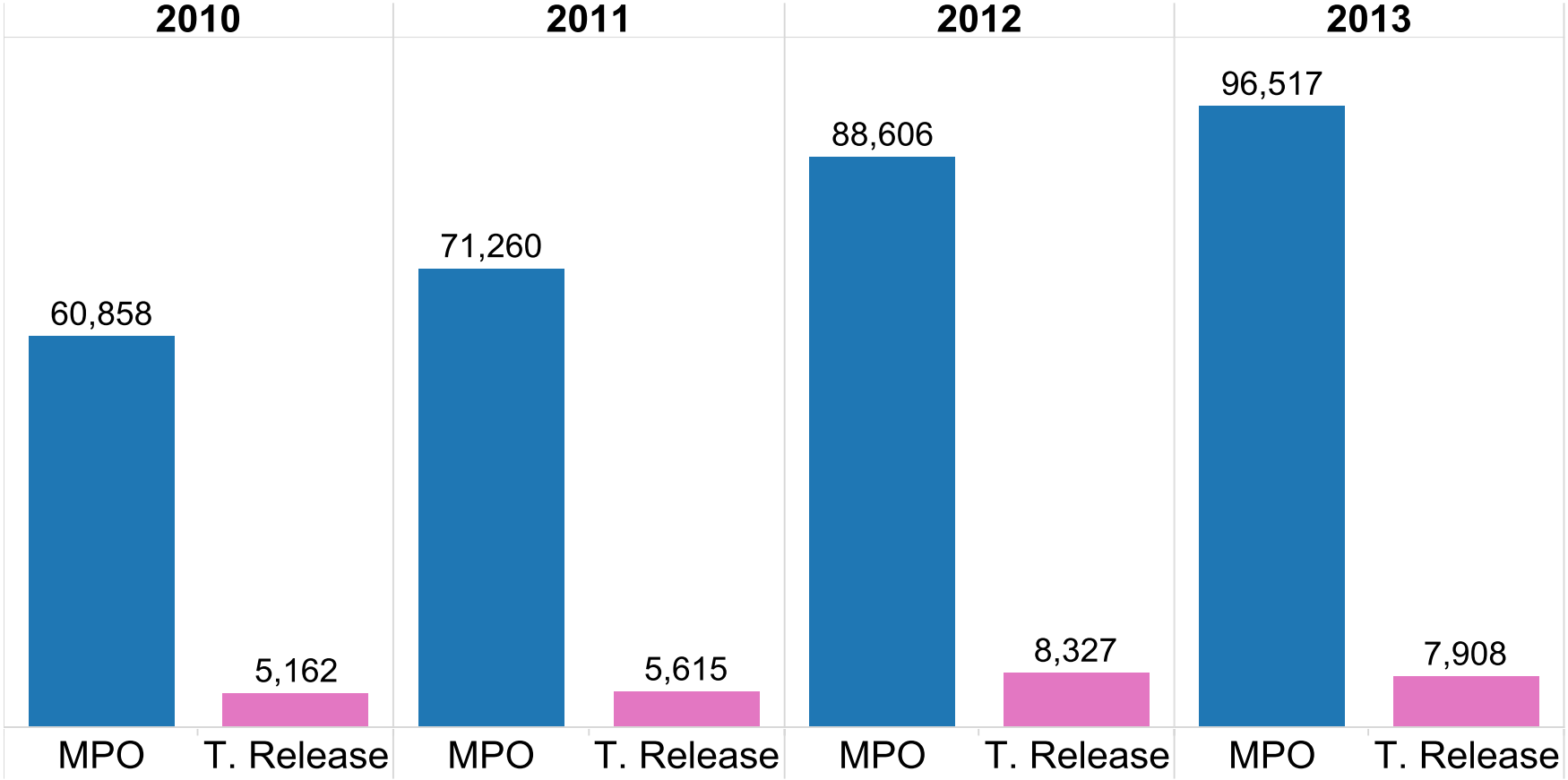
Related Datasets

- Elections - Campaign Contributions – 2006 to 2009
- City Council and Committees Meeting Schedule Reports
- 311 - Open311 API Calls for Service Requests
- Core Service Review - Quantitative Data
- External Job Postings and Applications Statistics
- Budget - Capital Budget & Plan By Ward (10 Year Recommended)
- Human Rights Office Service Statistics
- Casino Survey Results
- Freedom of Information Requests Summary
- Committee of Adjustment Applications
- Web Analytics
- Members of Toronto City Council — Meeting Attendance
- 311 Service Requests - Customer Initiated
- Clerks - Record Classification System - Internally Approved (RSMT)
- Elected Officials' Contact Information
- Polls conducted by the City
- Marriage Licence Statistics
- Inventory of Applications
- Open Government Public Survey
- Zoning By-law

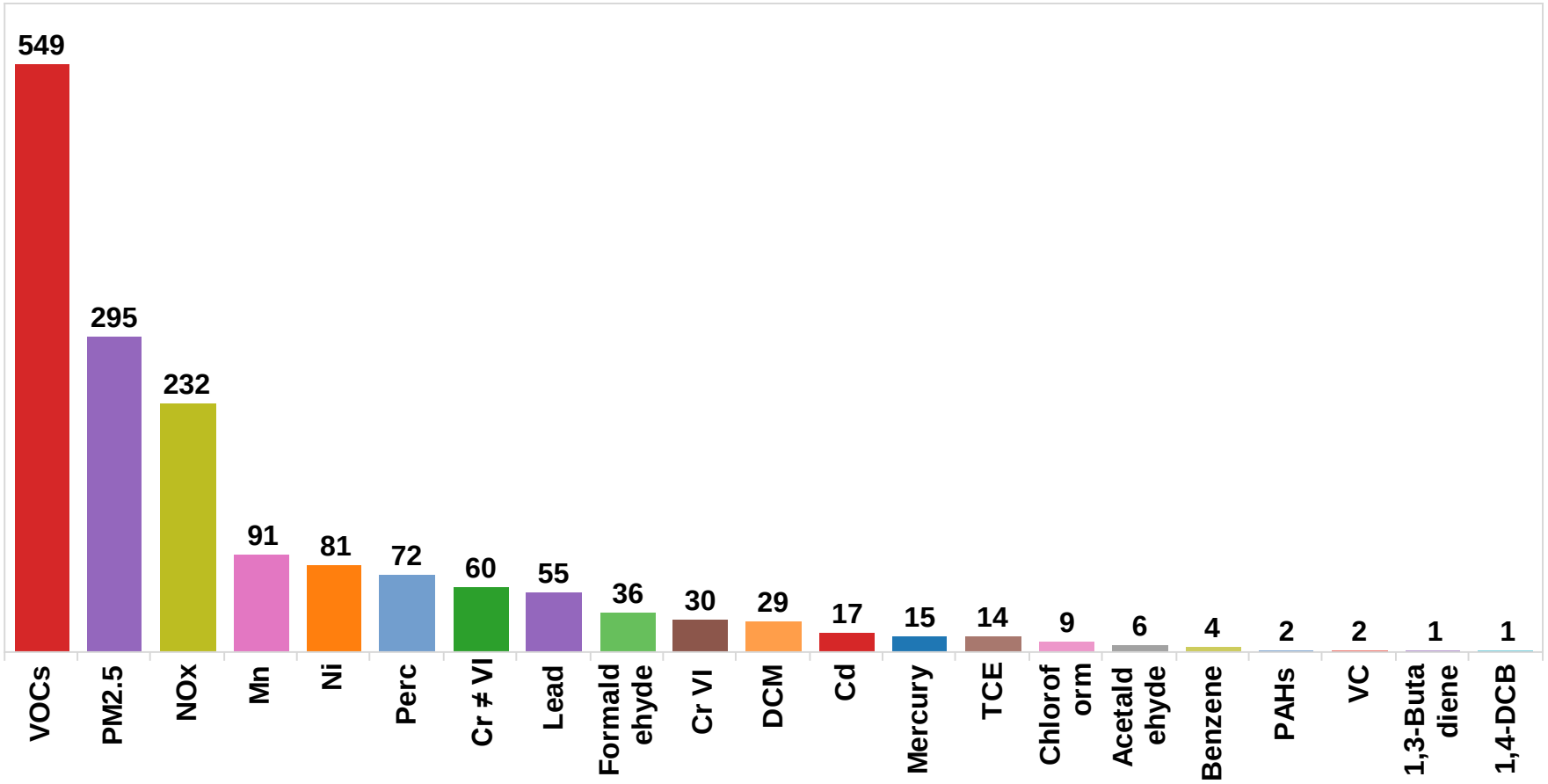
Number of Facilities that has Reported from 2010 to 2013



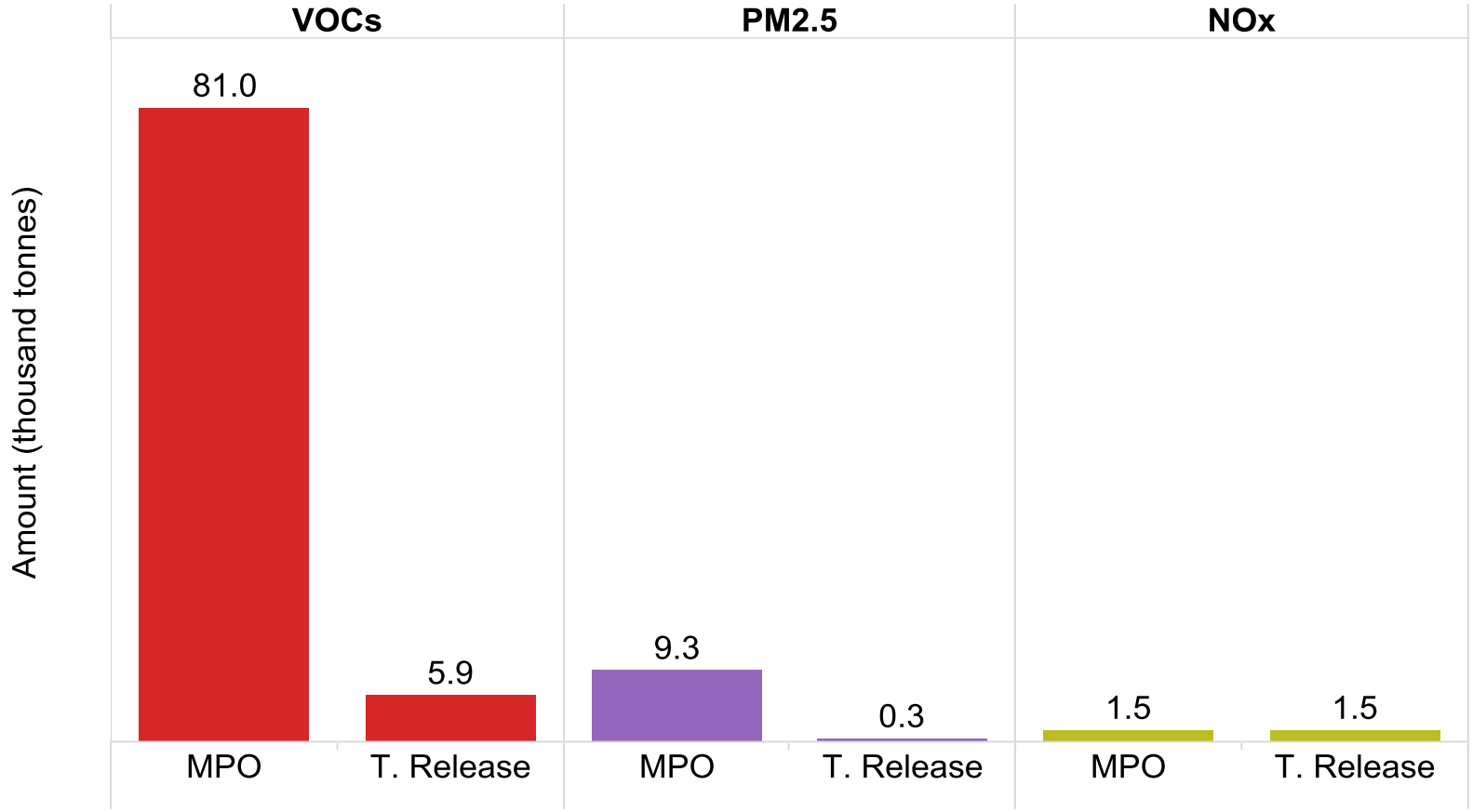
Total Amounts (tonnes) of Chemicals Reported from 2010 to 2013



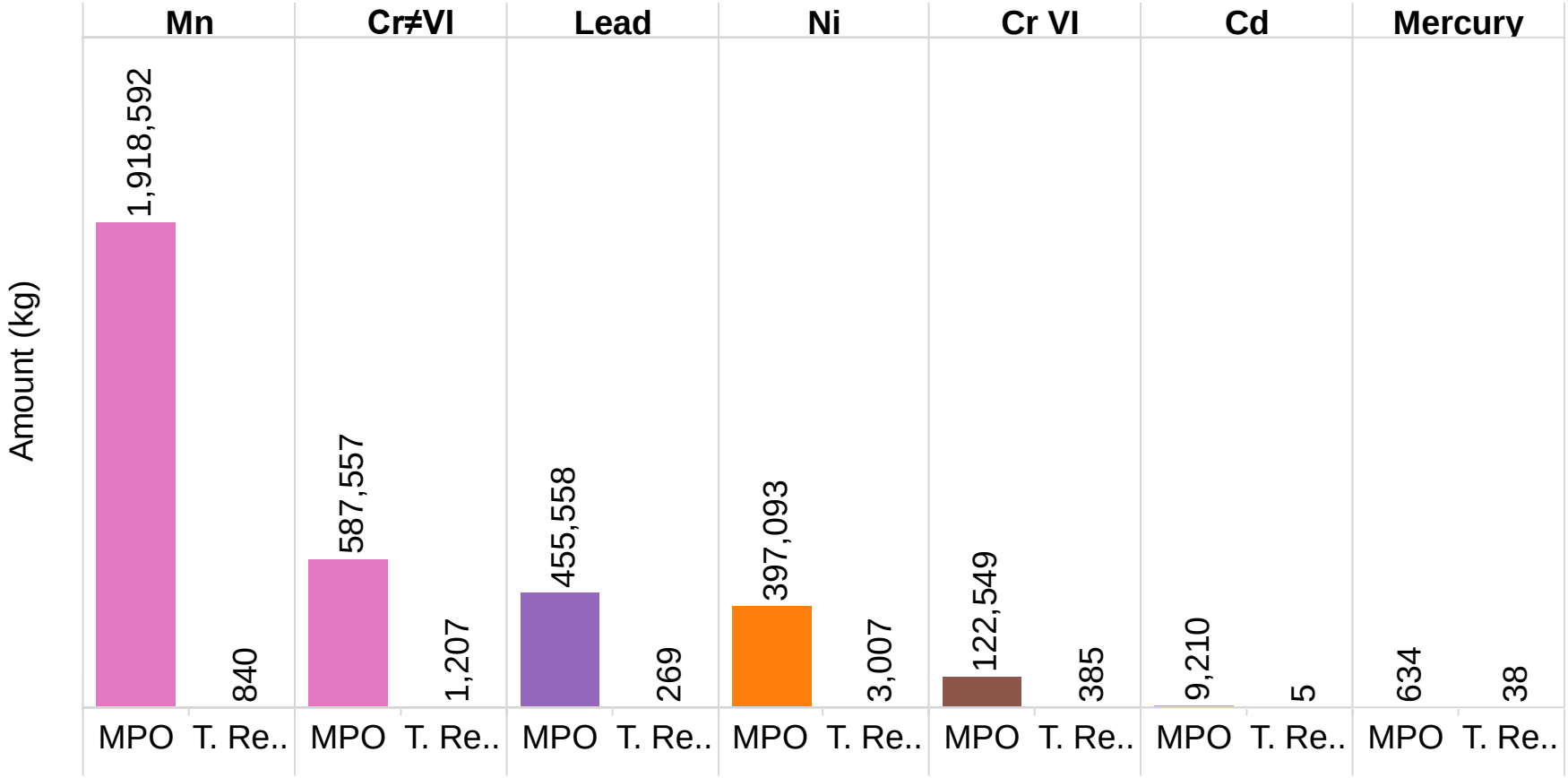
Number of Facilities that Reported Each Chemical in 2013



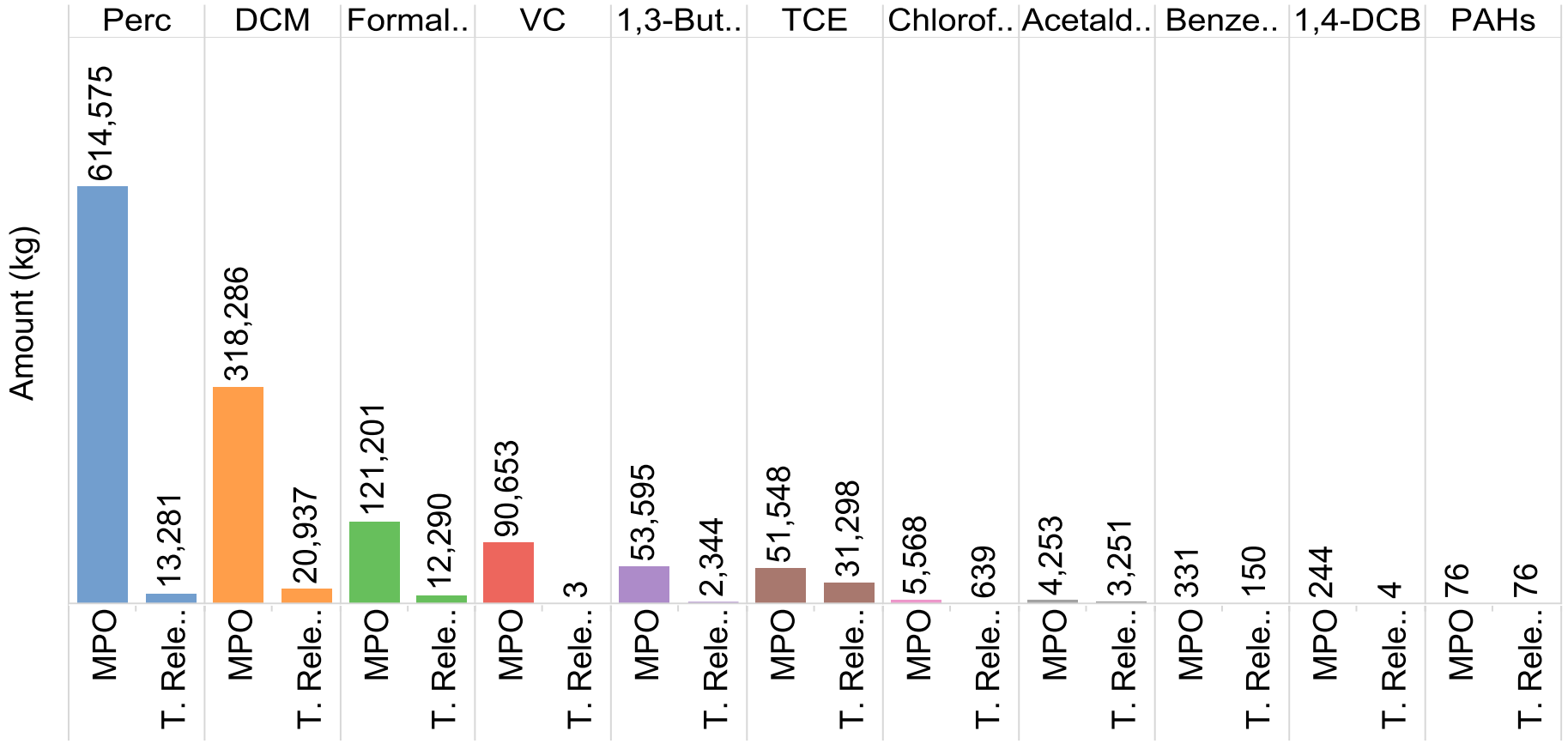
MPO and releases of CAC



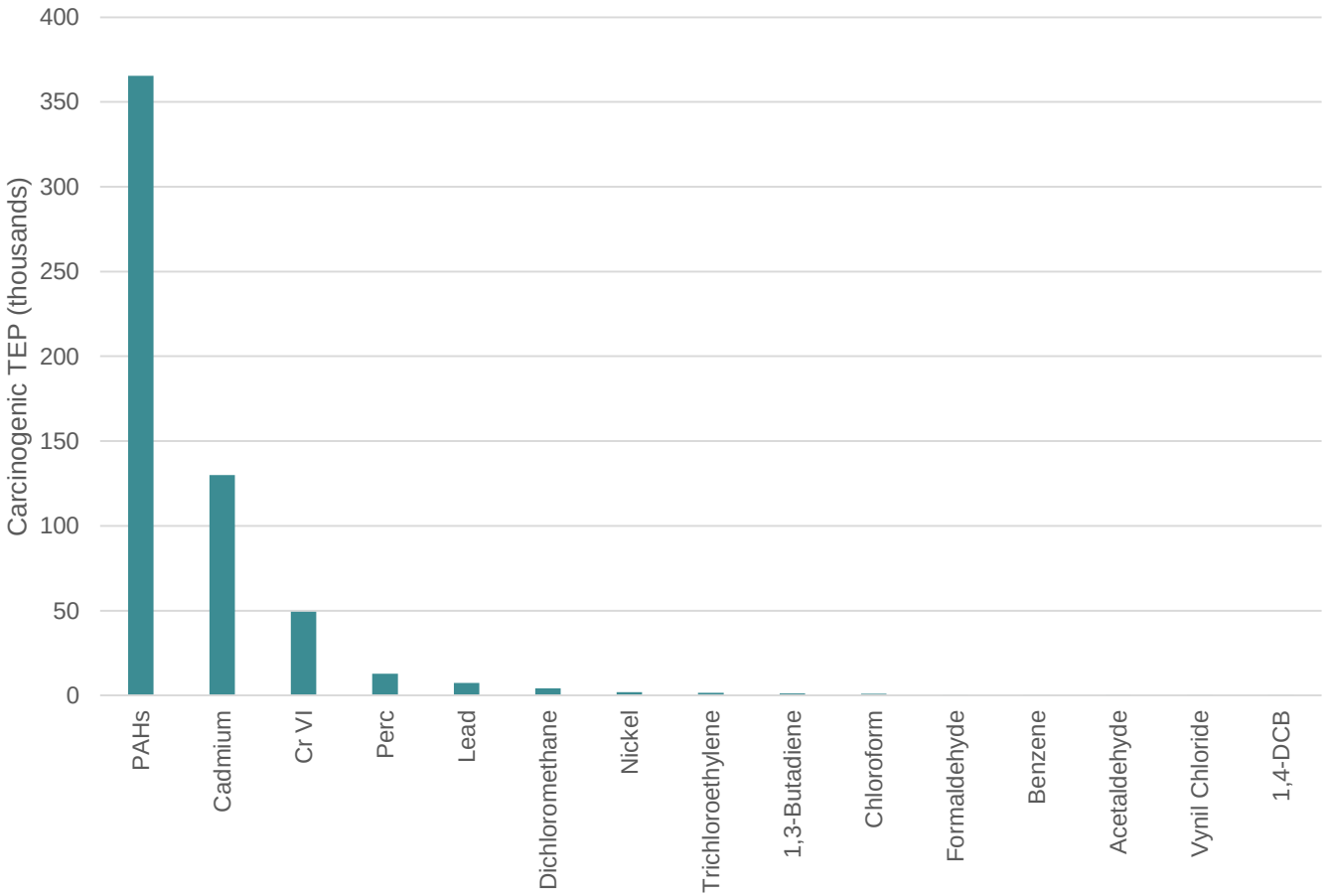
MPO & Releases of Metals



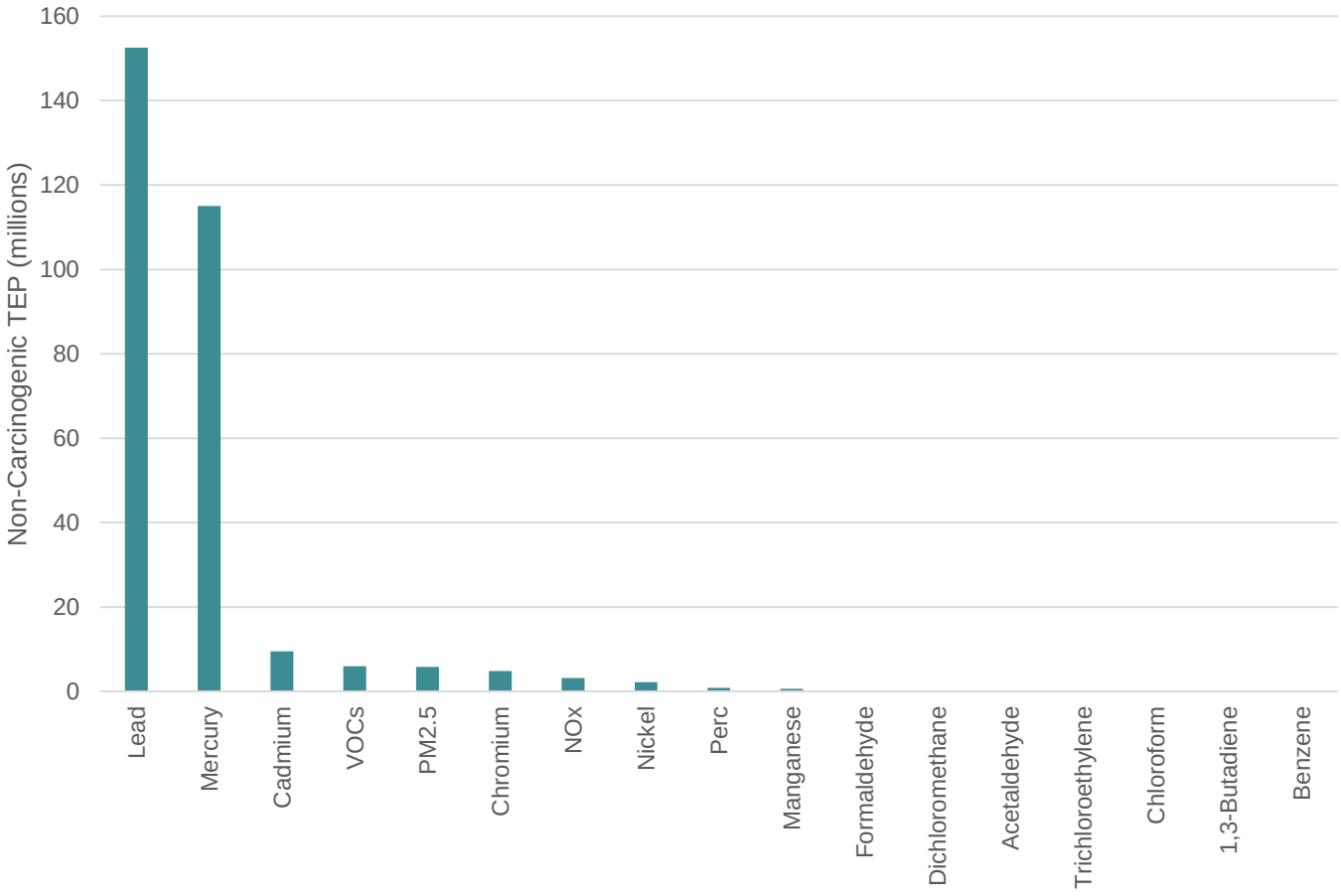
MPO & Releases of Organics



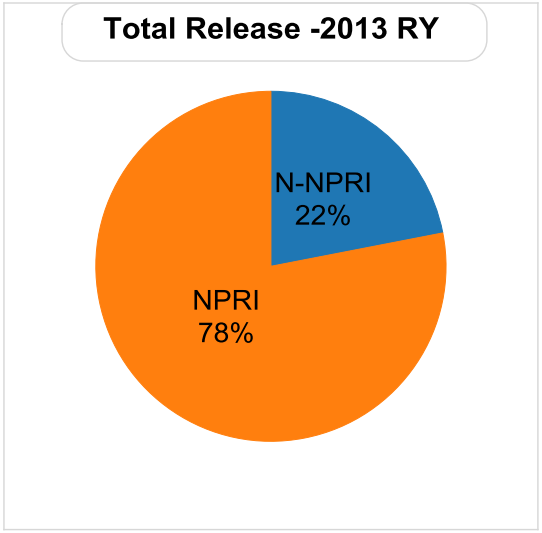
Carcinogen TEP score

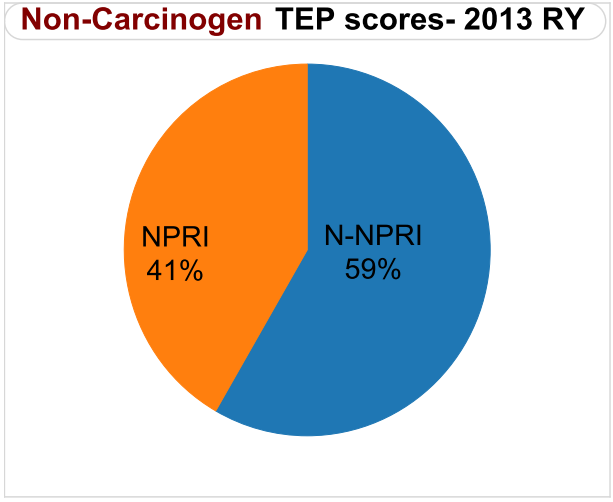


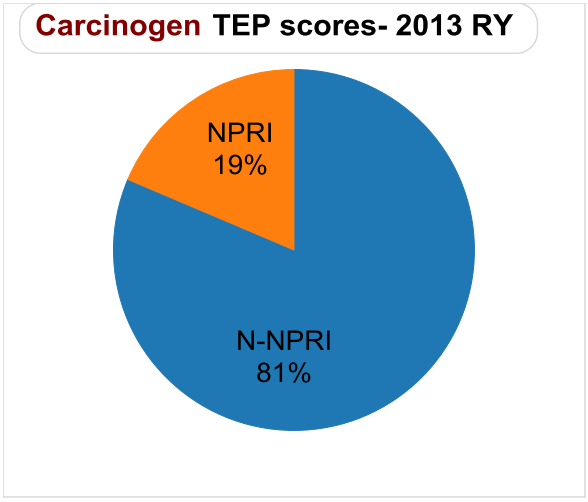
Non-carcinogen TEP score



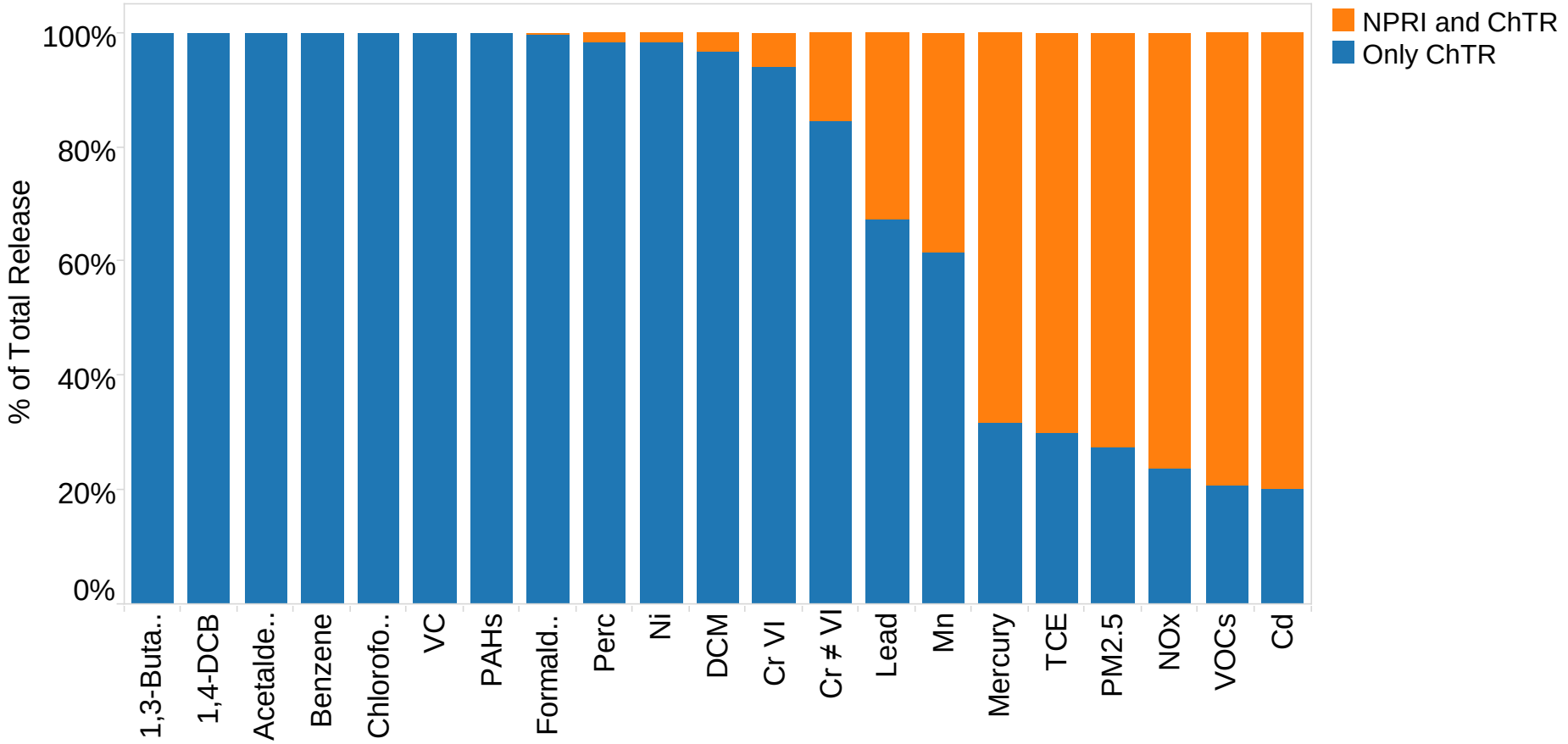
NPRI vs. ChemTRAC - 2013

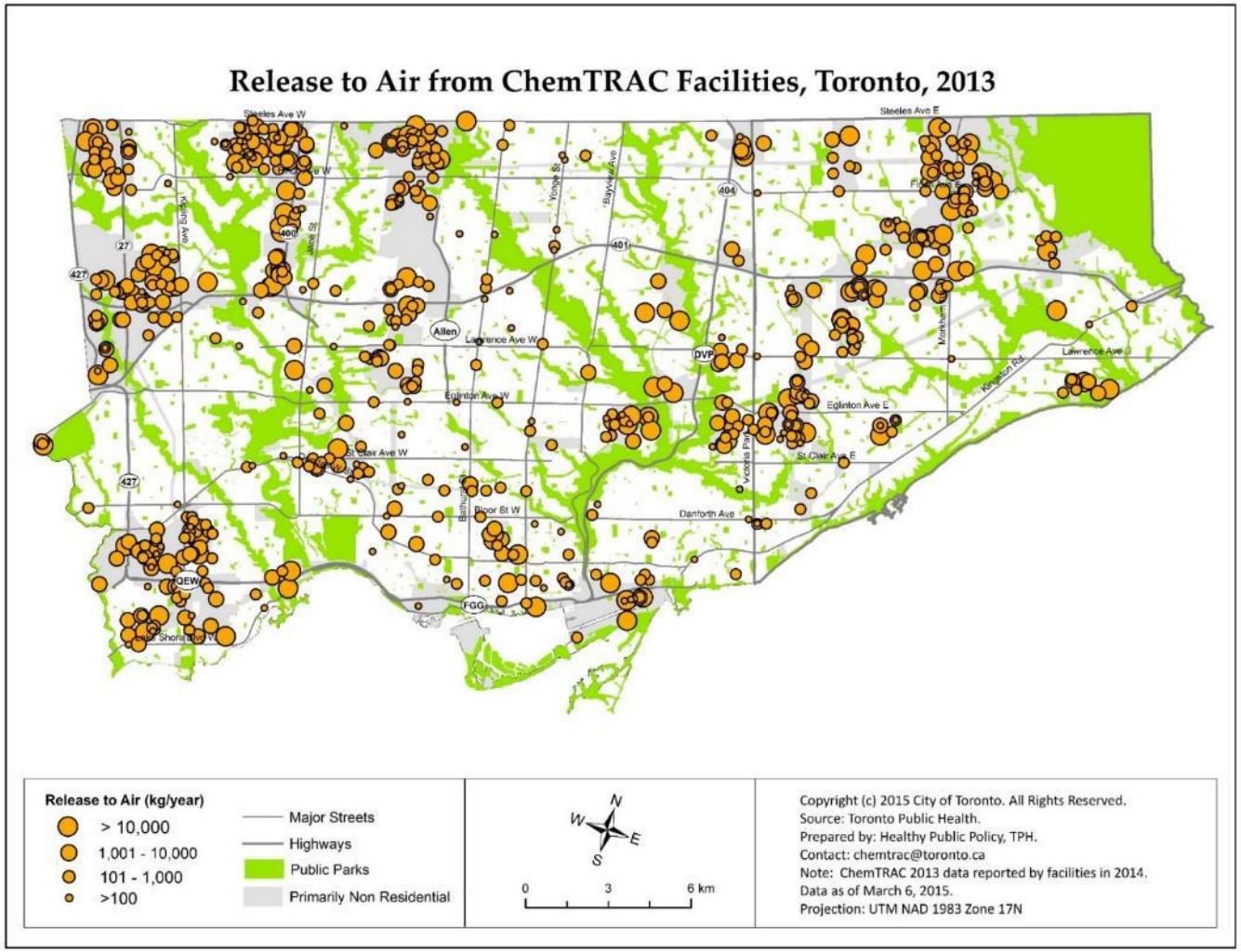




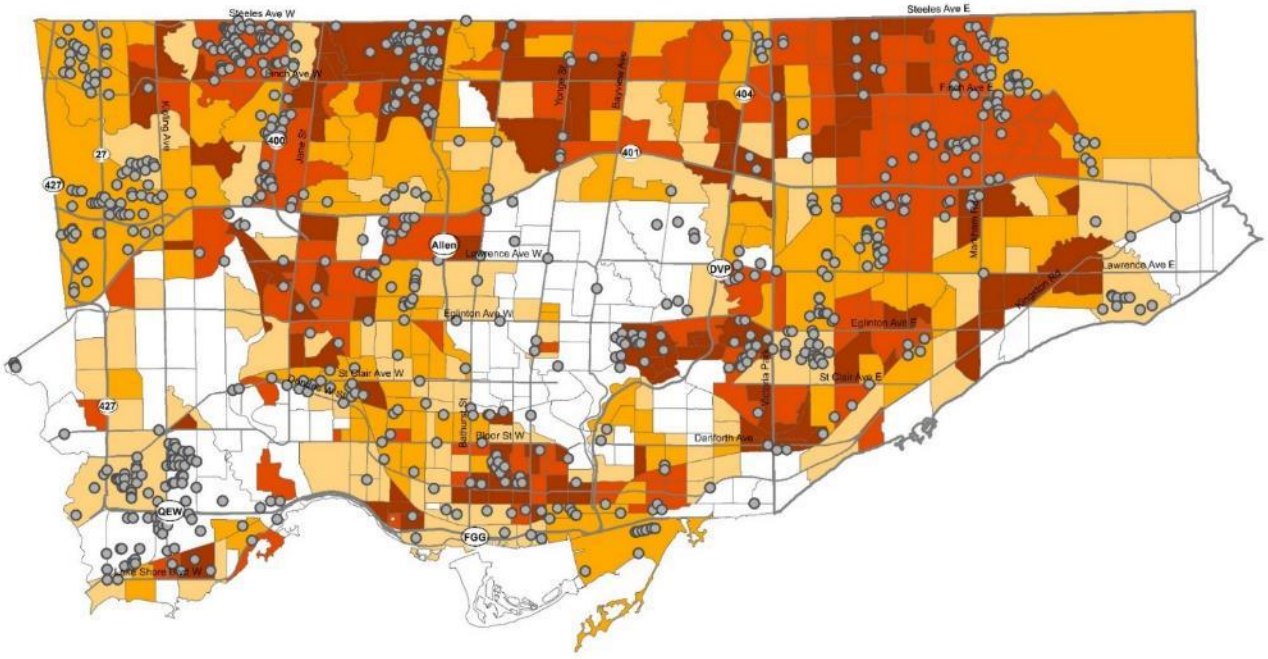


NPRI vs. ChemTRAC - 2013

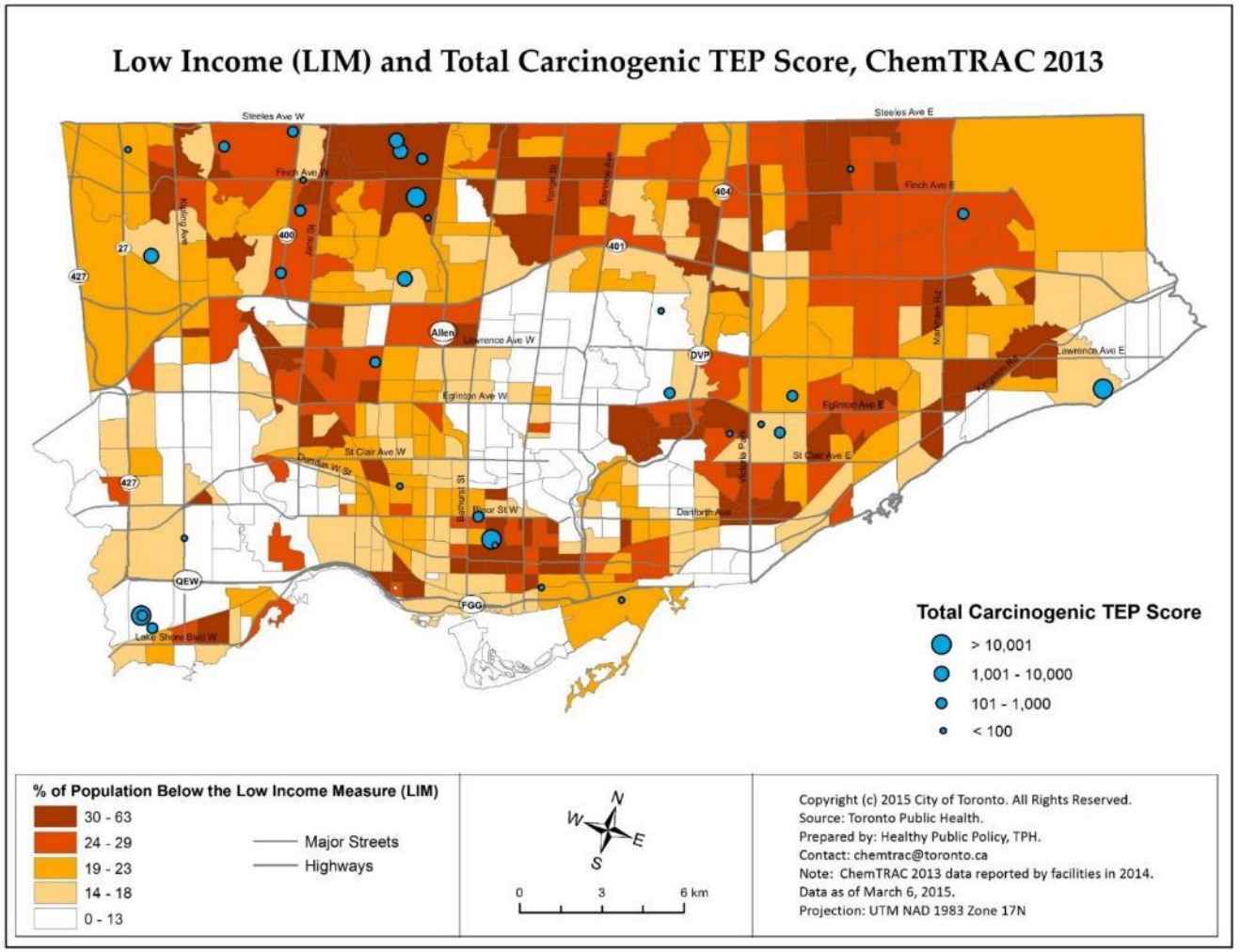



Release to Air from ChemTRAC Facilities, Toronto, 2013
Steeles Ave W
Steeles Ave E
Lawrence Ave W
Lawrence Ave E
Eglinton Ave W
Eglinton Ave E
St Clair Ave W
St Clair Ave E
Bloor St W
Danforth Ave
Kingston Rd
Allen
DVP
QEW
FGG
Release to Air (kg/year)
> 10,000
1,001 - 10,000
101 - 1,000
>100
Major Streets
Highways
Public Parks
Primarily Non Residential
N
W
E
S
0
3
6 km
Copyright (c) 2015 City of Toronto. All Rights Reserved.
Source: Toronto Public Health.
Prepared by: Healthy Public Policy, TPH.
Contact: chemtrac@toronto.ca
Note: ChemTRAC 2013 data reported by facilities in 2014.
Data as of March 6, 2015.
Projection: UTM NAD 1983 Zone 17N

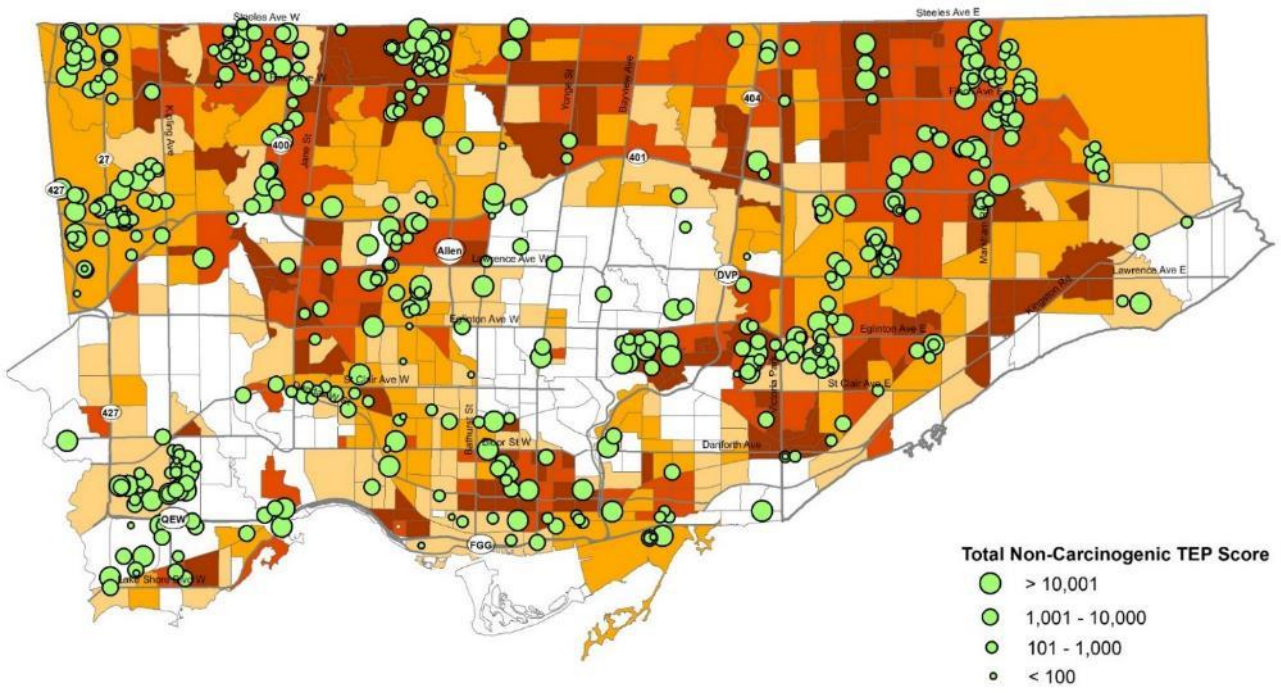
Low Income (LIM) and ChemTRAC Above Threshold Facilities, Toronto, 2013



Copyright (c) 2015 City of Toronto. All Rights Reserved.
Source: Toronto Public Health.
Prepared by: Healthy Public Policy, TPH.
Contact: chemtrac@toronto.ca
Note: ChemTRAC 2013 data reported by facilities in 2014.
Data as of March 6, 2015.
Projection: UTM NAD 1983 Zone 17N


Low Income (LIM) and Total Carcinogenic TEP Score, ChemTRAC 2013
Steeles Ave W
Steeles Ave E
Finch Ave W
Finch Ave E
Keele St
Yonge St
Bayview Ave
Kipling Ave
400
404
401
27
427
Allen
Lawrence Ave W
Lawrence Ave E
DVP
Eglinton Ave W
Eglinton Ave E
St Clair Ave W
St Clair Ave E
Dundas W St
Bathurst St
Bloor St W
Danforth Ave
Victoria Park
Markham Rd
Kingston Rd
QEW
FGG
Lake Shore Blvd W
Total Carcinogenic TEP Score
> 10,001
1,001 - 10,000
101 - 1,000
< 100
% of Population Below the Low Income Measure (LIM)
30 - 63
24 - 29
19 - 23
14 - 18
0 - 13
Major Streets
Highways
N
W
E
S
0
3
6 km
Copyright (c) 2015 City of Toronto. All Rights Reserved.
Source: Toronto Public Health.
Prepared by: Healthy Public Policy, TPH.
Contact: chemtrac@toronto.ca
Note: ChemTRAC 2013 data reported by facilities in 2014.
Data as of March 6, 2015.
Projection: UTM NAD 1983 Zone 17N

Low Income (LIM) and Total Non- Carcinogenic TEP Score, ChemTRAC 2013



% of Population Below the Low Income Measure (LIM)

- 30 - 63
- 24 - 29
- 19 - 23
- 14 - 18
- 0 - 13

Major Streets
Highways

N W E S

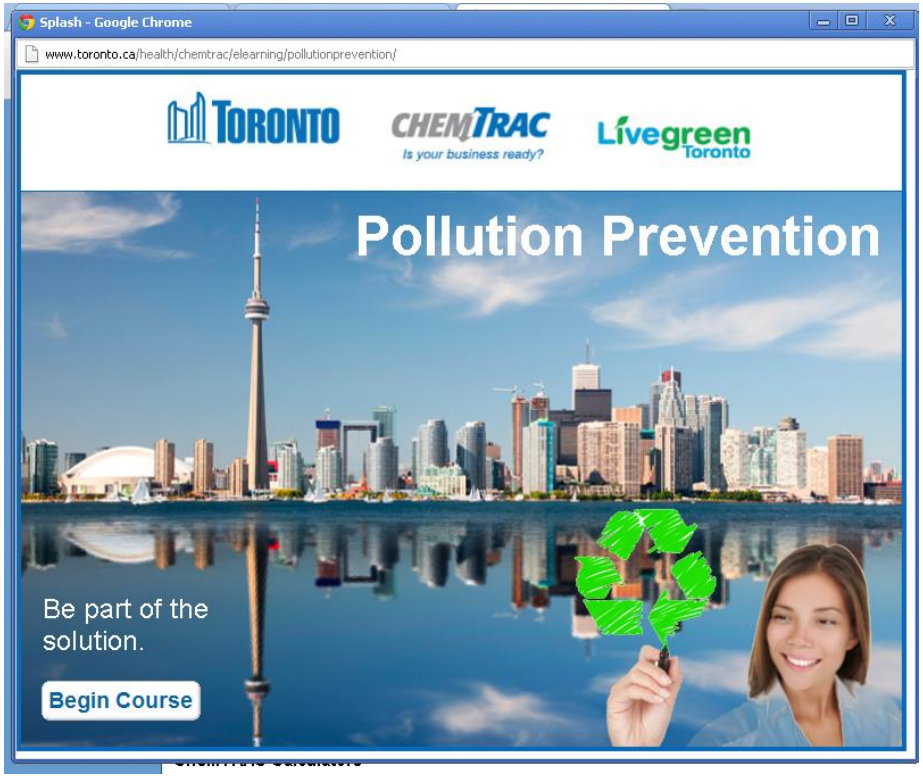
0 3 6 km

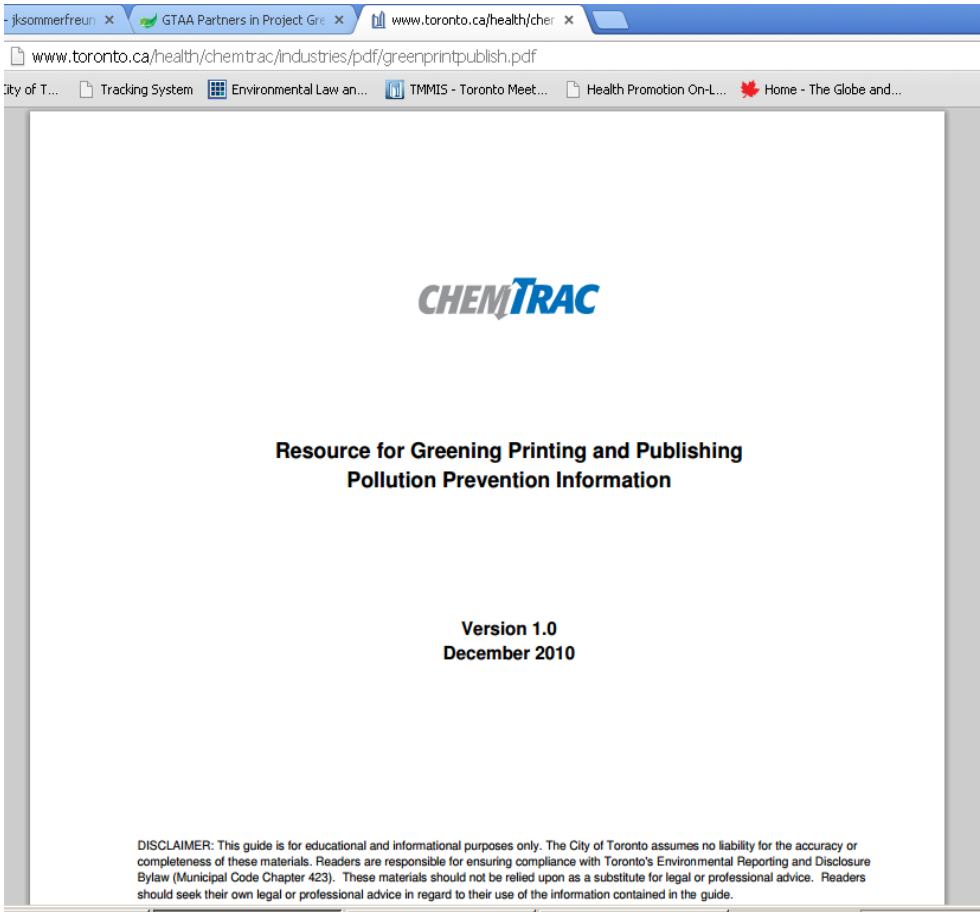
Copyright (c) 2015 City of Toronto. All Rights Reserved.
Source: Toronto Public Health.
Prepared by: Healthy Public Policy, TPH.
Contact: chemtrac@toronto.ca
Note: ChemTRAC 2013 data reported by facilities in 2014.
Data as of March 6, 2015.
Projection: UTM NAD 1983 Zone 17N

Supports for Greening

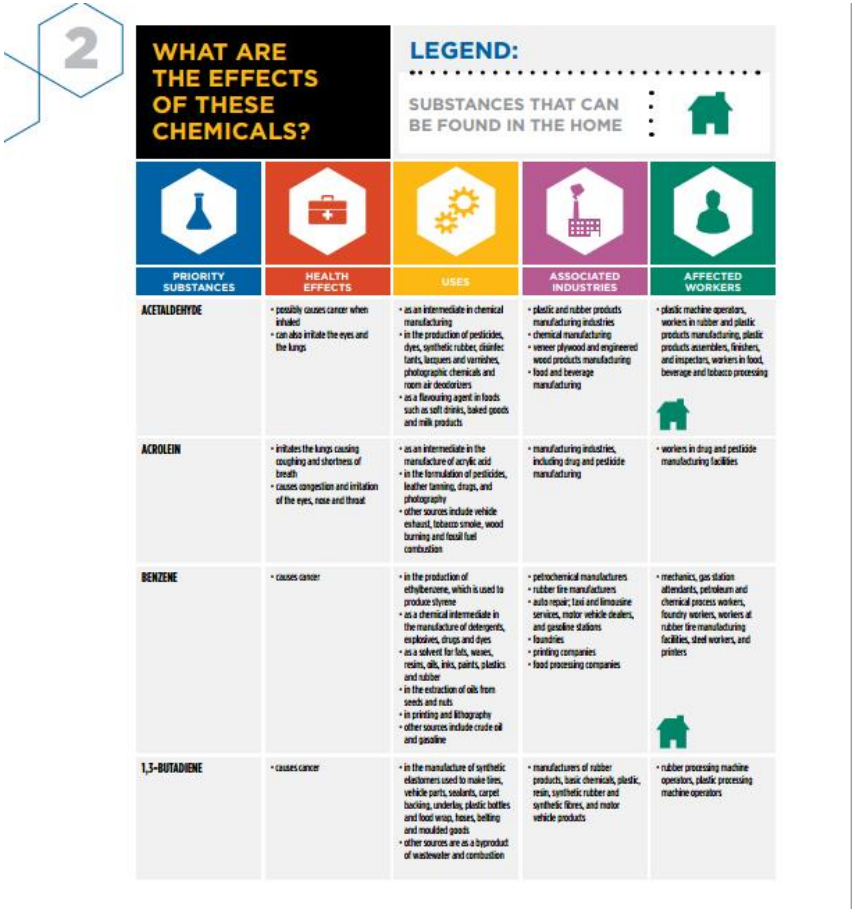
- Pollution Prevention guidance
  - Sector-specific guides to pollution prevention
  - Technical assistance and outreach

Support for Greening





Partnering with community groups



2

WHAT ARE THE EFFECTS OF THESE CHEMICALS?

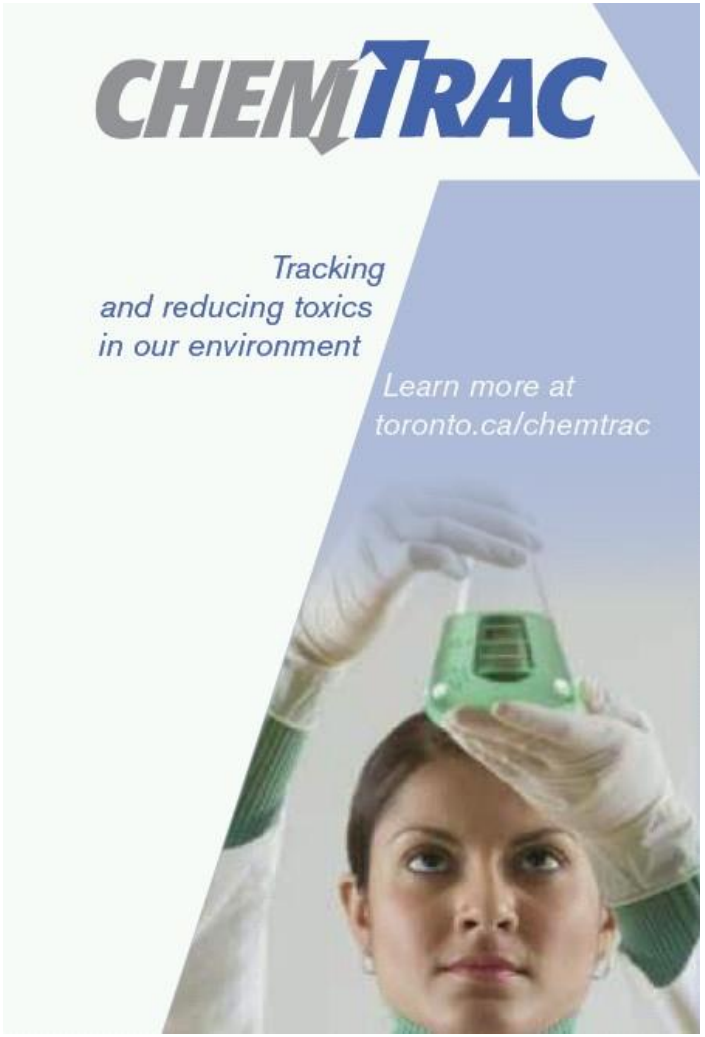
LEGEND:

SUBSTANCES THAT CAN BE FOUND IN THE HOME

PRIORITY SUBSTANCES	HEALTH EFFECTS	USES	ASSOCIATED INDUSTRIES	AFFECTED WORKERS
ACETALDEHYDE	• possibly causes cancer when inhaled • can also irritate the eyes and the lungs	• as an intermediate in chemical manufacturing • in the production of pesticides, dyes, synthetic rubber, disinfectants, lacquers and varnishes, photographic chemicals and room air deodorizers • as a flavouring agent in foods such as soft drinks, baked goods and milk products	• plastic and rubber products manufacturing industries • chemical manufacturing • veneer plywood and engineered wood products manufacturing • food and beverage manufacturing	• plastic machine operators, workers in rubber and plastic products manufacturing, plastic products assemblers, finishers, and inspectors, workers in food, beverage and tobacco processing
ACROLEIN	• irritates the lungs causing coughing and shortness of breath • causes congestion and irritation of the eyes, nose and throat	• as an intermediate in the manufacture of acrylic acid • in the formulation of pesticides, leather tanning, drugs, and photography • other sources include vehicle exhaust, tobacco smoke, wood burning and fossil fuel combustion	• manufacturing industries, including drug and pesticide manufacturing	• workers in drug and pesticide manufacturing facilities
BENZENE	• causes cancer	• in the production of ethylbenzene, which is used to produce styrene • as a chemical intermediate in the manufacture of detergents, explosives, drugs and dyes • as a solvent for fats, waxes, resins, oils, inks, paints, plastics and rubber • in the extraction of oils from seeds and nuts • in printing and lithography • other sources include crude oil and gasoline	• petrochemical manufacturers • rubber tire manufacturers • auto repair; taxi and limousine services, motor vehicle dealers, and gasoline stations • foundries • printing companies • food processing companies	• mechanics, gas station attendants, petroleum and chemical process workers, foundry workers, workers at rubber tire manufacturing facilities, steel workers, and printers
1,3-BUTADIENE	• causes cancer	• in the manufacture of synthetic elastomers used to make tires, vehicle parts, sealants, carpet backing, underlay, plastic bottles and food wrap, hoses, belting and moulded goods • other sources are as a byproduct of wastewater and combustion	• manufacturers of rubber products, basic chemicals, plastic, resin, synthetic rubber and synthetic fibres, and motor vehicle products	• rubber processing machine operators, plastic processing machine operators

Toronto Cancer Prevention Coalition (TCPC)

Learn more about ChemTRAC



For more information:

www.toronto.ca/chemtrac

chemtrac@toronto.ca

416-338-4830

Acknowledgements

The ChemTRAC Team:

- Dylan Dampier, Healthy Public Policy
- Marco Belmont, Healthy Public Policy
- Ronald Macfarlane, Healthy Public Policy
- Sayeh Imanzadeh, Healthy Public Policy
- Yusuf Alam, Healthy Public Policy
- Zia Islam, Healthy Public Policy

Questions?

Thank You!

Marco A. Belmont, Ph.D.
Health Research Specialist
Healthy Public Policy
Toronto Public Health
277 Victoria St. 7th Floor.
Toronto M5B 1W2
mbelmon@toronto.ca
416.338.6267