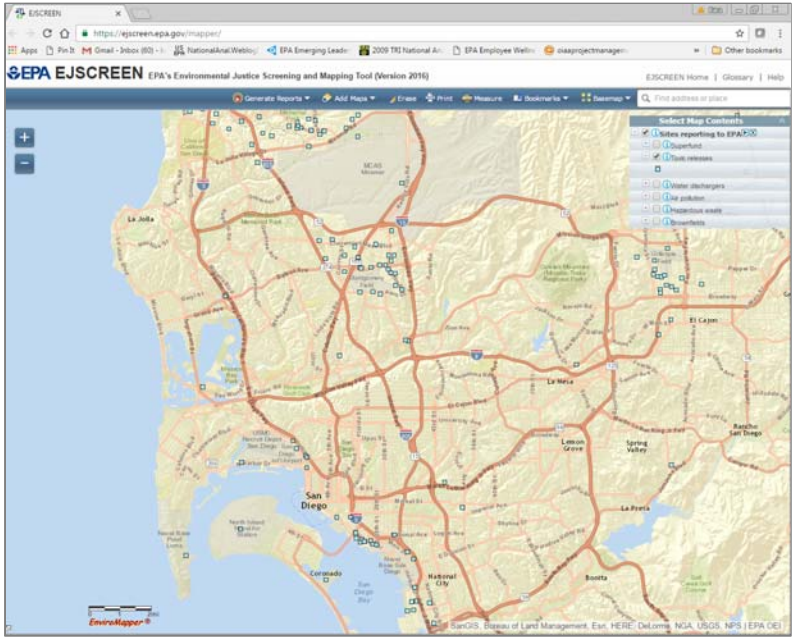
What Can TRI Tell You about Human Health Risks?

Kara Koehrn
Toxics Release Inventory Program

Outline

- Basics of risk in the context of TRI
- Helpful tips for using TRI data to answer risk questions
- Example risk question



Three Takeaways

1. TRI, with other information, can be a starting point in evaluating potential risks.

2. TRI data is only a part of a bigger risk picture.

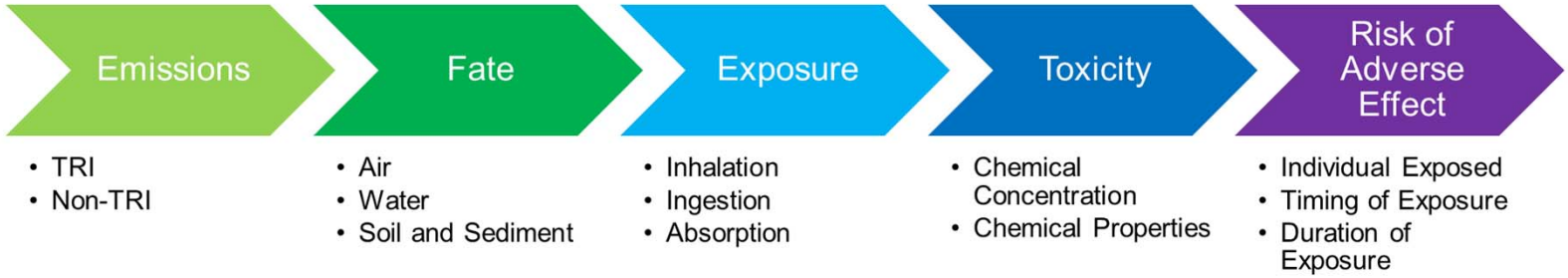
3. You can start looking through TRI data and other helpful public resources online.

What is risk?

Risk is the chance that an exposure to an environmental stressor (e.g., a chemical) will lead to harmful effects (e.g., cancer, birth defects).

What is risk?

Individual risk from chemical exposures results from many factors.



TRI contains some of this information:

- what chemicals are released from industrial facilities,
- the amount of each chemical released, and
- the amount released to air, water and land.

Limitations of TRI Data

- TRI does not include information about public exposure to chemicals.
- TRI covers an important subset of toxic chemicals managed at U.S. facilities, but doesn't cover all chemicals or facilities.
- Data reflect annual chemical release totals and don't indicate the frequency or duration of releases.

For more information, see “Factors to Consider When Using TRI Data” at:
http://www2.epa.gov/sites/production/files/2013-09/documents/tri_factors_to_consider_2013.pdf

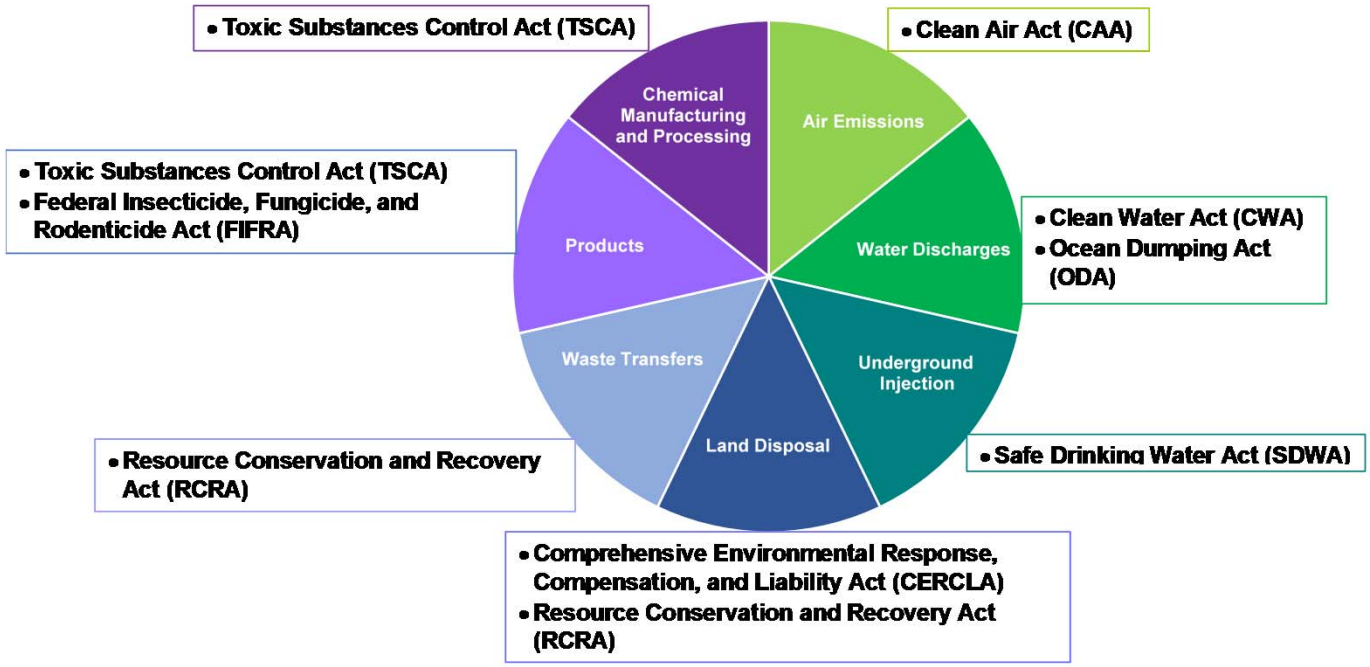
Helpful Tips

- Keep other sources of toxic chemicals in mind.
- Releases reported to TRI do not equal exposure.
- A large release of a less toxic chemical may be of less concern then a small release of a more toxic chemical.

TRI does not include emissions from cars

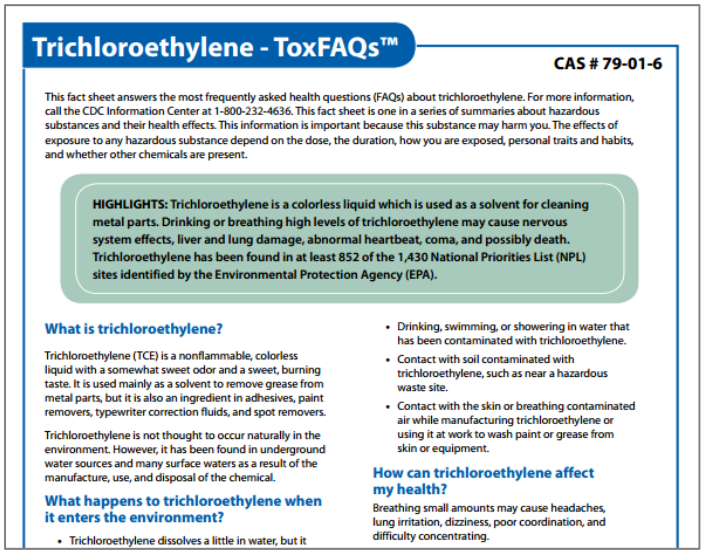
Helpful Tips

- Check facility compliance information under other EPA programs



Helpful Tips

- Information about health impacts associated with toxic chemicals is available in several EPA tools (e.g. myRTK, ChemView) and CDC resources.



Trichloroethylene - ToxFAQs™

CAS # 79-01-6

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene dissolves a little in water, but it
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

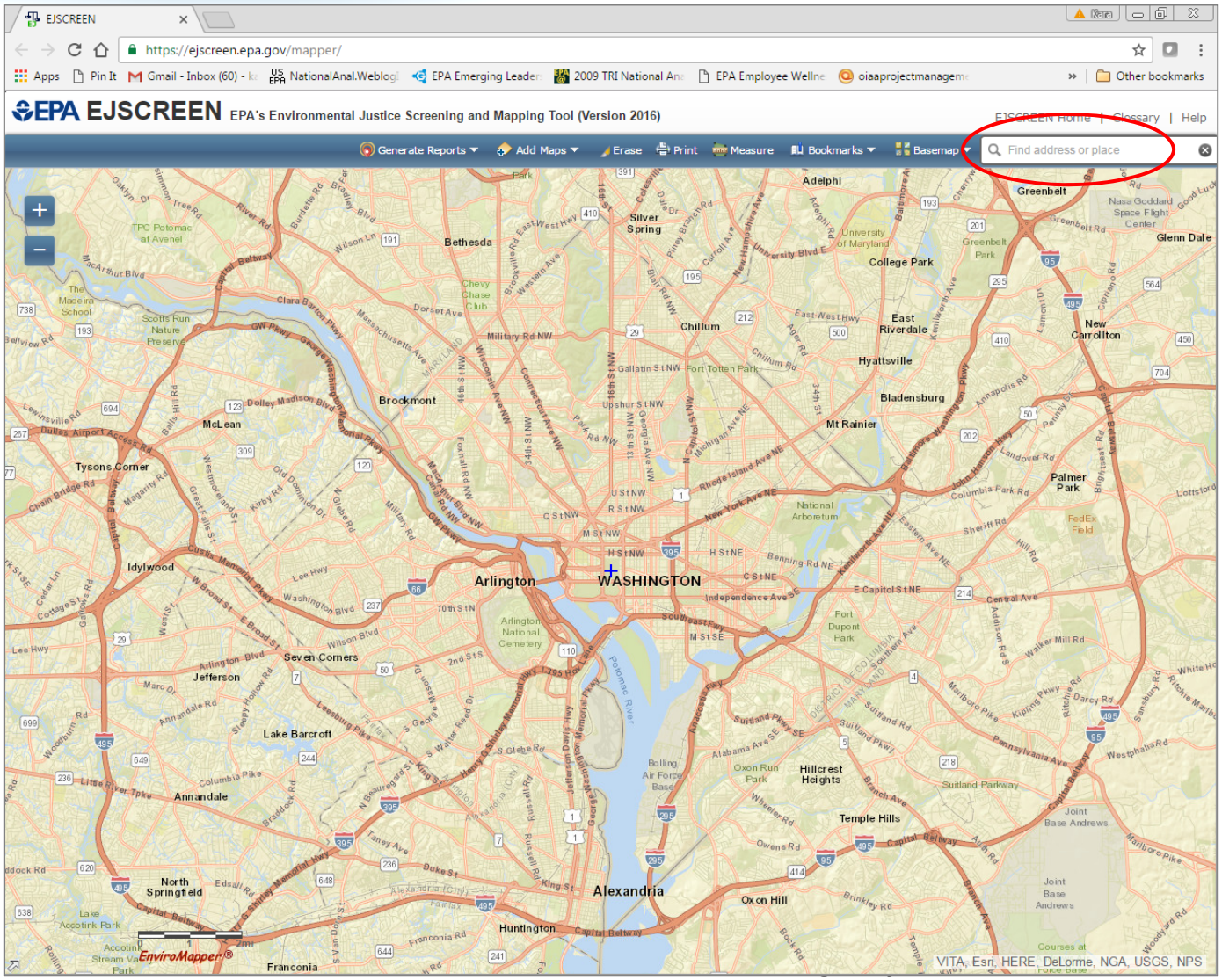
How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

http://www.atsdr.cdc.gov/toxfaqs/Index.asp

Accessing TRI Data Through EJSCREEN

https://www.epa.gov/ejscreen


EJSCREEN
https://ejscreen.epa.gov/mapper/
EPA EJSCREEN EPA's Environmental Justice Screening and Mapping Tool (Version 2016)
EJSCREEN Home | Glossary | Help
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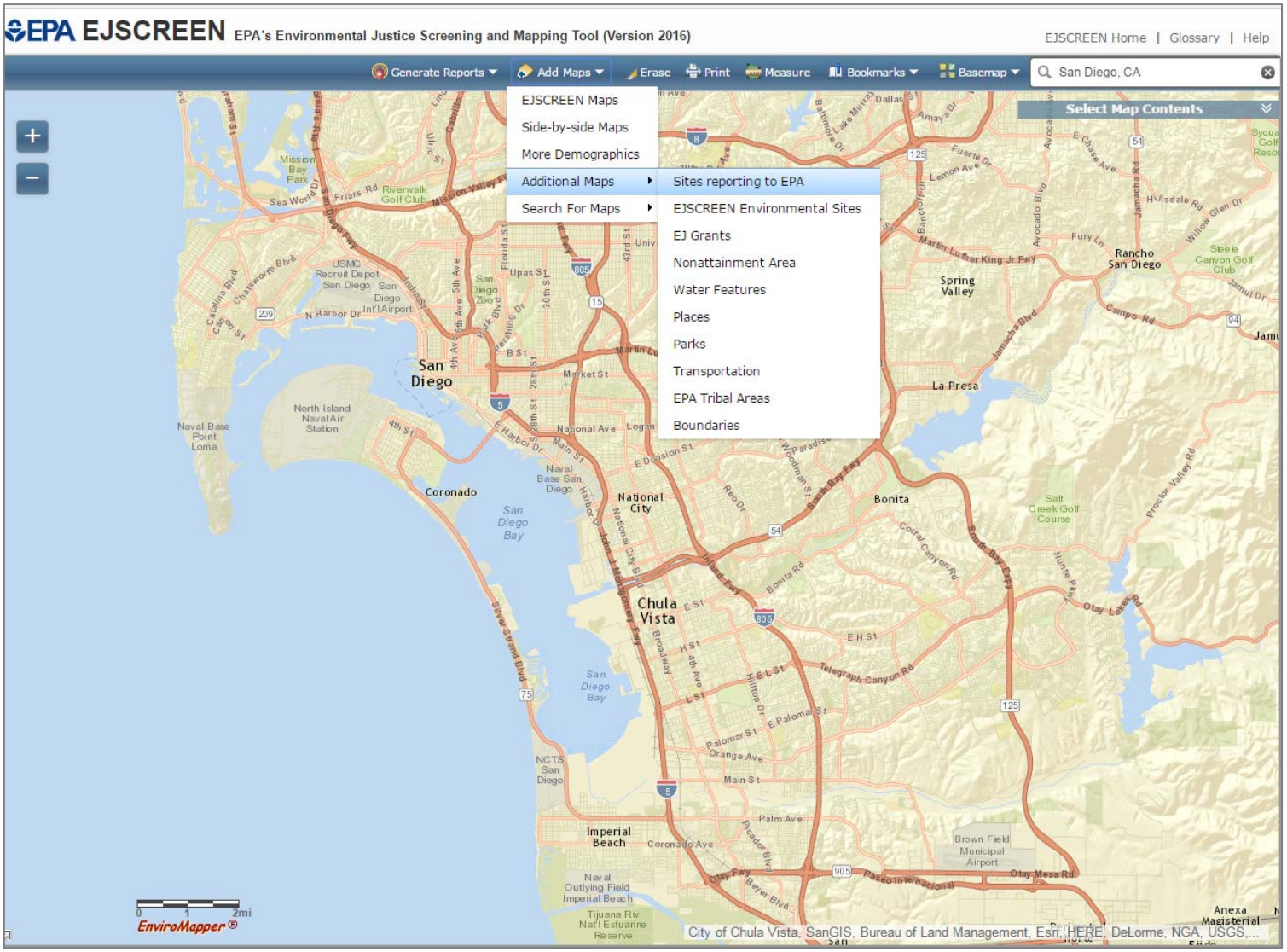
Add Maps
Erase
Print
Measure
Bookmarks
Basemap
Find address or place
Adelphi
Greenbelt
Silver Spring
Bethesda
College Park
Glenn Dale
Chillum
East Riverdale
New Carrollton
Hyattsville
Brookmont
Bladensburg
McLean
Mt Rainier
Tysons Corner
Palmer Park
Idylwood
Arlington
WASHINGTON
Seven Corners
Jefferson
Lake Barcroft
Annandale
Hillcrest Heights
Temple Hills
Joint Base Andrews
North Springfield
Alexandria
Oxon Hill
Huntington
Franconia
EnviroMapper®
VITA, Esri, HERE, DeLorme, NGA, USGS, NPS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More Demographics
Additional Maps
Search For Maps
Sites reporting to EPA
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Water Features
Places
Parks
Transportation
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Boundaries
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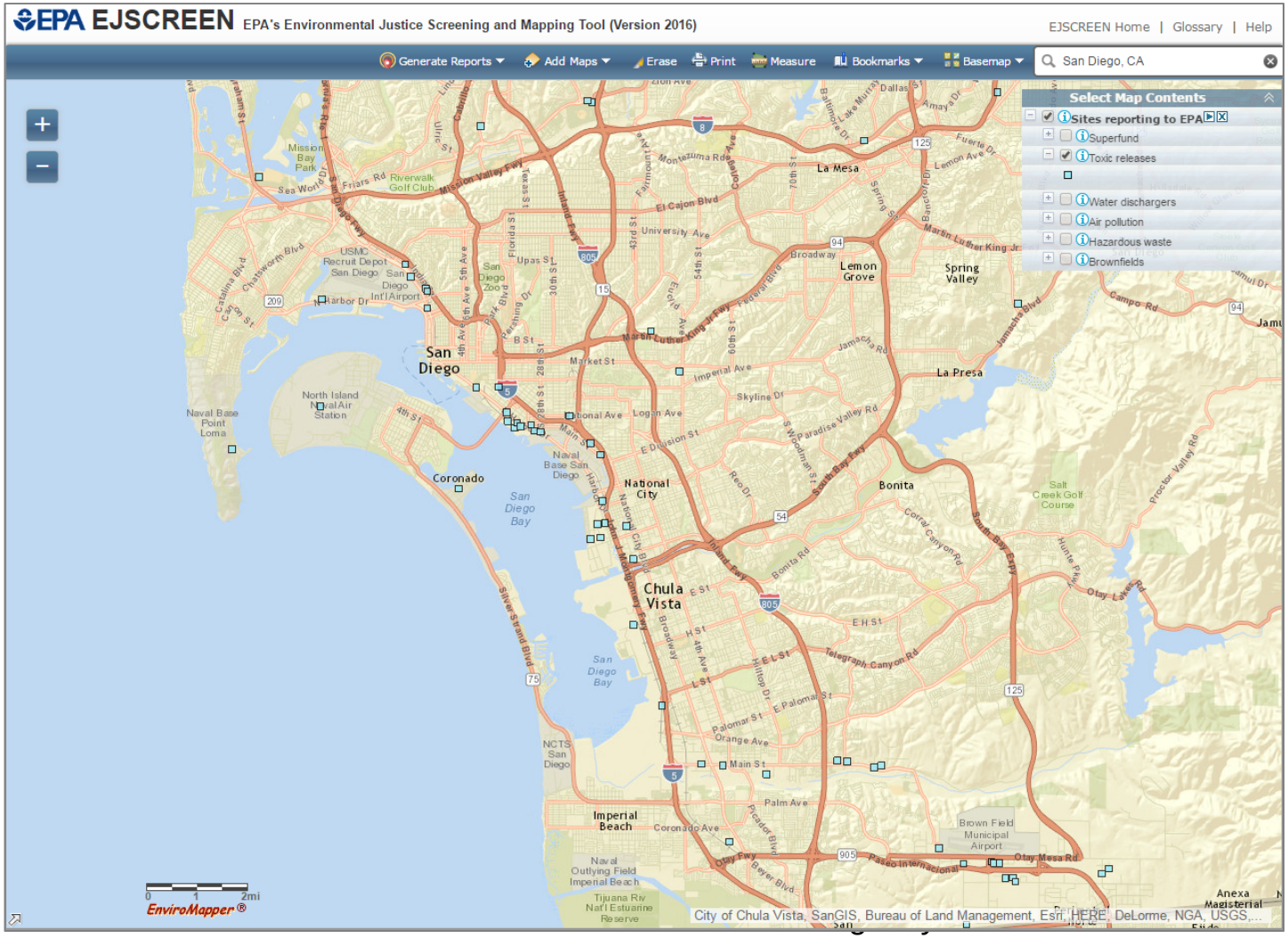
Imperial Beach
Bonita
La Presa
Spring Valley
Rancho San Diego
EnviroMapper®
City of Chula Vista, SanGIS, Bureau of Land Management, Esri, HERE, DeLorme, NGA, USGS,...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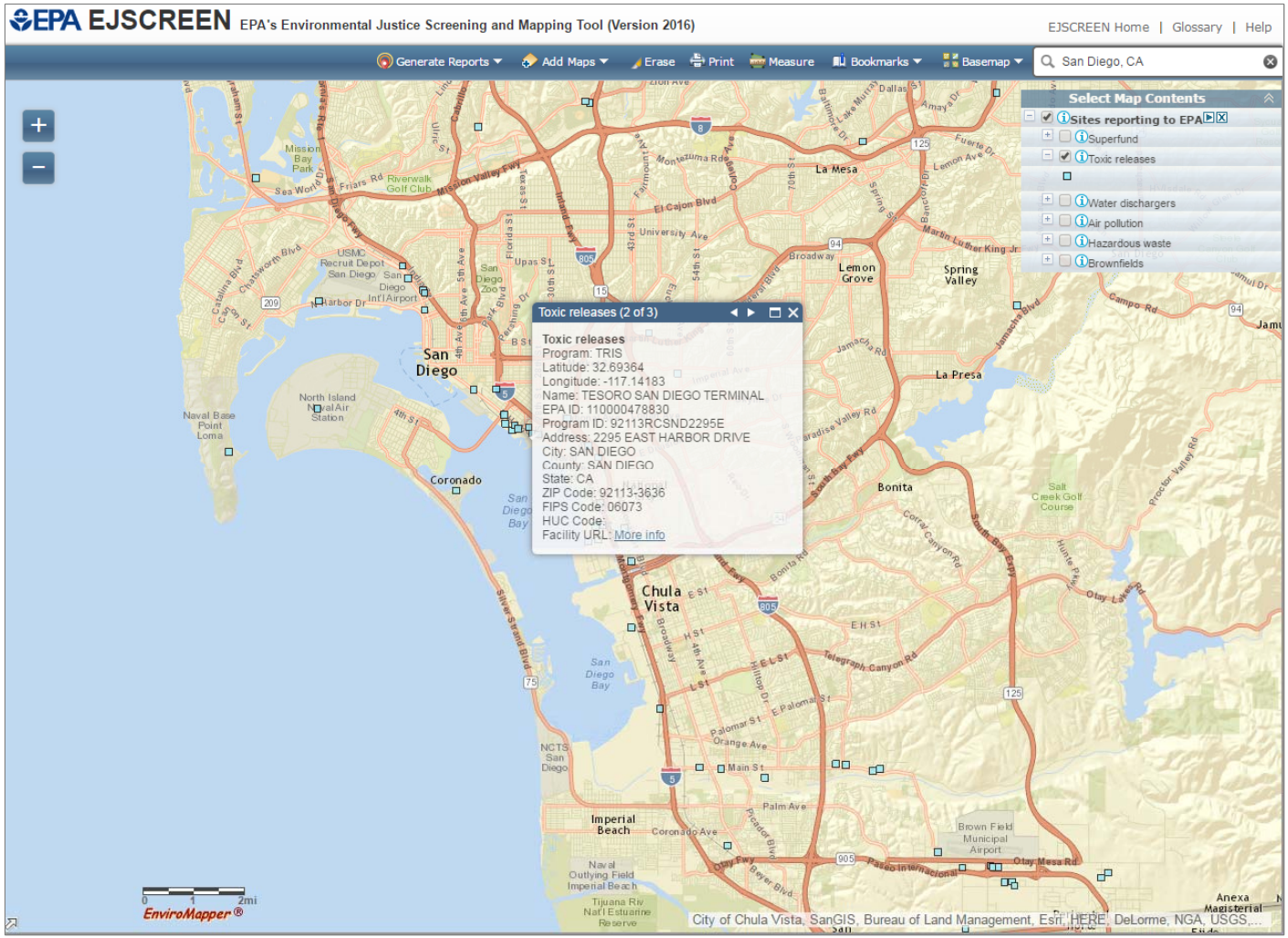
Sites reporting to EPA
Superfund
Toxic releases
Water dischargers
Air pollution
Hazardous waste
Brownfields
San Diego
Chula Vista
National City
Coronado
Imperial Beach
La Mesa
Lemon Grove
Spring Valley
La Presa
Bonita
EnviroMapper
City of Chula Vista, SanGIS, Bureau of Land Management, Esri, HERE, DeLorme, NGA, USGS,...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Bookmarks
Basemap
San Diego, CA
Select Map Contents
Sites reporting to EPA
Superfund
Toxic releases
Water dischargers
Air pollution
Hazardous waste
Brownfields
Toxic releases (2 of 3)
Toxic releases
Program: TRIS
Latitude: 32.69364
Longitude: -117.14183
Name: TESORO SAN DIEGO TERMINAL
EPA ID: 110000478830
Program ID: 92113RCSND2295E
Address: 2295 EAST HARBOR DRIVE
City: SAN DIEGO
County: SAN DIEGO
State: CA
ZIP Code: 92113-3636
FIPS Code: 06073
HUC Code:
Facility URL: More info
San Diego
Coronado
Chula Vista
La Mesa
Lemon Grove
Spring Valley
La Presa
Bonita
Imperial Beach
EnviroMapper®
City of Chula Vista, SanGIS, Bureau of Land Management, Esri, HERE, DeLorme, NGA, USGS,...

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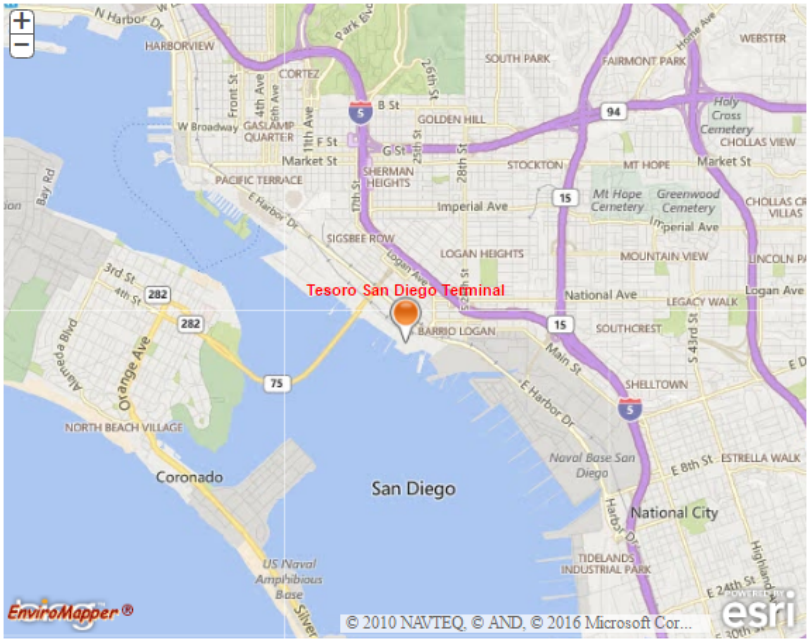
TRI Facility Report: TESORO SAN DIEGO TERMINAL(92113RCSND2295E)

Facility Information

FACILITY INFORMATION | CHEMICALS | POLLUTION PREVENTION (P2) | WASTE MANAGEMENT | RELEASES | WATER RELEASES | TRANSFERS | CLASSIC VIEW

Facility Name	TESORO SAN DIEGO TERMINAL	**TRI ID**	92113RCSND2295E
Address	2295 HARBOR DR SAN DIEGO, CA, 92113	**FRS ID**	110000478830
Mailing Name	TESORO SAN DIEGO TERMINAL	**DUNS Number**	008133480
Mailing Address	8601 S GARFIELD AVE SOUTH GATE, CA, 90280	**Parent Company**	TESORO CORP
County	SAN DIEGO	**Public Contact**	RUTHANNE WALKER
EPA Region	9	**Phone**	(562) 806-4105
Latitude	32.69364	**Tribe**	NA
Longitude	-117.14183	**BIA Tribal Code**	NA
NAIC(S)	424710 Petroleum Bulk Stations and Terminals	**Industry Sector**	4247 Petroleum Bulk Terminals
Last Form	2015		

Information is for the most recent reporting year



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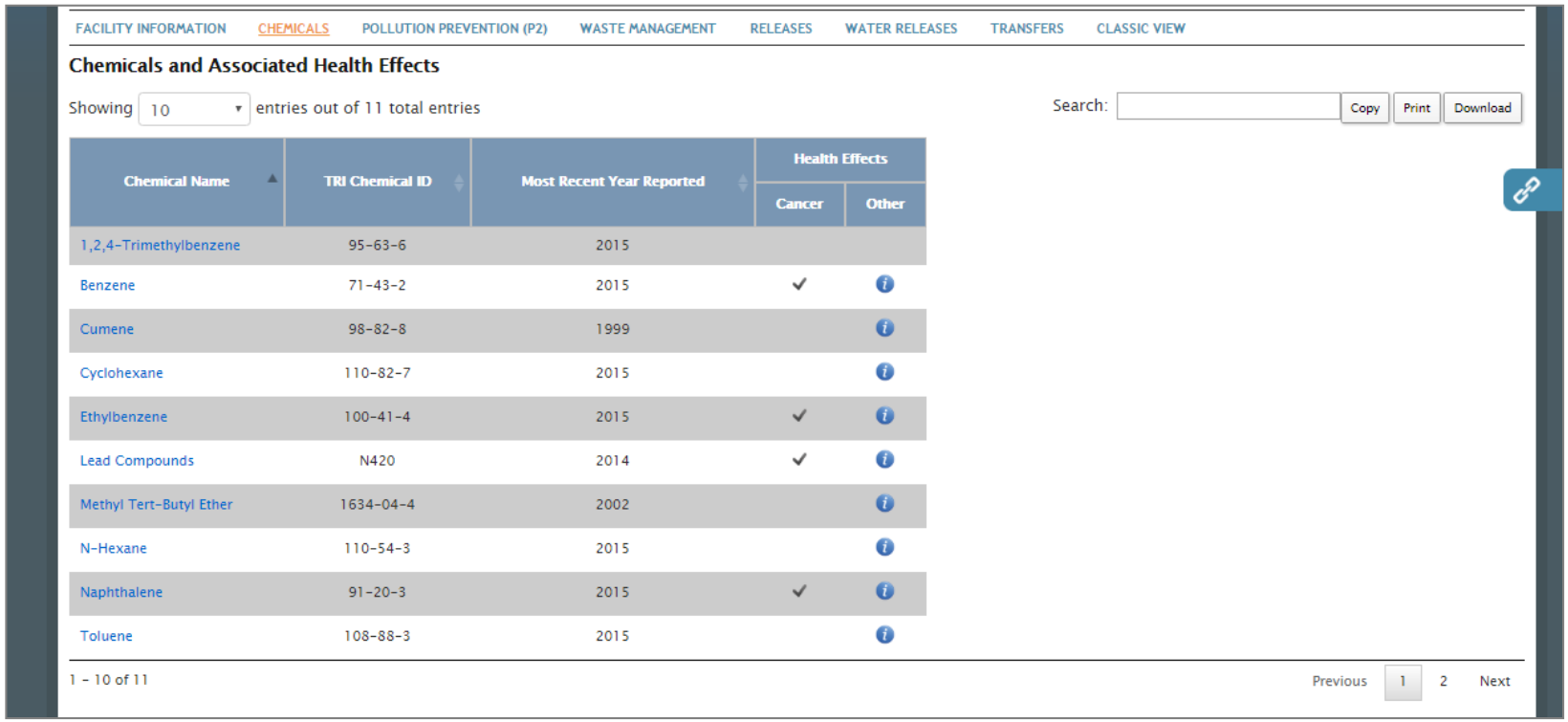

FACILITY INFORMATION | CHEMICALS | POLLUTION PREVENTION (P2) | WASTE MANAGEMENT | RELEASES | WATER RELEASES | TRANSFERS | CLASSIC VIEW

Chemicals and Associated Health Effects

Showing 10 entries out of 11 total entries

Search: Copy Print Download

Chemical Name	TRI Chemical ID	Most Recent Year Reported	Health Effects	
			Cancer	Other
1,2,4-Trimethylbenzene	95-63-6	2015		
Benzene	71-43-2	2015	✓	ⓘ
Cumene	98-82-8	1999		ⓘ
Cyclohexane	110-82-7	2015		ⓘ
Ethylbenzene	100-41-4	2015	✓	ⓘ
Lead Compounds	N420	2014	✓	ⓘ
Methyl Tert-Butyl Ether	1634-04-4	2002		ⓘ
N-Hexane	110-54-3	2015		ⓘ
Naphthalene	91-20-3	2015	✓	ⓘ
Toluene	108-88-3	2015		ⓘ

1 - 10 of 11

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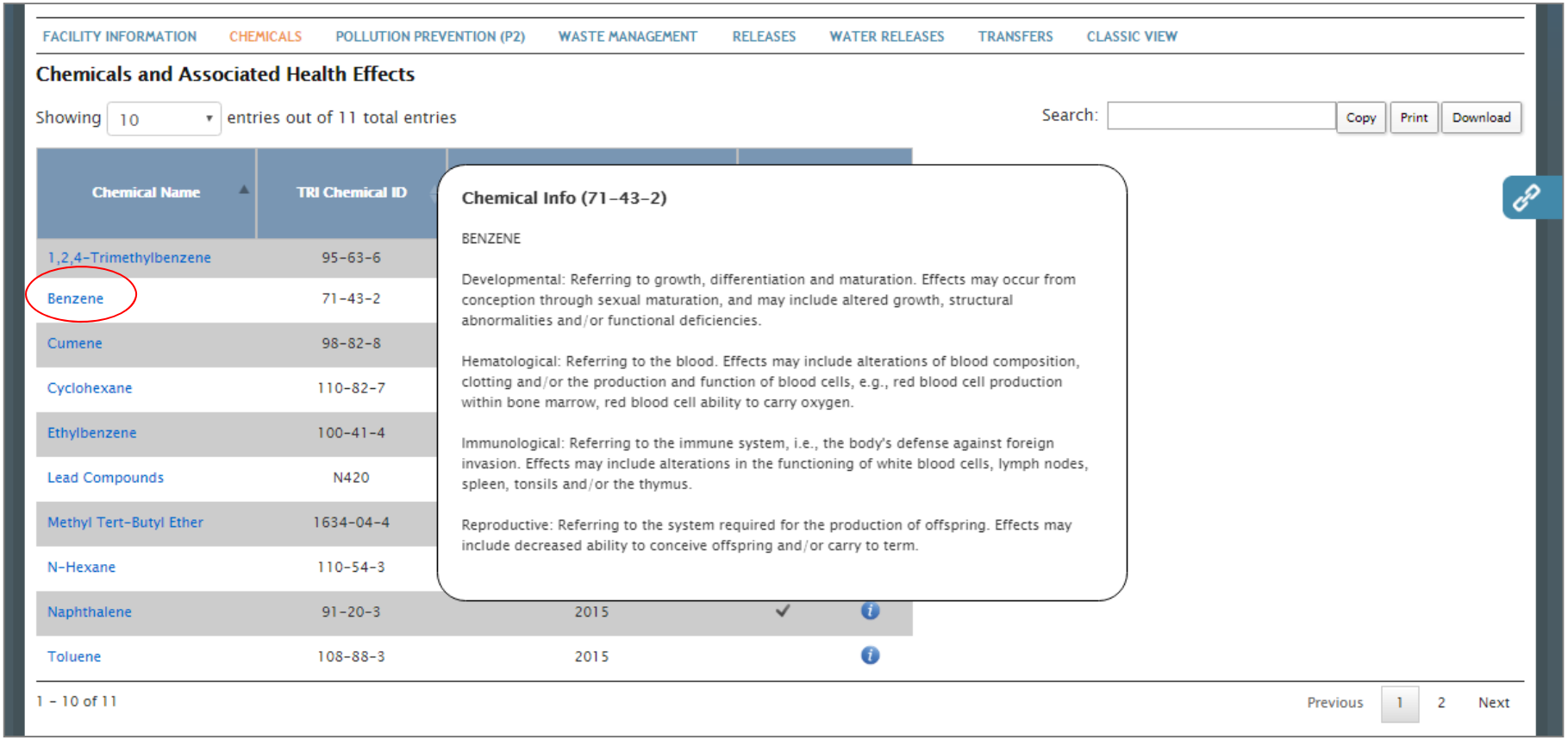
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Chemicals and Associated Health Effects
Showing 10 entries out of 11 total entries
Search:
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Chemical Name
TRI Chemical ID
1,2,4-Trimethylbenzene 95-63-6
Benzene 71-43-2
Cumene 98-82-8
Cyclohexane 110-82-7
Ethylbenzene 100-41-4
Lead Compounds N420
Methyl Tert-Butyl Ether 1634-04-4
N-Hexane 110-54-3
Naphthalene 91-20-3 2015
Toluene 108-88-3 2015
Chemical Info (71-43-2)
BENZENE
Developmental: Referring to growth, differentiation and maturation. Effects may occur from conception through sexual maturation, and may include altered growth, structural abnormalities and/or functional deficiencies.
Hematological: Referring to the blood. Effects may include alterations of blood composition, clotting and/or the production and function of blood cells, e.g., red blood cell production within bone marrow, red blood cell ability to carry oxygen.
Immunological: Referring to the immune system, i.e., the body's defense against foreign invasion. Effects may include alterations in the functioning of white blood cells, lymph nodes, spleen, tonsils and/or the thymus.
Reproductive: Referring to the system required for the production of offspring. Effects may include decreased ability to conceive offspring and/or carry to term.
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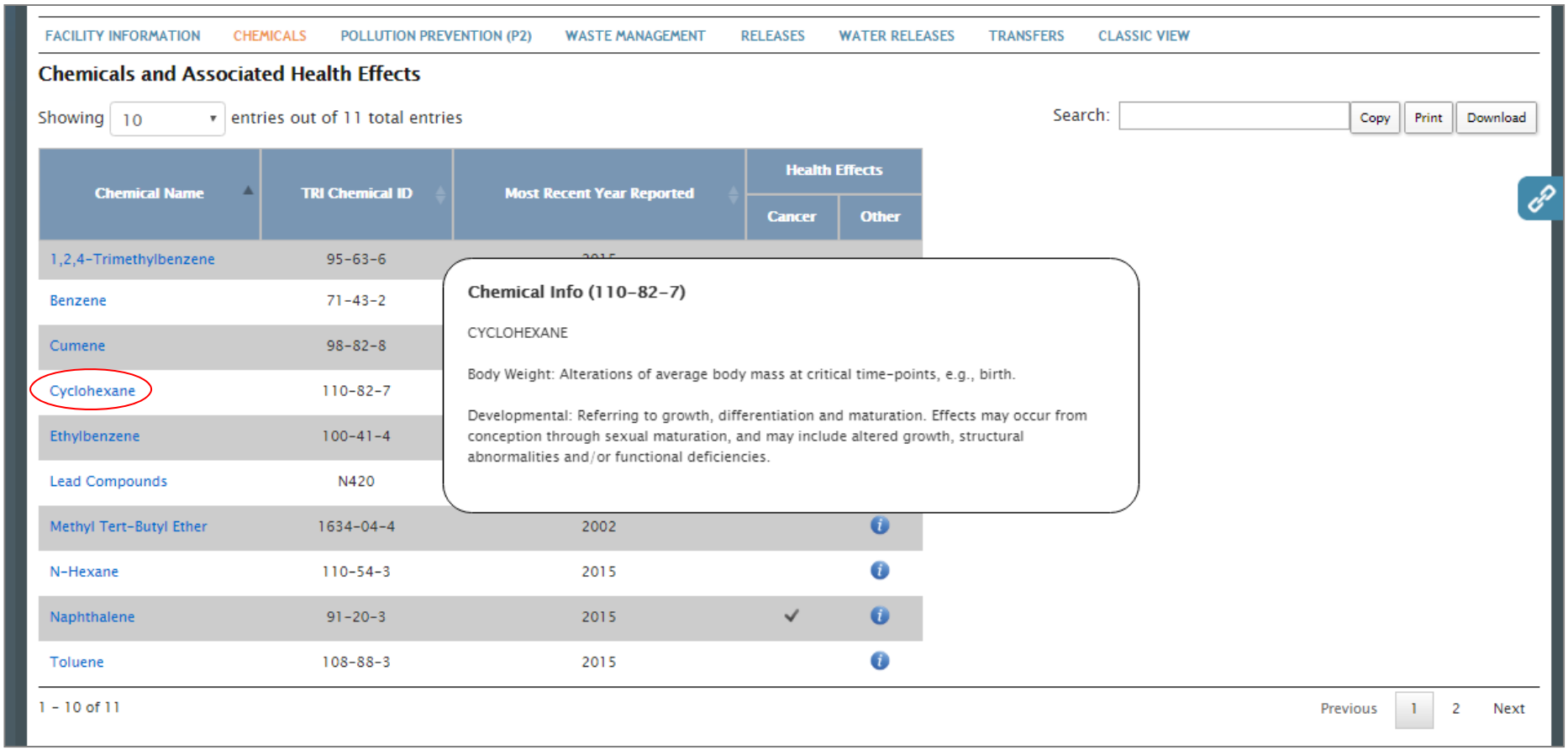
Previous
1
2
Next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Chemicals and Associated Health Effects
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Search:
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Chemical Name
TRI Chemical ID
Most Recent Year Reported
Health Effects
Cancer
Other
1,2,4-Trimethylbenzene 95-63-6
Benzene 71-43-2
Cumene 98-82-8
Cyclohexane 110-82-7
Ethylbenzene 100-41-4
Lead Compounds N420
Methyl Tert-Butyl Ether 1634-04-4 2002
N-Hexane 110-54-3 2015
Naphthalene 91-20-3 2015
Toluene 108-88-3 2015
Chemical Info (110-82-7)
CYCLOHEXANE
Body Weight: Alterations of average body mass at critical time-points, e.g., birth.
Developmental: Referring to growth, differentiation and maturation. Effects may occur from conception through sexual maturation, and may include altered growth, structural abnormalities and/or functional deficiencies.
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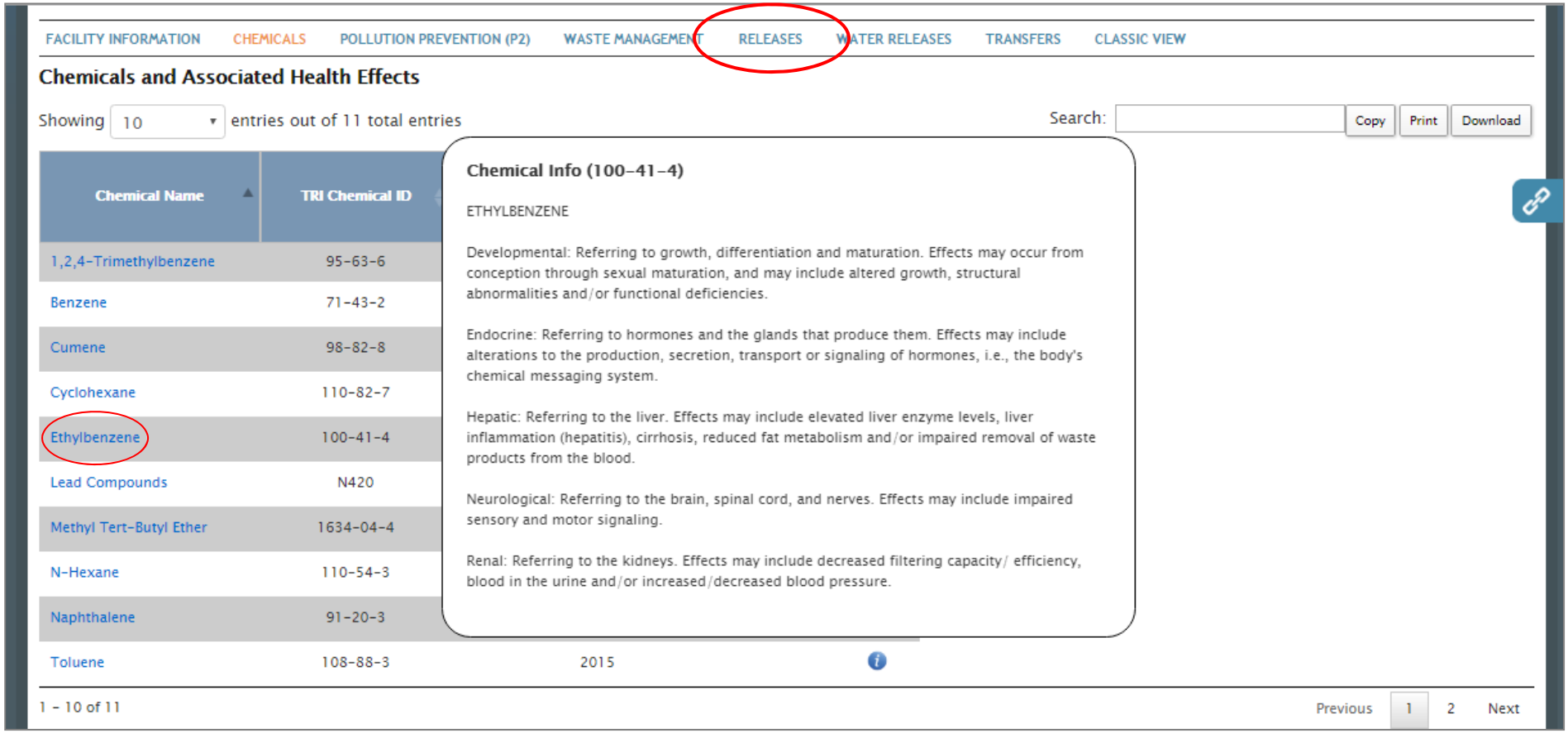
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Search:
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Chemical Name
TRI Chemical ID
1,2,4-Trimethylbenzene 95-63-6
Benzene 71-43-2
Cumene 98-82-8
Cyclohexane 110-82-7
Ethylbenzene 100-41-4
Lead Compounds N420
Methyl Tert-Butyl Ether 1634-04-4
N-Hexane 110-54-3
Naphthalene 91-20-3
Toluene 108-88-3 2015
Chemical Info (100-41-4)
ETHYLBENZENE
Developmental: Referring to growth, differentiation and maturation. Effects may occur from conception through sexual maturation, and may include altered growth, structural abnormalities and/or functional deficiencies.
Endocrine: Referring to hormones and the glands that produce them. Effects may include alterations to the production, secretion, transport or signaling of hormones, i.e., the body's chemical messaging system.
Hepatic: Referring to the liver. Effects may include elevated liver enzyme levels, liver inflammation (hepatitis), cirrhosis, reduced fat metabolism and/or impaired removal of waste products from the blood.
Neurological: Referring to the brain, spinal cord, and nerves. Effects may include impaired sensory and motor signaling.
Renal: Referring to the kidneys. Effects may include decreased filtering capacity/ efficiency, blood in the urine and/or increased/decreased blood pressure.
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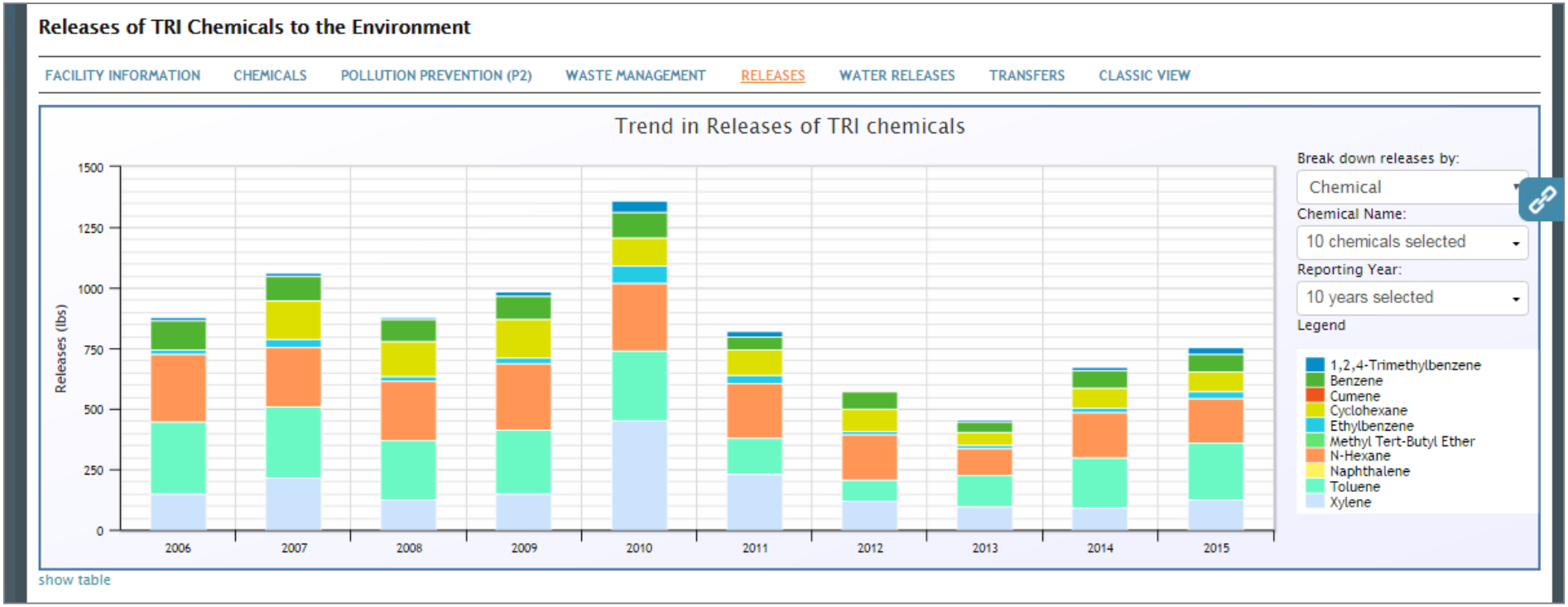
Releases of TRI Chemicals to the Environment
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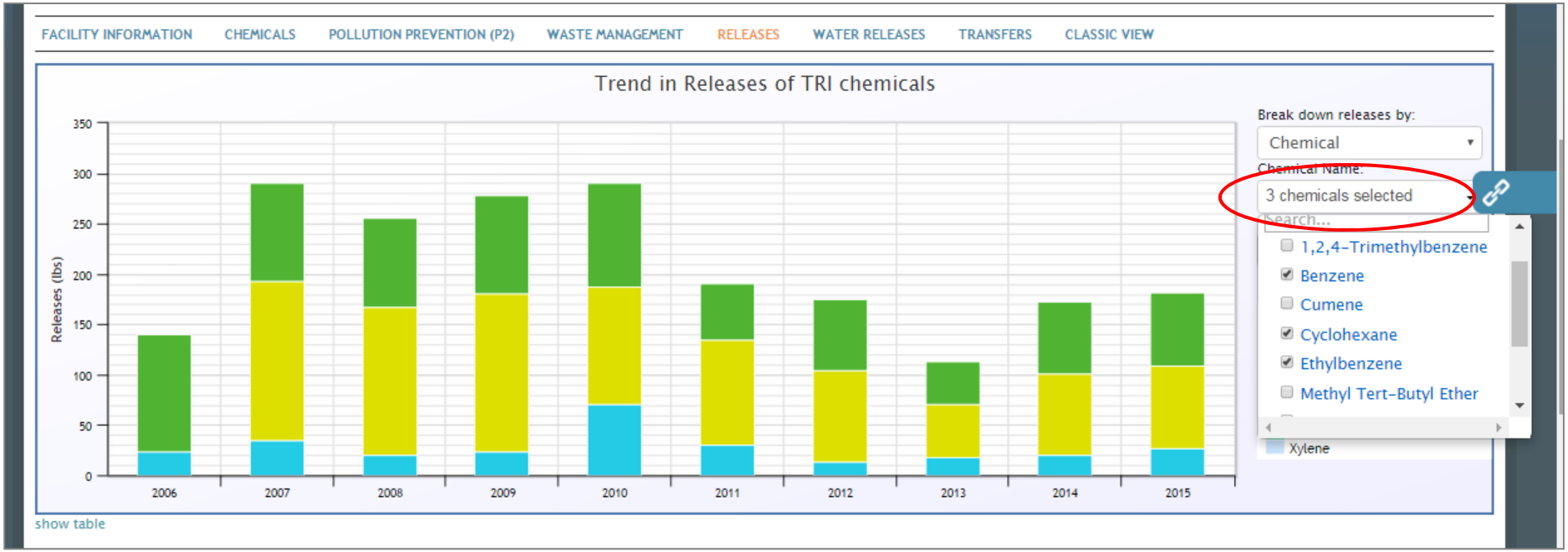
Trend in Releases of TRI chemicals
Releases (lbs)
1500
1250
1000
750
500
250
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Break down releases by:
Chemical
Chemical Name:
10 chemicals selected
Reporting Year:
10 years selected
Legend
1,2,4-Trimethylbenzene
Benzene
Cumene
Cyclohexane
Ethylbenzene
Methyl Tert-Butyl Ether
N-Hexane
Naphthalene
Toluene
Xylene
show table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WATER RELEASES
TRANSFERS
CLASSIC VIEW
Trend in Releases of TRI chemicals
Releases (lbs)
350
300
250
200
150
100
50
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Break down releases by:
Chemical
Chemical Name:
3 chemicals selected
Search...
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Cumene
Cyclohexane
Ethylbenzene
Methyl Tert-Butyl Ether
Xylene
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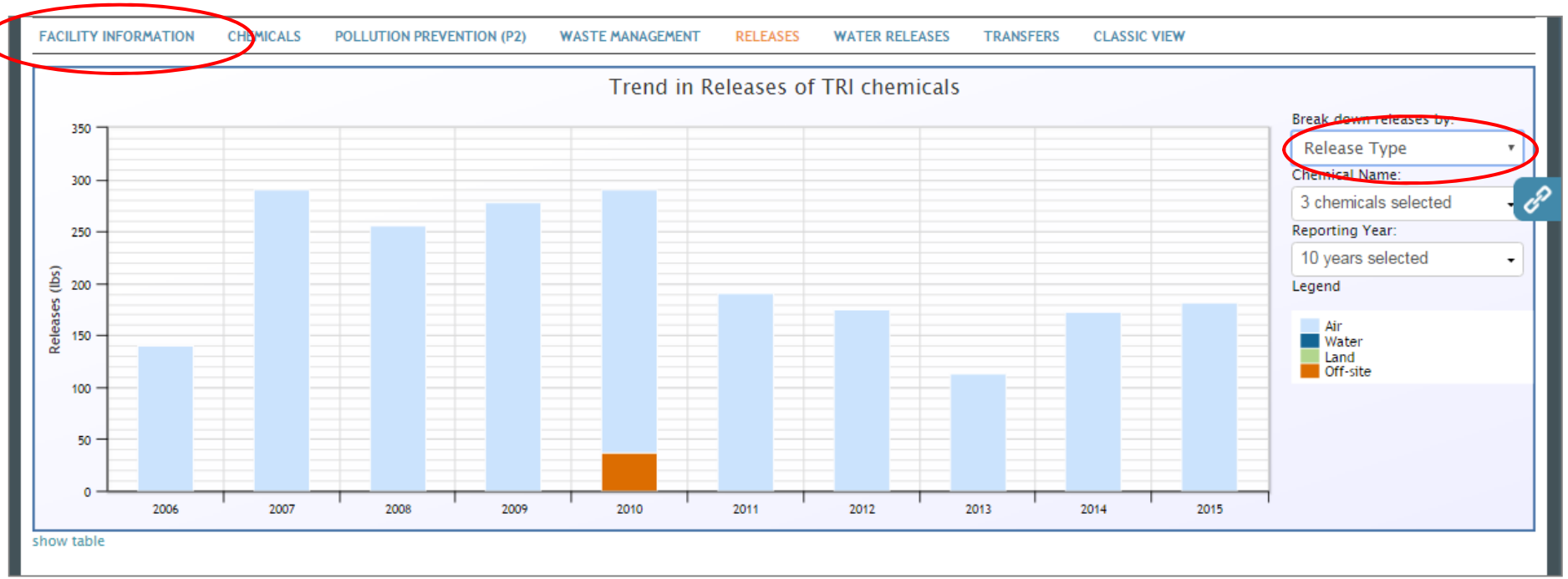
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WASTE MANAGEMENT
RELEASES
WATER RELEASES
TRANSFERS
CLASSIC VIEW
Trend in Releases of TRI chemicals
Releases (lbs)
350
300
250
200
150
100
50
0
2006
2007
2008
2009
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2011
2012
2013
2014
2015
Break down releases by:
Release Type
Chemical Name:
3 chemicals selected
Reporting Year:
10 years selected
Legend
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Land
Off-site
show table

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TRI Facility Report: TESORO SAN DIEGO TERMINAL(92113RCSND2295E)

Facility Information

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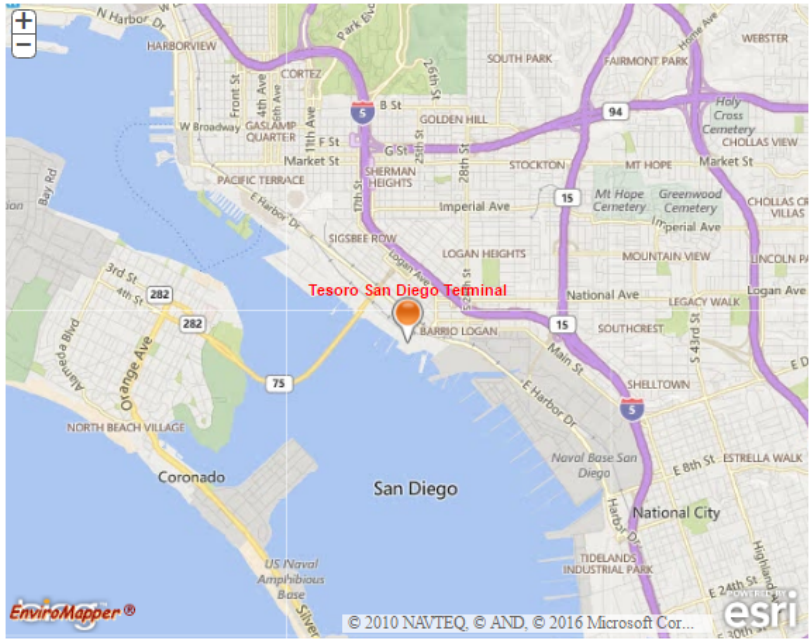
Mailing Name	TESORO SAN DIEGO TERMINAL	**DUNS Number**	008133480
Mailing Address	8601 S GARFIELD AVE SOUTH GATE, CA, 90280	**Parent Company**	TESORO CORP
County	SAN DIEGO	**Public Contact**	RUTHANNE WALKER
EPA Region	9	**Phone**	(562) 806-4105
Latitude	32.69364	**Tribe**	NA
Longitude	-117.14183	**BIA Tribal Code**	NA
NAIC(S)	424710 Petroleum Bulk Stations and Terminals	**Industry Sector**	4247 Petroleum Bulk Terminals
Last Form	2015		

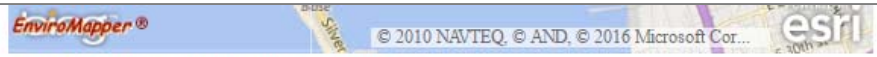
Information is for the most recent reporting year



*You can navigate within the map with your mouse.

Last Form	2015		

Information is for the most recent reporting year



You can navigate within the map with your mouse.

Other Regulatory Data

In addition to TRI, this facility reports to the programs listed below. The table below reflects regulatory data contained within Envirofacts and may not reflect all other EPA regulatory data:

Statute/Program	Universe	Media	Identifier
Clean Air Act (CAA)	AIR MINOR	Air	CASDS0000607300039
Resource Conservation and Recovery Act (RCRA)	LQG	Land	CAD000633271

Compliance Information

Compliance data below provided by ECHO.

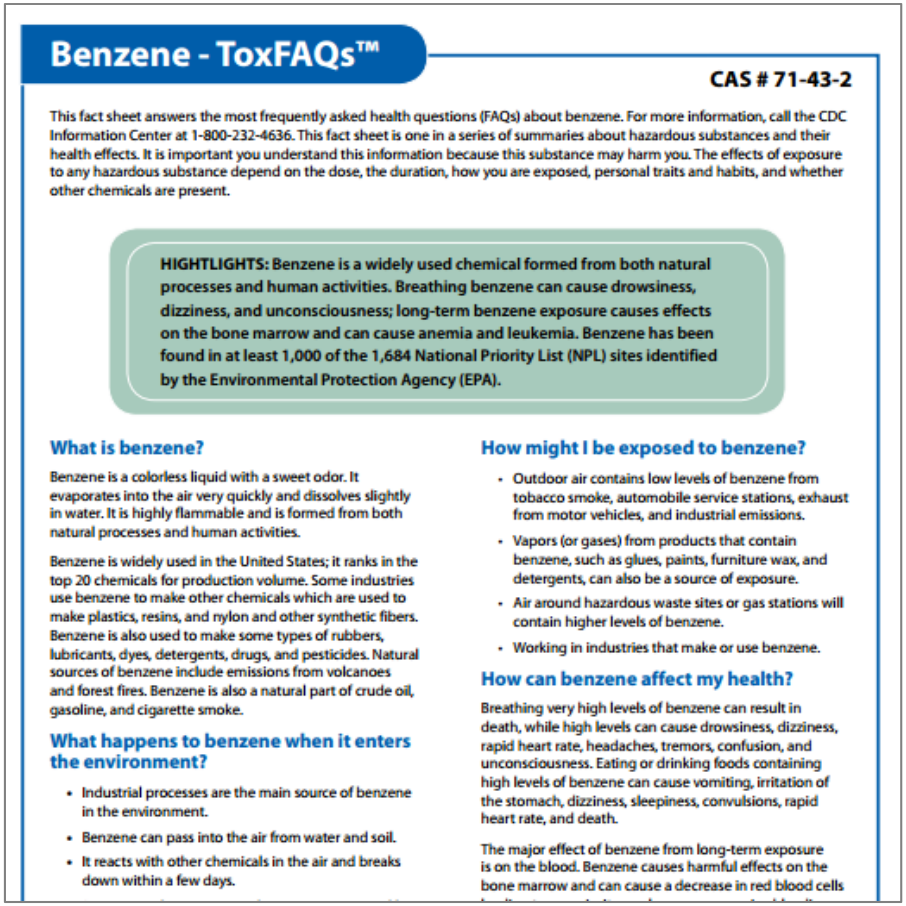
Go to ECHO for More Enforcement and Compliance Data

Timestamp

Query was executed on SEP-15-2016

Results are based on data extracted on JUL-20-2016

CDC's ToxFAQs



Benzene - ToxFAQs™

CAS # 71-43-2

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHTLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 1,000 of the 1,684 National Priority List (NPL) sites identified by the Environmental Protection Agency (EPA).

What is benzene?

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and other synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include emissions from volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.

How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Vapors (or gases) from products that contain benzene, such as glues, paints, furniture wax, and detergents, can also be a source of exposure.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Working in industries that make or use benzene.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

The major effect of benzene from long-term exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells

http://www.atsdr.cdc.gov/toxfaqs/index.asp

Other Resources

- **Risk-Screening Environmental Indicators (RSEI)** is a risk-screening tool that incorporates TRI data about toxic chemicals released to the environment with information about chemical toxicity, chemical fate, and potential human exposure. https://www.epa.gov/rsei

- **TRI University** example projects: https://www.epa.gov/toxics-release-inventory-tri-program/2013-14-tri-university-academic-partners

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