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Canadian Experiences in Pollutant Reporting – the National Pollutant Release Inventory

**2014 National Training Conference on
the Toxics Release Inventory**

May 7, 2014

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Environment Canada

Outline

1. Background on the National Pollutant Release Inventory (NPRI) – What it is, why it exists, how it was created, basic reporting requirements, how the data are used and shared
2. Highlights of 2012 data reported to the NPRI
3. Changes to the NPRI over time – historical and future changes to requirements, and improvements to data access tools
4. NPRI and TRI reporting compared – some examples

About the National Pollutant Release Inventory (NPRI)

- Established in 1993, the NPRI is Canada's legislated, publicly-accessible inventory of pollutant releases (to air, water and land), disposals and off-site recycling. It is Canada's Pollutant Release and Transfer Register (PRTR).
- The NPRI includes:
 1. Information collected from facilities under the *Canadian Environmental Protection Act, 1999* (mandatory annual reporting); and
 2. Air Pollutant Emission Inventories for key air pollutants: facility-reported data and estimates compiled by Environment Canada from all Canadian sources (such as motor vehicles, residential heating, agriculture, and non-reporting industrial sources).



Why the NPRI Exists

- The NPRI is a key resources for identifying and monitoring sources of pollution in Canada. It exists to:
 - Support priority setting and monitoring of environmental performance measures
 - Contribute to the compilation of pollution patterns and trends
 - Provide environmental information in the public interest
 - Fulfill international reporting obligations
- NPRI data are used by governments, academia, industry, non-governmental organizations, international organizations, financial institutions and media
- Publication of the NPRI is mandated under the *Canadian Environmental Protection Act, 1999*

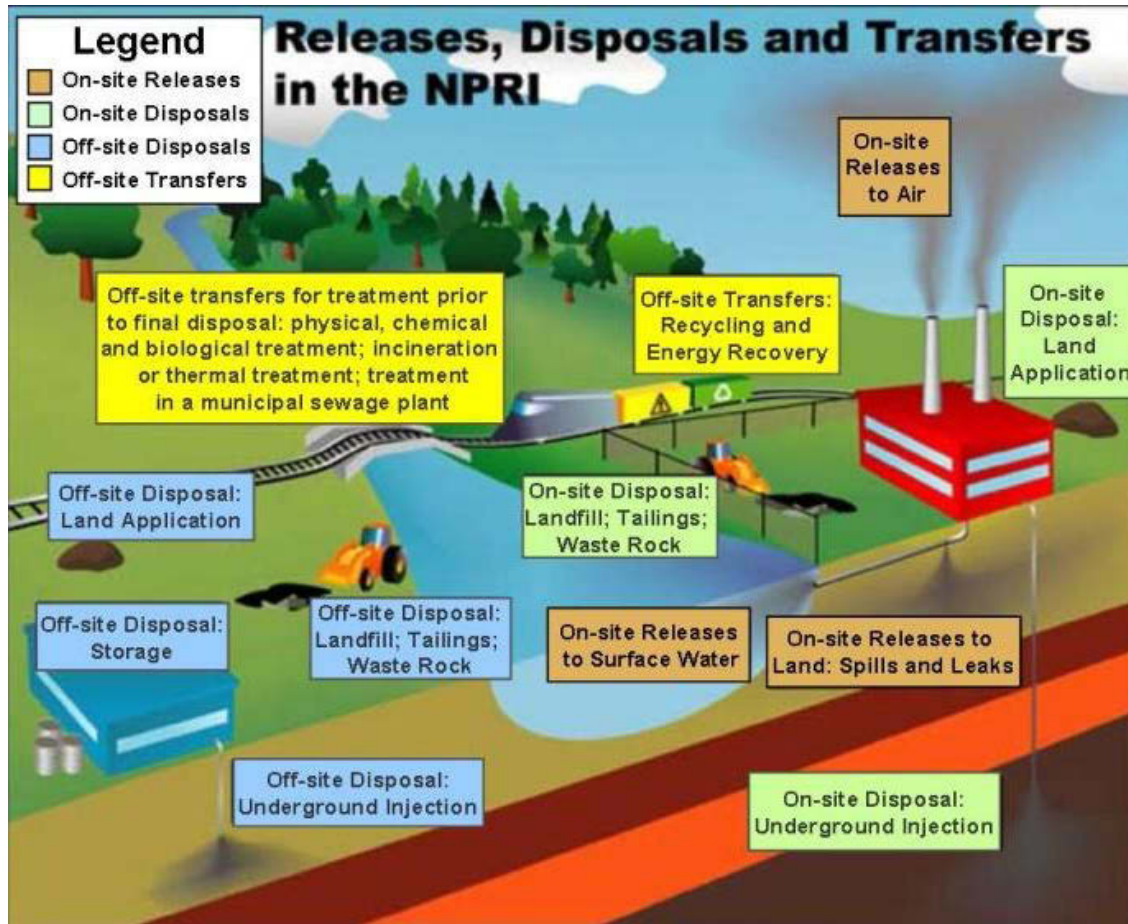
Basic Reporting Requirements

- NPRI reporting requirements are published in Part I of the *Canada Gazette*. In summary:
 1. Facilities are subject to the requirements if they:
 - Have more than 10 full-time employees (20 000 hours); or
 - Carry out specified activities (e.g., incineration, stationary combustion)
 2. Individual substances may be reportable if:
 - Thresholds are exceeded for:
 - Quantity manufactured, processed or otherwise used
 - Quantity released (for air pollutants)
 - Specified activities occur (for dioxins/furans and hexachlorobenzene)

NPRI Substances

- Over 300 substances are listed on the NPRI, including CEPA-toxic substances, air pollutants and other substances of concern.
- They are listed in parts, each with its own reporting criteria:
 - Part 1A – **Core Substances** [10-tonne manufactured, processed or otherwise used (MPO), at >1% concentration except by-products]
 - Part 1B – **Alternate Threshold substances** [MPO, with lower mass and/or concentration thresholds]
 - Part 2 – **Polycyclic Aromatic Hydrocarbons (PAHs)** [50 kg released, disposed or recycled for group, 5 kg for individual reporting]
 - Part 3 – **Dioxins, Furans & Hexachlorobenzene** [specified activities]
 - Part 4 – **Criteria Air Contaminants (CACs)** [quantity released to air]
 - Part 5 – **Individual Volatile Organic Compounds (VOCs)** [1 tonne released to air, if Part 4 criteria for Total VOCs is met]

What is Reported to the NPRI?



Quantities

Releases: air, surface water, land

Disposals (on- or off-site): landfill, land application, tailings & waste rock, underground injection

Transfers (off-site): treatment, recycling or energy recovery (including the destination of the transfer)

Other information

Facility information: location, industry type, contacts

Type of use: e.g. for sale, by-product; additive

Pollution Prevention

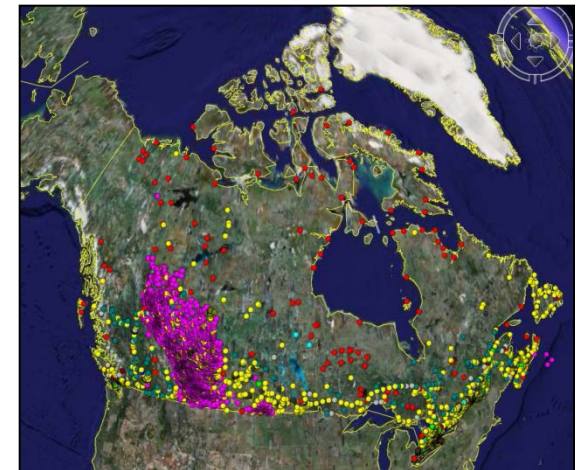
Reasons for changes

Sharing of NPRI data

- NPRI query site (Quick, easy to find information on a particular facility)
- Microsoft Excel flat file (most common fields in a simplified spreadsheet format)
- NPRI database – available in Microsoft Access format (Useful for custom analysis for “technical” users such as industry-level analysis, time trends, etc.)
- NPRI Map Layers for use in Google Earth (Allow users to “explore” NPRI data in an intuitive and visual way)

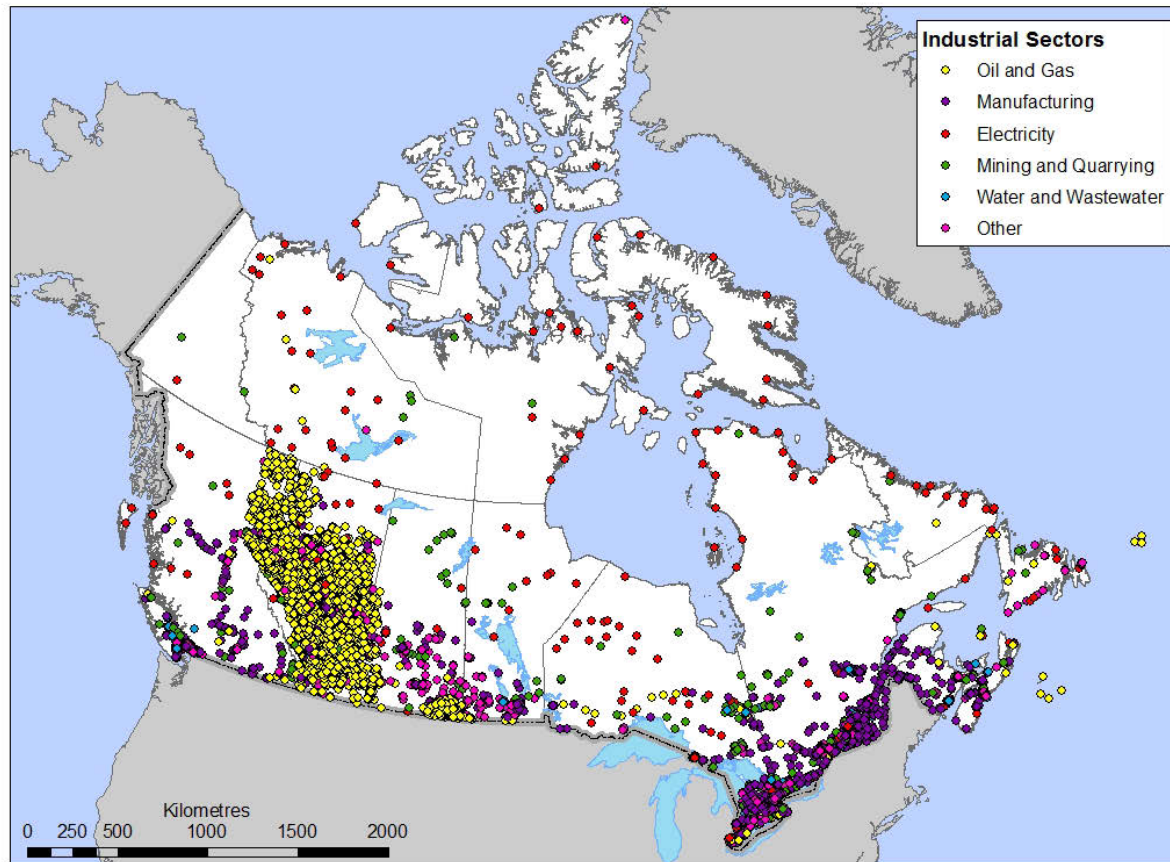




REPORT	NPRI ID	CAS NUMBER	UNITS	UNITS EDIT	UNITS STOR	DISPOSAL	DISP ON	DISP OFF	DISF
2006	0000000001	10349-04-4	tonnes	tonnes			0	0	0
2006	0000000001	1104-93-1	tonnes	tonnes			0	0	0
2006	0000000001	110-74-1	grams	grams			0	0	0
2006	0000000001	120-80-9	tonnes	tonnes			0	0	0
2006	0000000001	129-00-0	kg	kg			-1	-1	0
2006	0000000001	191-24-2	kg	kg			-1	-1	0
2006	0000000001	192-97-2	kg	kg			0	0	0
2006	0000000001	193-39-5	kg	kg			-1	-1	0
2006	0000000001	190-55-0	kg	kg			0	0	0
2006	0000000001	205-82-3	kg	kg			0	0	0
2006	0000000001	205-99-2	kg	kg			-1	-1	0
2006	0000000001	206-44-0	kg	kg			-1	-1	0
2006	0000000001	207-05-9	kg	kg			0	0	0
2006	0000000001	208-96-8	kg	kg			0	0	0
2006	0000000001	210-01-9	kg	kg			-1	-1	0
2006	0000000001	463-59-1	tonnes	tonnes			0	0	0
2006	0000000001	50-32-0	kg	kg			-1	-1	0
2006	0000000001	53-70-3	kg	kg			-1	-1	0
2006	0000000001	56-55-3	kg	kg			-1	-1	0
2006	0000000001	630-08-0	tonnes	tonnes			0	0	0
2006	0000000001	67-56-1	tonnes	tonnes			0	0	0
2006	0000000001	71-43-2	tonnes	tonnes			0	0	0
2006	0000000001	7446-09-5	tonnes	tonnes			0	0	0
2006	0000000001	75-07-0	tonnes	tonnes			0	0	0



2012 NPRI Facility-Reported Data

~ 7,700 facilities submitted substance reports for 2012



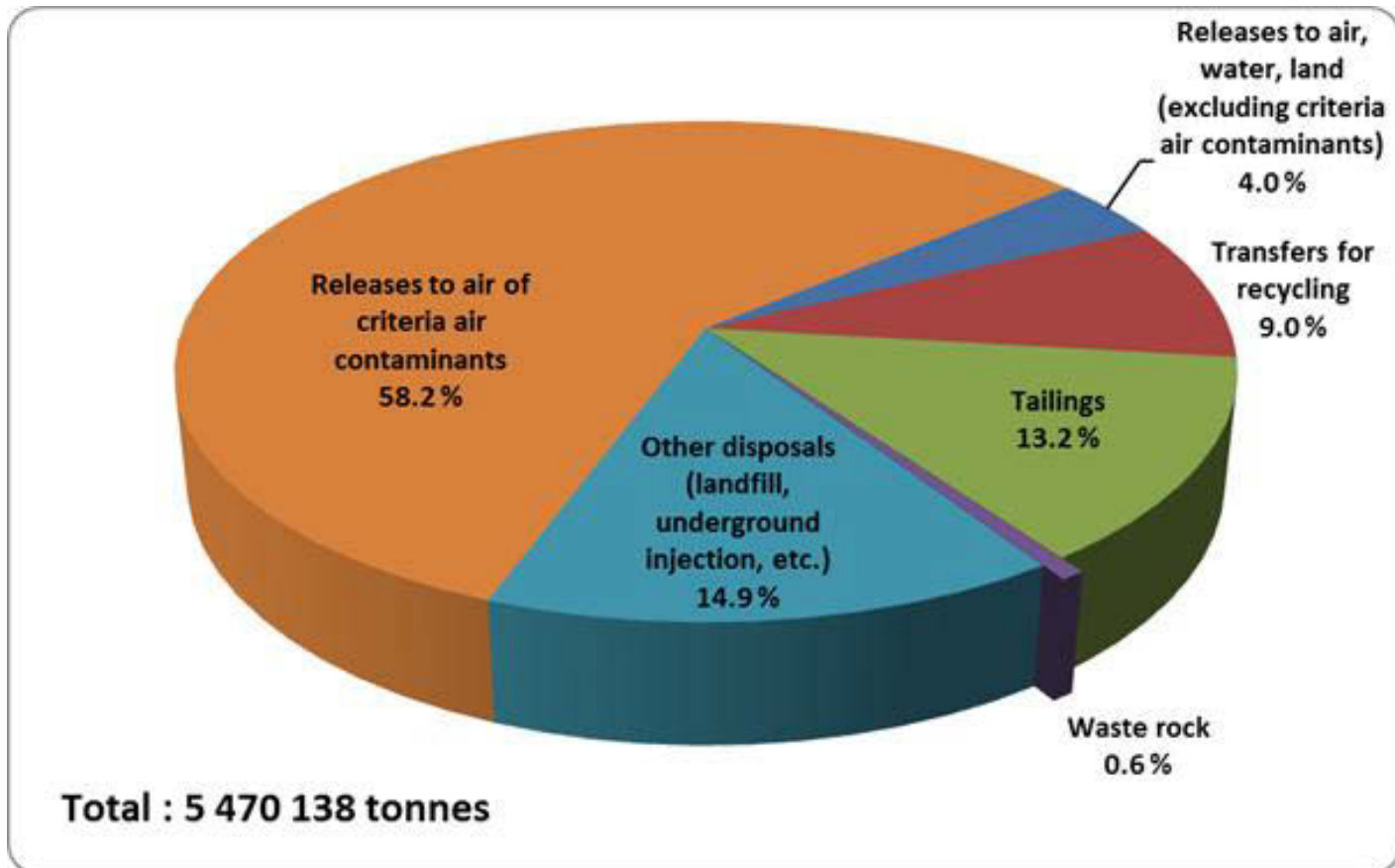
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Source: National Pollutant Release Inventory (NPRI), 2013



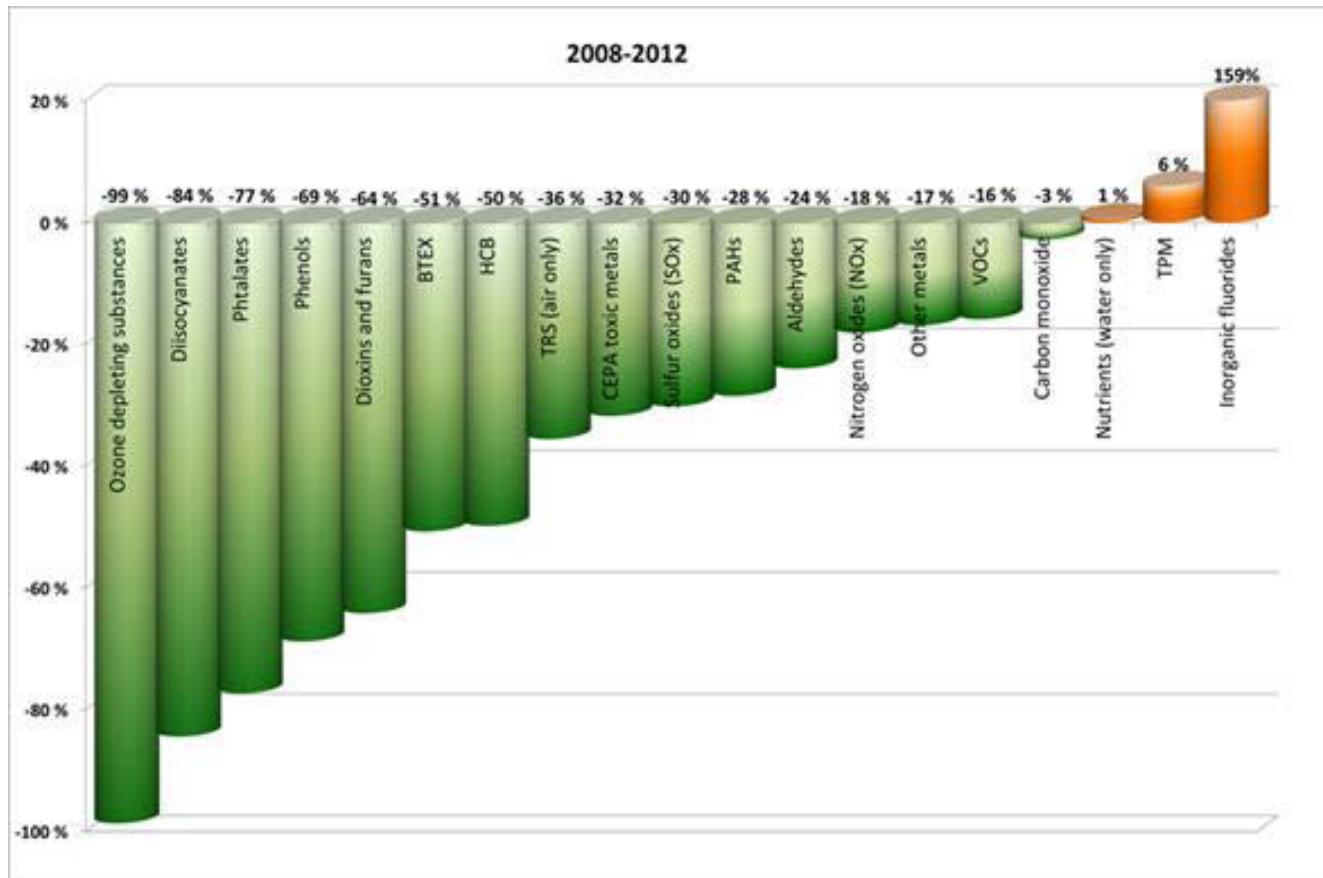
2012 NPRI Facility-Reported Data

The largest percentage of releases reported to the NPRI is releases of criteria air contaminants



2012 NPRI Facility-Reported Data

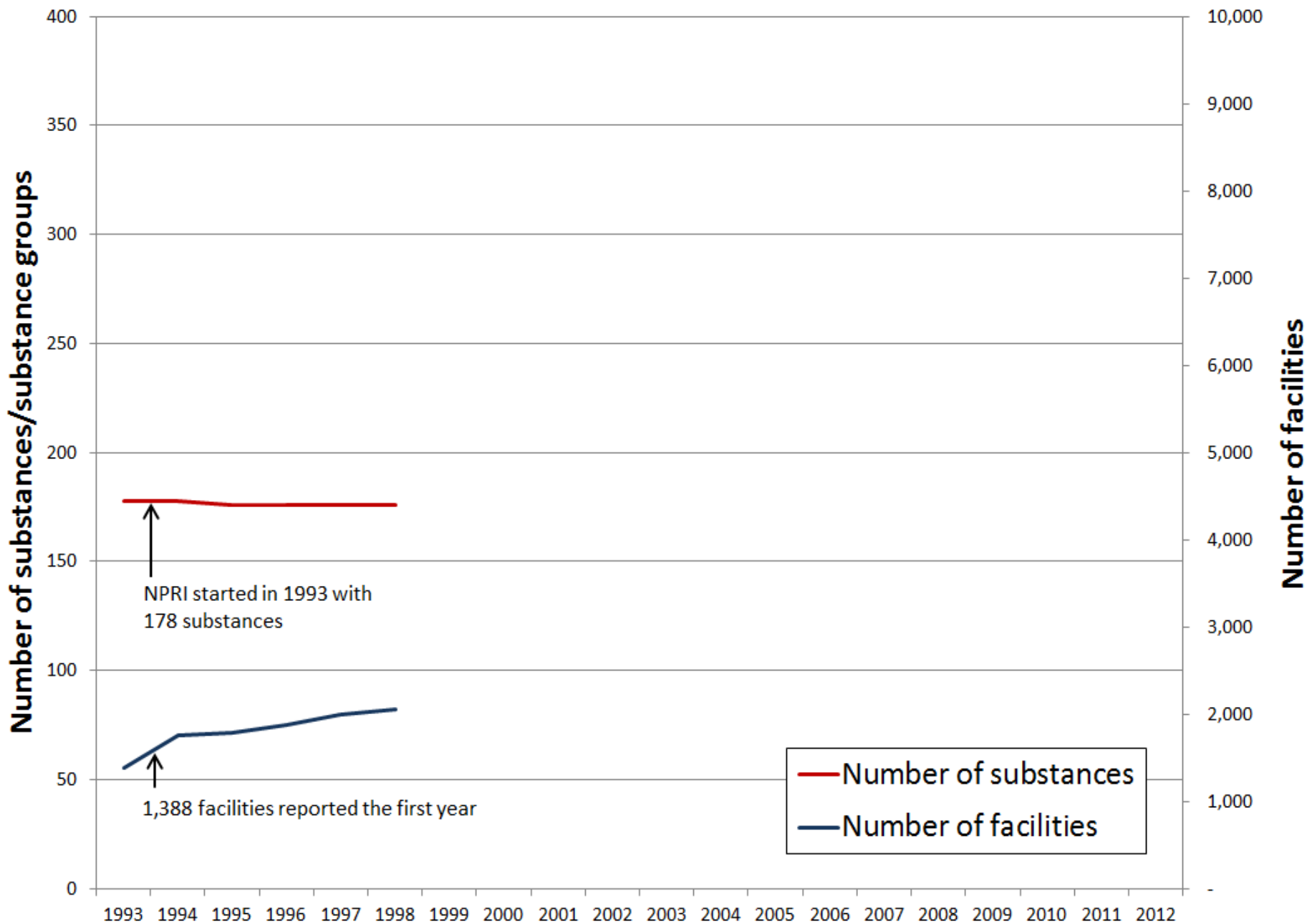
Total releases (air, water and land) fell by 17% from 2008 to 2012



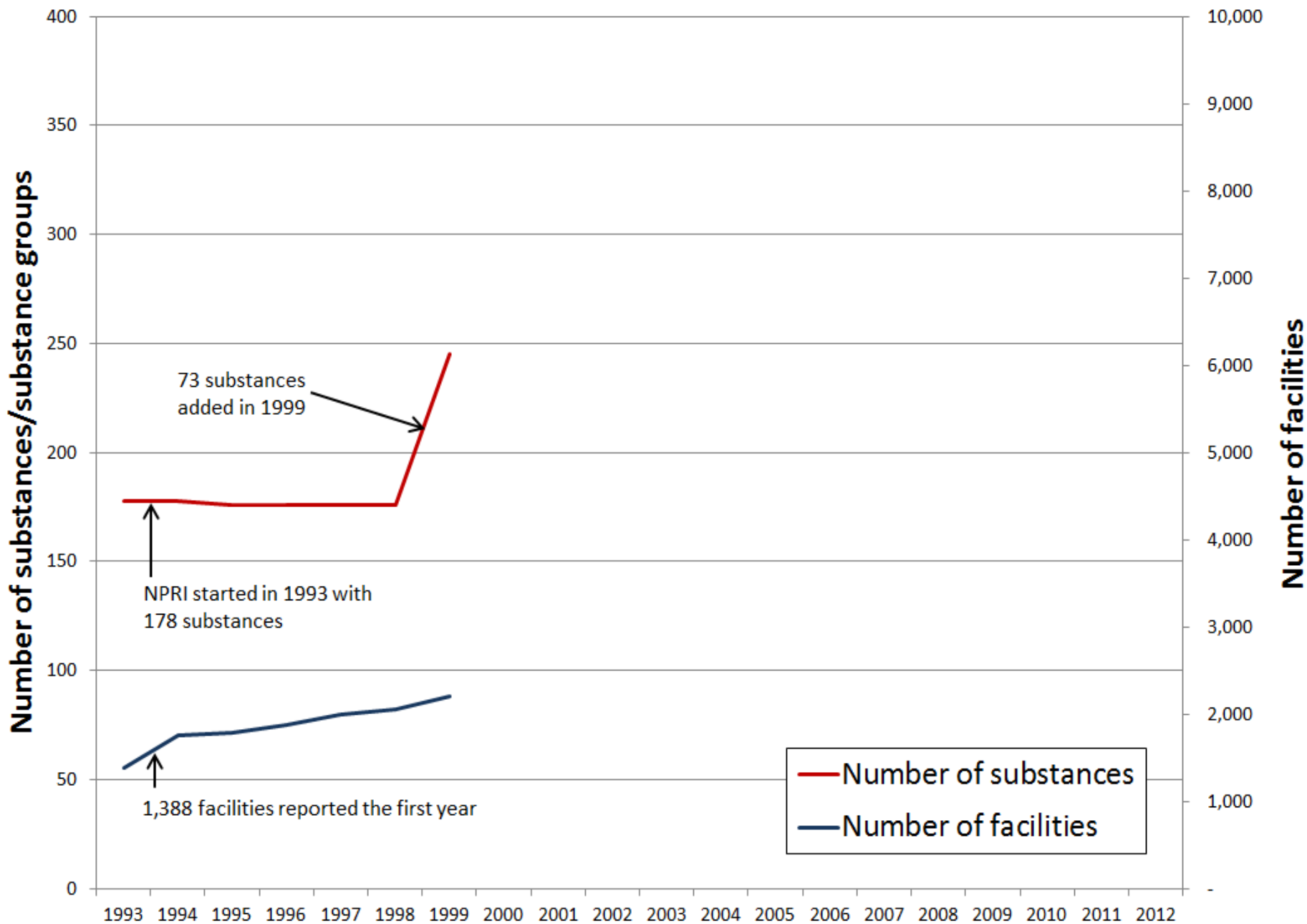
The NPRI has expanded since its inception...

- Since 1993, the first year of the NPRI, Environment Canada has:
 - Added over 150 substances, including toxic substances and air pollutants
 - Reduced thresholds
 - Established different reporting criteria for certain substances and activities
 - Removed exemptions
- Changes over time available at:
<http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1>

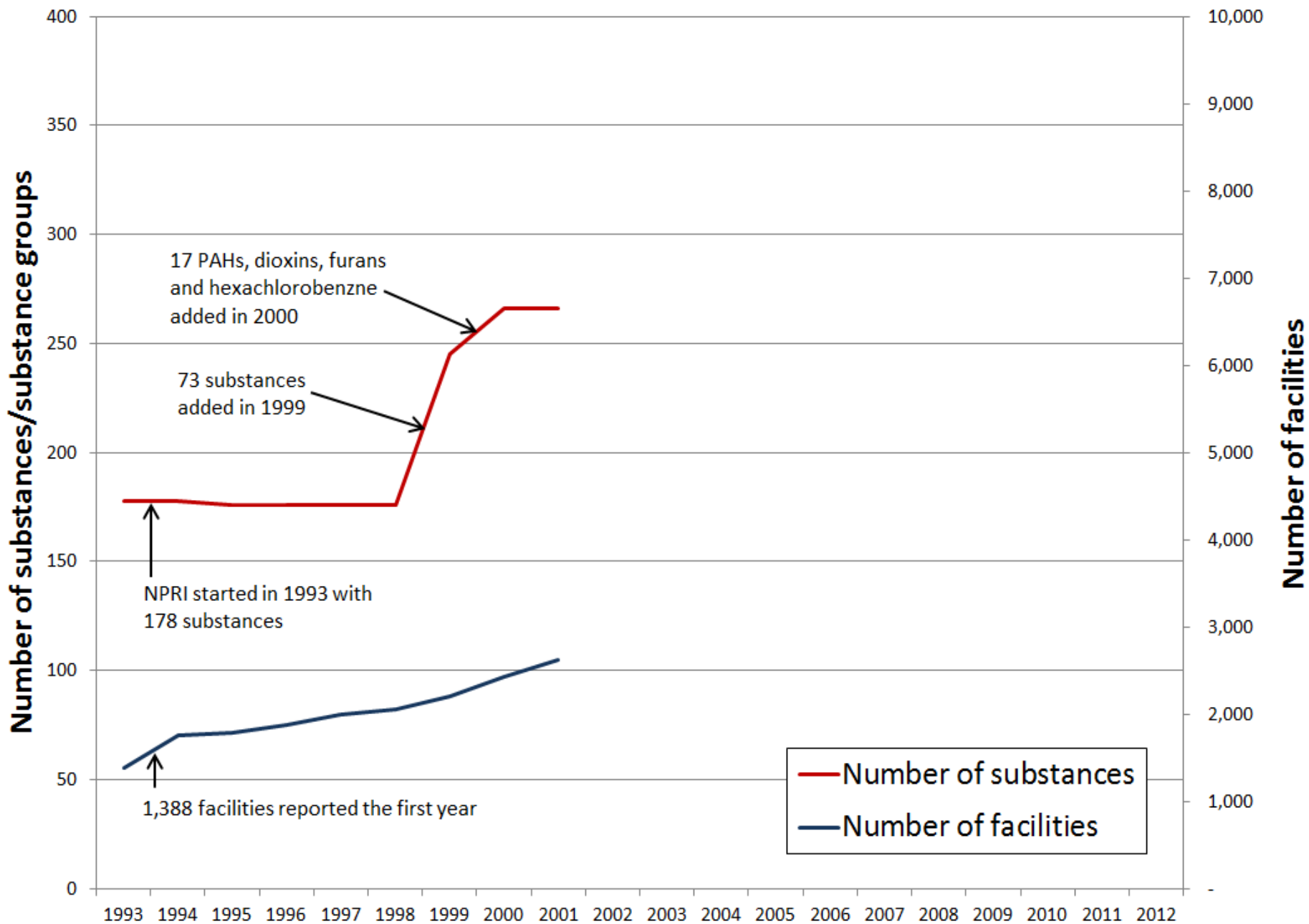
Growth in Reporting to the NPRI, 1993-2012



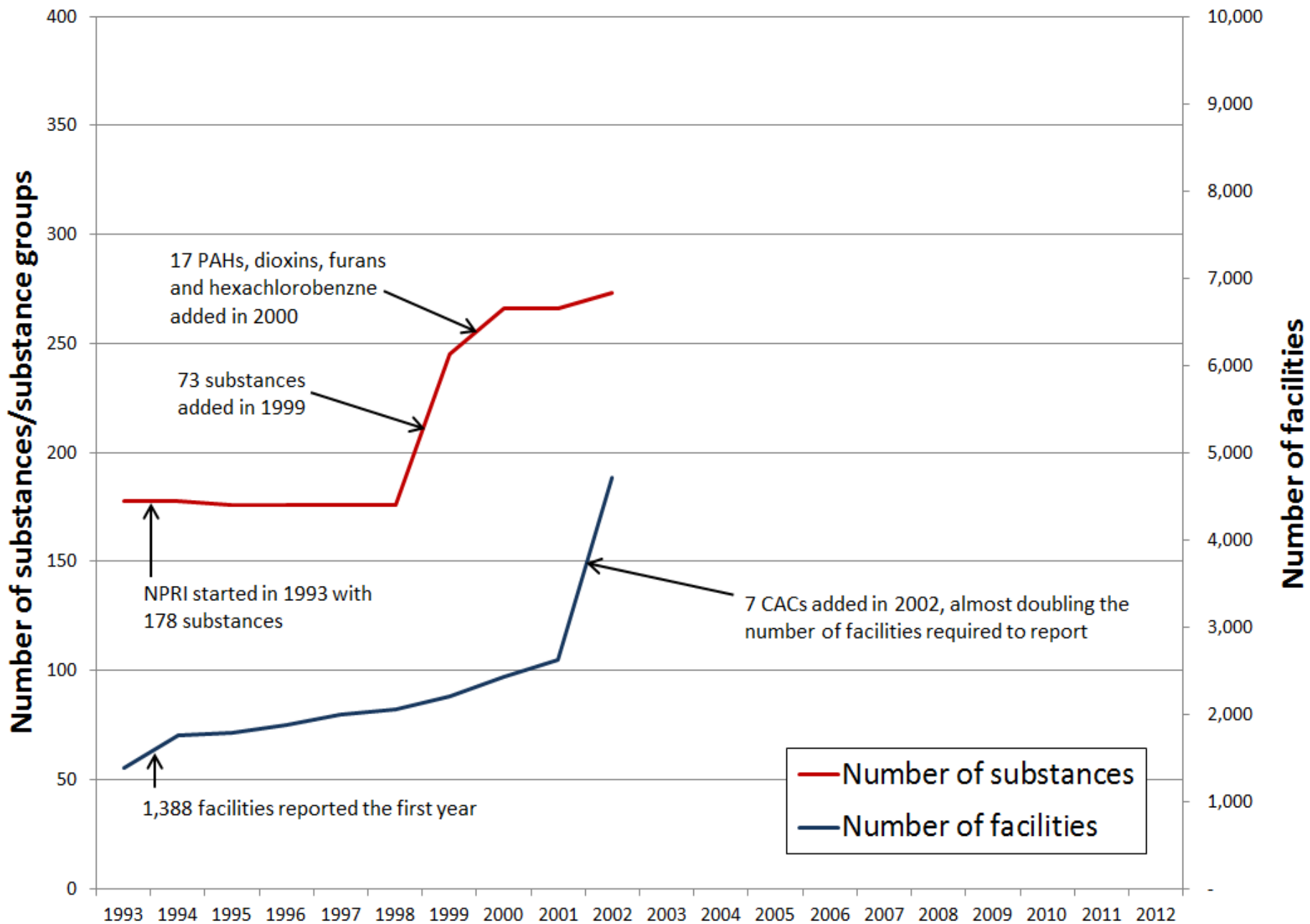
Growth in Reporting to the NPRI, 1993-2012



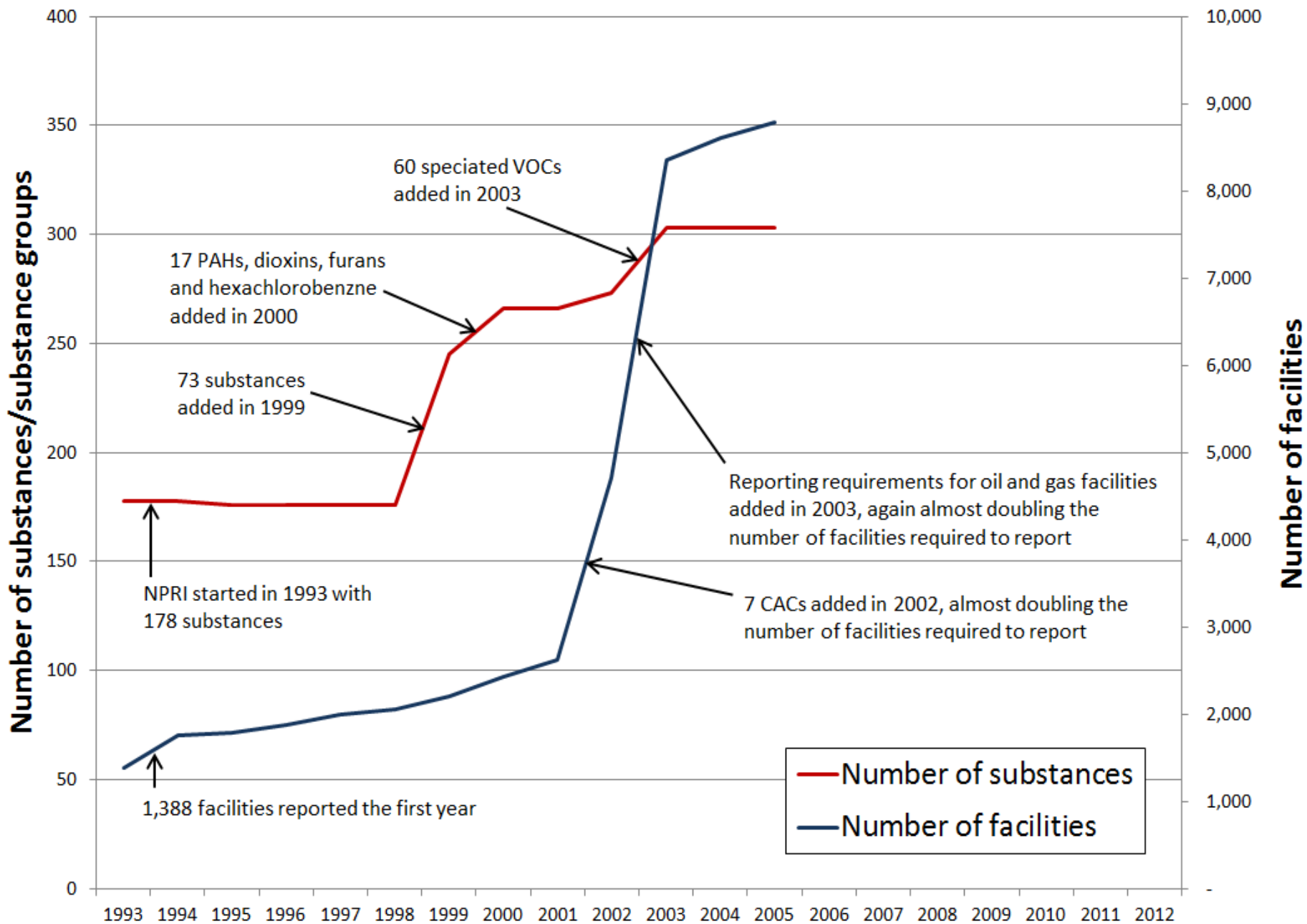
Growth in Reporting to the NPRI, 1993-2012



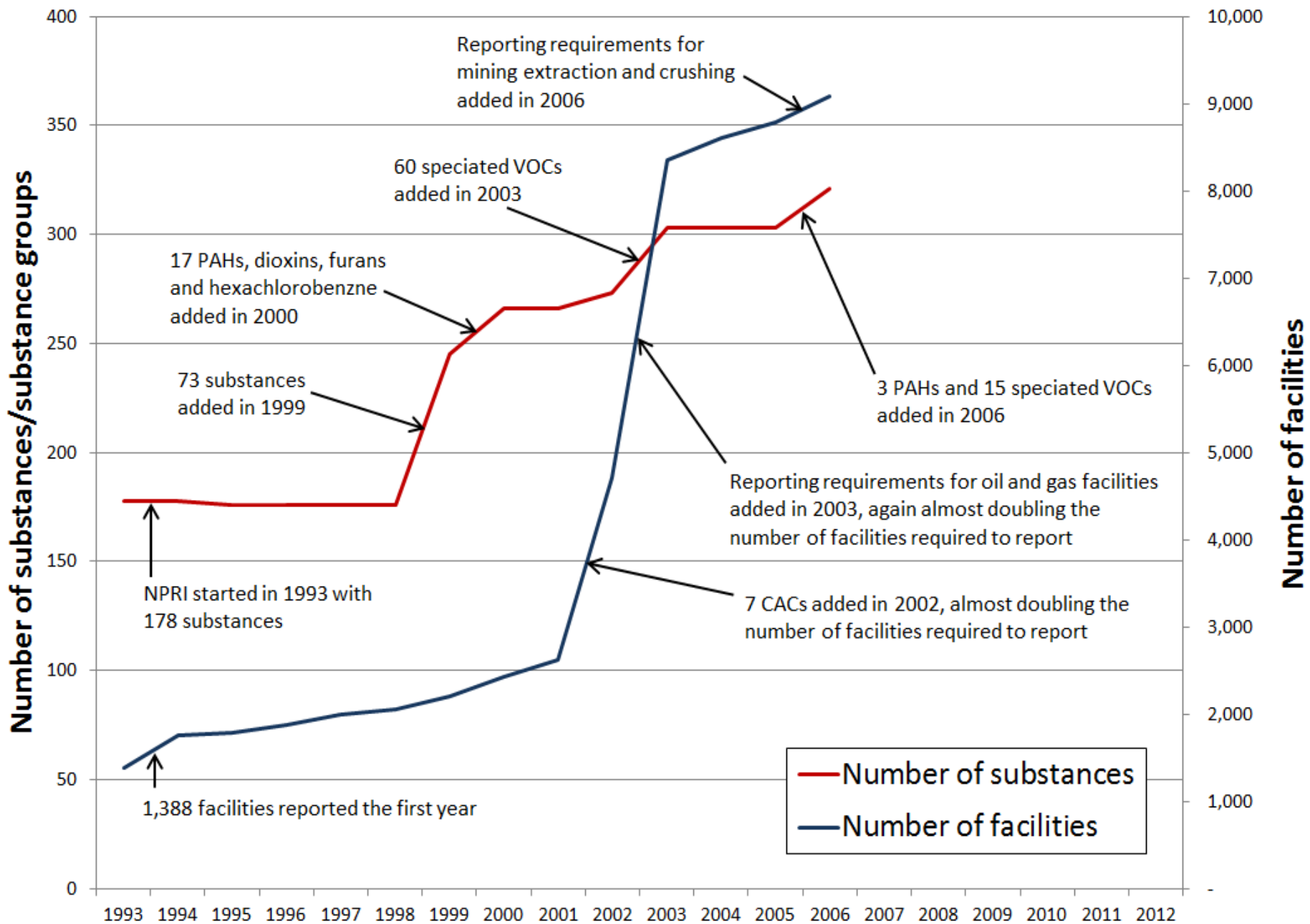
Growth in Reporting to the NPRI, 1993-2012



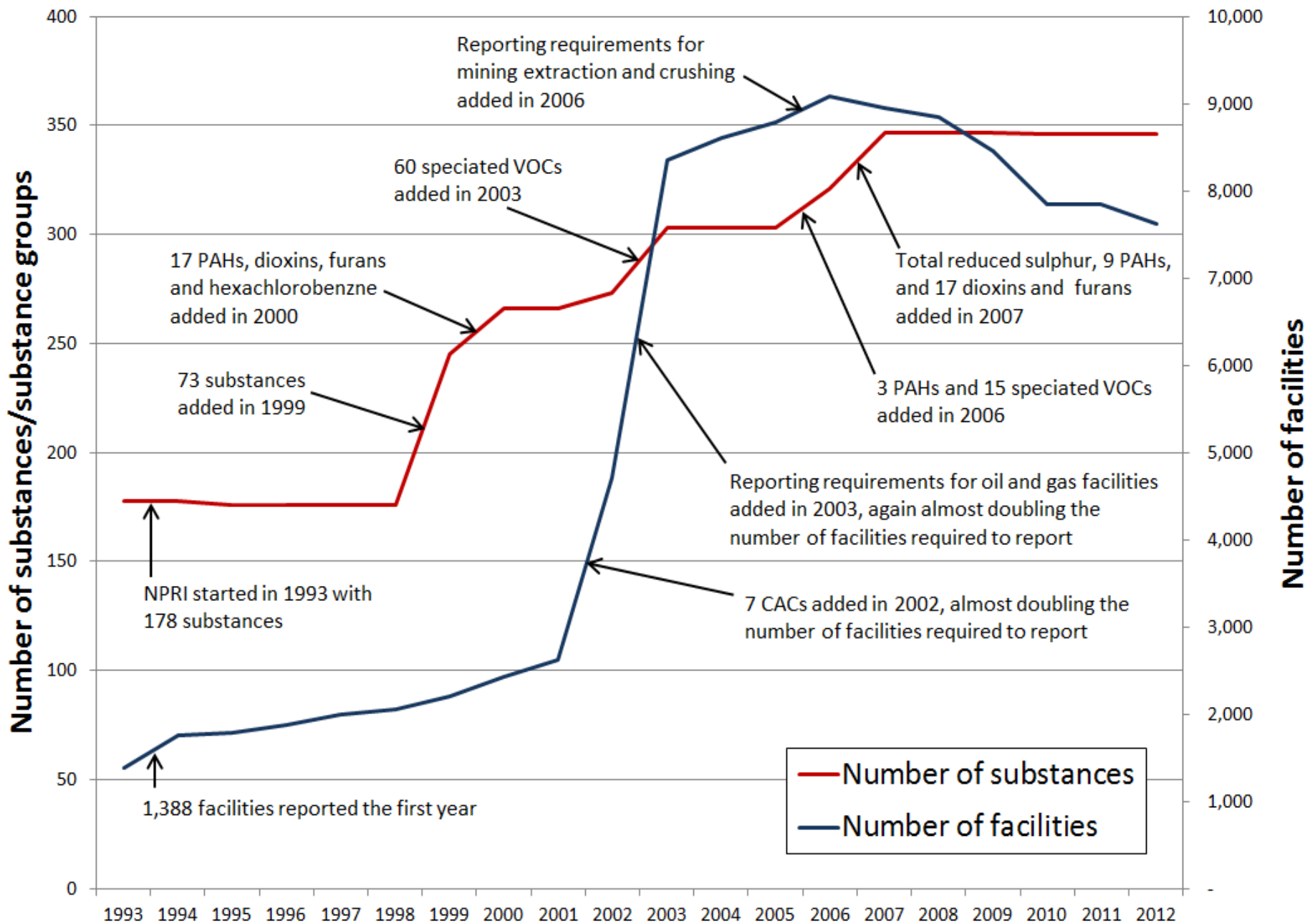
Growth in Reporting to the NPRI, 1993-2012



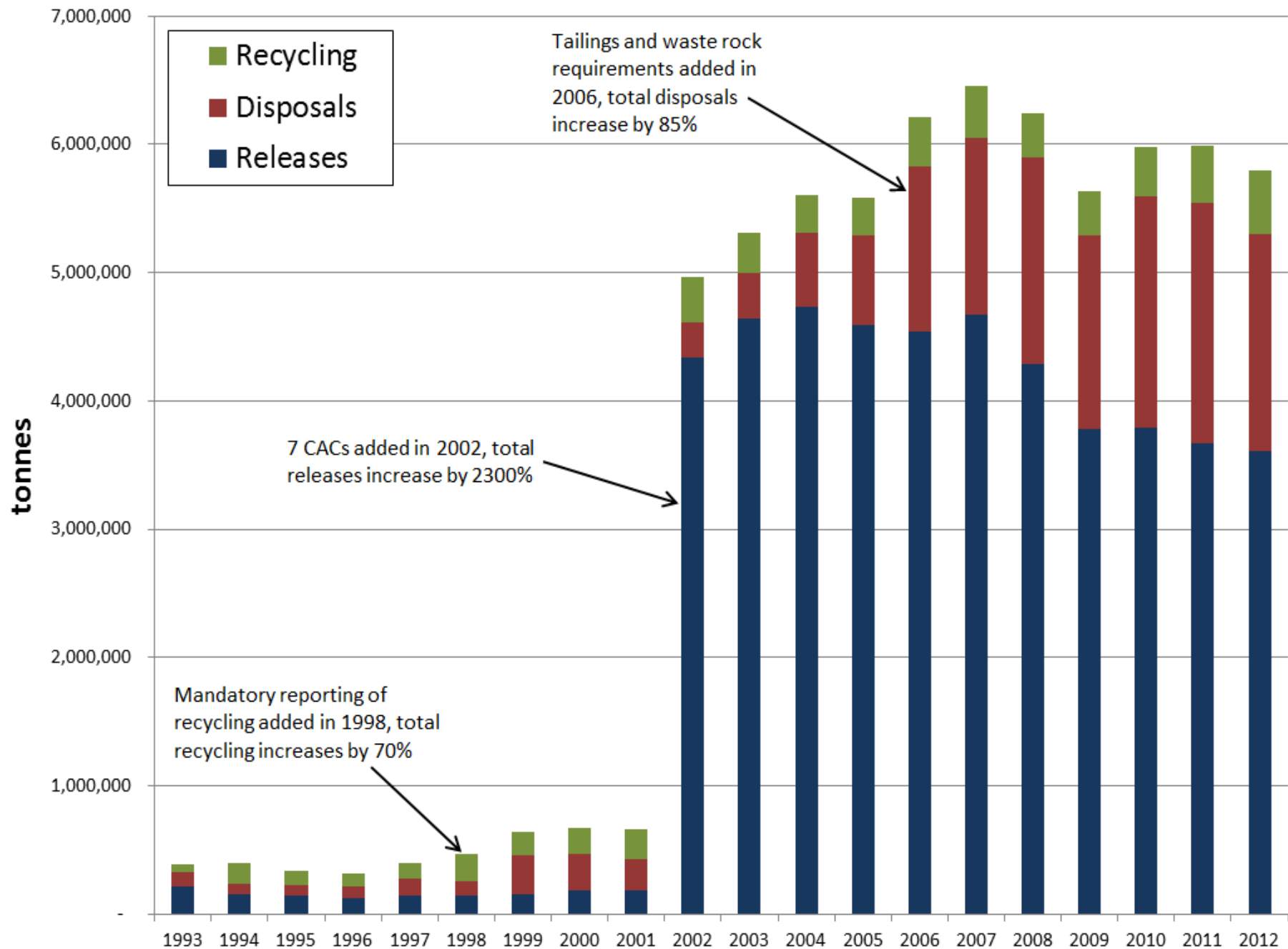
Growth in Reporting to the NPRI, 1993-2012



Growth in Reporting to the NPRI, 1993-2012



Releases, Disposals and Recycling, 1993-2012



Potential Future Changes to the NPRI Requirements

- Publication of the next NPRI Notice (requirements for 2014-15) expected in June 2014.
- The following changes are currently being considered (for 2014 or later years):
 - Review of NPRI substances in light of Canada's Chemicals Management Plan (additions, threshold changes and deletions)
 - Addition of thallium (at a reduced threshold)
 - Changes to reporting of total reduced sulphur (air only)
 - Review of reporting from oil & gas extraction (external proposal)
 - Addition of Naphthenic Acids (external proposal)
 - Addition of 10 substances from the U.S. TRI (external proposal)
 - Addition of radionuclides (external proposal)
 - Possible changes to reporting of criteria air contaminants

Data Users Engagement / Data Quality

- Current priorities for NPRI are related to improving data quality to better meet the needs of NPRI data users
 - 6 dimensions of data quality are relevance, accuracy & reliability, timeliness, completeness, understandability, accessibility
- Some key areas of activity or exploration include:
 - Engagement of data users and follow-up activities
 - Workshop in November 2013, working on a follow-up action plan
 - Interested in similar initiative to the TRI University Challenge
 - Exploring relationship between NPRI data and risk (Toxic Equivalency Potential, Risk Screening Environmental Indicators)
 - Exploring integrated reporting to the public (ChemView)
 - Improving online data search and mapping (Taking Stock Online and TRI MyRTK application)
 - Review of the NPRI substance list and other possible changes
 - Work with key sectors (e.g., oil sands) to improve data quality

NPRI and TRI are similar in many respects, but also have some key differences

- Similarities since NPRI was created in 1992 using TRI as a model, adapted for Canada
 - annual, mandatory reporting from industrial and commercial sources
 - similar thresholds for “core” substances, based on manufacture, process and use, with lower thresholds for priority substances
 - ~270 substances are common to both programs
 - neither NPRI or TRI include GHGs, but both countries have separate facility-level GHG reporting
- Differences reflect different objectives for the programs, differences in Canadian and U.S. industry, and different criteria for listing of substances
 - Sectors: NPRI includes all sectors unless exempt, instead of listing sectors that must report – as a result NPRI includes some additional sectors (oil & gas extraction, sewage treatment)
 - Substances: NPRI lists criteria air contaminants (SO_x, NO_x, VOCs, PM, CO) since 2002, to support reporting to UNECE under the LRTAP Convention. Numerous other differences in listed substances
 - Reporting categories: different terminology for on-site land disposal vs release

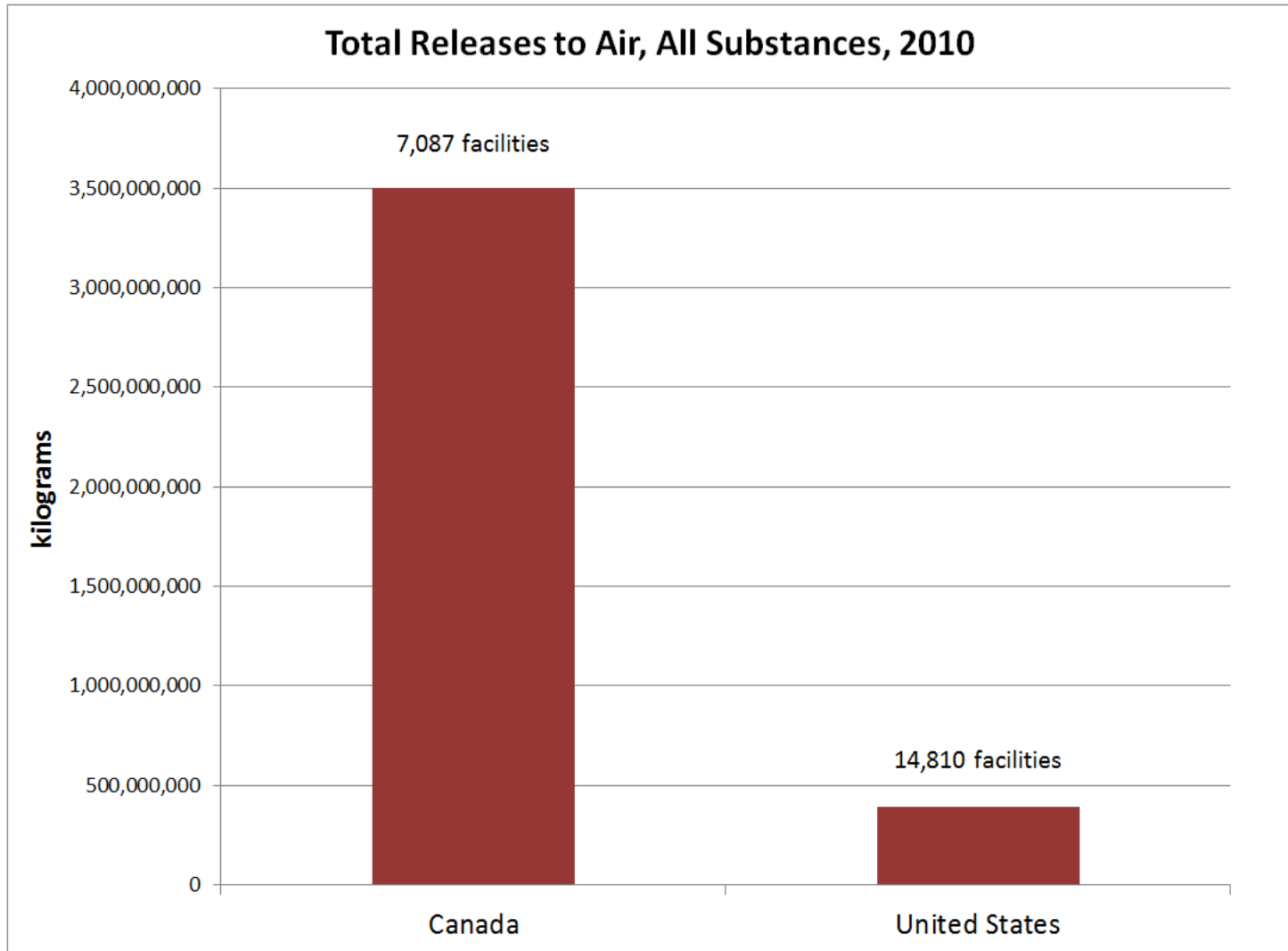
NPRI and TRI Compared – Substances

- Number of substances/groups of substances
 - TRI: > 600 NPRI: > 300 Common to both: ~270
- Pesticides and PCBs are examples of chemicals required to be reported to the TRI, but not to the NPRI. Others chemicals are manufactured/used in U.S but not in Canada, so do not meet NPRI criteria for listing.

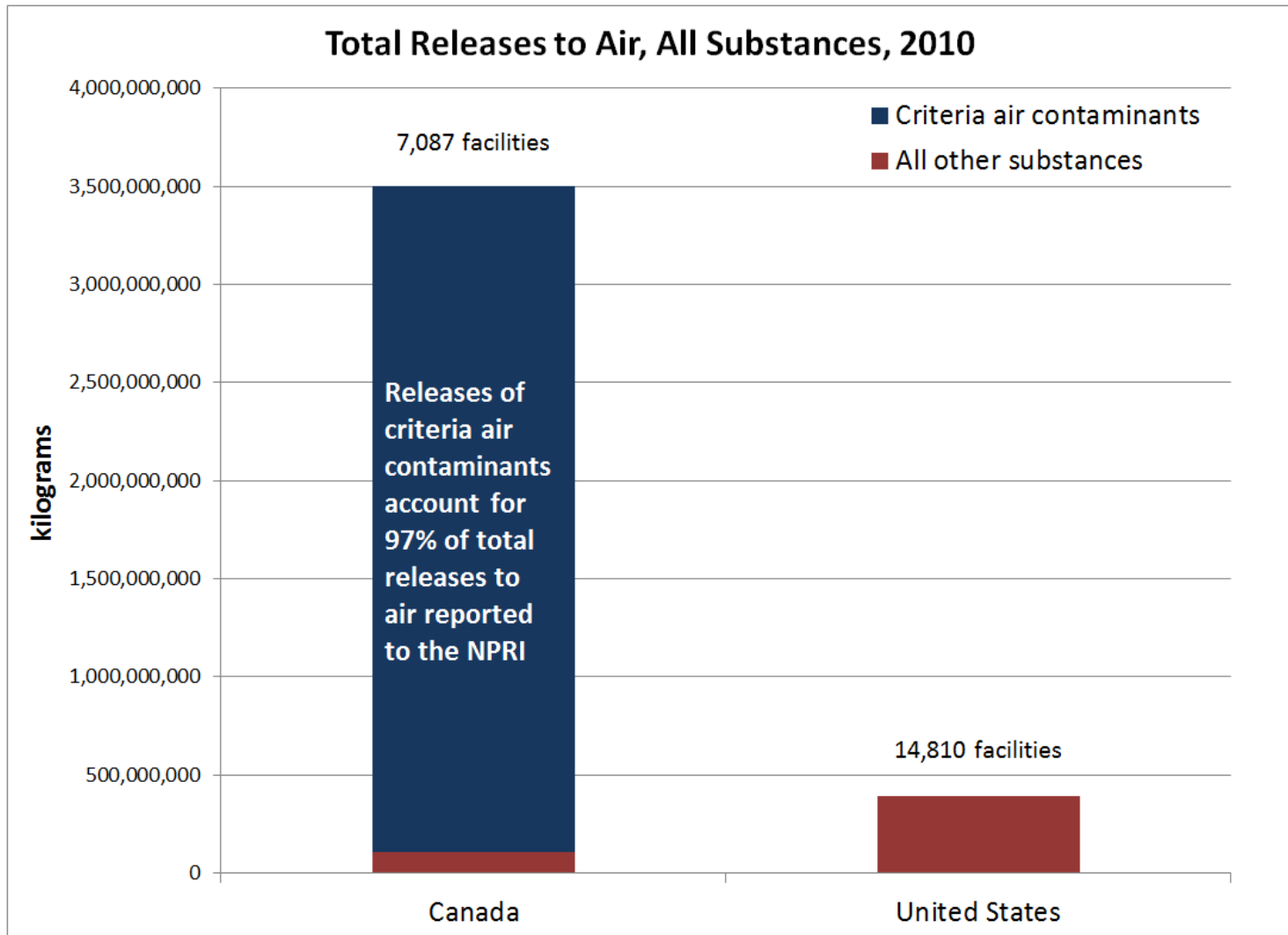
- 7 criteria air contaminants are reported to the NPRI, but not the TRI

Criteria Air Contaminant	Air Release Threshold (tonnes)
Nitrogen oxides	20
Sulphur dioxide	20
Carbon monoxide	20
Volatile organic compounds	10
Total particulate matter	20
PM ₁₀	0.5
PM _{2.5}	0.3

NPRI and TRI Compared – Releases to Air



NPRI and TRI Compared – Releases to Air



NPRI and TRI Compared – Reporting Thresholds for PBT Chemicals

Substance/Group	TRI Threshold	NPRI Threshold
Dioxin and dioxin-like compounds*	0.1 gram	Activity-based**
Hexachlorobenzene	10 pounds	Activity-based**
Lead	100 pounds	50 kg (110 pounds)
Mercury	10 pounds	5 kg (11 pounds)
Polycyclic aromatic compounds***	100 pounds	50 kg (110 pounds)

* TRI: 17 congeners must be reported individually. NPRI: 17 congeners can be reported individually or as a total in toxic equivalents

** Dioxins and furans and must be reported if certain activities take place (e.g., waste incineration, smelting), regardless of quantities.

*** TRI: 25 PACs reported as total PACs. NPRI: 29 PACs reported individually

NPRI and TRI Compared – Reporting Thresholds for Other Metals

Substance	TRI Threshold	NPRI Threshold
Arsenic	25,000 pounds	50 kg (110 pounds)
Cadmium	25,000 pounds	5 kg (11 pounds)
Hexavalent chromium	25,000 pounds*	50 kg (110 pounds***)
Selenium	25,000 pounds	100 kg (220 pounds)
Tetraethyl lead	100 pounds**	50 kg (110 pounds****)
Thallium	25,000 pounds	Proposed to be added for 2014 at 100 kg (220 pounds)

* Included in chromium compounds category

** Included in lead compounds category

*** Reported separately from chromium compounds

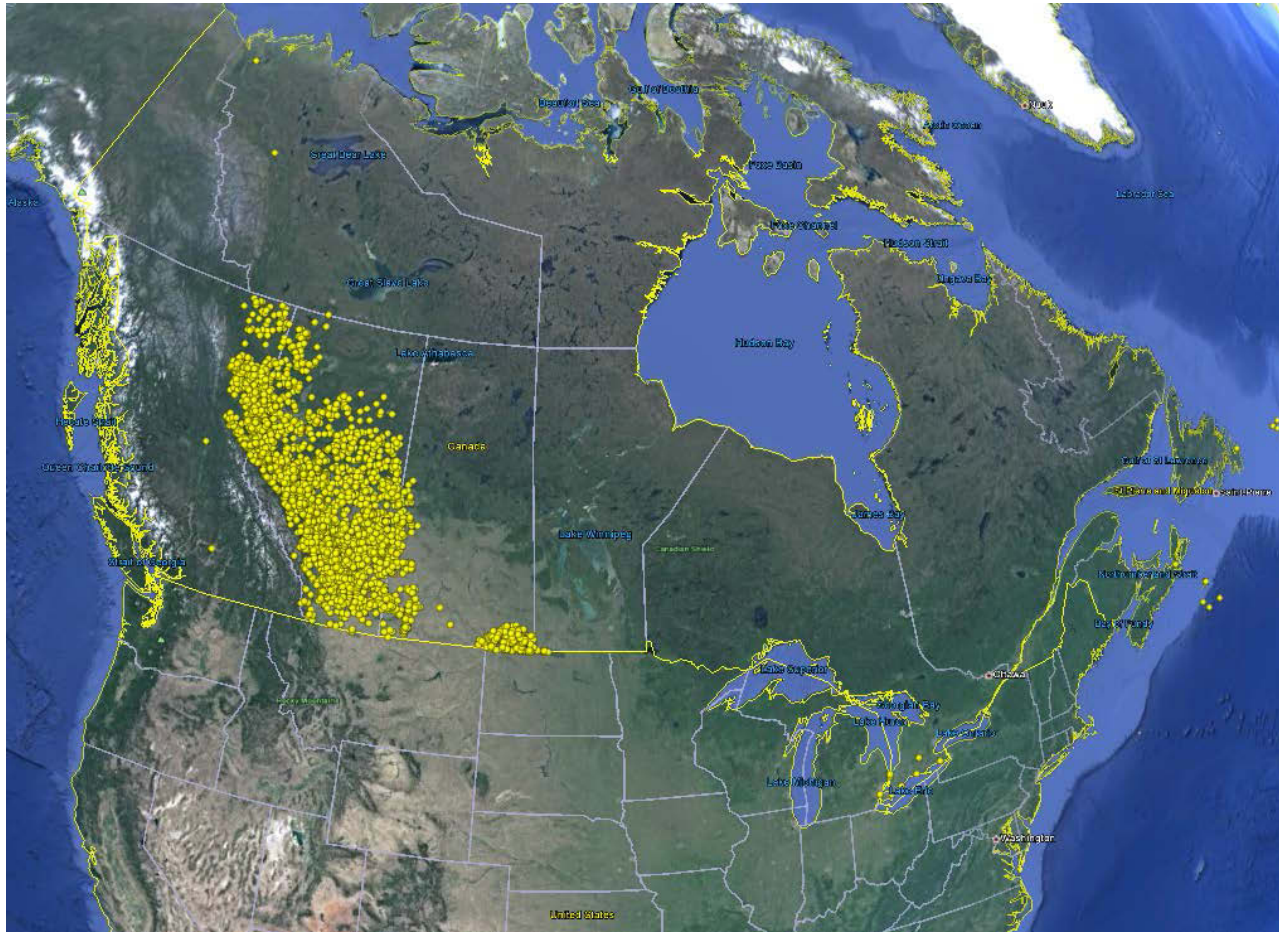
**** Reported separately from lead compounds

NPRI and TRI Compared – Facilities and Sectors

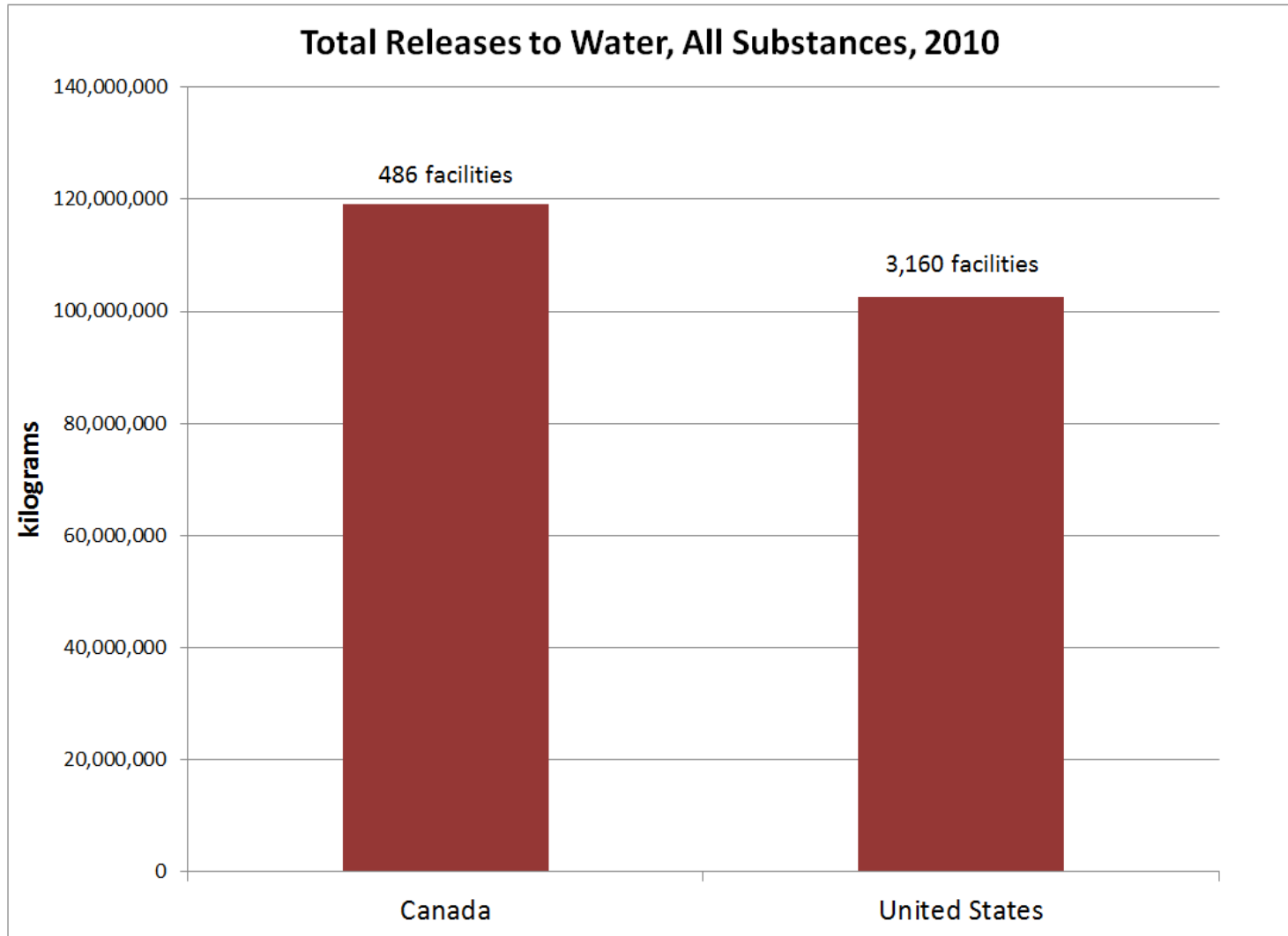
- Number of facilities that report
 - TRI: ~20,000
 - NPRI: ~8,000
- Sectors required to report
 - TRI: Specified sectors
 - NPRI: All sectors, with some specific activities exempt (e.g., education, research, agriculture, retail sale of fuels)
- Differences in sector requirements have significant impacts on reported data, for example:
 - ~ 1/2 of the facilities that report to the NPRI are in the upstream oil and gas sector
 - The majority of releases to water in Canada are from publicly owned treatment works (sewage treatment facilities)

NPRI and TRI Compared – Upstream Oil and Gas Facilities

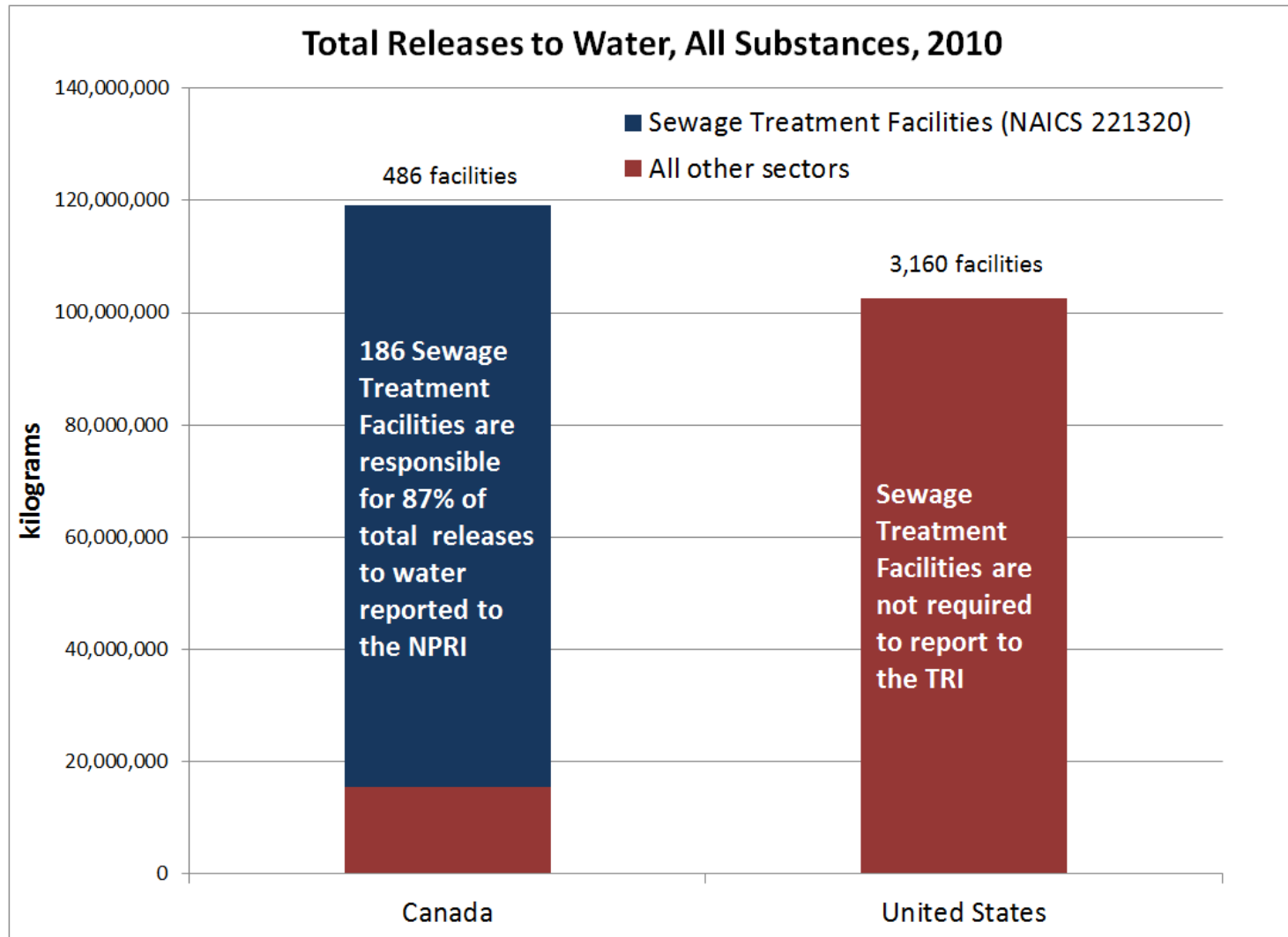
~ 4,000 UOG facilities submitted NPRI reports for 2012



NPRI and TRI Compared – Releases to Water



NPRI and TRI Compared – Releases to Water



In Summary

- TRI and NPRI are similar in many respects, and share the overall objective of providing information on toxic chemicals / substances of concern
- TRI requirements and activities will continue to influence activities under the NPRI – Environment Canada appreciates opportunities such as this conference to learn about EPA activities and priorities for TRI
- Our North American Pollutant Release and Transfer Register (PRTR) work under the Commission for Environmental Cooperation will continue to benefit the citizens of all three North American countries

Thank You!

Contact the NPRI

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Gatineau, Québec K1A 0H3

Tel: 1-877-877-8375

E-mail: inrp-npri@ec.gc.ca

NPRI Website:

www.ec.gc.ca/inrp-npri

The screenshot shows the Environment Canada website for the National Pollutant Release Inventory (NPRI). The page is titled "National Pollutant Release Inventory" and includes a navigation menu with "Explore the Topics", "Acts and Regulations", and "Resources". The main content area is divided into several sections:

- Pollution and Waste**: A sidebar menu with links to "National Pollutant Release Inventory Home", "About the NPRI", "Reporting to the NPRI", "Pollution Data and Reports", "Using and Interpreting NPRI Data", "Data Quality", "Consultations", "Substance Lists", "Glossary", "Related Links", "FAQ", "Contact the NPRI", and "Site Map".
- Tracking Pollution in Canada**: A section explaining that the NPRI is Canada's legislated, publicly accessible inventory of pollutant releases (to air, water and land), disposals and transfers for recycling. It is a key resource for:
 - identifying pollution prevention priorities;
 - supporting the assessment and risk management of chemicals, and air quality modelling;
 - helping develop targeted regulations for reducing releases of toxic substances and air pollutants;
 - encouraging actions to reduce the release of pollutants into the environment; and
 - improving public understanding.
- Pollution Data and Reports**: A section with a photo of a factory chimney emitting smoke. Below the photo, it states: "Resources for accessing, analyzing and interpreting information on pollutant releases and transfers in Canada."
- Reporting to the NPRI**: A section with a photo of a person typing on a keyboard.
- NPRI Data Search**: A search interface with the following options:
 - Search by Company or Facility Name:** Includes a "Facility Name" input field and a "Send" button.
 - Search by Postal Code:** Includes a "Postal Code" input field and a "Send" button. The postal code field is labeled "(First 1-3 Characters)".
 - More Search Options (+ Other Reporting Years):** A link to expand search options.
- NPRI Highlights**: A section listing recent updates:
 - 2012 NPRI Reviewed Facility Data Now Available
 - Highlights
 - Summary Report
 - 2012 Air Pollutant Emissions Summaries
 - Archive...
- NPRI Map Layers for use with Google Earth™**: A section with a "To learn more" link.
- THE CHEMICAL SUBSTANCES PORTAL**: A logo for the Chemical Substances Portal.

Information for owners or operators of facilities required to report to the National Pollutant Release Inventory.