How Communities Can Use Pollution Data to Inform Engagement – NPRI (National Pollutant Release Inventory) Examples

Jamie Kneen

MiningWatch Canada

February 20, 2024

From a community perspective, NPRI reporting serves two main purposes.

1. Identify risks to health and the environment from off-site releases (via air, water)
   - What cleanup measures may need to be taken?

2. A record of liabilities to public health and ecological integrity from potentially dangerous substances present in waste rock and tailings facilities (on-site releases)
   - Identify potential risks from spills and accidental releases
   - Identify impacts of long-term degradation of facilities post-decommissioning
   - Identify measures to minimize and manage risks

Implications for planning

Context for regional planning and environmental assessment

1. Cumulative impacts

2. Precedents, established practices, and pitfalls for pollution and safe management of pollutants

3. Financial securities for clean-up, identify limits where clean-up is not possible or consequences are unacceptable

Manitoba examples

Releases, disposals and transfers (by facility)*: *This graph can only display data for a limited number of facilities at one time and should only be used once one of more filters have been applied. Complete data is available in the table below the graph.
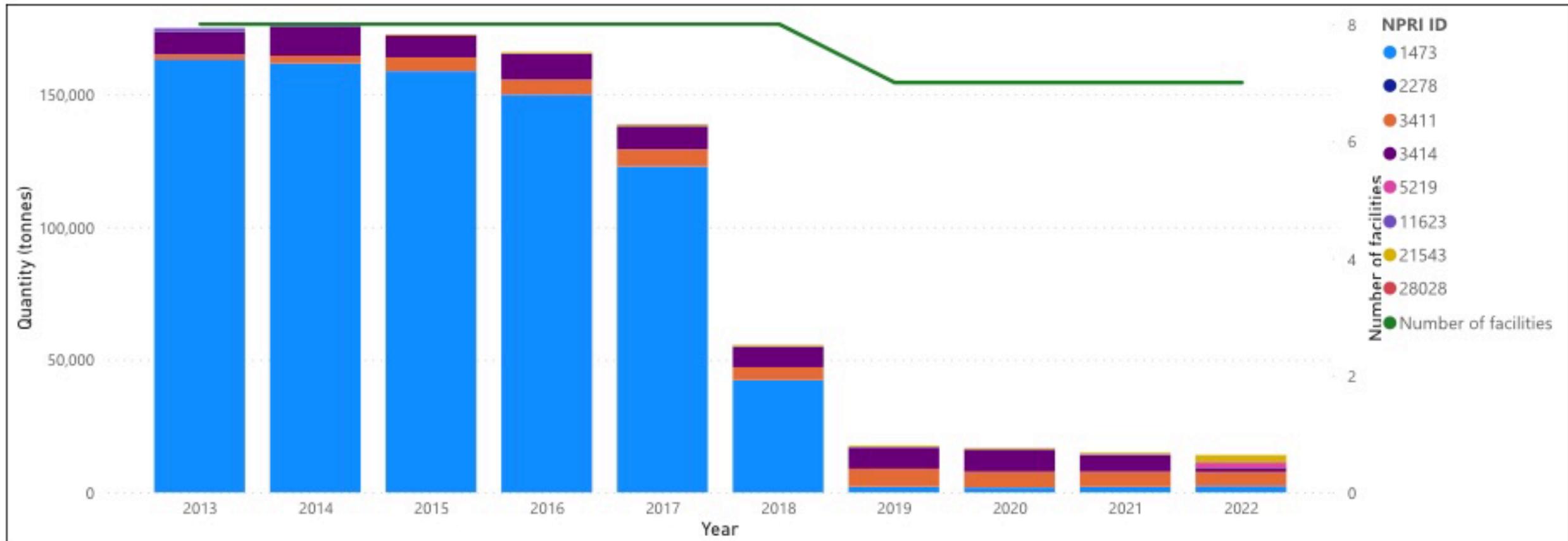
Manitoba examples – cont'd

Releases, disposals and transfers (by substance):

*This graph can only display data for a limited number of substances at one time and should only be used once one of more filters have been applied. Complete data is available in the table below the graph.
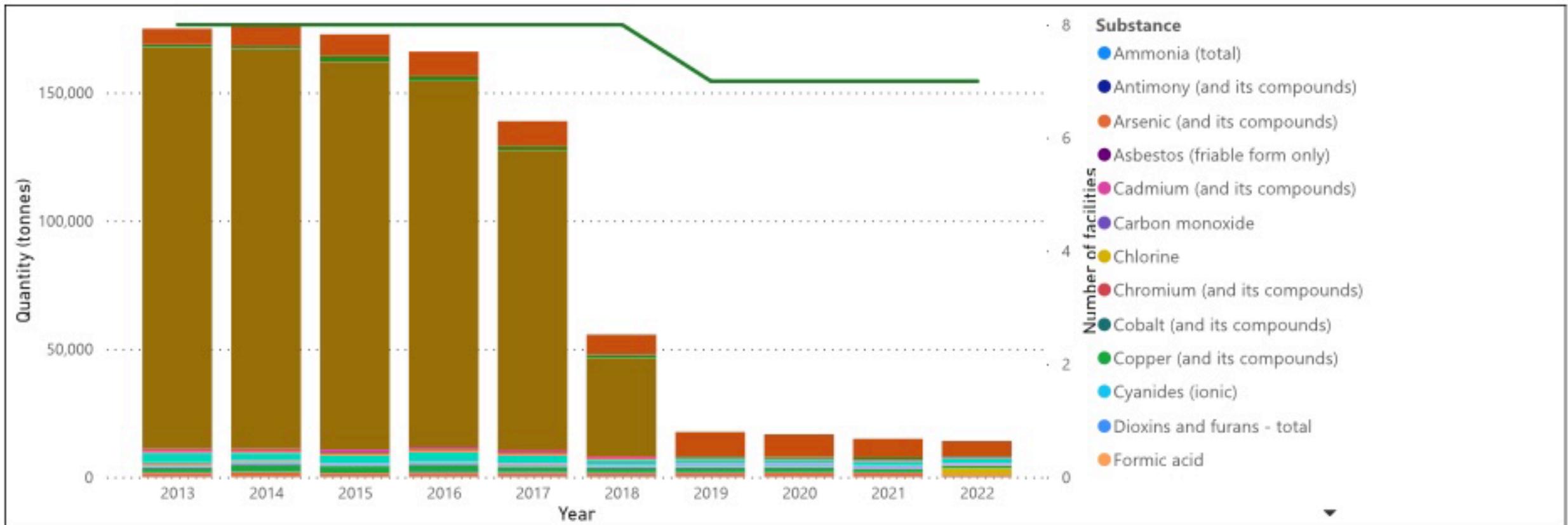
Releases, disposals and transfers (by substance):

*This graph can only display data for a limited number of substances at one time and should only be used once one of more filters have been applied. Complete data is available in the table below the graph.
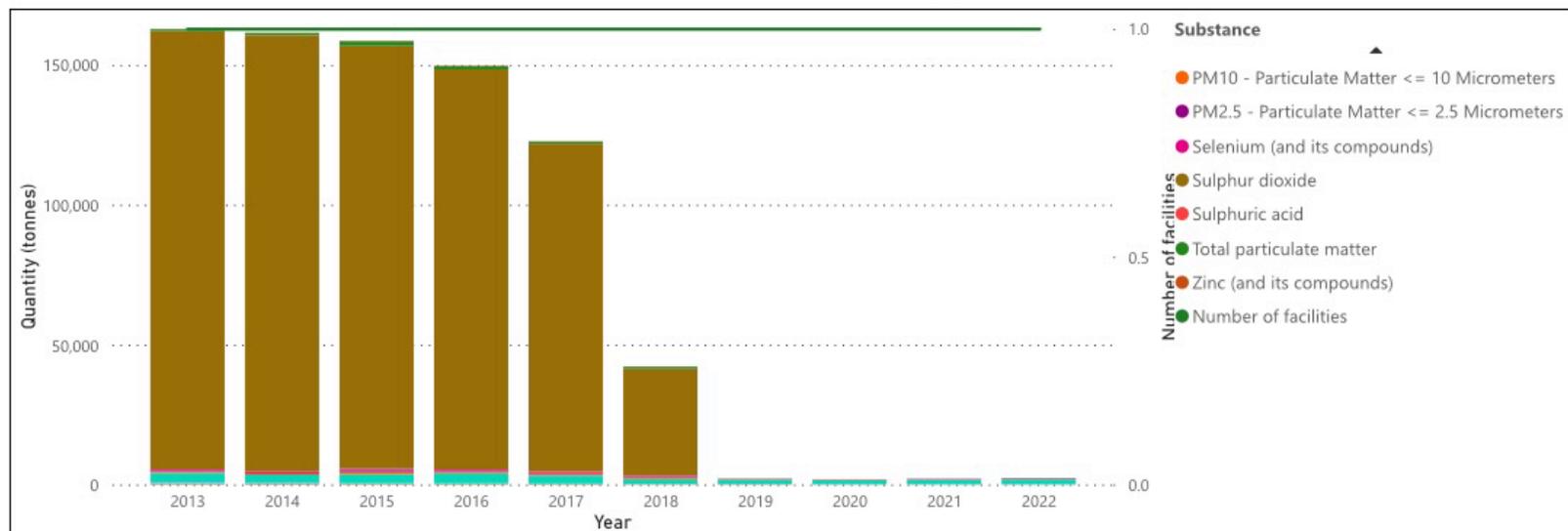
Total reported quantity by substance

Part	Substance	CAS Number	Units	2013	2014	2015	2016	2017	2018	2019	2020	2
1a	Chlorine	7782-50-5	tonnes	19.82	20.36	20.30	20.01	20.48	20.01			
	Cobalt (and its compounds)	NA - 05	tonnes	103.87	141.76	89.74						
	Copper (and its compounds)	NA - 06	tonnes	252.84	237.16	213.43	267.65	189.99	117.69	84.07	71.85	
	Cyanides (ionic)	NA - 07	tonnes		0.06	0.08	0.08	0.05	0.04			
	Hydrochloric acid	7647-01-0	tonnes					0.32	0.31			
	Nickel (and its compounds)	NA - 11	tonnes	3,417.39	2,717.98	3,251.58	3,581.93	2,863.30	1,734.74	1,461.29	1,318.75	
	Sulphuric acid	7664-93-9	tonnes	0.30	0.28	0.28	0.28	0.28	0.28			
	Zinc (and its compounds)	NA - 14	tonnes	126.46	136.52	167.49	175.29	106.25	80.96	65.05	47.13	
1b	Arsenic (and its compounds)	NA - 02	kg	91,980.77	107,881.77	97,225.67	64,271.76	67,594.91	26,094.81	29,660.46	11,923.77	
	Cadmium (and its compounds)	NA - 03	kg	26,991.33	18,350.61	31,493.29	20,318.27	13,592.03	11,582.70	8,155.74	7,721.28	
	Cobalt (and its compounds)	NA - 05	kg				100,101.83	82,680.65	39,472.68	36,502.40	31,175.70	
	Lead (and its compounds)	NA - 08	kg	268,156.69	187,756.34	59,360.09	30,449.71	37,675.78	29,139.58	17,962.09	18,206.42	
	Mercury (and its compounds)	NA - 10	kg	0.06	0.26	0.11	0.06	0.09	0.09	0.13	0.11	
	Selenium (and its compounds)	NA - 12	kg	616,311.00	319,607.00	393,998.68	387,219.00	562,436.04	419,094.95	192,491.00	153,470.71	
3	Dioxins and furans - total	NA - D/F	g_teq_et	0.00	0.00	0.00	0.00	0.00	0.00			
	Hexachlorobenzene	118-74-1	grams						0.00			
4	PM10 - Particulate Matter <= 10 Micrometers	NA - M09	tonnes	372.32	595.00	890.72	653.34	593.75	508.05	60.33	68.10	
	PM2.5 - Particulate Matter <= 2.5 Micrometers	NA - M10	tonnes	214.98	400.00	617.96	349.09	273.21	293.73	17.45	20.09	
	Sulphur dioxide	7446-09-5	tonnes	156,680.17	155,880.00	151,154.00	142,937.32	117,192.45	38,175.56			
	Total particulate matter	NA - M08	tonnes	724.00	795.39	1,715.06	1,230.00	746.78	799.99	137.00	136.01	

October 25, 2013

November 10, 2013

The Obed Mountain coal mine spill

On October 31, 2013, an impoundment containing a slurry of waste from Sherritt International's Obed Mountain coal mine failed releasing approximately 670 million litres of waste into the Athabasca River watershed.

On-site releases of tailings or process water at the Obed Mountain mine

SUBSTANCE	UNITS	2010	2011	2012	TOTAL
Arsenic (and its compounds)	kg	1684	1078	200	2962
Cadmium (and its compounds)	kg	92	26	5	123
Lead (and its compounds)	kg	4449	1591	294	6334
Manganese (and its compounds)	tonnes	16.3	10.459	1.9	28.659
Mercury (and its compounds)	kg	44	11	2	57
Phenanthrene – PAH	kg	16	3	1	20
Phosphorus (total)	tonnes	24.5	15.7	2.9	43.1
Zinc (and its compounds)	tonnes	14.7	5		19.7

The Mount Polley copper-gold mine spill

8/10/2014

SKYTRUTH

8144 ft

Image © 2014 DigitalGlobe

Google earth

Substances in Mount Polley tailings as reported to the NPRI (in tonnes)

Substance	2009	2010	2011	2012	2013	Total
Nickel	48	73	56	63	71	311
Lead	105	59	40	36	38	278
Arsenic	81	137	84	84	83	472
Zinc	273	701	453	420	403	2250
Copper	9,016	9,044	7,570	6,723	6,392	38745
Vanadium	1,045	1,474	1,357	1,637	1,557	7070
Cadmium	2	2	1	2	1	8.6
Cobalt	105	139	129	142	138	653
Phosphorus	7,784	11,374	9,735	10,056	10,405	49354
Antimony	35	3.6	2.8	3.5	3.6	48.5
Manganese	3,231	7,444	4,733	4,733	4,119	24260
Mercury	0.5	0.7	0.5	0.4	0.6	2.6
Selenium	0.01	0.01	6.8	8.2	9.0	24

September 4, 2014 water samples that exceed copper toxicity guidelines for aquatic life

	Aquatic Life Guideline	Below Breach	Quesnel Lake at Hazeltine Creek				
Total Copper (µg/l)	Chronic 2 Acute 7	709	21.3	4.32	6.06	58.8	121
Dissolved Copper (µg/l)	(existing guidelines refer only to total copper)	21.1	2.6	1.48	1.56	5.1	7.77

"Critical" minerals

Push for increased, accelerated, and expanded mining "to save the climate"

- Expanded and intensified mining for "traditional" metals like nickel, lead, and zinc

- Mining for new minerals like lithium, graphite, high-purity silica sand, and rare earth elements

- Mining in new areas without a mining "vocation" and/or requiring major infrastructure

- Measures to expedite mining

  - Accelerated "approvals" i.e. curtailed or exempted environmental assessment

  - Reduced regulatory "burden" – closure planning, security deposits, reporting

  - Additional subsidies – public investment in infrastructure and mining projects/companies, tax expenditures, tax holidays, flow-through shares

Conclusions

Public, more or less accessible data on the quantities of potentially dangerous substances present in waste rock and tailings facilities helps inform public and ensure that appropriate safeguards are in place & appropriate responses can be deployed in case of a spill or failure

Value of data diminished by several factors:

- non-process materials or substances may be added without being reported

- no reporting on mining prior to 2006

- no inventory of mine waste rock and tailings

- no reporting on disposals and transfers of radionuclides

Jamie Kneen

jamie@miningwatch.ca