

ENVIRONMENT & ENERGY BULLETIN



VOLUME 8, ISSUE 5, NOV 2016

THE RISKS OF NEEDING AND WANTING 'STUFF'

HIGHLIGHTS

- Globally, 80% of trade is in “stuff” — the things we use every day. A sizable portion of our disposal income is used to finance the consumption of goods, including food and manufactured products from elsewhere in the world.
- Delivery of these goods is via thousands of kilometers of roadways, railways, pipelines (gathering, distribution, transmission), electrical transmission and distribution lines, communications infrastructure (cell towers, fibre optic cable, satellites), along with ferries and ships servicing our 25,725 kilometres of coastline.
- People are afraid of the unknown but today’s risks are no more severe than those in the past.
- Standing ready for low-probability but high-consequence events is part of the modern regulatory state. BC and Canada already have world class systems for managing the risks of transportation supply chains — indeed, our regulatory systems are viewed, globally, as among the best.
- The evidence shows there are fewer accidents across the full spectrum of supply chain delivery modes.
- Seven industry associations are working together to strengthen land-based spills preparedness, collaboration and communication by leveraging existing and emerging federal and provincial regulatory frameworks, as well as industry systems and practices.

CONTEXT

BC is ~950,000 square kilometers. The province includes 40,000 islands, and mountains cover 75% of the land mass. There are 162 cities, towns¹ and unincorporated areas, ranging in size from less than 250 people to over 700,000, all of which cover only 1% of the province’s total land area. Sixty percent² of us live in Greater Vancouver and Greater Victoria — a combined area of 3,396 square kilometres or just 0.4% of BC’s total physical land mass.

Connecting these communities are thousands of kilometers of roadways, railways, pipelines (gathering, distribution, transmission), electrical transmission and distribution lines, communications infrastructure (cell towers, fibre optic cable, satellites), along with ferries and ships servicing our 25,725 kilometres of coastline. These pathways to connection matter: without the movement of people, goods, and ideas, cities falter, economies wane, and societies wither.³

Globally, the total flow of people, physical things, and intellectual property is increasing.⁴ An emerging middle class in Asia and some other developing economies demands the comforts of the developed world — a variety of food products from places far away; heating and cooling in buildings (shelter) made from wood, glass, stone, concrete, and steel; living spaces stocked with a variety of labour- and time-saving appliances and tools; screens of all sizes for both utility and

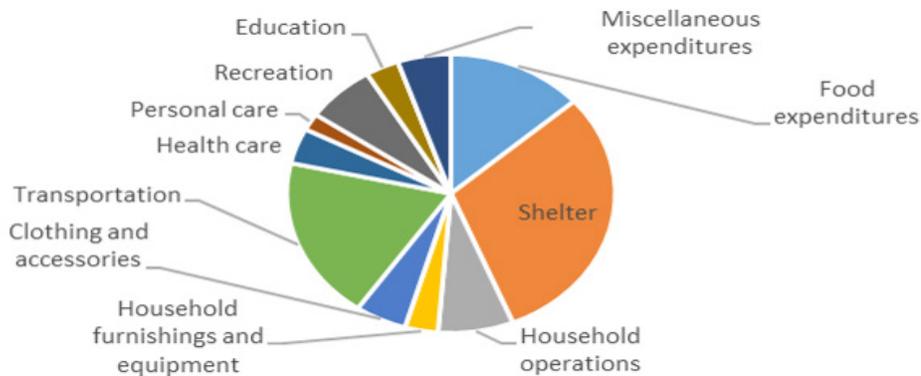
¹ <http://www.cscd.gov.bc.ca/lgd/pathfinder-mun.htm>.

² <http://sorc.crrf.ca/bc/>.

³ *Understanding the Changing Planet: Strategic Directions for the Geographical Sciences*, US National Research Council, National Academy of Sciences, 2010.

⁴ *Global flows in a digital age*. McKinsey Global Institute, April 2014. http://www.mckinsey.com/insights/globalization/global_flows_in_a_digital_age.

FIGURE 1: BC HOUSEHOLD CONSUMER SPENDING, 2014



entertainment, made from chemicals, glass, metal alloys; clothing — the list is endless, and all these goods and services are demanded at a reasonable price. Canadians and British Columbians are no different.

Why does this matter? Because about 60% of global GDP⁵ depends on household consumer expenditures — the stuff we buy and use every day. Figure 1⁶ shows that the two biggest expenses for BC residents are shelter and transportation (90% private vehicles), followed by food. Clothing and household furnishings and equipment come next. While BC’s GDP is derived from 80% services and 20% goods, this does not match what we actually spend our disposal income on — a sizable portion of it is used to finance the consumption of goods, including food and manufactured products from elsewhere in the world.

WHERE DOES ALL THE STUFF COME FROM?

Globally, 80% of trade is in goods, worth just over \$16 trillion in 2015.⁷

Of this, 73% (~\$12 trillion) comes from manufactured items, 15% from fuels and mining products (~\$2.5 trillion), and 12% (~2 trillion) from agriculture products. Canada is the 11th largest exporter of merchandise (2015) and the 10th largest importer; we are also the world’s 6th largest exporter of energy and mining products. BC imported just over \$100 billion and exported around ~\$94 billion worth of goods and services in 2015.⁸ This merchandise is delivered via transportation modes based on the unique needs of a product along a complex supply chain. The latter is defined as the transformation of natural resources, raw materials, and components into a finished product delivered to an end customer.

WHAT ARE PEOPLE CONCERNED ABOUT?

The short answer is “the unknown”. In the case of moving goods like oil, gas, and chemicals, or the operations of power plants, some people fear the possibility of an accident with highly adverse results — pipeline

rupture, explosion, sour gas leak, tanker grounding and spills. But it is misleading to think there are more threats in today’s supply chains — the infrastructure of delivery — than existed in the past, or that today’s risks are more severe than in the past. Unfortunately, the existence of more and bigger risks is a common but mistaken belief colouring the public dialogue about activities that are central to meeting growing worldwide consumer needs — most of it focused on “stuff.”

Collectively, we have done a remarkable job creating a culture of exaggerated fear around big projects. At the moment, there seems to be a particular fear, in Canada, of oil spills, on land and at sea. Most media communication features fear-based language and messaging, and takes advantage of an inherited human facility to be afraid. We are so conditioned by fear that it takes only one situation or event to establish a long-term aversion to the prospect of it happening again. In the context of an oil spill, we recall Exxon Valdez, which occurred

“Our investment in our beliefs is much stronger than any other affiliation ... the likelihood about agreement on facts becomes smaller and smaller as the personal investment in the problem grows.”

Daniel Ariely, Predictably Irrational: Hidden Forces that Shape Our Decisions, 2008

⁵ <http://data.worldbank.org/indicator/NE.CON.PETC.ZS>.

⁶ Table 203-0021 Survey of household spending (SHS), household spending, Canada, regions and provinces, annual (dollars). Shelter costs include the cost of rent/mortgage plus energy and water services. Transportation is 90% personal vehicles costs. Miscellaneous expenditures include print materials, tobacco and alcohol, and gaming.

⁷ World Trade Statistical Review 2016, World Trade Organization. https://www.wto.org/english/res_e/statis_e/wts2016_e/wts2016_e.pdf.

⁸ Statistics Canada, CANSIM table 384-0038, data released November 9, 2016. Chained 2007 dollars.

in 1989, and for the most part not part of the living memory of many who protest. Unfortunately, once we have constructed a vivid image of a negative outcome, even if low probability, the more certain we are of its likelihood — despite the evidence.⁹ Thus, the probability of rare events is overestimated because of the confirmatory bias of memory¹⁰ ... and over weighted by attention. The constant use of negative language in a proliferation of media contexts, most of them not fact- or science-based, exacerbates the misperception of risk.

This is exactly the tactic used by opponents of resource development in British Columbia. A quick look at a City of Vancouver’s website confirms this hypothesis. Repetitive negative language about pipeline development includes: bad, catastrophic, severe, 10-times-higher, devastate, imposing-such-a-risk, and going backwards. Such language sells a point of view but often the rhetoric is contrary to the evidence.

WHAT THE EVIDENCE TELLS US

The data tells a completely different story — one of increased safety and fewer accidents over time, especially for pipelines¹¹ (Figure 2). This is also true for rail and marine (Figures 4 and 5). Since the 1930s, oil tankers and container ships have traversed the west coast, with the former accounting for 0.75% of the total traffic¹² and producing zero serious spills of crude.¹³ In fact, about 90% of world trade is carried by the

FIGURE 2: NUMBER OF PIPELINE ACCIDENTS, CANADA, 2006 TO 2015

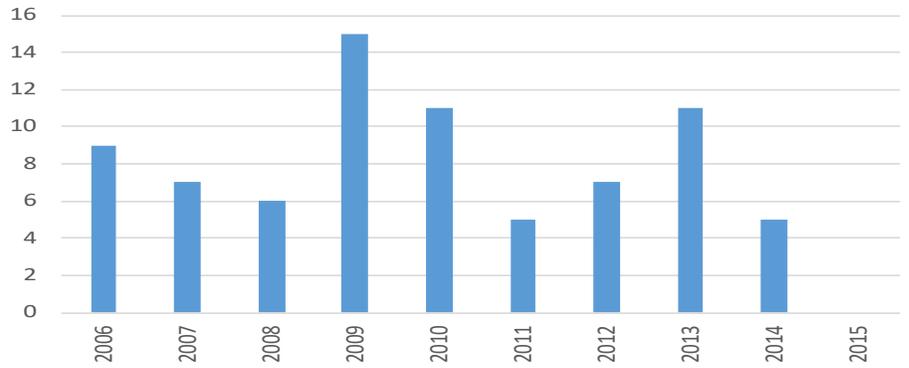


FIGURE 3: PIPELINE ACCIDENTS PER EXAJOULE OF ACTIVITY, CANADA, 2006 TO 2015

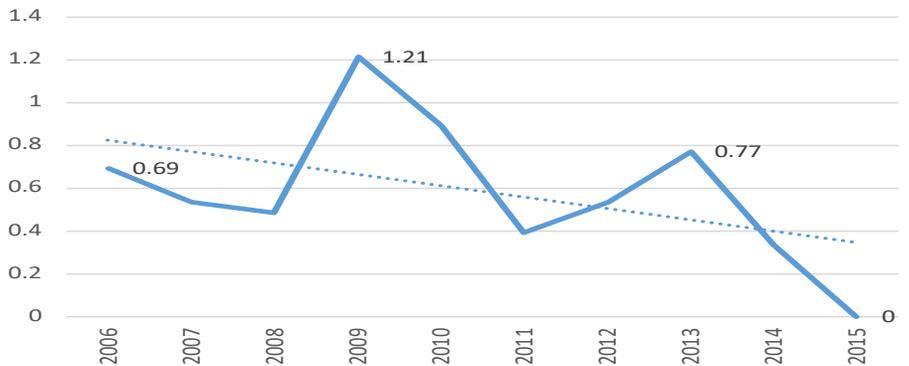
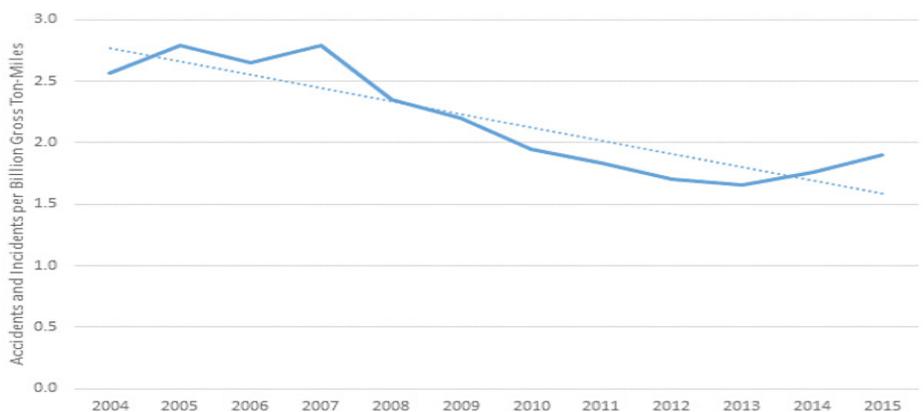


FIGURE 4: BC RAIL ACCIDENTS AND INCIDENTS, 2004 TO 2015



⁹ Daniel Kahneman, *Thinking Fast and Slow*, p.328.

¹⁰ Ibid, p. 333.

¹¹ <http://www.tsb.gc.ca/eng/stats/>; <http://www.tsb.gc.ca/eng/stats/pipeline/2015/ssep-sspo-2015-tbls.asp>.

¹² <http://www.tc.gc.ca/eng/marinesafety/facts-oil-tanker-safety-canada-4513.html#oil-spills>.

¹³ http://www.tc.gc.ca/media/documents/mospr/transport_canada_tanker_report_accessible_eng.pdf, p 10.

FIGURE 5: PACIFIC REGION MARINE ACCIDENTS, 2004 TO 2016

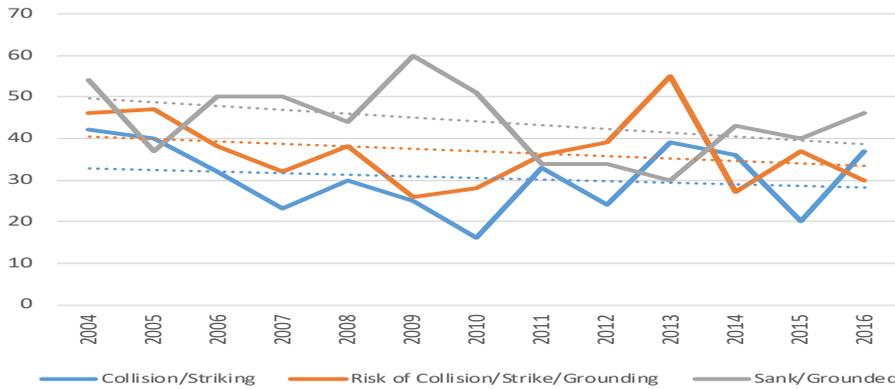
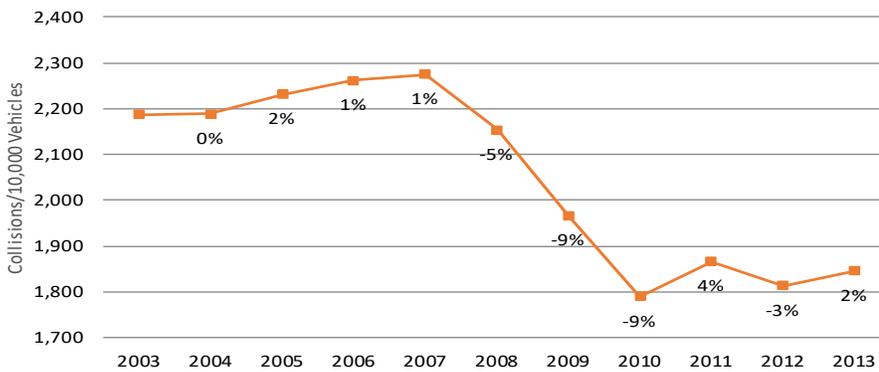


FIGURE 6: HCV COLLISIONS PER 10,000 ACTIVELY INSURED HCVs IN BC (LGWV >= 11,795 KG, CASUALTY & PDO, 2003 TO 2013)



international shipping industry¹⁴ and the global loss of ships and life declined dramatically over the past two decades.¹⁵ Similarly, in trucking we see a sharp decline in heavy commercial vehicle accidents over the past decade (Figure 6).

WHAT ARE GOVERNMENT AND INDUSTRY DOING?

In short, continuous improvement. A quick look at changes to safety

requirements for rail, pipe, trucking, and marine transport over time shows that both government and industry have been listening and responding to the concerns of Canadians.

Pipelines: Canada’s pipelines are regulated over their entire life cycle. The new *Pipeline Safety Act* amended the *National Energy Board Act*, and to some extent the *Canada Oil and Gas Operations Act*, to enhance the principle of “polluter

pays” and to impose absolute liability for all costs and damages of National Energy Board regulated companies. British Columbia’s *Oil and Gas Activities Act, Regulation*, and applicable *Canadian Standards Association* standards, along with oversight from the BC Oil and Gas Commission, covers prevention, preparedness and response, and liability and compensation for provincially-regulated pipelines. On a very important note, other countries look to Canada as a model for pipeline regulation. We are considered world-class — a fact never acknowledged by environmental groups.

Rail: There are *fourteen applicable acts* with a safety orientation, although the *Railway Safety Act* and 21 related regulations, and the *Transportation of Dangerous Goods Act*, are the most important. Since mid-2013 there have been numerous changes and other new initiatives to improve safety — directives, Ministerial Orders, studies, task forces and working groups, amendments to regulations, and guidance documents, all designed to enhance rail safety. This regulatory regime is complemented by well-developed safety management systems in each railway, and voluntary initiatives such as TRANSCAER® — the railway and chemistry sectors’ commitment to work with municipalities, emergency responders, and residents in communities along transportation routes to make sure they are informed about the products being moved through their areas and are prepared to respond to potential incidents involving dangerous goods.

¹⁴ <http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade>.

¹⁵ <http://www.ics-shipping.org/shipping-facts/safety-and-regulation/reduction-in-the-number-of-ship-losses>.

Trucking: In trucking, the federal government regulates [safety standards](#) while provincial governments have responsibility for on-road enforcement of federally-regulated trucking companies and oversee most of the operating conditions and the economic environment for intra-provincial carriers, (e.g., driver qualifications, fuel taxes, vehicle weights, vehicle dimensions, rules of the road, vehicle inspection, securement of loads, vehicle licensing and mandated safety equipment). Most spills from tank trucks occur during loading or unloading, not while in transit. These are easier to contain and manage and do not have broad negative environmental impacts. Canada's economy is dependent on trucking to support trade (exports and imports) and to supply retail stores on which the public depends for basic sustenance.

Marine: Safe navigation of ships is governed by five statutes: [Canada Marine Act](#), [Canada Shipping Act](#), [Marine Insurance Act](#), [Marine Liability Act](#), and [Pilotage Act](#), and 81 associated regulations. In November 2016, Canada announced an Oceans Protection Plan, a \$1.5 billion investment in marine safety systems, ecosystems management, and additional research on oil spills clean-ups. The plan also committed to strengthen the Canadian Coast Guard and build on experience to develop a new regional oil spill response plan for the north coast of British Columbia.

British Columbia has engaged with a variety of stakeholders over the past number of years on the development

"Our biases reflect the choices that kept our ancestors alive. But we have yet to evolve similarly effective responses to statistics, media coverage, and fear-mongering ... Though emotions are themselves critical to making rational decisions, they were designed for a world in which dangers took the form of predators, not pollutants."

Emotion and Decision Making, Jennifer Lerner, Harvard University; Ye Li, University of California, Karim Kassam, Carnegie Mellon University

of a land-based spills regime. In 2016, the province amended the *Environmental Management Act* by adding a new section on Spill Preparedness, Response and Recovery. Seven industry groups¹⁶ and their member companies are collaborating on the development of a BC Preparedness & Coordination Organization (BCPCO) aimed at strengthening preparedness, collaboration and communication associated with land-based spills and leveraging existing and emerging federal and provincial regulatory frameworks, as well as industry systems and practices.

CONCLUSION

Standing ready for low-probability but high-consequence events is part of the modern regulatory state. BC and Canada already have world class systems for managing the risks of transportation supply chains – indeed, our regulatory systems are viewed, globally, as among the best. It takes a bit of research to understand the breadth and depth of the system. Criticism about gaping holes in the regulatory system is greatly exaggerated and overlooks industry's close attention to safety. Further, adding more regulation will not necessarily improve performance,

although it is sure to increase redundancy, confusion, and costs to industry and other stakeholders – ultimately showing up in higher costs for consumer goods. It is our view that new prescriptive regulations in the area of land-based spills are unnecessary. Instead, policy-makers should be looking to enhance response capacity in BC by promoting collaboration, information-sharing and the dissemination of best practices to drive continuous improvement.

AUTHORED BY

Denise Mullen
Director, Environment and Sustainability
Business Council of British Columbia

¹⁶ BC Trucking Association (BCTA); Canadian Association of Petroleum Producers (CAPP); Canadian Energy Pipeline Association (CEPA); Canadian Fuels Association (CFA); Chemistry Industry Association of Canada (CIAC); Railway Association of Canada (RAC); and Responsible Distribution Canada (RDC).