Railway Safety Act review Consultation Document comments Millar 8 29 17b

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To: Railway Safety Act Review Panel

Dear Chair Paton, Vice-Chairs Eaton and Quinlan:

I have reviewed your current Consultation Guidance Document for the ongoing review, am glad you highlight the bi-national implications of any proposed Canadian policy changes, and have participated before in an earlier such rail safety review some years ago. I would like to suggest two specific areas for review [within the dangerous goods area] which are not specifically addressed at all in the guidance document, but which are important.

These issues I raise are both arguably:

- consistent with your overall approach of seeking to assess progress in railway risk reduction in safety and security,
- and with your list of key questions [p. 7],
- the first of which is even mentioned briefly in your Appendix B – Key Enhancements [Table 3 on p.14 regarding Key Trains and Key Routes]

Issue Area One: Railway Selection of Appropriately Safe and Secure Routes for the highest risk Dangerous Goods

Risk-reduction routing of dangerous goods by rail has often been publicly discussed and sought by concerned citizens and officials in Canada and the US and in the aftermath of well-known rail disasters: Mississauga ON in 1979 with a potential chlorine tank car release prompting the largest evacuation in North American history, 250,000 residents for a week; the 47-fatality Lac-Mégantic QUE disaster of 2013 followed by several other crude by High Hazard Flammable Train rail emergencies across North America. Transport Canada top officials, however, have historically been adamant that unlike in the cities of the eastern US, "We are NOT going to have a debate about regulating protective dangerous goods routing in Canada." And to my knowledge no re-routing has been implemented.

Canada's star railway CEO Hunter Harrison [now cost-cutting madly in an attempted turnaround as "interim CEO" of the troubled US railroad CSX] in an earlier 3 2 15 Toronto Globe and Mail interview expounded thus:

"The chance of a terrorist attack on a train hauling flammable goods is a greater threat to public safety than a derailment, says Hunter Harrison, chief executive officer of Canadian Pacific Railway Ltd.

***Rerouting trains hauling dangerous goods to avoid heavily populated** areas, and keeping the list of hazardous cargo from the eyes of would-be criminals are keys to hauling flammable goods safely, Mr. Harrison said on Monday in Toronto speech.*

Some cities, including Toronto, have called for Ottawa and the railways to end the movement of dangerous goods through their centres. The railways are also facing calls to make public the list of dangerous goods they haul. ***Mr. Harrison said he would prefer to avoid congested, heavily populated areas like Chicago****…*"

In short, under your 2015 regulations, railway CEOS like Hunter Harrison got to decide whether to endanger Toronto, Ottawa and Chicago – or not. And he chose to do so. If Transport Canada knows that this is no longer the case, this safety review should release the evidence for concerned citizens.

The liability lawyers for giant US railroad CSX have apparently warned CSX corporate officials that transcontinental crude oil unit trains, like the one that passed through Toronto and Montreal before disastrously blowing up in Lac-Mégantic Quebec in July, are too dangerous to continue to route through Washington DC. CSX Railroad safety officials announced publicly in 2013 to a meeting of concerned trackside citizens that CSX would be "voluntarily" re-routing around the Nation's Capital not only unit trains of crude oil, but also unit trains of ethanol and railcars of flammable pressurized gases. No other US city has gotten similar public assurances from its railroads, and I think none in Canada, either.

The Canadian government, post-Lac-Megantic, has commendably required railways to inform woefully uninformed Canadian local officials, on an annual or quarterly basis, of the volumes of dangerous goods cargoes they are routing through their downtowns and neighborhoods. Emergency responders in both the US and Canada need their governments also to require the railroads to provide Worst Case Scenario information on the most dangerous cargoes, so they can assess the adequacy of the routing and their local emergency planning, capabilities and training.

The Canadian government, however, historically Community Right to Know-challenged, is reportedly still keeping secret their reviews of the railways' own Emergency Response Action Plans. And local officials in both nations are deplorably willing to keep their at-risk citizens in the dark about the potential mass casualty risks imposed by shippers and carriers of dangerous

goods. No uninformed North American citizens should have to learn the Worst Case Scenario of a dangerous goods train passing through their town, as Lac-Mégantic citizens tragically did with crude oil unit trains, by actually experiencing it.

Reducing dangerous goods rail risks will need some entity making difficult routing decisions, balancing such options as going through or around specific major cities, all the Great Lakes and other environmentally sensitive areas, and First Nations lands. Protective governments are needed for such decisions, which can force railways to interchange cargoes for public safety, not private railway corporations whose major aim is to keep the long-distance shippers paying freight rates on their own lines for as long as possible.

Even a cursory glance at, e.g., the DeskMap Systems Inc. "Professional Railroad Atlas of North America" shows some potential rail routing choices for protecting Canadian major target cities, in that existing rail routes go through:

Ottawa or Bedell?

Toronto or Brampton? Or West Toronto? Or Snider?

London or St Thomas?

Regina or Moose Jaw?

Montreal or Adirondack Jct?

Winnipeg or Napinka MB, Morris MB, Warroad MN, Geraldton ON, Thunder Bay ON

Vancouver or Alberta Wheat Pool?

Edmonton or Glover Bar?

Re-routing options would all require detailed examination, of course, and the railways may have in recent years expended vast sums in beefing up their selected freight routes which bring the most dangerous goods cargoes through North America's major cities and neglected to improve the alternative rail lines which could reduce the consequences of major accidents. But the general company line prevalent among Canadian railway and government officials, that there are in fact no alternatives, needs to be challenged.

No Canadian official or citizen I have spoken with had ever heard, e.g., of Nakina ON [north of Thunder Bay] nor had I, until I saw it this town listed on the northern-most Canadian National Railway transcontinental rail route that seemingly offers an alternative that needs to be explored for safest long-distance dangerous goods routing. Both CN and CP have lines farther south that leaving eastward from Thunder Bay are routed very close to Lake Superior for 100 miles or more. These lines then turn south near Sudbury and travel through Toronto, Ottawa and Montreal on the shortest routes to Atlantic Coast ports in Maine and New York.]

Canadian citizens and officials need to learn that all the North American railroads and railways [2 Canadian and 5 US] incredibly frequently use each other's lines with standing "interchange agreements" to offer expedited services to shippers. The continental total has been estimated at 6.5 million times per year – such interchanges are clearly the life blood of the integrated North American rail system. But so far the rail corporations have all successfully resisted any US or Canadian government role in selection of routing for public purposes such as safety, environmental and cultural protection, or reduction of urban terrorism risks.

John Read, formerly the smart and conscientious top official on dangerous goods shipments at Transport Canada, told me in 2007 that Transport Canada had after 9/11 [quietly] decided not to re-route to avoid target cities, and also not to armor-plate the most dangerous tank cars such as for chlorine gas. He was focused [as was the industry-staffed US Department of Homeland Security] merely on "expediting" such shipments through Canadian cities, i.e., shortening the long "dwell times" for such shipments in urban rail yards, based on his agency's historical statistical data on the deplorably long-term storage of chemical railcars, often unguarded, in major cities.

Routing concerns are still highly relevant. By analogy, as you may know, the Transportation Safety Board's 2017 comprehensive Railway Investigation Report R15H0021 on the Gogama 2015 crude oil train accident "acknowledges TC's progress on a number of integrated measures related to route planning and analysis for trains transporting dangerous goods" [p. 45] and **"risk assessments for key routes"** [p. 90]. But TSB also warned in a relevant and indisputable observation that "Had the [rural area Gogama] accident occurred within a town, city or metropolitan area, the outcome could have been even more severe." [p.91] As the Lac-Mégantic tragedy amply demonstrated. **If the newly completed risk assessments for key routes have in fact enabled the railways to select safer and more secure dangerous goods routes, one would think that the railways and the government would not mind providing evidence of these happy results.**

Even in the TSB Report's "Section 2.12 Canadian National Railway Company key route risk assessment" [p. 93], however, there is no examination nor assessment, nor reference to any other entity or agency's assessment, of how Canadian National's route choices in the post-Lac-Mégantic era have reduced risks or not.

As the TSB noted in this Report R15H0021,

"Since the Lac-Mégantic derailment in July 2013 (TSB Railway Investigation Report R13D0054), other recent derailments in Canada…have demonstrated that there can be significant risk to

people, property, and the environment when trains carrying large volumes of flammable liquids derail.

These recent occurrences highlight the need for strategic route planning and safer operations of all trains carrying DGs in Canada. ***Railways must carefully choose the routes on which crude oil and other flammable liquids are to be carried, and ensure that train operations over those routes will be safe****. These risks must be dealt with as a North American transportation issue, because these products are transported across borders by rail operators." [p. 79]*

But the Canadian government's recent approach on regulation of railways' route selections – certainly meeting the low-bar standard of compatibility with the US approach which is so weak as to be merely a pretense of government oversight -- **has been merely to impose the same regime that the US Congress legislated in 2007 at the behest of the railroads**, in Public Law 110-53, Section 1551 and in subsequent regulations. Both CN and CP Railways have presumably found it quite comfortable since 2008 to comply with this astonishingly railroad-friendly US regulatory regime in their US operations.

Your Canadian copy of this US regime is the August 2015 **TRANSPORT CANADA ORDER PURSUANT TO SECTION 19 OF THE RAILWAY SAFETY ACT MO 15-06** http://www.tc.gc.ca/eng/railsafety/railsafety-981.html [See full text in Attachment below]

The US regulation from 2007 has had sufficient time to show progress in railway safety and security risk reduction, or not. It has not.

The best and virtually the only public source for this assessment is found in the US DOT/ PHMSA Draft Regulatory Impact Assessment [DRIA] 2014 [pp 40-42] which has extensive economic cost-benefit analyses of the agency's proposed Hgh Hazard Flammable Trains [crude oil and ethanol, both HHFTs] regulations.

The authors estimate huge economic benefits of an effective final HHFT regulation if future serious HHFT rail accidents were avoided. For example, they estimate just one HHFT derailment event, in a city with density five times the average city, as potentially, yielding $6 Billion damages, or such an event could also reach such damages in *"a particularly vulnerable environmental area".*

Based on an analysis that the same huge volumes of HHFT cargoes would move across the US over the next twenty years as in 2013-2014, under similar infrastructure conditions, with no new stringent regulations, the DRIA predicted:

"The high end of the range of estimated benefits includes the same estimate of 5 to 15 annual mainline derailments predicted based on the U.S. safety record, plus an estimate that the U.S. would experience the equivalent of 10 additional safety events of higher consequence—nine of

which would have environmental damages and monetized injury and fatality costs exceeding $1.15 billion and one of which would have environmental damages and monetized injury and fatality costs exceeding $5.75 billion—over the next 20 years" [p.4]

Their DRIA analysis thus underscores the potential value of protective re-routing and also approvingly cites the unchallenged, historical literature on this subject, including from prominent Canadian university researchers:

"Scaling potential risk by population density is a technique used frequently in the literature on the safety of hazardous material shipments. For example, Verma uses population exposure as a component of a risk assessment framework for hazardous materials shipments by rail… Glickman et al. uses population density as a risk factor to be used in making rail routing decisions for hazardous materials shipments. Saat and Barkan use the number of people affected, which is a function of population density, to scale the consequence levels of hazardous materials rail accidents. Kawprasert also uses population density as a factor that influences hazardous material risk. It seems reasonable, given this body of research, to scale our damages to the average track mile weighted population density along U.S. crude and ethanol routes."

The DRIA authors, however, reviewed some US railroads' actual route decision documents [held secret from public view] and concluded that under the 2007 law the railroads' actual amount of re-routing under the regulations [the same as Canada adopted] was only "modest". Which is probably diplomatic language for "nearly none". As a consequence of this dismal record of staunch railroad resistance to protective re-routing, and despite its own DRIA document's having shown that re-routing was the single most likely way to lower significantly the risks of dangerous good rail transport, the 2015 final US DOT rule eventually simply proposed an extension of the existing regulatory regime under Public Law 110-53, Section 1551 to High Hazard Flammable Trains, and the DRIA authors estimated only a minor economic benefit would be gained from the tiny amount of [secret and unaccountable] railroad re-routing the document predicted would occur.

You have an unprecedented opportunity in your current Review, regarding this first issue area, to assess and report on:

- how and how well the Canadian railroads are complying with the longstanding US routing regime
- how and how well the US and Canadian railroads are complying with the newer [but familiar approach] Canadian regime
- the adequacy of TC's auditing and enforcement of the routing Order MO 15-06
- whether such railroad-friendly and non-transparent regulatory routing regimes have any chance of delivering substantial risk-reducing safety and security improvements
- what are optimal steps forward

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<u>Issue Area Two:</u> A dangerous North American industry/agency effort is ongoing to reduce the perception [not the reality] of release risk for toxic gas containers, including the standard 90-ton railcars. Railcar toxic gas releases are the priority concern for all involved, given their proximity to dense populations in virtually all North American cities.

Most North American citizens and officials are totally unaware that **a quiet, under-the-radar, multi-year effort is ongoing to recalculate [and minimize the official government perception of] the risks of large railcar releases of toxic gas** cargoes moving in large numbers across North America and through virtually all major cities. The effort has been spearheaded by chemical and railway corporations and a few secretive US agencies: DHS/Chemical Security Analysis Center, DHS/Transportation Security Administration and DOD/Defense Threat Reduction Administration. This movement includes by invitation several hand-picked stakeholders, but no elected officials or representatives from hospitals, transportation or medical workers or toxicologists, and has not even tried to conduct the outreach that would be needed to elicit widespread buy-in from the fire service or emergency responder community. Transport Canada has been contributing [an unknown level of] funding, and some TC representatives have attended meetings and conference calls.

A crucial context underlying this effort is the Chlorine Institute's steadfast refusal over many years to implement the recommendations in the 1986 reports from their own prestigious Technica International consultants that the industry should conduct a series of full-scale chlorine tank car field test releases at the federal government's premier Nevada Test Site's Liquefied Gaseous Fuels Spill Test Facility. The users/transporters of several other dangerous gases including HF, N_2O_4, and ammonia had conducted important field test releases at this site, and had gotten impressive if dismaying evidence of how far downwind dense gas clouds can move [e.g., the HF toxic gas cloud moved over 5 miles downwind, ominous news for the 50 US refineries using HF catalyst]. Instead, between 2010 and 2016 this new ad hoc movement commissioned, funded and coordinated some clearly biased small-scale lab tests and field test Jack Rabbit I and II releases which have been conducted with taxpayer support and have been intended to produce complacency-inducing results.

The effort was mounted with the aid of "science for sale" arrangements and with the explicit aims of "casting doubt" [a well-known phenomenon in several risk fields such as nicotine, asbestos and climate change] on the preceding gas science. The movement has been from the beginning especially keen to modify all the national risk guidance documents relied upon by

the emergency response community, including the Emergency Response Guidebook [e.g., ERG2016, which currently estimates downwind risks of a worst case scenario release of a chlorine tank car at 11+ km (7+ miles)] , NOAA's ALOHA program, US EPA's Risk Management program, and the NFPA standards, and aimed at re-educating the North American emergency responders about the new assessment of [lowered] dense gas release risks.

http://www.washingtonfirechiefs.com/News/TabId/2286/ArtMID/7666/ArticleID/22596/WFC-Express-Concerns-Regarding-Chlorine-Gas-Evacuation.aspx

Some of the members of the emergency response community who have heard about this risk minimization effort have mounted some pushback, especially against the chlorine industry's new and non-credible risk-minimizing assertions. The Chlorine Institute [representing the North American chlorine industry] abruptly and unabashedly cited explicitly the results of the effort's early lab and field test experiments to justify astonishing new assertions in its authoritative industry guidance, the 2015 Edition 6 of Pamphlet 74 [available for free download on its website] **that the downwind travel of a chlorine gas cloud would be not 15 miles as in the previous 5 editions, but only 1184 feet [0.2 miles].**

No fire service organization has taken an official public position on this clear indication of the dramatic results industry hopes to achieve by the risk minimization effort, but one informed source hinted at the likely response in the emergency response community by offering a private position to an inquiring fire service hazardous materials official:

*"[My] **personal** take **and that vetted through meetings** on the JR I and 2015 JRII NFA hosted meetings was that we did not have sufficient data to indicate any changes to the ERG. If you want current thought on changes to the ERG, you should contact PHMSA at DOT. **The USFA/NFA is currently advocating no change to current response techniques in relation to dispersion patterning due to the lack of data analysis and broad scientific and emergency response vetting.***

*In relation to pamphlet 74 from the CL Institute, I offer my personal opinion that the fact that it is based on the JR I trials is **not conclusive science.** The [Chlorine Institute's Pamphlet] 74 document has never been widely used by public emergency response and is industry based. [The National Fire Academy has] not made any substantial changes to instructional materials based on the Jack Rabbit project outcomes since the details of the science are still emerging."*

The main and oft-repeated **arguments for the benefits sought** in the overall risk minimization effort can be seen in the [attached] Shannon Fox DHS/CSAC 2013 slides**, "**Project Jack Rabbit - Chlorine Chemical Reactions as a Loss Mechanism for Dense Plumes". All the new research was designed to show mechanisms that might lessen the risk of a downwind chlorine cloud.

Slide 33 shows vividly the effort's explicit push for less safety conservatism in federal guidance, lowering the margin of safety for emergency responders and communities on toxic gas releases. The slides also show explicitly the toxic gas shipper and carrier industries' key interest in

reducing the community evacuation costs, gaining thus **a large "Return on Investment" ["ROI"]** of future "excessive" Incident Commander-ordered community evacuations in toxic gas emergencies [which industry firms eventually must pay] if such evacuations result from the older gas science reflected in current guidance documents [e.g., the ERG2016] suggesting Protective Action Distances out to "7+ miles":

SLIDE 33:

"Evacuation:

§ Evacuation zone distances and procedures refined through improved modeling

§ Current ERG guidance directs ***excessive distances (7+ miles) due to modeling uncertainties***

§ ***Realistic distances dramatically reduce unnecessary evacuation, impact, costs***

§ Results in a significant, quantifiable ROI for evacuation improvement alone"

Slide 30 in this presentation illustrates graphically, using seemingly cherry-picked data, how significant the savings are that the industry hopes to achieve: *the "ROI for reducing the evacuation distance from 7 to 4 miles reflects the savings per day"*, estimated at **$74 million per day**. And Slide 30 asserts that *"Historical large-scale TIH evacuations have generally lasted 7-10 days."*

http://cchealth.org/hazmat/hmc/pdf/2017-0517-attachment1.pdf

These hoped-for evacuation cost benefits may pale in significance to other, unmentioned future benefits of reducing the perception of release risks, such as for the toxic gas industry's liability costs and for the costs of safety-related regulatory mandates for more robust tank cars, re-routing, etc.

I have asked Transport Canada several questions related to this effort to minimize the perception of toxic gas rail release risks. [See also my letter to Minister Garneau, attached.]
I hope your review can also raise these questions:

1. TC and Canadian DRDC are prominently cited as financial and staff contributors to the Jack Rabbit testing effort -- see DHS/Fox 2016 slides attached, slides 2 and 3 regarding these agencies' financial and staff participation in the controversial Chlorine field research, Jack Rabbit testing at US DOD's Dugway Proving Grounds. **Could you please outline what Canadian funding and staff work this contribution has entailed?**

2. The first round of the risk-minimizers' public presentations directed at the emergency response community regarding the results of the early Jack Rabbit testing in 2010 and 2015 emphasized visuals that suggested that a new gas science "consensus" showed that chlorine gas releases [and by analogy, other TIH cargoes] would not travel long distances downwind. For example, the Utah Valley University's Jack Rabbit Program website visuals were purported to be the project's main mechanism to educate the fire service:

http://www.uvu.edu/esa/jackrabbit/

And, for another example, a misleading article in Fire Service magazine:

http://www.fireengineering.com/articles/print/volume-169/issue-11/features/the-jack-rabbit-tests-catastrophic-releases-of-compressed-liquefied-gases.html

The Chlorine Institute [representing the North American chlorine industry] unabashedly cited explicitly the results of these lab and field test experiments to justify its astonishing new assertions in its authoritative industry guidance, the 2015 Edition 6 of Pamphlet 74 [available for free download on its website] that the downwind travel of a chlorine gas cloud would be not 15 miles as in the previous 5 editions, but only 1184 feet [0.2 miles].

Have your Canadian agencies or chemical facilities been publicizing such risk-minimizing estimates to Canadian emergency responders and at-risk citizens and/or modifying your national guidance?

3. The most recent larger scale Jack Rabbit II [Phase 2] release tests, as seen in the 2016 Fox GMU slides [especially slides 22-25] show the largest chlorine gas cloud releases from the Dugway daytime desert facility "trials" in Sept 2016 traveling downwind at high concentrations quite far, clearly past the 11 km sensors arc which were the farthest downwind.

So is there a need in Canada, as in the US, effectively to correct the earlier mis-leading communications that minimized the perception of the downwind risks of toxic gas releases in dangerous good transportation and from onsite storage?

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ATTACHMENTS

ATTACHMENT ONE: my letter to Minister Garneau dated June 2, 2017

Dear Minister Garneau:

I would guess you have not been informed about the quiet but potent efforts of the North American chlorine industry unilaterally to impact the longstanding North American perception of the severe disaster risks posed by chlorine rail tank cars and the national guidance documents based on that perception. Previous longstanding Chlorine Institute Pamphlet 74 editions estimates that a chlorine tank car release cloud could travel 15 miles downwind by 4 miles wide, but now the industry estimates a downwind travel of only 1184 feet (0.2 miles)

The citizens and officials in Mississauga ON, for one example, are to be re-educated by a brand-new post-9/11 dense gas science movement, funded by US taxpayers, to realize that their 1979 precautionary chlorine tank car emergency evacuation of 250,000 citizens for a week was sadly misguided. See the attached document for the overall story and some indication of the entirely predictable rise of opposition to the chlorine/TIH shippers and carriers' miraculous new risk reduction on paper.

Four of your TC staffers attended one [in 2016] of the US national "stakeholder" meetings [excluding all elected officials or their national associations] at which the "training implications" of the new movement's Jack Rabbit field testing was discussed, and perhaps some Canadians also were selected to observe one or more of the series of the field testing itself. They thereby got privileged "insider" status, I was told, to see the preliminary results of the field testing to date, access which outsiders to this quiet movement still have not gotten. Your staffers say they are reluctant to release the information [closely held in secrecy-prone US federal agencies, DHS and DOD] even to knowledgeable professional outsiders, citing the usual excuse post-9/11 of "homeland security."

I have a few questions, therefore to ask you directly, focused on the issues involving estimates of railcar releases of chlorine gas:

a. Please send me copies of all the Jack Rabbit-related materials [concentration data, videos, photos, analyses] shared with your staffers at the meeting[s], and other materials from the meeting/test operations, and indicate whether they were forced to sign some confidentiality agreements which mean they cannot share these with Canadian citizens.

b. I have been told that Transport Canada still relies for emergency response [ER], ER pre-planning, event management and ER training on the long-respected Orange Book, the Emergency Response Guidebook, currently ERG 2016, and that your agency has no plans to modify its ER guidance or training or ER operations to fit the new gas science guidance from the chlorine industry. True? Please provide any authoritative agency position on this question.

c. Has the Chlorine Institute's 2015-2017 Pamphlet 74 Edition 6 guidance influenced the Canadian regulations, or regulatory programs in the dangerous goods realm [as it has the ERG2012 and

2016, according to the chlorine industry's CHLOREP Bulletin from 2016, and the NOAA ALOHA model] ?

d. Have any Canadian citizens or emergency responders or local/provincial officials to your knowledge been informed about the previous Pamphlet 74 estimates that a chlorine tank car release cloud could travel 15 miles downwind by 4 miles wide?

e. US FEMA staffers have stated, in the stakehold meetings and elsewhere, their most recent position, namely, that the ER community does not consider the Jack Rabbit testing to be conclusive or convincing enough to warrant n urgent push to modify the ERG and other guidance documents and the training at the National Fire Academy. Do your Canadian counterparts share that assessment?

f. Has your agency assessed the credibility of the underlying data, models and assumptions involved in calculations in the new Pamphlet 74?

g. Has your agency queried any network of ER community representatives on their view of the credibility of the new Pamphlet 74 estimates?

Thank you for your consideration of these requests.

Sincerely,

Fred Millar

ATTACHMENT TWO:

TRANSPORT CANADA ORDER PURSUANT TO SECTION 19 OF THE RAILWAY SAFETY ACT

MO 15-06 **http://www.tc.gc.ca/eng/railsafety/railsafety-981.html**

Paragraph 19(1)(a) of the *Railway Safety Act* (RSA) gives the Minister of Transport the authority to order a railway company or a local railway company to formulate rules respecting any matter referred to in subsection 18(1) or 18(2.1) or to revise its rules respecting that matter.

Pursuant to the provisions of paragraph 19(1)(a) of the RSA, all railway companies and local railway companies listed in Appendix A are hereby ordered to formulate rules respecting the safe and secure operations of trains carrying certain dangerous goods and flammable liquids.

Rules should be based on an assessment of safety and security risks, and shall, at a minimum:

1. Govern the route and limit the speed of any Key Train to 50 miles per hour (MPH) and govern the route and limit the speed of any Key Train to 40 MPH within Census Metropolitan Areas (CMAs).

2. Govern the route and limit the speed of any Key Train transporting one or more DOT-111 loaded tank cars containing UN1170 ETHANOL, UN1202 DIESEL FUEL, UN1203 GASOLINE, UN1267 PETROLEUM CRUDE OIL, UN1268 PETROLEUM DISTILLATES, N.O.S., UN1863 FUEL, AVIATION,

TURBINE ENGINE, UN1993 FLAMMABLE LIQUID, N.O.S., UN3295 HYDROCARBONS, LIQUID, N.O.S., UN1987 ALCOHOLS N.O.S., UN3494 PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC or UN3475 ETHANOL AND GASOLINE MIXTURE to 40 MPH in areas identified as higher risk through the risk assessment process. The DOT-111 tank cars include those that are CPC-1232 specification.

3. Provide for instructions to be issued to operating employees setting out the speed and mile posts within which the speed restrictions referred to in Items 1 and 2 above are applicable and providing that a Key Train shall not be operated otherwise than in accordance with the instructions developed.

4. Include requirements for any Key Train at meeting or passing points.

5. Ensure that Key Trains are only operated with cars equipped with roller bearings.

6. Provide instructions in the rule for setting off a defective car on a Key Train.

7. Provide minimum safety requirements for Key Routes on which a Key Train may operate including increased minimum inspection frequency for:

    - electronic geometry inspection (i.e., Heavy and Light Geometry Inspection Vehicles as applicable);
    - rail flaw inspection; and,
    - joint bar inspection and repairs in continuous welded rail territory.

8. Require Wayside Defective Bearing Detectors at specific minimum intervals along Key Routes.

9. Require initial risk assessments and periodic updates based on significant change to determine the level of risk associated with each Key Route over which Key Trains are operated by the company. These Key Route Risk Assessments must be conducted for all Key Routes, at a minimum, every three (3) years and must, at a minimum:

    - define each Key Route and include at a minimum mile markers within a subdivision;
    - identify and describe all relevant safety and security-related risks associated with each Key Route;
    - identify and define the [NOTE SIMILARITY TO US LIST OF 27 FACTORS – APPENDIX H -- USED IN COMPLIANCE WITH PUBLIC LAW 110-53, SECTION 1551] factors taken into account in assessing the safety and security related risks associated with each Key Route including:

        1. Annual volumes and types of dangerous goods being transported by class and division;
        2. Rail traffic density;
        3. Trip length for route;
        4. Presence and characteristics of railway facilities;

5. Track type, class, and maintenance schedule;
6. Track grade and curvature;
7. Presence or absence of signals and train control systems along the route (“dark” versus signaled territory);
8. Presence or absence of wayside hazard detectors;
9. Number and types of grade crossings;
10. Single versus double track territory;
11. Frequency and location of track turnouts;
12. Proximity to iconic targets and natural hazards;
13. Environmentally sensitive or significant areas;
14. Population density along the route;
15. Venues along the route (stations, events, places of congregation);
16. Emergency response capability and capacity along the route including training of local fire services and municipalities with respect to the volumes and types of dangerous goods being transported;
17. Areas of high consequence along the route;
18. Presence of passenger traffic along route (shared track);
19. Speed of train operations;
20. Proximity to en-route storage or repair facilities;
21. Known threats, including any non-public threat scenarios;
22. Measures in place to address apparent safety and security risks including those pertaining to situations and locations where unattended equipment could move uncontrollably should its means of securement fail;
23. Availability of practicable alternative routes;
24. Past incidents;
25. Overall times in transit;
26. Training and skill level of crews;
27. Impact on rail network traffic and congestion; and,
28. Geohazards

- factor potential or future railway operational changes such as new customers moving goods subject to an Emergency Response Assistance Plan under the *Transportation of Dangerous Goods Act, 1992* and population growth; and,
- **evaluate and compare alternative routes if available.**

10. Include a process to consult with the Federation of Canadian Municipalities on how to incorporate municipal input on safety and security concerns in risk assessments.

For the purpose of this Order,

"Within Census Metropolitan Areas" means population centres defined by Statistics Canada as core (i.e., at least 50,000 persons) and secondary core (i.e., at least 10,000 persons) of CMAs listed in Appendix B. The list of CMAs will be amended should updates by Statistics Canada become available.

"Key Train" means an engine with cars:

1. that includes one or more loaded tank cars of dangerous goods that are included in Class 2.3, Toxic Gases and of dangerous goods that are toxic by inhalation subject to Special Provision 23 of the *Transport of Dangerous Goods Regulations*; or
2. that includes 20 or more loaded tank cars or loaded intermodal portable tanks containing dangerous goods, as defined in the *Transportation of Dangerous Goods Act, 1992* or any combination thereof that includes 20 or more loaded tank cars and loaded intermodal portable tanks.

"Key Route" means any track on which, over a period of one year, is carried 10,000 or more loaded tank cars or loaded intermodal portable tanks containing dangerous goods, as defined in the *Transportation of Dangerous Goods Act, 1992* or any combination thereof that includes 10,000 or more loaded tank cars and loaded intermodal portable tanks.

Subsection 19(2) of the RSA requires that a company shall not file rules unless it has first, during a period of sixty days, given a reasonable opportunity for consultation with it on the rules to:

a) In the case of a railway company, each relevant association or organization that is likely to be affected by the implementation of the rules; or

b) In the case of a local railway company, any railway on whose trackage the local railway operates that is likely to be affected by the implementation of the rules.

Pursuant to the provisions of paragraph 19(1)(b) of the RSA, the rules shall be filed with the Minister of Transport for approval within 120 days of the date of this Order.

Director General, Rail Safety

ATTACHMENT THREE: "Inside EPA/ OSHA" Article 8 14 17

" Washington Fire Chiefs Seek To Block Industry Tool" by Dave Reynolds 8 14 17

http://www.washingtonfirechiefs.com/News/TabId/2286/ArtMID/7666/ArticleID/22594/Firefighters-Seek-To-Block-Industry-Tool-Said-To-Ease-RMP-Compliance.aspx

https://insideoshaonline.com/share/35818?s=08162017

Firefighters seek to block industry tool said to ease RMP compliance

By Dave Reynolds August 14, 2017

Washington state firefighters are urging Democratic senators to halt development of a novel dispersion modeling approach for assessing risks from toxic gas releases, arguing the federal agency and industry collaboration underestimates risks to the public in filings with EPA and other agencies, though an industry group says the method is based on sound science and may still be revised.

In an Aug. 2 letter to Sen. Maria Cantwell (D-WA) and other senators,

http://www.washingtonfirechiefs.com/Portals/20/Chlorine%20Letter%20w%20attachments.pdf

Washington Fire Chiefs Executive Director Wayne Senter argues that chemical and railroad industries are pushing the new assessment approach -- developed in conjunction with the Departments of Homeland Security (DHS) and Defense (DOD) -- that downplays risks from potential disasters by dramatically reducing the distance toxic gases are projected to travel. "The industry-initiated but federal agency-enabled and Congressionally-funded effort . . . has all along explicitly aimed at significantly modifying in a risk-minimizing direction the downwind toxic cloud estimates in all of the major national emergency response guidance documents, including . . . chemical facility submissions to the US EPA's Risk Management Program," Senter writes. Sens. Tom Carper (D-DE) and Claire McCaskill (D-MO) are copied on the letter, as is Mark Light, executive director of the International Association of Fire Chiefs.

Senter's letter to Cantwell continues months of pushback from the Washington state firefighters association and an environmentalist. This spring, Senter sought to enlist the help of the U.S. Chemical Safety Board (CSB) in opposing the novel assessment method, and an environmentalist unsuccessfully sought a staff opinion on the method.

In his group's April 6 letter to CSB, attached to the Cantwell letter, Senter says facilities have already used the approach to comply with reporting RMP requirements, even though it has not been peer reviewed and is "utterly nonsense." Senter contends that the new approach yields dramatically reduced estimates of the reach of a toxic chemical release than past Chlorine Institute (CI) guidance, saying that a toxic plume once estimated to travel 15 miles would span only 1,184 feet or 0.2 miles under the new approach.

"Many fire chiefs find this new industry information utterly lacking in credibility for use in a real release event, and some emergency managers say they will refuse to use it for pre-planning," Senter told CSB. "We ask your assistance in publicly challenging the current ill-advised industry push for an astonishing risk minimization on paper, by demanding full transparency in the assumptions and models and field test data and a full discussion with the emergency response community and the public and with the

federal agencies being directly targeted for re-calculation of their long-standing toxic gas risk guidance; DOT/PHMSA, NOAA, DOT and EPA."

RMP Rule

The risks posed by potential release of toxic chemicals were the driving force behind the Obama EPA's Jan. 12 final rule overhauling the agency's RMP facility accident prevention rule with new requirements for certain facilities to conduct third-party audits, hazard analysis, and streamline disclosure of toxic chemical holdings. EPA Administrator Scott Pruitt, while Oklahoma's state attorney general, opposed the proposed rule, faulting disclosure provisions as worsening terror threats.

Now leading EPA, Pruitt has delayed the update rule nearly two years and is weighing significant revisions, despite opposition from environmental, labor and first-responder groups. But if industry groups and federal agencies are able to implement the new toxic release assessment method, it could further ease RMP and other requirements on industry.

A 2014 DHS fact sheet says that it is leading a collaborative project with government, industry and academia that will use large-scale outdoor chlorine release trials to fill data gaps on toxic inhalation hazards from chemical releases. It says the new modeling method seeks to incorporate real-world variables, such as gases' reactions with soil and vegetation, into dispersion estimates. It also says the project seeks to fill information gaps for toxic inhalation hazards that have never been tested or validated at scales representative of releases from rail cars or storage tanks. An industry source says this differs from previous methods that have been based on computer modeling that uses conservative assumptions and have overestimated risks.

But Senter says DHS and DOD have supported testing of the new method, and that some facilities have already used the approach to comply with EPA's RMP rule requirements for submitting an analysis of potential off-site consequences of a facility release. "Federal taxpayers should not continue to fund a complacency-inducing and unreviewed campaign which is dangerous for the emergency responders and the communities at risk for [Toxic Inhalation Hazard] releases," he says.

Senter says industry has long touted the approach, including in CI's 2015 update to its "Pamphlet 74 Guidance on Estimating the Area Affected by a Chlorine Release." He says the revised guide backs a risk estimation approach that dramatically reduces the estimated distance toxic chlorine gas released from a rail car accident would travel from 14.8 miles in previous iterations to 0.2 miles. "Congress should not allow the risk minimization campaign to stay mainly in the shadows, as currently enabled by the secretive US DHS and US DOD agencies keeping locked away from the at-risk public the most important information underlying the risky changes quietly being infiltrated into industry and federal emergency guidance." He notes that while early DHS test results using the method suggested that chlorine and other toxic gases may not travel as far downwind as previously believed, recently released DHS data show the releases travel far.

"The new data, unlike results from the previous 2010-2015 smaller scale tests which had been designed mainly to show clouds 'held up' at the release point in various ways, show a long chlorine gas cloud plume, dangerously far downwind. This measurement data decisively undermines the chlorine industry's current risk-minimizing efforts and can help protect the safety-conservative estimates" emergency responders rely on, he says.

He urges the three senators to “ensure that the new sobering field test data is publicized vigorously and directly to the whole Congress, the emergency response community and the public.”

But a CI official says in an email that the 2015 update to the group's guidance brings new science to distance estimates that previously were conducted using conservative and hypothetical computer modeling. The approach stems from a project DHS' Chemical Security Analysis Center began in 2010 and CI joined in 2015. While Senter argues more recent testing undermines the approach, the CI source says that the 2015 update to Pamphlet 74 incorporates test results conducted in 2010, and that it will be updated again to account for more recent testing when those results are published.

“CI members’ primary concern as it relates to dispersion modeling is accuracy. Accurate models assist them in their planning and response efforts in the unlikely event of a release,” the source says, adding that CI members would respond to emergencies alongside local responders. “CI members want models that use the best available science and that is what Pamphlet 74 does.”

EPA Query

In a March 21 letter to James Belke, of EPA's Office of Land and Emergency Management, Fred Millar, an environmental consultant who used to work for Friends of the Earth, queried the agency on the validity of the new gas model and asked whether use of the model is appropriate for complying with RMP reporting requirements. Citing 1999 EPA guidance on conducting RMP off-site consequence analysis, Millar acknowledges that facilities may use industry approaches to estimate risks from toxic releases, but he argues that EPA guidance suggests that the agency should have a role in assessing the validity of methodologies used to comply with the rule.

Millar asks EPA's Belke a variety of questions, including whether the agency has been provided with models and assumptions underlying the new approach, how widely-accepted the approach is by industry and how commonly it is being used, and whether EPA has standards for assessing whether the model is appropriate for RMP compliance. Millar tells *Inside OSHA Online* that EPA has not provided answers to his letter.

In the email to *Inside OSHA Online*, CI, the industry group, says that DHS selected chlorine to test a new dispersion method because prior modeling tools had been proven to overestimate how far toxic gases would travel in case of a release. While CI members have provided chlorine for testing the experiments were conducted by DHS and its academic partners, the email says. The source says that CI's primary interest in dispersion modeling is accuracy for emergency planning and suggests that firefighters are misinterpreting the institute's guide. The source says the updated guide presents modeling results in terms of dosage -- a factor of concentration multiplied time.

“To the casual reader, because these results are depicted graphically, this can appear that the footprints represent the predicted size of the cloud,” the source says. “The footprints, as explained in Appendix B, specifically section B.1, are dosages. This measure expresses risk in clear, clinical terms required to assist emergency responders.”

The source also says the CI members and DHS officials briefed EPA staff on the new modeling approach in 2015 before CI updated its new guidance. While EPA officials asked questions during the meeting, they have not followed up to request additional information or to seek further discussions, the CI official says. -- *Dave Reynolds*(dreynolds@iwpnews.com)

ATTACHMENT FOUR: My letter to Minister McKenna dated June 5, 2017

Honorable Minister of Environment and Climate Change Catherine McKenna

Dear Minister McKenna:

As a longtime dangerous goods risk expert who has over 30 years often consulted with Canadian citizen groups, legislators and agencies [e.g., Transport Canada's former official Dr. John Read], I would hazard a guess that you have not been informed about the quiet but potent efforts of the North American chlorine industry unilaterally to impact the longstanding North American perception of the severe disaster risks posed by chlorine rail tank cars and the national guidance documents based on that perception.

Previous longstanding Chlorine Institute Pamphlet 74 editions estimates that a chlorine tank car release cloud could travel 15 miles downwind by 4 miles wide, but now the industry estimates a downwind travel of only 1184 feet (0.2 miles). This stunning risk reduction effort is based allegedly on a Born Yesterday new gas science dealing with the physical and thermodynamic mechanisms of release of chlorine product, for example in a pressurized railcar derailment, [upon which prediction of the subsequent gas dispersion is of course essentially based] so it seems to fall squarely within the purview of your agency's remit [as well as within TC's].

The citizens and officials in Mississauga ON, for one example, are now to be re-educated by a brand-new post-9/11 dense gas science movement, funded by US taxpayers, to realize that their 1979 precautionary chlorine tank car emergency evacuation of 250,000 citizens for a week was sadly misguided. See the attached documents for the overall story and some indication of the entirely predictable rise of opposition to the chlorine/TIH shippers and carriers' miraculous new "risk reduction on paper".

Four of your sister agency TC's staffers attended one [the one in 2016] of the private US national "stakeholder" meetings [interestingly excluding all elected officials or their national associations] at which the "training implications" of the new movement's Jack Rabbit field testing was discussed, and perhaps some Canadians also were selected to observe one or more of the series of the field testing itself at the US DOD Dugway Proving Ground. They thereby got privileged "insider" status, I was told, to see the preliminary results of the field testing to date, access which outsiders to this quiet movement still have not gotten upon request. The TC staffers I contacted already say they are reluctant to release the information [closely held in secrecy-prone US federal agencies, DHS and DOD] even to knowledgeable professional outsiders.

I am hoping that you will insert your agency vigorously into this matter, which I maintain is a direct threat mounted by profit-minded and self-interested toxic gas industries to unbiased research and the integrity of gas science overall. I have a few questions, therefore to ask you directly, focused on the issues involving estimates of railcar releases of chlorine gas [i.e., before eventual downwind dispersion]:

a. Please send me copies of all the Jack Rabbit-related materials [concentration data, videos, photos, analyses] shared with your staffers at any meeting[s], or which you can get from TC staffers, and other materials from the meeting/test operations, and indicate whether they were forced to sign some confidentiality agreements which mean they cannot share these with Canadian citizens. And any agency memos on this matter.
b. I have been told that your sister agency Transport Canada still relies for emergency response [ER], ER pre-planning, event management and ER training on the long-respected Orange Book, the Emergency Response Guidebook, currently ERG 2016, and that TC has no plans to modify its ER guidance or training or ER operations to fit the new gas science guidance from the chlorine industry. Is this also true of your agency? Please provide any authoritative agency position on this question.
c. Has the Chlorine Institute's 2015-2017 Pamphlet 74 Edition 6 guidance influenced the Canadian regulations, or regulatory programs, or training activities in the dangerous goods realm [as it has already the ERG2012 and 2016, according to the boastful chlorine industry's CHLOREP Bulletin from 2016] and the NOAA ALOHA model – with the RAILCAR module] ?
d. Have any Canadian citizens or emergency responders or local/provincial officials to your knowledge been informed about the previous authoritative industry consensus Pamphlet 74 estimates [prior to June 2015] that a chlorine tank car release cloud could travel 15 miles downwind by 4 miles wide at a very dangerous 20 ppm concentration? Has this information been shared with participants in emergency response training sessions in Canada?
e. US FEMA staffers have stated, in the stakeholder meetings and elsewhere, their most recent position, namely, that the ER community does not consider the Jack Rabbit testing to be "conclusive" or convincing enough to warrant an urgent push to modify the ERG and other guidance documents and the training at the National Fire Academy. Do your Canadian counterparts share that assessment?
f. Have the scientists in your agency assessed the credibility of the underlying data, models and assumptions involved in calculations in the new Pamphlet 74 and in the Jack Rabbit field testing?
g. Has your agency queried any network of ER community representatives on their view of the credibility of the new Pamphlet 74 estimates and the recent modifications of the ERG [more planned, if the industry gets its way]?

Thank you for your consideration of these requests.

Sincerely,

Fred Millar, Ph.D.