



Disposal of Retired Railway Ties: Current Management and Alternatives

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April 24, 2017
Project 2017-01-10
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Introduction

The purpose of this report is to provide background information regarding the disposal of retired railway ties in Canada in the context of the Atlantic Power Williams Lake Power Plant's 2016 amended waste discharge permit. This amended permit allows for up to 50% of biomass burned at the plant annually to be railway ties. Part 1 of this report details the current management and disposal of retired railway ties in Canada. Part 2 summarizes the details of the Williams Lake Power Plant permit amendment in the context of current estimates of the amount of retired railway ties available in Canada. Part 3 outlines the alternatives available for the disposal of retired railway ties and summarizes the policies for retired railway ties disposal in other jurisdictions. Part 4 summarizes how retired railway ties are legally classified as waste in British Columbia and Canada.

Where quantities of railway ties have been provided in the report, they are based off of estimates from several reports, which differ in how they estimate the standard size and weight of railway ties. Where possible, it is indicated how the number was calculated. Most weights are provided in metric tonnes, except where indicated. Not all reports clarified whether railway tie weights provided were wet or dry weights. Therefore, not all numbers provided are directly comparable.

1. Movement and Disposal of Retired Railway Ties

1.1 Quantity of Retired Railway Ties

There are approximately 20-22 million wooden railway ties replaced each year in the United States and Canada combined.¹ The two big Canadian railway companies, CP Rail and CN Rail, generate over 3 million retired railway ties per year. CN Rail generates over 2 million ties and CP Rail generates approximately 1.1 million ties annually.²

CN Rail and CP Rail in 2011 estimated that they had 800,000 retired railway ties (72,000 tonnes) available for disposal in Western Canada.³ There are also stockpiles of retired railway ties in the control of CN and CP Rail. As of 2011, these stockpiles were estimated to be more than 6.5 million railway ties (585,000 tonnes).⁴ As of 2011, CN and CP Rail estimated that there would be approximately 1.45 million ties (130,500 tonnes) available for disposal in Western Canada each

¹ Railway Tie Association, "Frequently Asked Questions," last modified 2016, <<http://www.rta.org/faqs-main>> accessed March 25, 2017.

² CN Rail, *Delivering Responsibly: Sustainability Report* (CN Rail: 2014), <<https://www.cn.ca/en/delivering-responsibly/reports-and-presentations>> accessed March 25, 2017 at 27; CP Rail, *Corporate Social Responsibility Report 2014: 2014 Data Supplement* (CP Rail: 2014) <<http://www.cpr.ca/en/about-cp/corporate-sustainability>> accessed March 25, 2017 at 3.

³ Southern Alberta Energy from Waste Alliance, *Waste Generation Rates and Facility Sizing* (2011) <<http://www.saewa.ca/public/download/documents/22989>> accessed March 25, 2017 at 9. Note: the estimate of the weight of railway ties is based on railway ties weighing 0.09 tonnes per tie.

⁴ *Ibid* at 9.

year for 10 years if all available newly retired railway ties and 10% of stockpiled railway ties were disposed of each year.⁵

1.2 Composition of Retired Railway Ties

New ties purchased in 2013 to replace old ties used mostly creosote (51%) and creosote borate (38%) as preservatives according to a 2014 survey from the Railway Tie Association.⁶ No railroads responding to the North American survey purchased pentachlorophenol (PCP)-treated ties in 2013.

In Canada, although PCP is still permitted for use on railway ties, the railway tie market has converted to using creosote-treated ties.⁷ CN Rail has not used PCP-treated ties on its railways except for experimental purposes in the 1970s where it used approximately 1000-2000 PCP treated ties.⁸ However, ties from other smaller railways that may be acquired by larger companies like CN Rail may introduce PCP treated ties.⁹ In addition, 5-10% of the stockpiled or legacy ties owned by CN Rail and CP Rail are expected to be treated with PCP.¹⁰

1.3 Handling of Retired Railway Ties

Retired railway ties are usually collected, sorted and graded by contractors. These contractors then sell retired railway ties that are in good condition to landscaping brokers. The retired railway ties in poorer condition are then disposed of in a cogeneration facility or landfill.¹¹

CN Rail uses Heritage Interactive as a waste service provider. CN sends retired railway ties first to a rail tie disposal hub in L'Anse, Michigan.¹² CP Rail refers to contractors being involved in the process of selling ties for landscaping, but not necessarily selling to cogeneration plants.¹³

Both CP and CN Rail have had direct fuel supply agreements with cogeneration plants, including Atlantic Power.¹⁴ This suggests that CP and CN Rail retain control over railway ties and use

⁵ *Ibid* at 11.

⁶ Railway Tie Association, *2014 Railway Ties Survey* (2015) <<http://www.rta.org/assets/docs/RTASponsoredResearch/Environmental/ties%20survey%20report%2012aug2015.1.pdf>> accessed March 25, 2017 at 3.

⁷ Canada, Environment Canada, *Recommendations for the Design and Operation of Wood Preservation Facilities, 2013: Technical Recommendations Document* (Environment Canada, 2013) <<https://www.ec.gc.ca/pollution/default.asp?lang=En&n=A6E307A4-1>> accessed March 25, 2017 at PCPP-1.

⁸ Canada, Environment Canada, *Strategic Options for the Management of CEPA-Toxic Substances from the Wood Preservation Sector* (Environment Canada, 1999) <http://publications.gc.ca/collections/collection_2014/ec/En84-120-1999-eng.pdf> accessed March 25, 2017 at 22.

⁹ British Columbia, Ministry of Environment, *Ministry Assessment of Permit Amendment: PA-8808* (Ministry of Environment: 2016) <http://www2.gov.bc.ca/assets/gov/environment/air-land-water/site-permitting-and-compliance/atlantic-power/2016-09-06_ministry_assessment.pdf> accessed March 27, 2017 at 27.

¹⁰ *Supra* note 3 at 10.

¹¹ Canada, Environment Canada, *Industrial Treated Wood Users Guidance Document* (Ottawa: Environment Canada, 2004) at 31.

¹² CN Rail, *supra* note 2 at 27.

¹³ CP Rail, *supra* note 2 at 3-5.

¹⁴ Glenda Waddell, *Technical Assessment* (Atlantic Power Corporation: 2016) at 18; CP Rail & Aboriginal Cogeneration Corporation, "A Canadian solution to scrap tie disposal; CP signs agreement with the ACC," *News*

contractors mainly for sorting and reusing ties, while the railroad companies stay involved in the negotiation of fuel supply contracts with cogeneration facilities.

1.4 Disposal of Retired Railway Ties

It was predicted in 1996 that the disposal of retired railway ties in Canada would transition from reuse in other railway lines and disposal in landfills to disposal through incineration in cogeneration plants. In the early 1990s, 90% of removed railway ties were reused in secondary railway lines or as fence posts along the track right of way or were re-sold to contractors or private individuals for landscaping or construction, 5% were left to decay along the railway right of way, and 5% were disposed by landfilling or open burning.¹⁵ The reuse of railway ties in secondary railway lines declined because of a reduction in amount of secondary lines built and maintained in the country.¹⁶ By 1999, most railway ties were disposed of in landfills with a small proportion being taken for incineration in the US.¹⁷

In the US and Canada, the proportion of retired railway ties reused in secondary railway lines and in landscaping (commercial and residential) has continued to decline, while the proportion of railway ties disposed of in cogeneration or boiler facilities has increased from 53.8% in 2008 to 81.3% in 2013.¹⁸ In 2013, this represented more than 9.9 million ties (700,000 tonnes¹⁹) disposed of through cogeneration annually in the US and Canada.²⁰ Table 1 shows the proportion of railway ties disposed of using each common method in the US and Canada.

Table 1. Methods for reuse or disposal of retired rail ties in the U.S., 2008 and 2013. Source: Railway Tie Association Data from their 2014 Survey.²¹ The data was obtained through a voluntary survey of railroad companies in the US and Canada. The data represents approximately 80% of track mileage in the US and Canada.

Reuse/disposal method	Proportion of railway ties disposed of in 2008	Proportion of railway ties disposed of in 2013
<i>Reused for other railroad uses</i>	4.7%	0.9%
<i>Reused for commercial and residential landscaping</i>	28.8%	17.1%
<i>Reused on commercial farms</i>	5.2%	0.4%
<i>Disposed of in landfills</i>	5.1%	0.3%
<i>Disposed of in cogeneration facilities</i>	53.8%	81.3%
<i>Disposed of in gasification facilities</i>	2.5%	0%

Release (November 9, 2007) <<http://www.newswire.ca/news-releases/a-canadian-solution-to-scrap-tie-disposal-cp-signs-agreement-with-the-acc-534647151.html>> March 25, 2017.

¹⁵ R.W. Stephens, G.E. Brudermann & J.D. Chalmers, *Provisional Code of Practice for the Management of Post-Use Treated Wood* (Canadian Council of Ministers of the Environment, 1996) at 37.

¹⁶ *Ibid* at 37-38.

¹⁷ *Supra* note 8 at 20.

¹⁸ *Supra* note 6 at 4.

¹⁹ Atlantic Power's method of estimating the conversion of railway ties to tonnes is used. This assumes 14 ties per tonne (see page 30 of Technical Assessment, *supra* note 14).

²⁰ *Supra* note 6 at 4.

²¹ *Supra* note 6 at 4.

CN Rail does not provide data with regard to how it disposes of retired railway ties. However, CN Rail's 2014 Sustainability Report indicates that it mainly disposes of retired railway ties through cogeneration facilities.²²

CP Rail does provide public data with regard to its disposal of retired railway ties. In 2014 CP Rail sent 90% of retired railway ties to co-generation facilities and 10% of retired railway ties to contractors for reuse.²³

There are limited disposal options for retired railway ties in Western Canada and in Canada more broadly.²⁴ Most ties sent for incineration are likely sent to the USA.²⁵ In 2008, 66% of retired railway ties in Ontario were shipped to the USA for incineration, while 26% went to landfill, and 8% went to be reused or recycled.²⁶

In 2004, there were five facilities in Canada permitted to accept railway ties for incineration:

1. Intercontinental Pulp and Paper Mill in Prince George, BC;
2. Lytton Power in Lytton, BC;
3. Northwest Energy (Atlantic Power) in Williams Lake;
4. Kruger Inc. Pulp Mill in Trois-Rivieres; and
5. St. Lawrence Cement Plant in Joliette.²⁷

Of these five facilities, it appears that only the Kruger facility still actively uses railway ties for feedstock. The Atlantic Power facility will presumably begin to use railway ties now that the permit is amended. The Intercontinental Pulp Mill in Prince George is still permitted to burn creosote or PCP treated railway ties for up to 10% of hog fuel.²⁸ However, the mill does not use railway ties for feedstock any more due to how hard railway ties are on the boiler.²⁹ Lytton Power appears to never have been constructed.³⁰

The St. Lawrence Cement Plant in Joliette has been permitted to accept railway ties since 1998, but does not accept railway ties anymore.³¹ Under the permit conditions for the Joliette plant, railway ties cannot be shredded or stored outside at the site and shredded ties must be

²² CN Rail, *Supra* note 2.

²³ CP Rail, *Supra* note 2 at 3.

²⁴ *Supra* note 3 at 12.

²⁵ Gottfried Brudermann (retired scientist) in discussion with the author, February 15, 2017.

²⁶ G.E. Brudermann, *An Inventory of Creosote in Ontario*, Report Prepared for Environment Canada, Ontario Region (2008).

²⁷ *Supra* note 11 at 32.

²⁸ British Columbia, Ministry of Environment, Lands and Parks, *Permit PA2762 Under the Provisions of the Waste Management Act* (Ministry of Environment, Lands and Parks, 2000)

<<https://j200.gov.bc.ca/pub/ams/download.aspx?PosseObjectId=67611003>> accessed March 25, 2017 at 3.

²⁹ *Supra* note 11; Canfor Shift Engineer at Intercontinental Pulp Mill, in discussion with author, February 24, 2017.

³⁰ Lytton Special Meeting of Council, *Minute of the Regular Meeting of the Council*, April 29, 2007. Council Minutes refer to Lytton Lumber not having developed cogeneration plant yet.

³¹ Quebec, Ministère du Développement durable, de l'Environnement et des Parcs, "Entreposage et valorisation énergétique de bois contaminé," permit to Ciment St-Laurent (Independent) inc, February 6, 1998; Sylvie LeBlanc (Joliette Cement Plant staff), in discussion with author, February 24, 2017.

transferred in a sealed watertight manner.³² Although the plant can accept creosote, PCP, and CCA treated wood, it receives little because of the high costs of processing the wood for use in the cement kilns.³³

Kruger would not provide any information with regards to whether railway ties are incinerated at its Trois-Rivieres Pulp Mill or Brompton Power Plant, where the ties (if any) come from, or what quantity is accepted.³⁴ The Trois-Rivieres plant is still authorized to burn creosote-treated railway ties for energy.³⁵ Kruger's Sustainability Report for 2011-2012, as well as Kruger's website, suggests that Kruger's recycling service includes a railway tie collection service. Kruger Recycling service supplies biomass boilers at Trois Rivieres and Brompton with wood waste, which could include retired railway ties.³⁶

There was a proposal for a cogeneration plant to burn exclusively creosote treated railway ties in Kamloops. The project was permitted by the Ministry of Environment. The plant had a contract with CP Rail to dispose of 500,000 creosote treated ties annually. However, protests from Kamloops residents prevented the project from going ahead in 2010.³⁷

In 2004, the main USA plants accepting Canadian railway ties were Koppers Inc. in Muncy, Pennsylvania, and two Viking Energy plants in Michigan.³⁸ These plants are still operational. The Koppers plant burns primarily used ties and utility poles and sells electricity to Pennsylvania Power and Light.³⁹ Koppers appears to burn ties for CP Rail.⁴⁰ The Viking Energy plants blends railway ties with other fuels.⁴¹

³² ³² Quebec, Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques, "Exploitation de la cimenterie," permit amendment to Holcim (Canada) Inc., May 11, 2015.

³³ *Supra* note 11 at 32.

³⁴ Paule Veilleux-Turcotte (Advisor, Corporate Affairs and Communications, Kruger Inc), e-mail message to author, February 24, 2017.

³⁵ Quebec, Ministère du Développement durable, de l'Environnement et des Parcs, "Valorisation énergétique de résidus de bois traité à la créosote," permit to Kruger Inc, July 20, 2006.

³⁶ Kruger Inc, *Sustainability Report 2011-2012* (2014), <http://www.kruger.com/assets/uploads/Kruger_Rapport_environnemental_EN_FINAL.pdf> accessed March 29, 2017; Kruger Inc, "Wood Recycling," <<http://recycling.kruger.com/en/products-and-services/wood-recycling/>> accessed March 29, 2017.

³⁷ Robert Matas, "'Green-energy' project stymied by Kamloops protesters," *The Globe and Mail*, March 25, 2010, <<http://www.theglobeandmail.com/news/british-columbia/green-energy-project-stymied-by-kamloops-protesters/article4312124/>> accessed March 25, 2017.

³⁸ *Supra* note 11 at 32.

³⁹ Koppers Inc., "Susquehanna Plant," <<http://www.koppers.com/locations/susquehanna-plant>> accessed March 25, 2017.

⁴⁰ Angela Cotey, "Contractors talk tie disposal, pole-line elimination," *Progressive Railroading*, February 2010, <<http://www.progressiverailroading.com/mow/article/Contractors-talk-tie-disposal-pole-line-elimination--22589>> accessed March 25, 2017.

⁴¹ Michigan Biomass, "Wood and Alternative Fuels," <<http://www.michiganbiomass.com/fuels.php>> accessed March 25, 2017.

2. Williams Lake Power Plant Details

In 2016, the Atlantic Power facility in Williams Lake BC received an amendment of its air emissions permit under the *Environmental Management Act* to allow it to burn creosote and/or PCP treated railway ties comprising up to 50% of biomass feedstock on an annual basis. A condition requires the rail tie material to be well mixed with untreated wood waste prior to incineration.⁴² The amendment of the air emissions permit is currently under appeal by local residents to the BC Environmental Appeal Board. It is understood that rail ties are not being burned at the Atlantic Power facility at the time of writing.

Atlantic Power sells electricity from the Williams Lake facility to BC Hydro under a long-term electricity purchase agreement that expires in 2018. BC Hydro cited confidentiality in declining to comment on the status of any negotiations for a long-term renewal of the EPA. Meanwhile, local residents and two BC environmental groups have asked BC Hydro to acknowledge that electricity from burning contaminated rail ties would not meet the “clean or renewable resource” criterion specified under the BC Clean Energy Act. At the time of writing, that issue has not been resolved.

The permit limit on the maximum amount of wood waste that can be burned at the Atlantic Power plant is 600,000 tonnes per year. This means that Atlantic Power’s amended permit theoretically allows it to burn up to 300,000 tonnes of retired railway ties per year.⁴³ Prior to receiving the permit amendment, Atlantic Power’s normal operating level was 400,000 tonnes of wood waste annually. However, it is unknown what Atlantic Power’s annual fuel consumption will be in the future.

Atlantic Power has said that it expects retired railway ties to be 15-25% of the feedstock annually. Atlantic Power expects that the plant would consume between 55,000 to 85,000 tonnes of retired railway ties per year with a maximum of 100,000 tonnes per year.⁴⁴ With the predicted range of 55,000 to 85,000 tonnes, Atlantic Power estimates that it would be burning at least 0.8 to 1.2 million retired railway ties per year.⁴⁵ If estimates provided by CN and CP Rail in 2011 are comparable, there are only 0.8 million newly retired railway ties to burn in Western Canada each year.⁴⁶ This suggests that Atlantic Power would be burning the equivalent of all the newly retired railway ties by CN and CP Rail in Western Canada each year as well as

⁴² British Columbia, Ministry of Environment, *Amended Permit 8808 Under the Provisions of the Environment Management Act* at s. 2.7.1.

⁴³ *Technical Assessment*, *Supra* note 14 at 34.

⁴⁴ *Ibid* at 19.

⁴⁵ *Ibid* at 19.

⁴⁶ Note: Atlantic Power uses an estimate of 0.07 tonnes/tie while the estimate used in 2011 was based on a weight of 0.09 tonnes/tie. If a weight of 0.09 tonnes/tie is applied to Atlantic Power’s estimate then it will be burning at least 0.6 million ties per year.

disposing of some or all stockpiled or legacy ties in Western Canada.⁴⁷ These stockpiled or legacy ties may include PCP treated ties.⁴⁸

If Atlantic Power was to burn the maximum amount of railway ties permitted based on an estimate of 400,000 tonnes of wood waste burned per year, then it could burn up to 200,000 tonnes of railway ties or approximately 2.8 million railway ties per year. This amount of railway ties would be close to the amount of all railway ties disposed of by CN Rail annually as well as most of the railway ties disposed of by CP Rail.

CN Rail will be Atlantic Power's primary supplier of railway ties. CN Rail will be supplying retired railway ties from the western Canada part of their system.⁴⁹ The amended permit allows for either creosote or PCP treated ties to be burned.⁵⁰ The composition of the ties is expected to be mostly creosote ties and some PCP ties, with an estimate of about 2% PCP ties.⁵¹

3. Comparisons of Disposal Methods for Retired Railway Ties

3.1 Alternatives to Railway Tie Incineration

Environment Canada's *Industrial Treated Wood Users Guidance Document* (2004)⁵²

recommends the application of the waste management hierarchy in managing retired railway ties and other post-use treated wood. The waste management hierarchy includes:

1. Abatement and elimination.
2. Reduction in waste by maximizing the service life of railway ties.
3. Reuse for landscaping. Reuse for landscaping minimizes the need to process railway ties. However, the ability to reuse ties for landscaping is limited to railway ties in good condition. Retired railway ties should not be used in landscaping where the preservative may become a component of food or animal feed or where it may come into contact with drinking water. Railways may be concerned by liabilities arising from the misuse of ties in landscaping.⁵³
4. Recycling into wood products, fibre, or energy. Of these three recycling options, only recycling as energy is significantly available for railway ties. Either industrial boilers or cogeneration facilities can be used to incinerate retired railway ties. Cement kilns can also use railway ties as fuel for the manufacture of portland cement. Incineration of creosote treated retired railway ties is thought to release no more harmful chemicals than the burning of coal.⁵⁴ The combustion of PCP needs to be carefully controlled to prevent the formation of harmful pollutants.⁵⁵
5. Treatment through hazardous waste incineration. Because hazardous waste incinerators must be able to destroy a wide range of hazardous wastes, they run very hot and are expensive to use

⁴⁷ *Supra* note 3 at 12.

⁴⁸ *Ibid* at 12.

⁴⁹ *Supra* note 14 at 18-19.

⁵⁰ *Ibid* at 5.

⁵¹ *Supra* note 9 at 27.

⁵² *Supra* note 11 at 32-34.

⁵³ *Supra* note 15 at 51.

⁵⁴ *Ibid* at 59.

⁵⁵ *Ibid* at 59.

to dispose of railway ties. They also prevent any recovery of energy, fibre, or the wood preservation chemicals.

6. Disposal through landfills. Because railway ties are not considered hazardous waste, they can be disposed of in landfills. Because of the bulkiness and slow decomposition rate of treated railway ties, landfill owners tend to charge high fees for disposal of railway ties.⁵⁶

Table 2 provides a cost comparison of the four end use disposal methods for retired railway ties: reuse in landscaping, recycling into energy, treatment through hazardous waste incineration, and disposal through landfills.

Table 2. *Costs and revenues from different retired railway disposal methods.* Source: Environment Canada 2004 and Railway Tie Association 2014.⁵⁷ Note: 2004 and 2014 data are not directly comparable, but demonstrate that costs of combustion have remained lower than the costs of landfill disposal on average.

Disposal Method	Cost/Revenue (\$)
<i>Reuse for landscaping</i>	2004 Report: ⁵⁸ Not quantified, but would be net revenue. ⁵⁹
<i>Recycling into energy</i>	2004 Report: Creosote wood: Revenue of CAD\$0 to \$19/ton PCP wood: Cost of CAD \$15/ton 2014 Survey: ⁶⁰ Ranging from a cost of US\$15 to \$25/ton to a revenue of US\$25/ton.
<i>Hazardous waste incineration</i>	2004 Report: Cost of CAD\$200 to \$1000/ton
<i>Disposal in a landfill</i>	2004 Report: Cost of CAD\$14-100/ton 2014 Survey: Cost of US\$22-60/ton (average of US\$36/ton)

As shown in Table 2, in both 2004 and 2014, costs for disposing of retired railway ties in waste to energy facilities were variable, but continually less expensive than disposal at a landfill. It is generally common for railroads to pay tipping fees for disposal through waste to energy, although there is a potential to be paid for retired ties under the right market conditions. In 2014, three contractors surveyed reported paying tipping fees of US\$15 to US\$25 per ton, while one contractor reported being paid US\$25 per ton. These contractors were not identified in the survey. Those contractors who reported paying tipping fees represented about 35% of total reported railway tie dispositions in the US and Canada, while the contractor reporting a sale of retired railway ties represented 15% of total reported railway tie dispositions.⁶¹ The cost of retired railway tie disposal for waste to energy is variable depending on the cost of electricity

⁵⁶ *Ibid* at 62.

⁵⁷ *Supra* note 11 at 34; *Supra* note 6 at 4-5.

⁵⁸ *Supra* note 11 at 34.

⁵⁹ *Ibid*.

⁶⁰ *Supra* note 6 at 4-5.

⁶¹ *Ibid* at 5.

and availability of other feedstock.⁶² Where other feedstock is available and the cost of electricity is low, then it is more likely that railway companies will pay tipping fees, while if there is little other feedstock available and the cost of electricity is high then railway companies may generate revenue from the disposal of retired railway ties at cogeneration facilities.

In the 2004 report, where costs for disposal of creosote treated ties and PCP treated ties were separated out, it is likely that PCP ties had a higher disposal cost because many incineration facilities would only accept creosote-treated wood and so PCP wood had to be transported to incineration facilities specifically permitted to burn PCP treated ties.⁶³ Safe incineration of PCP treated ties requires additional pollution control measures, which increase the costs of incineration facilities.⁶⁴

3.2 Management Regimes in Other Jurisdictions

3.2.1 United States of America

The Environmental Protection Agency (EPA) has the authority to control the disposal of treated wood under *Resource Conservation and Recovery Act*. Testing of wood for leaching has meant that treated wood can be disposed of in sanitary landfills.⁶⁵

In 2016, the EPA determined that creosote treated railway ties were “categorical” non-waste fuels, which meant that they would not need to be evaluated further when being used in combustion units. As a part of this rule, creosote treated railway ties cannot be more than 40% of the heat input on an annual basis for each facility. This classification means that a facility burning creosote treated ties would need to meet the *Clean Air Act* standards for commercial, industrial or institutional boilers or cement kilns (s. 112), which means it would be subject to technology-based standards.⁶⁶ Facilities burning railway ties treated with PCP would have to meet the *Clean Air Act* standards for solid waste incinerators (s. 129), which require performance-based standards determined by the administrator for the incineration unit.⁶⁷ This means that U.S. facilities burning only creosote treated ties do not have make individual determinations to assess the status of waste being burned.

Some U.S. states restrict treated wood disposal further. Washington State only provides for a narrow exclusion for treated wood from its “dangerous waste” designation. The state allows for creosote treated wood to be burned for energy in an approved industrial or commercial boiler or furnace, but does not allow incineration of PCP treated ties. All other treated wood is to be preferentially reused. If it must be disposed then it must go to a lined landfill with leachate

⁶² *Supra* note 15 at 58; *Supra* note 25.

⁶³ *Supra* note 11 at 32.

⁶⁴ *Supra* note 3 at 10.

⁶⁵ *Supra* note 15 at 35-36.

⁶⁶ 42 USC § 7429(a)(2).

⁶⁷ 40 CFR 241.4 (a)(7); Environmental Protection Agency, “Frequent Questions about the Final Rule: Additions to List of Categorical Non-Waste Fuels” last updated February 9, 2017, <<https://www.epa.gov/rcra/frequent-questions-about-final-rule-additions-list-categorical-non-waste-fuels#q3>> accessed March 25, 2017.

collection. All retired railway ties are to be disposed of within 180 days of becoming waste. Washington requires that any ash from burning creosote be “designated and managed appropriately.”⁶⁸ Washington also explicitly excludes energy generated by the burning of creosote, PCP, or copper chromium arsenate treated wood from its definition of renewable “biomass energy” under the *Energy Independence Act*.⁶⁹

Oregon also has additional rules regarding pesticide treated wood that exempts treated wood from a hazardous waste designation if it is not stored for more than six months, unless necessary, and if the waste is disposed of in a landfill, hazardous waste facility, or other facility authorized to receive such waste.⁷⁰ Like Washington, Oregon explicitly excludes electricity generated from the burning of wood treated with creosote, PCP, or copper chromium arsenate from its definition of renewable energy.⁷¹

California has developed alternative management standards for treated wood waste. Treated wood waste can be disposed of hazardous waste landfills or in composite-lined portions of solid waste landfills.⁷² Incineration of retired railway ties for energy does not appear to occur in California. California also limits storage times for disposal of retired railway ties.⁷³

3.2.2 United Kingdom

The EU classifies all pesticide treated wood as hazardous waste. Retired railway ties are classified as Grade D Hazardous Waste wood waste, which requires disposal at specialist landfills or incinerators compliant with the EU Waste Incineration Directive.⁷⁴ The EU Waste Incineration Directive sets out strict air emission limits and monitoring requirements for incineration facilities.⁷⁵

⁶⁸ Washington State Department of Ecology, *Focus on Treated Wood Exclusion* (2003)

<<https://fortress.wa.gov/ecy/publications/documents/0304038.pdf>> accessed March 25, 2017.

⁶⁹ *Energy Independence Act*, RCW 19.285.030,

<<http://apps.leg.wa.gov/rcw/default.aspx?cite=19.285&full=true#19.285.030>> accessed March 25, 2017.

⁷⁰ OAR 340-101; OAR 340-093, <http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/> accessed March 25, 2017.

⁷¹ ORS 469A.025 (3) (2015), <<https://www.oregonlaws.org/ors/469A.025>> accessed March 25, 2017.

⁷² Cal Health & Saf Code § 25150.7 (2016), <<http://law.justia.com/codes/california/2016/code-hsc/division-20/chapter-6.5/article-5/section-25150.7/>> accessed March 25, 2017.

⁷³ California Environmental Protection Agency, Department of Toxic Substances Control, *Requirements for Generators of Treated Wood Waste (TWW)* (State of California, 2008)

<<http://www2.lbl.gov/ehs/waste/doc/Treated-Wood-Waste-Generators-Fact-Sheet.pdf>> accessed March 30, 2017;

California Environmental Protection Agency, Department of Toxic Substances Control, *Treated Wood Waste Management in California: AB 1353 Implementation Report* (State of California, 2011)

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⁷⁴ United Kingdom, Department for Environment, Food and Rural Affairs, *Wood waste: A short review of recent research* (Crown, 2012)

<https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82571/consult-wood-waste-researchreview-20120731.pdf> accessed March 30, 2017.

⁷⁵ European Union, *Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste* [2000] IJ L 332 <<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:l28072>> accessed March 30, 2017.

Options to incinerate retired railway ties in the UK are currently limited.⁷⁶ The UK has at least one railway tie fuelled waste to energy facility, Trackwork, which has a national contract to dispose of retired railway ties.⁷⁷

3.2.3 Germany

Germany has had a Wood Waste Ordinance in place since 2003 to govern the disposal of wood waste. The ordinance prohibits the disposal of wood waste in landfills.⁷⁸ Under this ordinance, most railway ties are incinerated. Railway ties are classified as “A IV” wood, which means that incinerators for retired railway ties must fulfill the highest requirements for waste incinerators under the *Federal Emissions Control Act* [translation].⁷⁹ For co-incineration of waste wood with other fuels, the incineration is not permitted to cause higher emissions than those allowed for conventional waste incinerators.

4. Legal Classification of Railway Ties as Waste in BC and Canada

Retired railway ties are excluded from the definition of hazardous waste in BC. Section 1 of the *Hazardous Waste Regulation* states that “hazardous waste” does not include “waste wood products treated with wood preservatives or wood protection products registered under the *Pest Control Products Act (Canada)*.”⁸⁰ This exemption would include creosote and PCP treated railway ties.

A permit or approval is required to burn or incinerate railway ties under the *Environmental Management Act (EMA)*.⁸¹ Under s. 6 of the *EMA*, a “prescribed industry, trade or business” cannot introduce waste into the environment in the course of the prescribed business without a permit, approval, order, regulation, or waste management plan. The *Waste Discharge Regulation* defines “prescribed industries, trades, businesses, operations or activities” as including an “electrical power industry” and the “burning or incineration of prohibited material.” “Electrical power industry” is defined in the regulation as establishments that generate electricity by the combustion of fuel and generate more than 5 megawatts under peak load. “Burning or incineration of prohibited material” in the *Waste Discharge Regulation* includes the incineration of railway ties.

Therefore, Atlantic Power could be considered as either an “electrical power industry” or a business conducting the prescribed activity of “burning or incineration of prohibited material.”

⁷⁶ *Supra* note 74.

⁷⁷ Trackwork, “Treated Wood Recycling and Disposal” <<http://www.trackwork.co.uk/index.php?q=node/4>> accessed March 30, 2017.

⁷⁸ Miha Humar, Rolf D Peek & Joran Jermer, “Regulations in the European Union with Emphasis on Germany, Sweden and Slovenia,” in Timothy G Townshend & Helena Solo-Gabriele, *Environmental Impacts of Treated Wood* (Boca Raton, FL, CRC Press, 2006) at page 43.

⁷⁹ *Ibid* at page 47.

⁸⁰ *Hazardous Waste Regulation*, BC Reg 63/88, s 1.

⁸¹ *Environmental Management Act*, SBC 2003, c 53, s 6.

As Atlantic Power has been granted an amended permit, it is exempted from the prohibition in s. 6 of the *Environmental Management Act*.⁸²

The definition of the “burning or incineration of prohibited material” in the *Waste Discharge Regulation* potentially indicates that the Legislature had environmental concerns regarding the burning or incineration of railway ties by choosing specifically to include railway ties as a “prohibited material.” The list of prohibited materials in the regulation include other materials such as hazardous waste and tires.⁸³ The *Waste Discharge Regulation* distinguishes “burning or incineration of waste” and “burning or incineration of wood residue” as separate prescribed activities from the “burning or incineration of prohibited materials.” This suggests that the burning or incineration of railway ties was considered to raise similar concerns as the burning of other potentially hazardous materials, concerns that were different from concerns with the burning of other waste or wood residue.

Both PCP and creosote treated wood wastes have components that are deemed toxic under the *Canadian Environmental Protection Act, 1999 (CEPA)*. Creosote-impregnated waste materials, including retired railway ties, were added to the Priority Substances List in 1989 and were assessed by Environment Canada and Health Canada in 1993.⁸⁴ The assessment was not able to conclude whether there was or was not a risk of leaching from creosote waste products like retired railway ties. Creosote-impregnated waste materials are designated as Track 2 wastes, which means they are to be managed through life-cycle management. The micro-contaminant components of pentachlorophenol are listed as Track 1 substances, meaning they are to be virtually eliminated from the environment.⁸⁵ Currently, only “creosote-impregnated waste materials from creosote-contaminated sites” are listed under the List of Toxic Substances.⁸⁶ Creosote wastes are not prohibited for export under the Export Control List under *CEPA*. However, pentachlorophenol does require notification and consent for export under the Export Control List.⁸⁷

Retired railway ties are also not explicitly included in the definition of hazardous waste in the federal *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations* under *CEPA*.⁸⁸ This means that the limitations on export or import of hazardous waste, including requirements for notice to the Minister, limits on quantity exported, and permitting for export, do not apply to the export of retired railway ties. The regulations prior to 2005 explicitly listed treated wood as a hazardous waste, but treated wood was removed in the 2005

⁸² *Waste Discharge Regulation*, BC Reg 320/2004.

⁸³ *Ibid.*

⁸⁴ Canada, Environment Canada & Health Canada, *Priority Substances List Report: Creosote impregnated waste materials* (Ministry of Supply and Services Canada, 1993) <<http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl1-lsp1/creosote/index-eng.php>> accessed March 30, 2017.

⁸⁵ *Supra* note 8 at page vi.

⁸⁶ *Canadian Environmental Protection Act, 1999*, SC 1999, c 33, Schedule 1.

⁸⁷ *Ibid.*, Schedule 3.

⁸⁸ *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations*, SOR/2005-149.

replacement of the regulations.⁸⁹ Treated wood is now only regulated as a hazardous waste for export or import if leachate from the wood demonstrates toxic characteristics according to U.S. EPA assessment methodology.⁹⁰

Conclusion

The disposal of retired railway ties through combustion for energy is not an activity that has taken place in large quantities in British Columbia or in Canada more broadly. Atlantic Power's permit amendment will likely result in the Williams Lake Power Plant being the main disposal site for retired railway ties in the province, and likely in the country.

Although the incineration of retired railway ties may be the most common way for disposal of retired railway ties in other jurisdictions, other jurisdictions have a more structured legislative approach to the incineration of railway ties. The U.S. approach has a lower maximum proportion of feedstock that can be railway ties and has been more restrictions on the burning of pentachlorophenol ties. In addition, states like Washington and Oregon explicitly exclude the burning of railway ties in biomass power plants from their definitions of renewable or clean energy.

⁸⁹ Canada, Environment and Climate Change Canada, "Reply to Comments Received in Submissions on the Proposed Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations," (Environment Canada, 2004) <http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=C5FF8E16-1&offset=26&toc=show> accessed March 30, 2017.

⁹⁰ *Supra* note 88 at s 1(1)(e).

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