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**Subject: MW & HRM Definition – Used Rail Ties**

## Introduction

Please accept this response on behalf of the Railway Association of Canada (RAC) and its members regarding used rail tie management. RAC and its members believe that the beneficial reuse of rail ties should be excluded from Cross-Border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations (XBR) requirements.

Environment and Climate Change Canada (ECCC) has initiated a review of the definitions of hazardous waste (HW) and hazardous recyclable material (HRM) under the *Canadian Environmental Protection Act* and the XBR, through the release of Discussion Document: Review of the Definitions of Hazardous Waste and Hazardous Recyclable Materials under the XBR (the Discussion Document; ECCC 2022).

This letter, which has been developed by AECOM and represents the views of the RAC and its members, is in response to the Discussion Document and ECCC's review of the definitions of HW and HRM as they relate to environmental protection requirements during transboundary movement of used rail ties.

RAC supports the Ministry's efforts to review the definitions of HW and HRM, particularly with respect to:

- harmonizing with U.S. legislation, provincial legislation, and international agreements
- supporting beneficial reuse and circular economies
- managing impacts to the environment

## Canada's Railway Sector

As the voice of Canada's railway industry, RAC advocates on behalf of its members to ensure that the rail sector remains globally competitive, sustainable, and safe.

Canadian freight railways serve more than 10,000 customers each year. More than 4 million carloads of freight are moved by approximately 2,400 locomotives and 33,000 dedicated railroaders across 44,000 kilometres of track that connects nine provinces, one territory, and multiple trade gateways between Canada and the U.S.

The freight railway network is largely serviced by two Canadian Class I railways (Canadian National Railway (CN) and Canadian Pacific Railway Limited (CP)), short sections of several U.S.-based Class I carriers, and more than 60 shortline and regional railways. Rail passenger services are predominantly provided by VIA Rail, GO Transit, Réseau de transport métropolitain and West Coast Express. Each year, more than 70 million passengers in the Vancouver, Greater Toronto and Montreal areas travel by rail, with an additional 4 million intercity passengers transported by VIA Rail.

## Rail Tie Life Cycle Management

Wood rail ties make up more than 95% of the ties in North American track as wood provides a natural flexibility that is suited for heavy railway loads, according to the Railway Tie Association (RTA 2022).

Since the early 1980s, creosote and its solutions have been the exclusive preservative for all wood tie applications. Dual treatment, using borates as a pre-treatment followed by a standard creosote treatment, was commercialized in 2004. Creosote or creosote/borate dual treatment ties constitute approximately 98.5% of the treated wood tie market (Gauntt 2015).

The railway industry procures ties for Class 1 track from a limited number of manufacturers in the U.S. and Canada (i.e., Stella-Jones and Koppers Inc.).

On Canadian Class I track, rail ties are typically in-service for 20 to 50 years, with an average of 25 years. On shortlines, rail ties can be in service for more than 50 years. It is estimated that as much of 80% of creosote is lost through degradation or oxidization over the life of used rail ties.

While some used rail ties are pulled out during small repair work, the vast majority are pulled out during large maintenance programs where they are removed intact, stockpiled according to requirements, and loaded into several gondola rail cars. Used rail ties are then transported for processing and reuse through various circular economy and industrial partnerships across Canada and the U.S.

In 2021, it is estimated that Canadian Class I railroads converted over 99% (over 200,000 metric tonnes) of used railway ties for alternative low carbon fuel power production and industrial process heating.

Used rail ties are a renewable, alternative low carbon fuel that contain roughly 18,600 to 28,000 kJ/kg (8,000 to 12,000 BTU/lb) of recoverable energy (Gauntt 2015). Used rail ties help offset the use of fossil fuels in power generation and other industrial heating processes.

Although railway companies continue to invest in alternative reuse options, there are currently only two viable options for used rail tie management:

- landfill as non-hazardous waste within provincially permitted landfill facilities
- chip and combust within a power generation or an industrial facility within the U.S. or Canada

The number of power generation and industrial facilities willing to handle used rail ties have been reduced over the years, making it harder for railway companies to find outlets for the beneficial reuse of used rail ties.

## Regulatory Background

The following section summarizes federal, provincial, American, and Basel Convention requirements as they relate to used rail tie management.

### XBR

According to the XBR, used rail ties could be designated as hazardous recyclable material (HRM), as summarized in the table below.

| XBR   | Assessment   |
|---|--|
| 4 (1) For the purposes of Division 8 of Part 7 and Part 10 of the Act and these Regulations, hazardous recyclable material means anything that is to be recycled using one of the operations set out in column 2 of Part 2 of Schedule 1 and that | R1- Use as a fuel in an energy recovery system when the net heating value of the recyclable material is at least 12,780 kJ/kg. |
| (a) is set out in column 2 of Schedule 6;   | Not applicable   |
| (b) meets the criteria for inclusion in one of Classes 2 to 6, 8 and 9 as set out in Part 2 of the Transportation of Dangerous Goods Regulations;   | Not applicable   |
| (c) contains a substance set out in column 3 of Schedule 7 that is in a concentration equal to or greater than the concentration set out in column 4 of that Schedule;  | Potential exceedances could include creosote.  |
| (d) produces a leachate that contains an environmentally hazardous constituent set out in column 3 of Schedule 2 that is in a concentration   | No known exceedances of TCLP limits.   |

|   |                |
|---|----------------|
| equal to or greater than the concentration set out in column 4 of that Schedule; or                   |                |
| (e) is set out in column 3 of Schedule 8, is either pure or the only active ingredient and is unused. | Not applicable |

### **Schedule 7 - Concentrations**

The following summarizes an assessment of the XBR, Section 4(1)c regarding concentrations of chemicals.

The XBR, Schedule 7 lists 173 chemicals, all of which are given an assay limit of 100 mg/kg (0.01% by weight; except for PCB) in column 4. These limits do not appear to be risk-based or based on toxicity calculations. For example, some chemicals are benign at 0.01%, such as acetic acid (which is present at 6% in household vinegar, which far exceeds the 100 mg/kg limit). It is unknown how the 100 mg/kg limit was derived for compounds in Schedule 7.

Also, although creosote is listed, it is not a single chemical but is made up of many different organic chemicals. There is no laboratory analytical test that can determine exactly how much creosote is in a material. Previous analytical data included the presence of several chemicals that are known to be present in creosote, and when these chemicals were summed, it indicated that greater than 100 mg/kg of creosote materials may be present in previously treated used rail ties. Also, since naphthalene is an ingredient of creosote, it could create a duplicate measurement.

### **Schedule 2 - Leachate**

The following summarizes an assessment of the XBR, Section 4(1)d regarding leachate.

Schedule 2 is based on leachate extraction through the Toxicity Characteristic Leachate Procedure (TCLP). TCLP was devised to simulate the leaching characteristics of wastes that are disposed of in a landfill as it is a test that determines whether various hazardous compounds can be leached out of a waste material, potentially polluting groundwater, or surface water around a landfill. The TCLP is not applicable for the reuse of used rail ties, where over 99% are shipped intact, reused by power or other industrial facilities, and are not landfilled.

### **Provincial**

Used railway ties are designated as non-hazardous wastes or recyclables (or the equivalent) within Canadian provincial jurisdictions. For example, the western provinces exclude wood waste products from the classification of hazardous waste if treated with preservatives or wood protection products registered under the *Pest Control Products Act*.

## United States of America

The U.S. EPA considers used rail ties to not be a hazardous waste. Under the EPA Non-Hazardous Secondary Material (NHSM) regulations, rail ties being processed and combusted for energy recovery are not considered a solid waste.

The NHSM regulations under the Resource Conservation and Recovery Act (RCRA) identify which NHSM are, or are not, solid wastes when burned in combustion units as ingredients or fuels. These regulations help combustion facilities in determining applicable emission standards for combustion units under the Clean Air Act (CAA) for the purposes of determining which Clean Air Act requirements apply:

- Units that burn NHSM that are not solid waste under RCRA are subject to the section 112 CAA requirements.
- Units that burn NHSM that are solid waste under RCRA are subject to the section 129 CAA requirements.

Non-hazardous secondary materials are any materials that are not the primary product of a manufacturing or commercial process, and can include post-consumer material, post-industrial material, and scrap. Many types of these materials have British Thermal Unit (BTU) or material value and can be reclaimed or reused in industrial processes. A wide and diverse range of NHSMs exists and some U.S. boilers or industrial furnaces use these secondary materials as substitutes for primary fuels or as ingredients. This is the case for used rail ties.

U.S. EPA includes three materials to the list of categorical non-waste fuels under title 40 of the Code of Federal Regulations (CFR) Part 241 standards for combustion of NHSM. The three materials are:

1. Creosote-borate and mixtures of creosote, copper naphthenate and copper naphthenate-borate treated railroad ties that are processed and then combusted in the following types of units:
  - i. Units designed to burn both biomass and fuel oil as part of normal operations and not solely as part of start-up or shut down operations;
  - ii. Units at major source pulp and paper mills or power producers subject to 40 CFR 63 Subpart DDDDD that had been designed to burn biomass and fuel oil, but are modified (e.g., oil delivery mechanisms were removed) in order to use natural gas instead of fuel oil as part of normal operations and not solely as part of start-up or shut down operations; and
  - iii. Units in (i) and (ii) that are also designed to burn coal.
2. Copper naphthenate treated railroad ties combusted in units designed to burn biomass, biomass and fuel oil or biomass and coal.

3. Copper naphthenate-borate ties combusted in units designed to burn biomass, biomass and fuel oil or biomass and coal.

## International

According to the Discussion Document, the XBR contributes to Canada's ability to meet its obligations and commitments under three international instruments respecting the management and international movement of hazardous waste and other waste. These instruments are:

- the United Nations Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)
- the Decision of the Council of the Organisation for Economic Co-operation and Development (OECD Decision) on the Control of Transboundary Movements of Wastes Destined for Recovery Operations, OECD/LEGAL/02661
- the Canada-USA Agreement on the Transboundary Movement of Hazardous Wastes

The Basel Convention presents the key difference between the Canadian and American approach with respect to hazardous wastes and hazardous recyclable materials. Canada is a signatory of the Basel Convention while the USA is not a signatory. The USA and Canada are both members of the OECD and, of course the Canada-USA Agreement is between the two countries. Therefore, it is worth evaluating the Basel Convention further.

### *Basel Convention*

The Basel Convention recognizes transboundary movements of hazardous wastes, especially to developing countries. Article 1 defines hazardous wastes for the purposes of the Convention as being wastes that belong to any category contained in Annex I, unless they do not possess any of the characteristics contained in Annex III. Used rail ties do not fit into any category within Annex I, with the possible exception of: Y5 wastes from the manufacture, formulation and use of wood preserving chemicals.

The Canadian railway industry does not manufacture treated wood rail ties; therefore, the 'use' of wood preserving chemicals is not applicable to the railway industry. The railway industry purchases rail ties from treated wood suppliers such as Koppers Inc. and Stella-Jones. The railway industry does not apply wood preserving chemicals.

## Conclusion

According to the Discussion Document, the XBR aim to ensure that shipments of HW and HRM crossing Canada's international and interprovincial or territorial borders reach their intended destination thus reducing the risk of release of contaminants to the environment in Canada and abroad.

Approximately 99% of used rail ties are transported intact to a limited number of facilities in the U.S. and Canada to be used as alternative low carbon fuel sources for power generation or other industrial processes. The remaining used rail ties are disposed as non-hazardous waste in provincially permitted landfills.

Used rail ties should be excluded from the XBR definition of hazardous waste and hazardous recyclable material for the following reasons.

1. A federal designation of used rail ties as a HW or HRM does not align with provincial or American legislation, nor the Basel Convention. Industry is concerned about these designations creating barriers to responsible used rail tie storage, shipment, and beneficial reuse. The intent of the Basel Convention is to protect developing countries; the shipment of used rail ties to other provinces or to the U.S. is not in conflict with this intent.
2. RAC and its members do not believe TCLP extraction test criteria (Schedule 2) and chemical concentrations (Schedule 7) are applicable for used rail tie management for the following reasons:
  - Used rail ties are transported as whole ties. They contain no free liquids and therefore have no environmental risk while in transit.
  - TCLP was devised to simulate the leaching characteristics of wastes that are disposed of in a landfill. Approximately 99% of used rail ties are reused as fuel for power and other industrial purposes.
  - The criteria in Schedule 7 are not risk-based, and are not fit for purpose for the storage, transportation, or recycling of used rail ties. There is also no analytical test for creosote.
3. While the railway industry continues to examine alternative reuse options for used rail ties, there are a limited number of existing facilities able to accept and reuse rail ties for beneficial purposes. RAC and its members are concerned that a designation such as HRM may limit the number of facilities that are willing to take used rail ties as a low carbon fuel alternative due to increased public scrutiny. This designation could also introduce additional permitting requirements and reduce investment, both of which would further reduce options for used rail tie reuse.

Used rail ties provide a viable fuel source for power generation and other industrial processes. Reuse as fuel provides a beneficial end-of-life option for used rail ties as an alternative low carbon fuel. The alternative of landfilling would have a much larger environmental impact than combustion for power and other industrial purposes.

4. Designation of used rail ties as a HRM provides no environmental benefit as there is no environmental risk during shipment. Used rail ties have weathered throughout their in-service life, remain intact during shipment, and the chemical constituents of concern remain within the ties throughout the entire duration of the shipment.

5. The HRM designation increases administrative burden and costs for no environmental benefit. Administrative burdens include the following: export permit and notification requirements; additional contractual requirements between the consignor and consignee; manifesting and reporting; and response to increased public inquiries and complaints regarding storage, shipment, and disposal management practices.

A designation such as HW or HRM could jeopardize used rail tie reuse options and incentivise landfilling – all of which negatively impact the environment and counter industry efforts to strengthen the circular economy.

## Recommendation

While ECCC may consider changing Schedule 2 and/or 7 criteria or requirements, exemptions for HW or HRM designations may also be considered, such as by excluding:

- wood waste products if treated with preservatives or wood protection products registered under the *Pest Control Products Act*; or
- based on end use criteria, such as alternative low carbon fuel use.

The RAC requests a meeting with ECCC to discuss our views and answer any questions you may have at your earliest convenience.

Sincerely,



Ben Chursinoff  
Policy Analyst & Program Coordinator  
Railway Association of Canada

Encl.



## References

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