

Image: Pile of used vehicle tires (TUBS/Wikimedia Commons)



# Washington Used Tire Assessment

Public Listening Session: January 23<sup>rd</sup>, 2025

Washington Department of Ecology

**Eastern Research Group (ERG, Inc.)** 



## Introductions

- Today's presenters:
  - Blake Nelson, Southwest Section Manager, Solid Waste Management, WA Department of Ecology
  - Matt Pasquali, Circular Economy Senior Analyst, Eastern Research Group, Inc.
- Please introduce yourself in the **chat** by sharing:
  - Name, organization, location
- Please change your name on Zoom to include:
  - Name and organization

## Agenda



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## Background



**6PPD** – a chemical added to rubber tires to extend their useful life. 6PPD reacts with ozone in the air to form 6PPD-quinone (6PPDQ); both harm Coho salmon in WA.

The chemical "6PPD" is added to tires to extend the useful life of rubber	Wear & tear of vehicle tires releases 6PPD/Q into the environment	6PPD/Q washes into watersheds from stormwater	6PPD/Q responsible for coho salmon pre-spawn mortality

#### DEPARTMENT OF ECOLOGY State of Washington

## **Background continued**





Image of car tires on asphalt. Source: Pixabay.com



Image of coho salmon. Source: Wikimedia commons 5

# **Project Scope and Introduction**



**Research Goal** – conduct a life cycle analysis (LCA) report for used tires to assess environmental pathways of 6PPD/6PPDq, and answer the following research questions:

- 1) How many tons of tires enter the secondary market on average each year? What are the sources?
- 2) How are the tires handled? How much is repurposed and how much is disposed? What are the trends?
- 3) What does "recycling" mean in the local and global secondary markets?
- 4) Where are the tires used and what communities are most vulnerable to negative impacts?
- 5) Which Washington state policies and programs support secondary tire product markets?
- 6) What alternatives to using tire derived rubber exist in these markets?

## **Project Approach**





**Conduct literature and data review to answer research questions** 

Host listening session and engage the public

**Conduct life cycle assessment and report findings** 



## **Public Feedback**

Host listening sessions and engage the public

- The next six slides will outline preliminary results by each research question
- We will present 2-3 minutes of preliminary findings, then provide 10-12 minutes for public comment per research question as time allows
- Written feedback in the chat will also be recorded and considered

#### To engage verbally:

Please use the "raise hand" function to indicate that you would like to speak, and wait for your name to be called before unmuting To engage by chat:

Please send your questions or comments through the chat



## **1.** How many tons of tires enter the secondary market on average each year? What are the sources?



### Sources of End-of-Life (EOL) Tires in the

- Passenger (Light)
- Light truck (Light)
- Tires from scrapped vehicles (Light Duty)
- Medium, wide base, heavy truck (Commercial)
- Tires from scrapped trucks and buses (Commercial)

#### **Preliminary findings**

- Tons of EOL Tires generated in 2021: • Washington: 79,899 – 87,943 tons of waste tires generated
- US: 3,579,000 tons generated
- Sources:
  - Light Duty 88 percent
  - Commercial Tires 12 percent

#### Questions and feedback:

- What are the sources of tires in Washington that enter the secondary market? Does the U.S. EOL distribution roughly represent Washington?
- Are any sources of used tires missing from this data?



# 2. How are the tires handled? How much is repurposed and how much is disposed? What are the trends?

Waste Tire Disposal in Washington



Source: Waste tire disposal in Washington (Excel data) on Ecology's website

#### Preliminary findings

 Tires Handled in Washington in Tons (2021) Recycled: 14,823–25,354 Disposed: 22,956–48,176 Burned for energy/fuel: 14,628–18,577 Retreaded/reused: 2,561–4,431

#### Questions and feedback:

• Are there any tire disposal or reuse pathways of which WA Ecology should be aware, and are not yet represented here?



# 3. What does "recycling" mean in the local and global secondary markets?

"Tires can be recycled by grinding up the rubber and remolding it for other purposes. Some uses of ground rubber include groundcover under playground equipment, running track material, and components of sports and playing fields.

Tires can also be cut, punched or stamped into various rubber products, including floor mats, belts, gaskets, shoe soles, dock bumpers, seals, muffler hangers, shims and washers."

Source: 2012 Annual Report to the Washington State Legislature on Tires

#### **Preliminary findings**

- Recycling includes tires baled and recycled, and excludes tires burned for energy and retreaded/reused
- In 2023, 71 percent of scrap tire processing is by Liberty Tire (includes L&S Tire and Castle Tire acquisitions), which produces asphalt mix to key markets

#### Questions and feedback:

• How does this categorization of tire recycling align with local or national definitions?



# 4. Where are the tires used and what communities are most vulnerable to negative impacts?



#### Map of Land Tire Piles in Washington

Source: Waste Tire Cleanup Program Evaluation, Ecology, 2023

#### Preliminary findings

- For tires disposed of in WA from 2018-2023, Spokane, Portland (OR), and Prineville (OR) are the top 3 cities where tires are used.
- 6 of the 11 landfills where tires are disposed across WA and OR are in communities where the percentages of low-income and people of color are higher than the respective state averages
- 49 major tire piles in 27 WA counties as of March 2023

#### Questions and feedback:

 What types of impacts would you be most interested in seeing summarized in a final report? Ecology's EJ webpage notes the following: lowincome communities, communities of color, and indigenous people.



# 5. Which Washington state policies and programs support secondary tire product markets?

Waste tire management rules and laws:

- Solid Waste Management, Reduction and Recycling statute
  - Waste Tire Sections (RCW 70A.205.400

     RCW 70A.205.460)
- Solid Waste Handling Standards rule
  - Definitions section (WAC 173-350-100)
  - Waste tire storage section (WAC 173-350-350)
  - Waste tire transportation section (WAC 173-350-355)
- Washington Clean Air Act
  - Outdoor burning fires prohibited section (RCW 70A.15.5010)
- Outdoor burning rule (WAC 173-425)

#### Preliminary findings

- 4 WA laws and rules relate to waste tire management
- The WA Legislature established the Recycling Development Center (RDC) in July 2019 (Chapter 70A.240 RCW). The law tasks the RDC with facilitating research and development, marketing, and policy analysis to bolster recycling markets and processing in WA.
- Revised Code of WA (RCW) 70.95.545 requires Ecology to report the increase or reduction in tire recycling and reuse rates in the state

#### Questions and feedback:

- What other state policies or programs may support secondary tire product markets?
- Are there any gaps in current policies or programs?



# 6. What alternatives to using tire derived rubber exist in these markets?

### Preliminary findings

- The following products are produced by the major scrap tire recyclers in the State of Washington, with alternatives identified through a literature review:
  - Crumb rubber for compression molding and infills: virgin synthetic rubber (ethylene propylene dime monomer or thermoplastic elastomers)
  - $_{\odot}$  Tire derived aggregates for civil engineering projects: gravel
  - Rubberized asphalt: asphalt binder (bitumen, styrene and butadiene)
  - $\odot$  Crumb rubber mulch for landscaping: wood mulch
  - Recovered wire: Pig iron (crude iron)
  - $_{\odot}$  Tire derived fuel for cement production: Coal, cokes and iron ore

### Questions and feedback:

• Any other use cases that Ecology should be aware of ?



## **Next Steps**

- Contact treatment facilities to get site specific information related to processing of scrap tires
- Consolidate literature review, public feedback, and LCA into a legislative report
- Life Cycle Analysis (LCA)
  - 3 treatment options identified: landfilling, energy recovery, and recycling
  - Brief review fate of 6PPD/6PPDQ through scrap tire treatment and disposal process.

### Questions and feedback:

- How might stakeholders use the data from this report?
- What other disposal scenarios should be considered in an LCA?

# Thank you for your participation! Questions?

#### To engage verbally:

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#### To engage by chat:

Please send your questions or comments through the chat

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