Tire Industry Project:

Pathways Toward a Sustainable Future

HEI Annual Conference , Chicago, April 2026

Dr. Mazzatorta Paolo

World Business Council for Sustainable Development

Tire Industry Project

Tire Industry Project

Formed in 2005, TIP is a voluntary, **CEO-driven** initiative with a mission to anticipate, understand, and address global environmental, social, and governance (ESG) issues relevant to the tire industry and its value chain.

Currently TIP brings together **10 leading tire companies**, collectively representing over 60% of the global tire manufacturing capacity and 8 Affiliates.

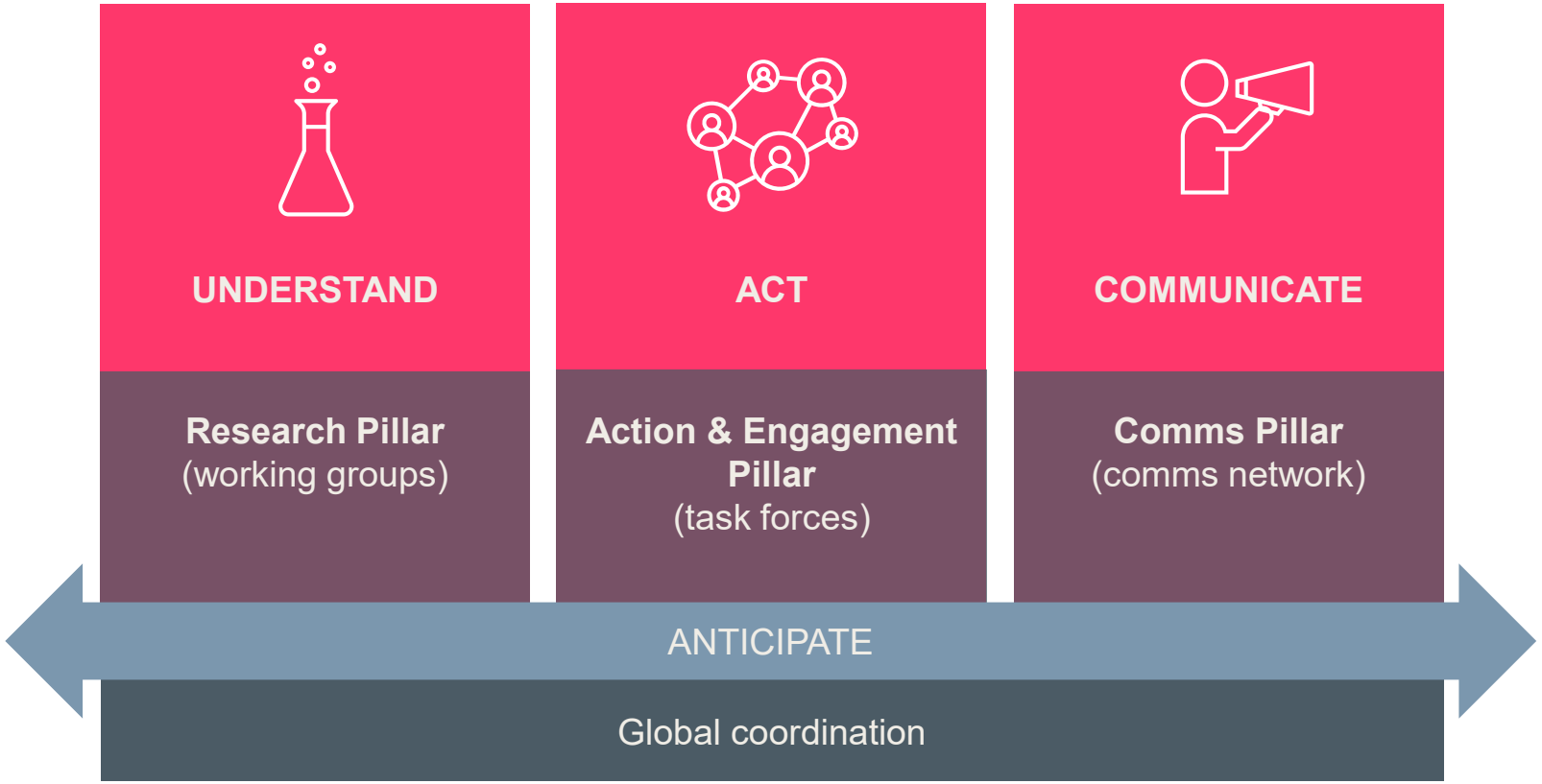
TIP is facilitated by World Business Council for Sustainable Development (**WBCSD**). TIP commissions independent research of the highest standards, collaborates on sectoral solutions, and engages with external stakeholders.

World Business Council for Sustainable Development

Tire Industry Project

TIP’s structure

TIP’s mission is to **anticipate**, **understand**, and **address** global environmental, social, and governance issues relevant to the tire industry and its value chain.



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How is the **Research Pillar** structured?

TIP acts by commissioning **independent** research of the **highest standards**, collaborating on sectoral solutions, and **engaging** with external stakeholders.

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TIP evolved in 20 years … and counting

TIP has progressively contributed to the scientific understanding of tire-related emissions through independent, peer-reviewed studies, reflecting advances in analytical methods and evolving research questions over time.

2005-2014

- State of Knowledge of TRWP
- TRWP Collection and Characterization
- First TRWP Toxicity Test
- Chemicals in the tire

TIP established

2015-2019

- Global Sampling PM2.5/10
- ISO Technical Specification
- Airborne sampling in New Delhi

2019-2023

- Quantification of TRWP: Refined P-GCMS*
- Test materials: CMTT** & lab generated TRWP
- TRWP quantification in environmental compartments
- Mass balance model in watersheds

TIP 2.0

2024-2025

- TIP conference
- Ecotoxicity studies
- Field sampling
- Leaching and degradation studies
- Standardization of analytical methods
- 6PPD

2026-2027

- Characterization of submicron TRWPs
- Standardization of analytical methods
- Degradation of tire treads

*P-GCMS: pyrolysis-gas chromatography–mass spectrometry
**CMTT: Cryogenically milled tire tread

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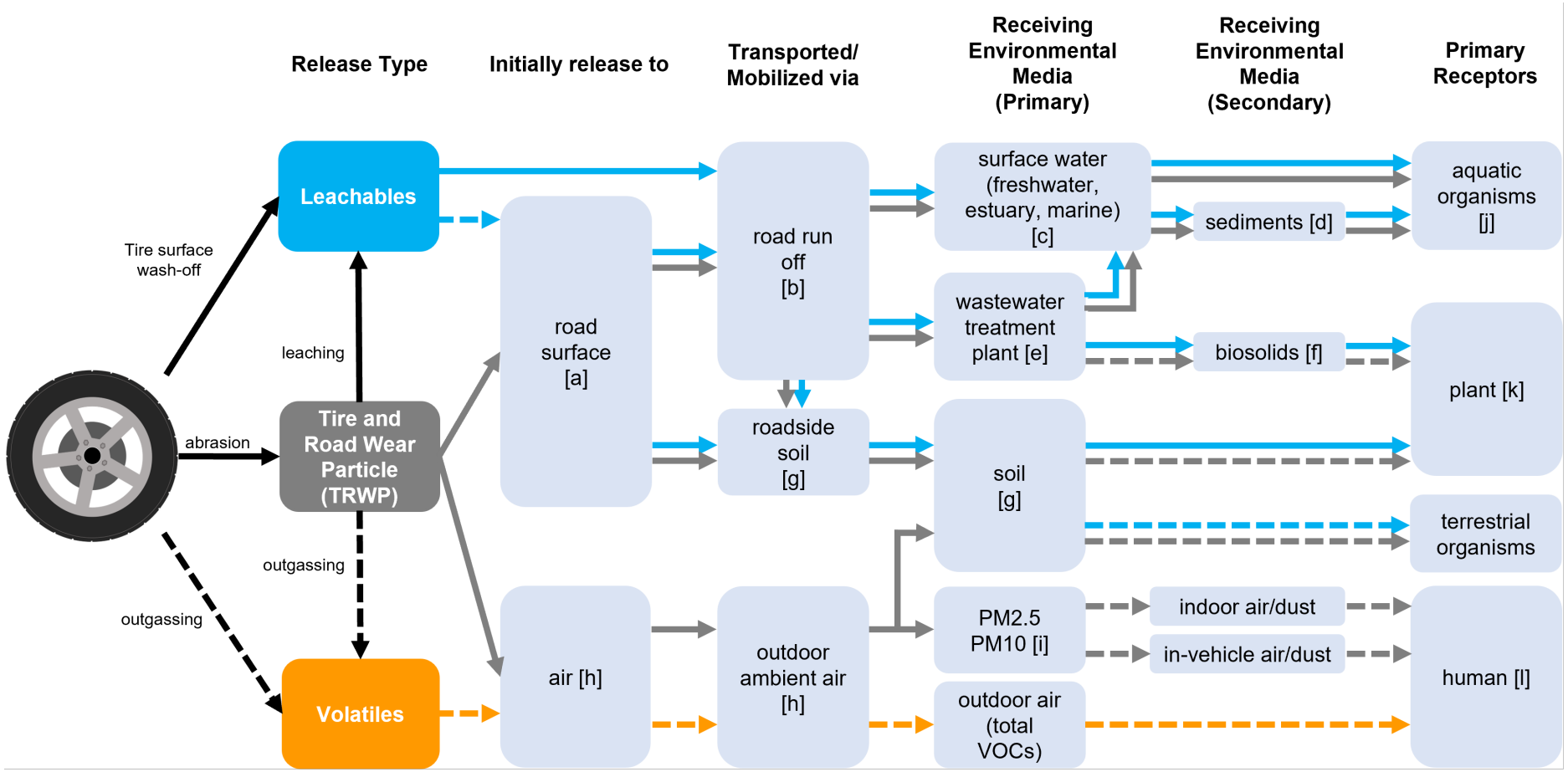
What is *emitted* during the use phase of tires?



Müller at Al., Environmental Science: Advances, 2025

How **nano-particle emissions** from tire and road wear can be measured?

A new approach to simultaneously study **emission factors**, **morphology**, **chemical composition**, and **solid/semivolatile separation** of nanoparticles

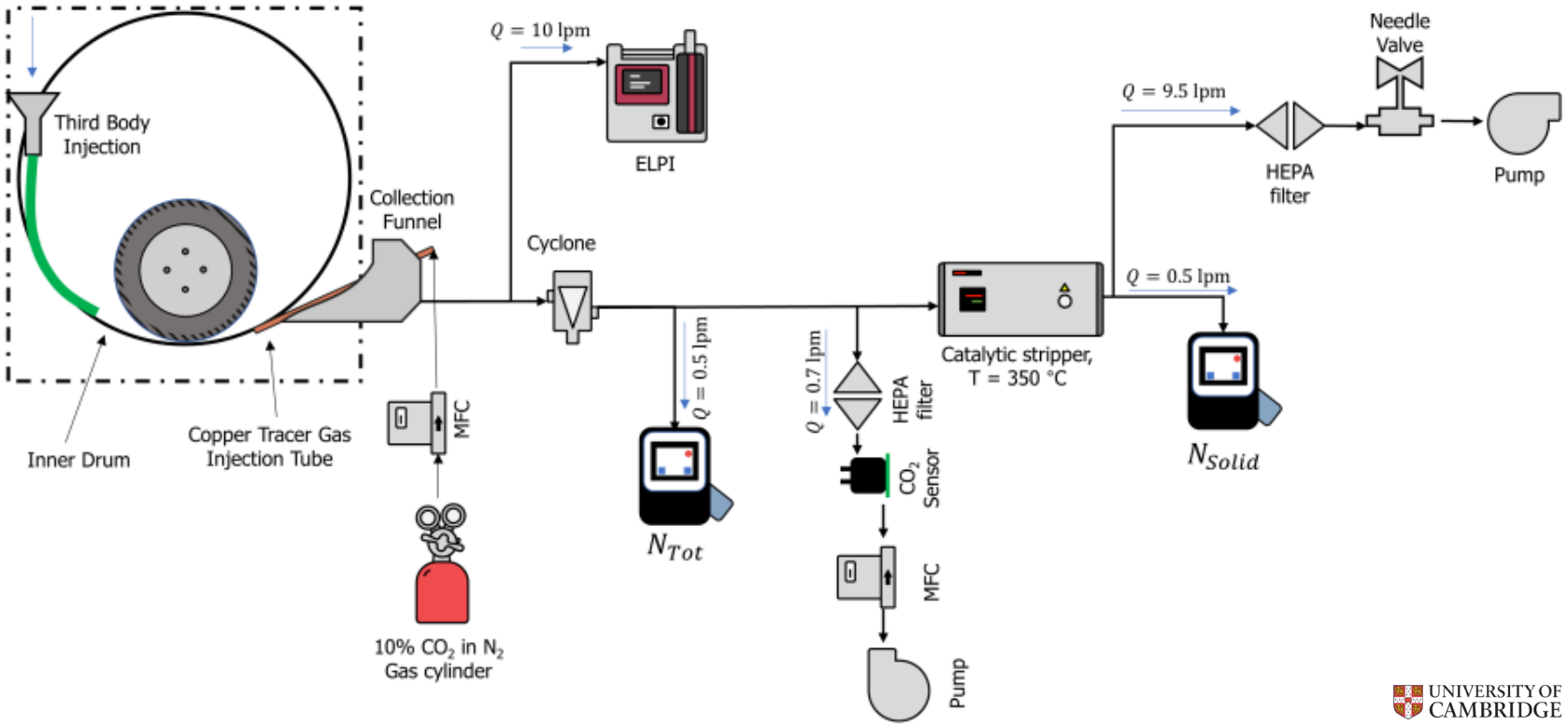


Figure 1: Schematic of the experimental setup used to measure TRWP emissions from the rotating drum. (Aerosol instrumentation icons for this figure were obtained at (https://github.com/tsipkens/aerosol-icon-project)

Hassim et Al., Journal of Aerosol Science, (under review)

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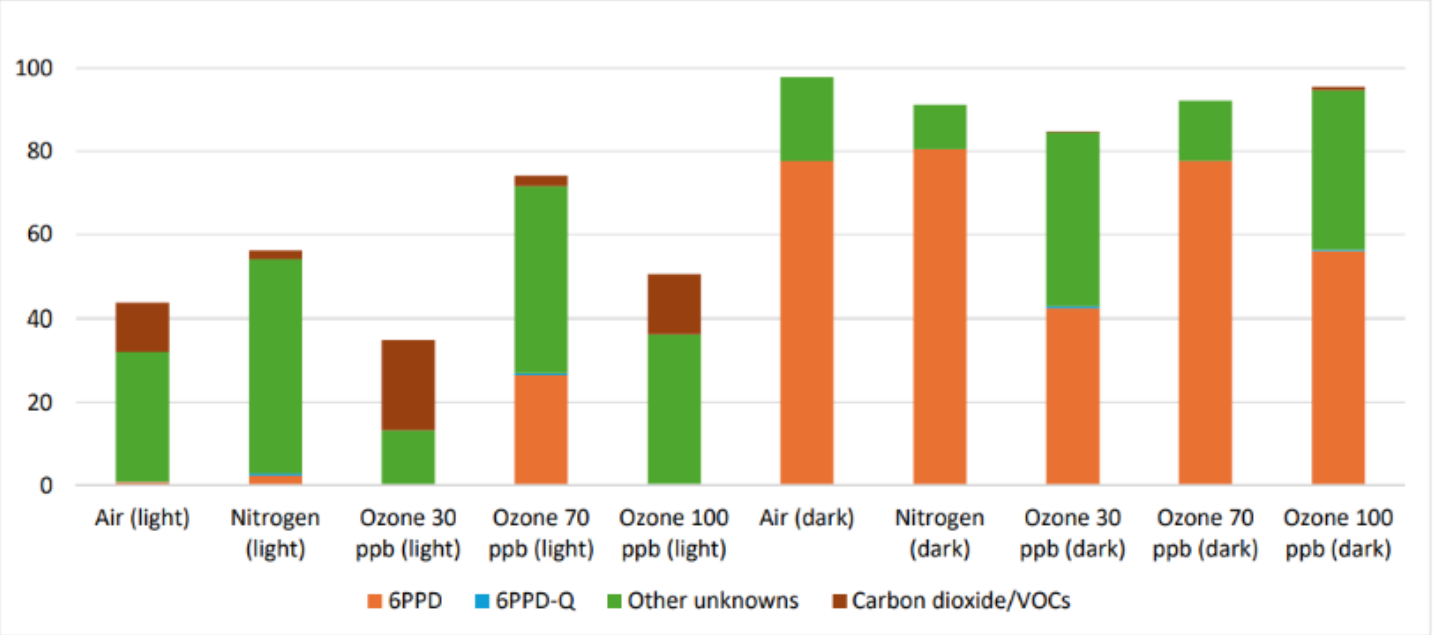
What is the **fate** tire-related chemicals once in the environment?

The reactivity of 6PPD-Q towards oxygen and ozone **prevents its accumulation** under natural conditions.

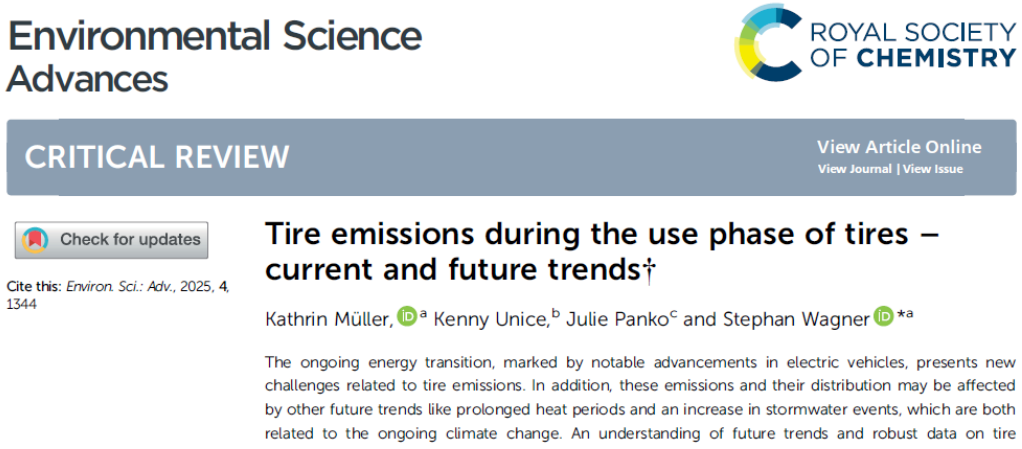
The amount of 6PPD-Q formed was ≤ 0.6 % in all cases studied.



Distribution of products of 6-PPD in contact with gases at the end of the experiments (in %)

Reemtsma et Al., Ecotoxicology and Environmental Safety, 2026

Tire wear emissions: Pathways Toward a Sustainable Future



Environmental Science Advances

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Cite this: *Environ. Sci.: Adv.*, 2025, 4, 1344

Tire emissions during the use phase of tires – current and future trends†

Kathrin Müller, [a] Kenny Unice,[b] Julie Panko[c] and Stephan Wagner *[a]

The ongoing energy transition, marked by notable advancements in electric vehicles, presents new challenges related to tire emissions. In addition, these emissions and their distribution may be affected by other future trends like prolonged heat periods and an increase in stormwater events, which are both related to the ongoing climate change. An understanding of future trends and robust data on tire

What have we learned:

Emissions are dominated by Tire Road Wear Particles (**TRWP**), with additional **chemical** releases through leaching, while available data on **volatile** emissions during tire use are limited and continue to evolve with further research

… and the way forward:

- A Tiered **framework** addressing particulate, leachable, and volatile tire emissions
- An **holistic assessment** across all emission types and pathways
- Develop **predictive** computational **models** of the emission process and exposure
- Facilitate the evaluation of the impact on tier emissions of **potential changes** e.g. e-mobility and climate change.
- Provide insights for targeted and efficient **mitigation strategies**

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Tire Emissions Research Conference

Cambridge (UK) 8-10 December, 2026

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Thank you!

Any Questions?

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