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## Discovering the Neglected Origin of 30% of Microplastics

### Description

Annually, billions of vehicles globally release an estimated 6 million tonnes of tire fragments, shedding light on the pervasive issue of microplastic pollution. These minuscule plastic flakes, a byproduct of normal driving wear and tear, pervade the environment, infiltrating soil, water bodies, and even our food chain. Recent research in South China detected tire-derived chemicals in the majority of human urine samples, underscoring the far-reaching impact of these particles.

While tire particles contribute significantly to global microplastic pollution, they often go unnoticed and are not categorized distinctly, impeding targeted mitigation efforts. Recognizing tire pollution as a unique environmental concern can spur specialized research and policy interventions, fostering public awareness and action.

Current negotiations in South Korea for the first global plastics pollution treaty, although groundbreaking, lack adequate focus on tire particles, despite their substantial microplastic contribution. Elevating the classification of tire pollutants to a distinct category can unlock tailored solutions and enhance public understanding of this urgent environmental threat.

Notably, tire particles, comprising a complex mix of synthetic and natural rubbers with countless chemical additives, pose unforeseen ecological risks. Chemicals like zinc oxide and 6PPD, essential for tire durability, have been linked to toxicity in aquatic life and ecosystem disruptions, necessitating thorough investigation and regulation.

To address the escalating issue of tire pollution, global action is imperative. From weight-based taxes targeting vehicle manufacturers to eco-friendly tire innovations and a scientific-policy expert panel akin to climate and biodiversity initiatives, comprehensive measures are essential for combating the environmental toll of tire particles and fostering sustainable transportation practices.

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### Vocabulary List:

1. **Microplastic** /'maɪ.kroʊ.plæs.tɪk/ (noun): Extremely small plastic particles that can harm the environment.
2. **Pollution** /pə'luː.ʃən/ (noun): The presence of harmful substances in the environment.
3. **Mitigation** /,mɪt.rɪ'geɪ.ʃən/ (noun): The action of reducing the severity or seriousness of something.
4. **Toxicity** /tɒk'sɪs.ɪ.ti/ (noun): The quality of being toxic or poisonous.
5. **Infiltrating** /'ɪn.fɪl.trɪt/ (verb): To permeate or enter gradually into a substance or area.
6. **Interventions** /,ɪn.tə'ven.ʃənz/ (noun): Actions taken to improve a situation especially in terms of policy or strategy.



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## Comprehension Questions

### Multiple Choice

1. What is the estimated amount of tire fragments released annually by billions of vehicles globally?  
Option: 1 million tonnes  
Option: 3 million tonnes  
Option: 6 million tonnes  
Option: 10 million tonnes
2. Where have tire-derived chemicals been detected according to recent research mentioned in the text?  
Option: North America  
Option: Europe  
Option: South China  
Option: Africa
3. What environmental impact do tire particles have as mentioned in the text?  
Option: Air pollution only  
Option: Soil pollution only  
Option: Water pollution only  
Option: Infiltrate soil, water bodies, and the food chain
4. Which chemicals essential for tire durability have been linked to toxicity in aquatic life and ecosystem disruptions?  
Option: Iron and Copper  
Option: Zinc Oxide and 6PPD  
Option: Lead and Mercury  
Option: Carbon and Nitrogen
5. What comprehensive measures are mentioned in the text to combat the environmental toll of tire particles?  
Option: Reducing tire pressure  
Option: Imposing bans on vehicle usage  
Option: Weight-based taxes, eco-friendly tire innovations, and scientific-policy expert panels  
Option: Increasing speed limits



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6. Where are negotiations taking place for the first global plastics pollution treaty as per the text?

- Option: South Korea
- Option: Japan
- Option: United States
- Option: Canada

**True-False**

7. Tire particles are often easily noticeable due to their large size.

8. Recognition of tire pollution as a unique environmental concern can lead to specialized research and policy interventions.

9. Negotiations in South Korea for the global plastics pollution treaty adequately focus on tire particles.

10. Tire particles are solely composed of synthetic rubbers.

11. Global action is deemed imperative to address the issue of tire pollution according to the text.

12. Chemicals like zinc oxide and 6PPD have not been linked to any environmental risks.

**Gap-Fill**

13. Billions of vehicles globally release an estimated 6 million tonnes of tire fragments annually, contributing to the pervasive issue of microplastic pollution. These tire particles infiltrate soil, water bodies, and even our food chain, shedding light on the urgent need for \_\_\_\_\_ efforts.

14. Recognizing tire pollution as a unique environmental concern can stimulate \_\_\_\_\_ , fostering public awareness and action.

15. Negotiations in South Korea for the first global plastics pollution treaty lack adequate focus on tire particles despite their significant contribution to \_\_\_\_\_ .

16. Tire particles comprise a mix of synthetic and natural rubbers with numerous chemical additives,



including chemicals like zinc oxide and 6PPD, which have been linked to toxicity in aquatic life and

\_\_\_\_\_.

17. To combat the environmental toll of tire particles and encourage sustainable transportation practices, comprehensive measures such as weight-based taxes, eco-friendly tire innovations, and a scientific-policy expert panel are deemed \_\_\_\_\_.

18. Chemicals essential for tire durability, like zinc oxide and 6PPD, pose unforeseen ecological risks, requiring thorough \_\_\_\_\_ and regulation.

## Answer

**Multiple Choice:** 1. 6 million tonnes 2. South China 3. Infiltrate soil, water bodies, and the food chain 4. Zinc Oxide and 6PPD 5. Weight-based taxes, eco-friendly tire innovations, and scientific-policy expert panels 6. South Korea

**True-False:** 7. False 8. True 9. False 10. False 11. True 12. False

**Gap-Fill:** 13. targeted mitigation 14. specialized research and policy interventions 15. microplastic pollution 16. ecosystem disruptions 17. essential 18. investigation

## Vocabulary quizzes

### Multiple Choice ( Select the Correct answer for each question. )

1. What term is used to describe species that are at risk of extinction?

- Option: Oscillating
- Option: Endangered
- Option: Detrimental
- Option: Infiltrating

2. What is the contamination of the environment with harmful substances known as?

- Option: Cataclysmic
- Option: Pollution
- Option: Transmission
- Option: Interference



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3. What process involves the accumulation of substances in an organism?
- Option: Ultra-dense
  - Option: Bioaccumulation
  - Option: Reservoirs
  - Option: Interventions
4. Which type of pollutants are small plastic particles of less than 5mm?
- Option: Phenomenon
  - Option: Microplastics
  - Option: Infiltrating
  - Option: Timestamp
5. What term is used to describe actions to reduce the severity of something?
- Option: Mitigation
  - Option: Enigma
  - Option: Diffraction
  - Option: Toxicity
6. What is considered a biological community of interacting organisms and their physical environment?
- Option: Rydberg
  - Option: Ecosystem
  - Option: Spectroscopy
  - Option: Innovative
7. Which term relates to interactions between different species?
- Option: Endocrine disruptors
  - Option: Interspecies
  - Option: Infiltrate
  - Option: Surveillance
8. The degree to which a substance can damage an organism is known as its:
- Option: Ultra-dense
  - Option: Toxicity
  - Option: Enigma
  - Option: Innovative
9. What term refers to the obstruction of a wave by another wave?
- Option: Endocrine disruptors
  - Option: Interference
  - Option: Spectroscopy
  - Option: Timestamp



10. What is the term for gradually seeping into something or somewhere?

- Option: Diffraction
- Option: Infiltrating
- Option: Enigma
- Option: Rydberg

**Gap-Fill ( Fill in the blanks with the correct word from the vocabulary list. )**

11. Diseases can be \_\_\_\_\_ through various means.

12. The conservation of \_\_\_\_\_ is vital for maintaining biodiversity.

13. The company focused on developing \_\_\_\_\_ solutions to complex problems.

14. Water \_\_\_\_\_ can serve as breeding grounds for disease vectors.

15. The earthquake had a \_\_\_\_\_ impact on the region.

16. \_\_\_\_\_ is used to analyze the interaction between matter and electromagnetic radiation.

17. The mystery surrounding the old mansion was an intriguing \_\_\_\_\_.

18. Every digital entry is marked with a specific \_\_\_\_\_ indicating the time of creation.

19. The newly discovered star has an \_\_\_\_\_ core.

20. The Northern Lights are a natural \_\_\_\_\_ that mesmerize viewers.

**Matching Sentences ( Match each definition to the correct word from the vocabulary list. )**

21. The monitoring of behavior and activities for the purpose of gathering information is known as surveillance.
22. Chemicals that interfere with the endocrine system can disrupt hormonal balance in organisms.
23. The Rydberg constant is used in calculating the wavelengths of spectral lines.
24. The bending of waves around obstacles is a characteristic of the phenomenon of diffraction.



25. The pendulum's motion was described as gently swinging back and forth in an oscillating manner.
26. Secret agents attempted to infiltrate the enemy's ranks to gather information.
27. The cutting-edge technology company was known for its innovative approach to problem-solving.
28. A timestamp is essential for tracking when a specific event or data point occurred.
29. The coded message presented a challenging enigma for the cryptographers to decipher.
30. When two or more waves meet interference can result in amplification or cancellation of the wave amplitudes.

## Answer

**Multiple Choice:** 1. Endangered 2. Pollution 3. Bioaccumulation 4. Microplastics 5. Mitigation 6. Ecosystem 7. Interspecies 8. Toxicity 9. Interference 10. Infiltrating

**Gap-Fill:** 11. transmitted 12. ecosystems 13. innovative 14. reservoirs 15. cataclysmic 16. Spectroscopy 17. enigma 18. timestamp 19. ultradense 20. phenomenon

**Matching sentence:** 1. Surveillance 2. Endocrine disruptors 3. Rydberg 4. Diffraction 5. Oscillating 6. Infiltrate 7. Innovative 8. Timestamp 9. Enigma 10. Interference

## CATEGORY

1. Health - LEVEL5

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