

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.

Vocabulary List:

- 1. Microplastic /'mai.kroʊ,plæs.tik/ (noun): Extremely small plastic particles that can harm the environment.
- 2. **Pollution** /pə'lu:.jən/ (noun): The presence of harmful substances in the environment.
- 3. Mitigation /,mit.i'gei.jən/ (noun): The action of reducing the severity or seriousness of something.
- 4. Toxicity /tpk'sIS.I.ti/ (noun): The quality of being toxic or poisonous.
- 5. Infiltrating /'In.fIl.trIt/ (verb): To permeate or enter gradually into a substance or area.
- 6. Interventions /,In.tə'ven.ʃənz/ (noun): Actions taken to improve a situation especially in terms of policy or strategy.



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



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: Interferance



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? ESL-NEW

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 in	to something or somewhere?
Option: Diffraction	
Option: Infiltrating	
Option: Enigma	
Option: Rydberg	
Gap-Fill (Fill in the blanks with the cor	rect 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 serv	e as breeding grounds for disease vectors.
15. The earthquake had a	impact on the region.
16 is used to analy	ze the interaction between matter and electromagnetic
radiation.	
17. The mystery surrounding the old mansior	n was an intriguing
18. Every digital entry is marked with a speci	fic 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 defin	ition to the correct word from the vocabulary list.)
21. The monitoring of behavior and activitie surveillance.	es for the purpose of gathering information is known as
22. Chemicals that interfere with the endoc	rine system can disrupt hormonal balance in organisms.
23. The Rydberg constant is used in calcula	ting 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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