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Lithium-Ion Batteries and Plastics:

The risks for liability insurers

Natasha Lioubimova, Legal Director, Clyde & Co LLP

Outline

Part I: Lithium Batteries

- What are the risks associated with lithium batteries?
- What are the implications for insurers?
 - Product liability
 - Property
 - Motor
 - Recall

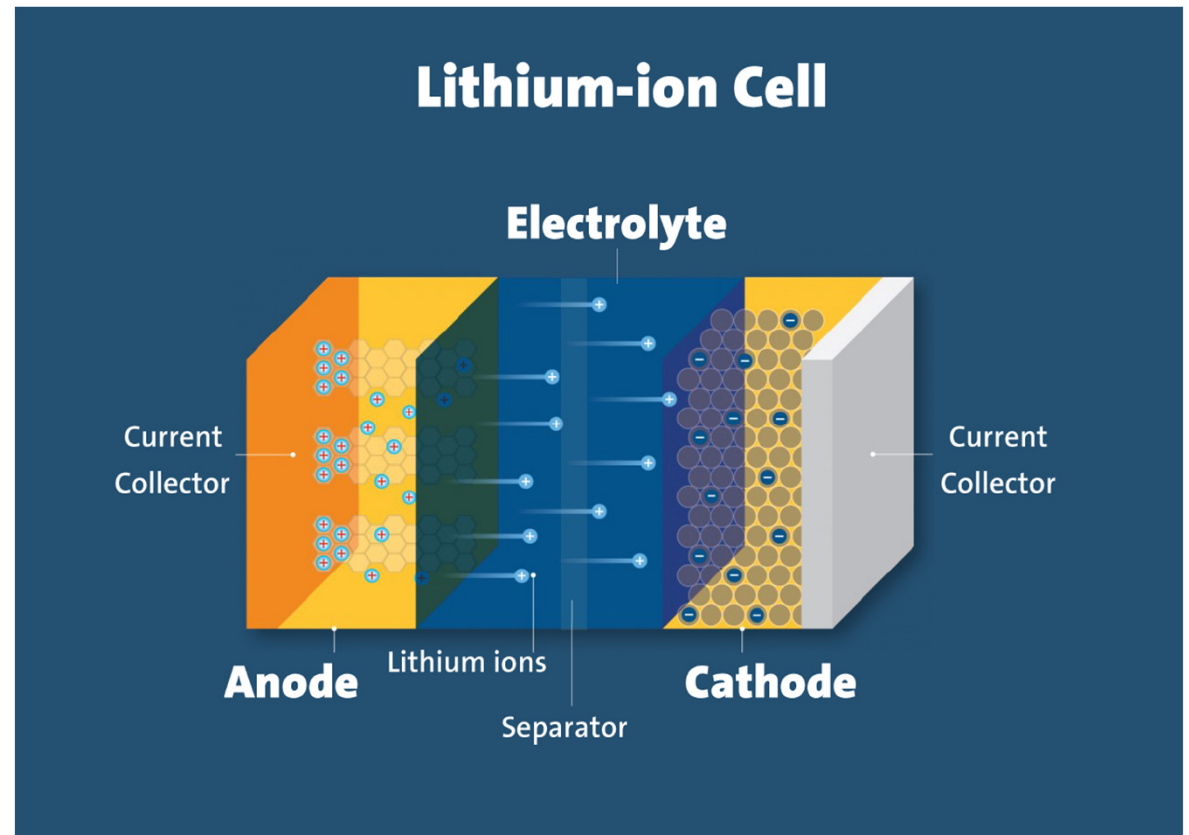
Part II: Plastics

- What are the risks associated with plastics?
- What are the implications for insurers?
 - Employers liability
 - Product liability
 - Public liability

Part I: Lithium-Ion batteries

What are lithium-ion batteries?

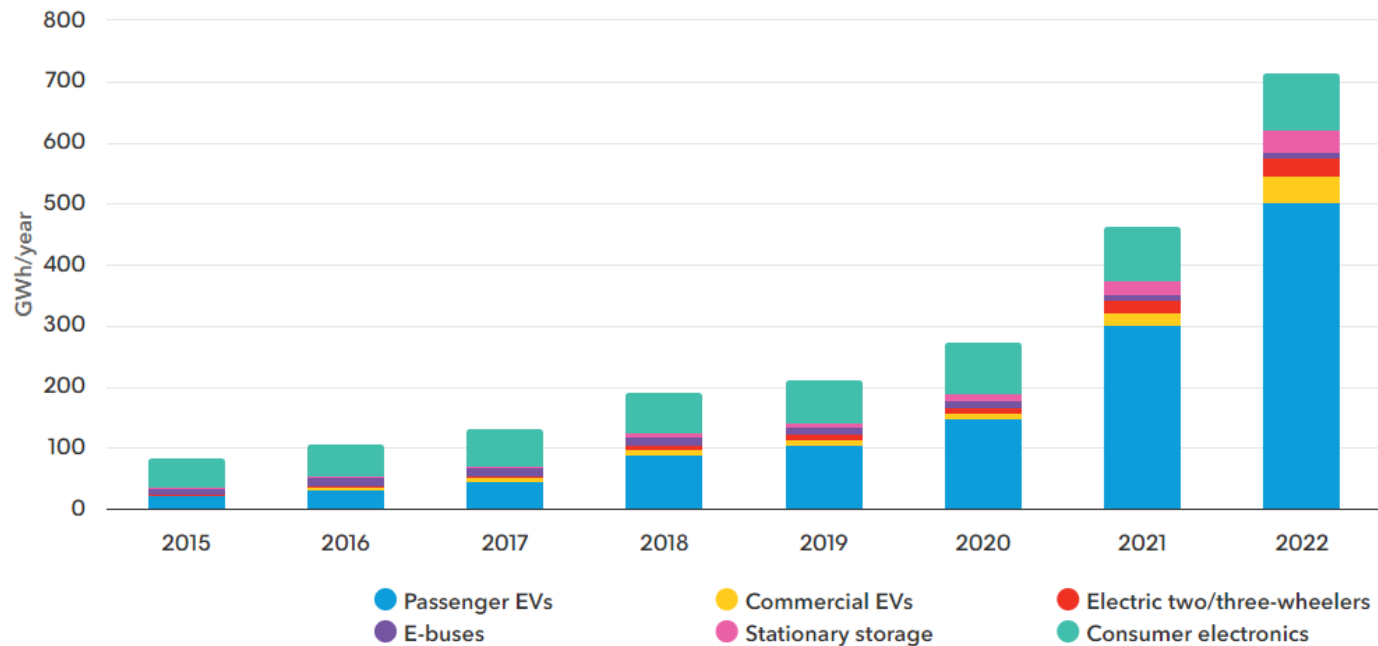
- A lithium-ion battery is a type of rechargeable battery.
- It is made up of one or more lithium-ion cells and a protective circuit board.
- It functions through the movement of lithium ions between the anode and the cathode through the electrolyte.



[Source: What Are Lithium-Ion Batteries? | UL Research Institutes](#)

How are lithium-ion batteries used?

Annual lithium-ion battery demand by application



[Source: EVO Report 2023 | BloombergNEF | Bloomberg Finance LP \(bnef.com\)](#)

What risks do lithium-ion batteries present?

Catastrophic failure

- In 2022/23, the London Fire Brigade reports having dealt with 104 e-bike fires, 32 e-scooter fires and 47 electric car fires.
- Unique nature of lithium fires: extreme temperatures, toxic gas and reignition.

The supply of raw materials

- Concerns surrounding the ethics of extracting cobalt and lithium.
- Drive to use alternative, less developed technologies and materials.

Regulation

- Standards vary by jurisdiction.
- Rapid changes in regulation.
- Two sets of standards; safety of the battery and safety of the product it is used in.

Sustainability

- Growing demand requires appropriate management of waste.
- Incorrect disposal can result in property damage.
- Existing recycling techniques can be difficult to apply to lithium batteries.

Insurance implications: product liability

Risk landscape

- The risk not limited to major battery manufacturers. It includes insureds with lithium battery products that are incidental to their wider product offering.
- Risk of unintentionally underwriting small, portable electronics produced by manufacturers that lack the resource and experience to:
 - Source high-quality batteries
 - Integrate batteries into products with adequate protections
 - Carry out appropriate testing and post-market quality control



Insurance implications: motor liability

Electric vehicle risks

- The EV fire risk different from the fire risk in traditional vehicles.
- Charging ports:
 - Where are they located? Public v private land
 - Is a vehicle 'in use' when charging?
 - 'DIY' EV owners?



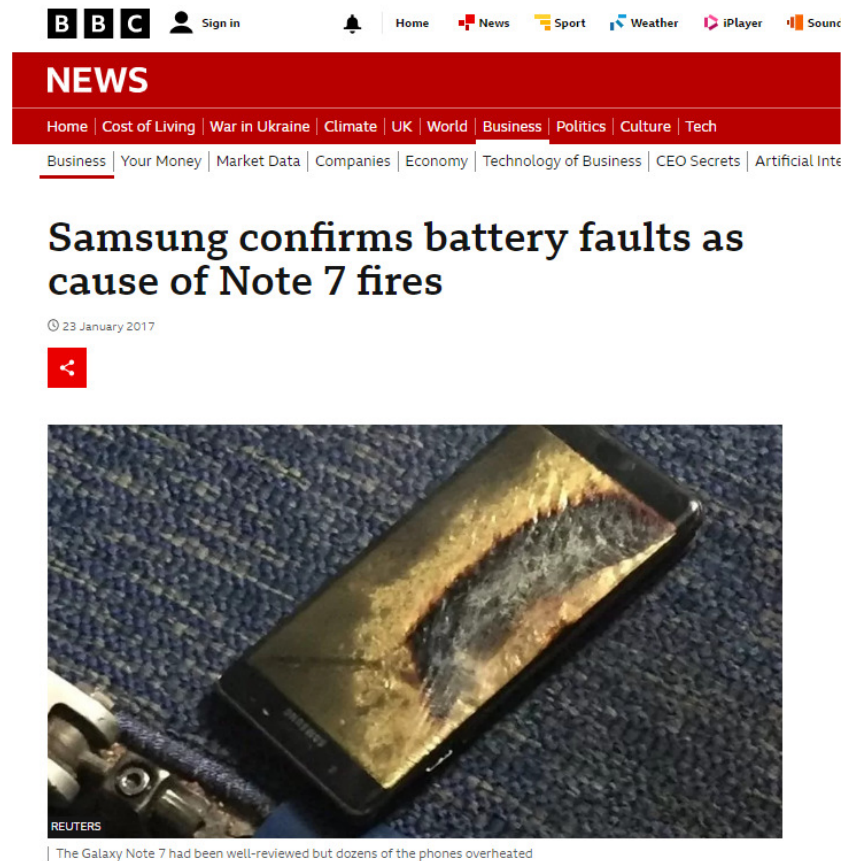
Fires with 10 feet to 15 feet flame lengths that grew into 50 feet to 75 feet flame lengths.”

- Arizona State Commission Review

Insurance implications: product recall

Complexities of battery recall

- Recalls can be expensive and high-profile. For example, the Samsung Galaxy Note 7 recall is reported to have cost USD5.3bn (£4.3bn).
- Recalls present logistical challenges:
 - How do you transport them?
 - How do you store them?
 - How do you dispose of them?
- Industry know-how and related infrastructure is invaluable



The image shows a screenshot of a BBC News article. At the top, the BBC logo is visible along with navigation links for Home, News, Sport, Weather, iPlayer, and Sound. Below the logo is a red banner with the word 'NEWS' in white. Underneath the banner is a navigation bar with links for Home, Cost of Living, War in Ukraine, Climate, UK, World, Business, Politics, Culture, and Tech. The article title is 'Samsung confirms battery faults as cause of Note 7 fires' in a large, bold, black font. Below the title is the date '© 23 January 2017' and a red share icon. The main image shows a Samsung Galaxy Note 7 smartphone lying on a blue carpet. The screen is severely damaged, with a large, irregular, golden-brown area that appears to be a fire or explosion. The phone is connected to a charging cable. In the bottom left corner of the image, the word 'REUTERS' is visible. Below the image is a caption: '| The Galaxy Note 7 had been well-reviewed but dozens of the phones overheated

Insurance implications

Managing the risk

- Proposal form questions
- Risk management standards
- Warranties
- Experienced battery litigation support
- Internal training



Part II: Plastics

The origin of plastics liability

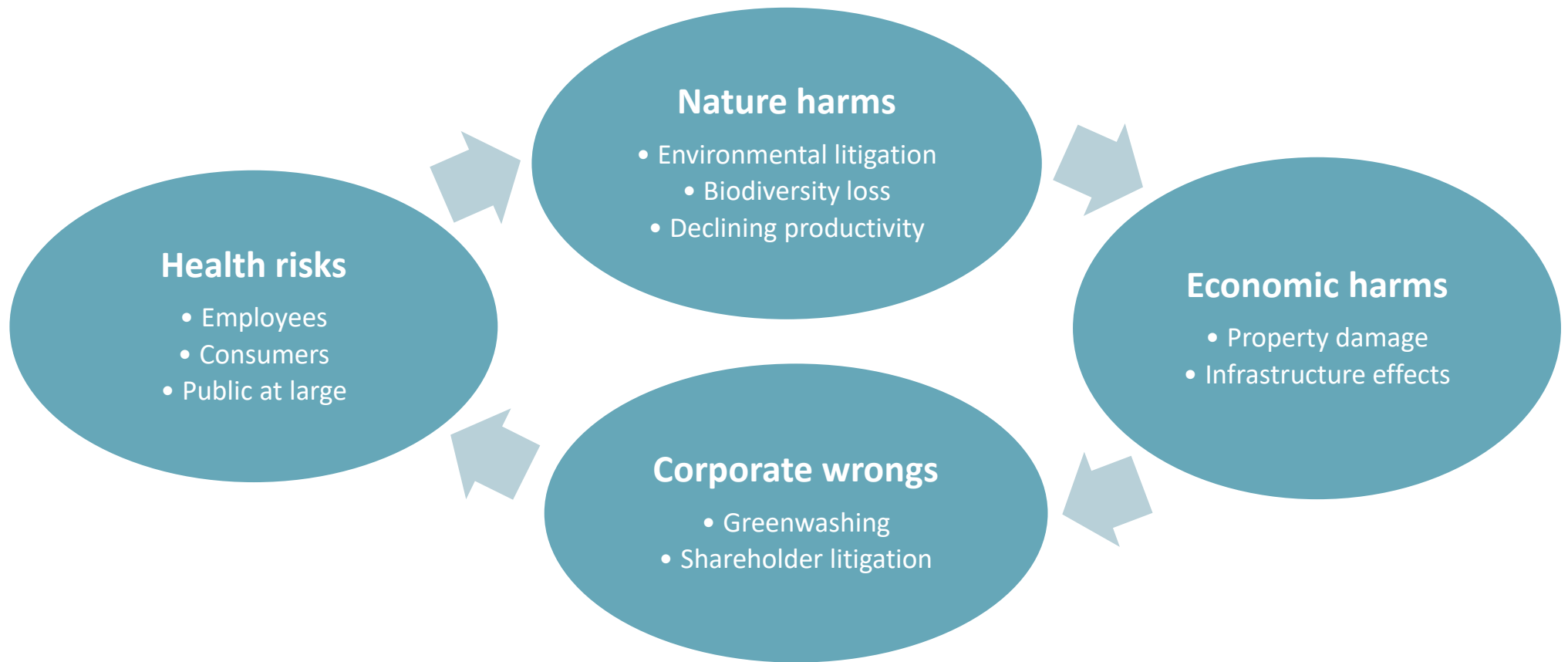
Growing evidence of toxicity



- 10000 chemicals associated with plastics including:
 - Phthalates
 - Bisphenols
 - Flame retardants
 - PFAS
- Micro-and nano-plastics

What are the risks associated with plastics?

Harms to health, nature and the economy



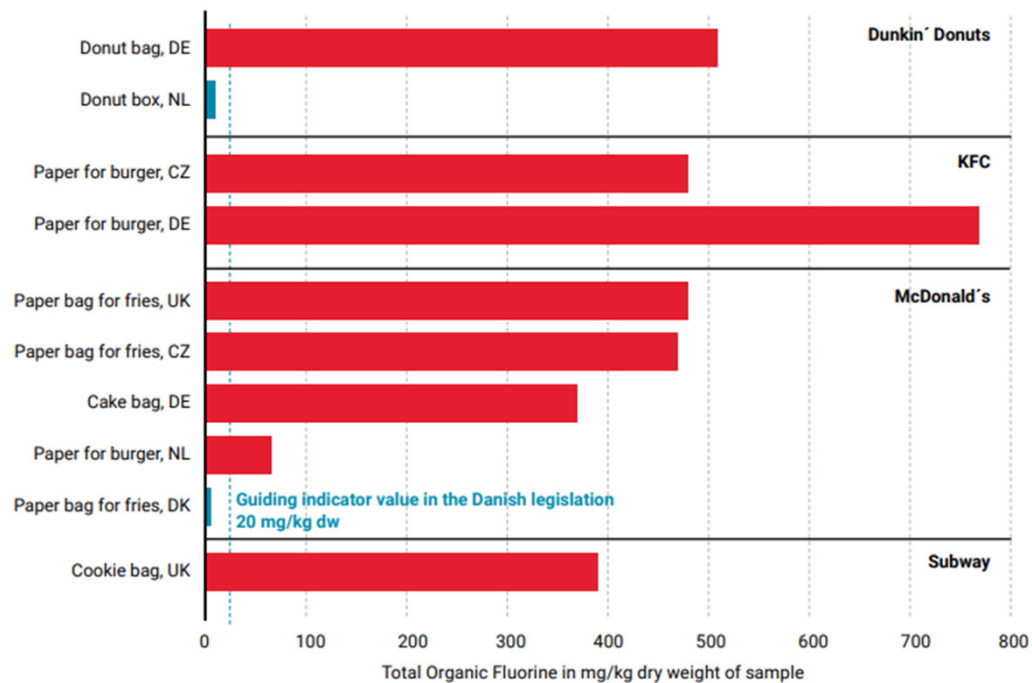
Insurance implications: employers liability

- **Precedents for industrial disease**
- **Unique problems of causation**
 - ‘But for’
 - ‘Material increase in risk’
 - Judicial presumption of causality



Insurance implications: product liability

Total Organic Fluorine content of takeaway food packaging from global fast-food chains.



- **Complex causal chain**

- Connecting illness with PFAS
- Connecting PFAS with product
- Connecting product with defendant

- **The problem of ubiquity**

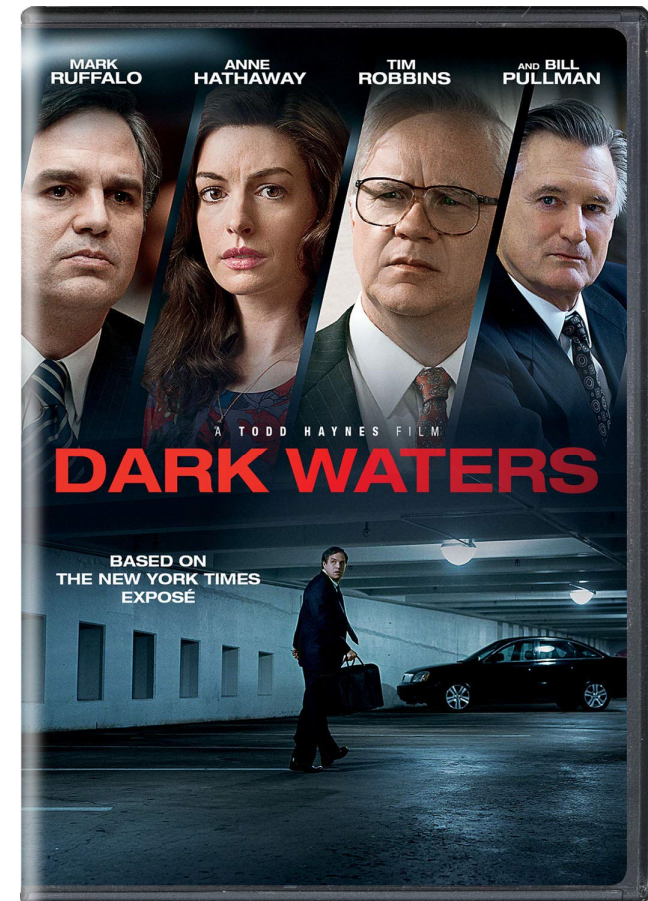
- Failure of mass BPA claims in the US

- **Changes ahead?**

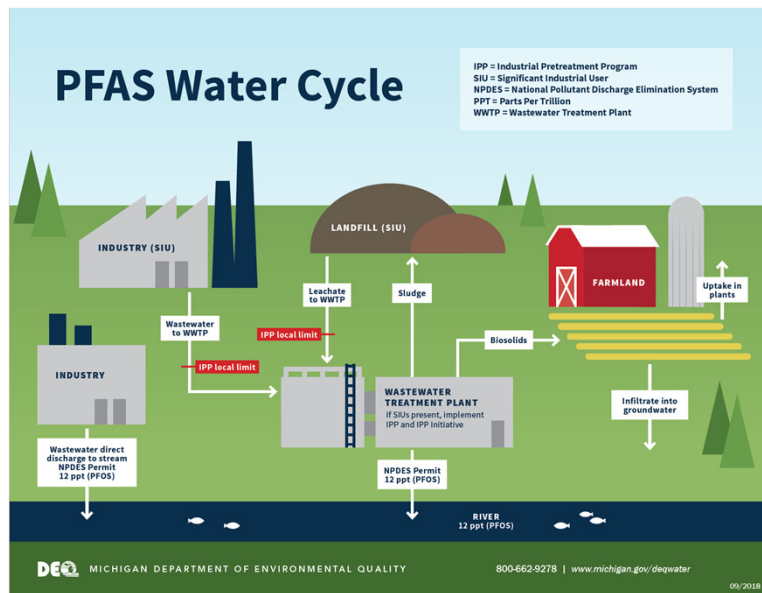
- Possible presumption of causality in Netherlands and new EU Product Liability Directive

Insurance implications: public liability

- **Does prevalence equate to cause?**
 - ‘But for’ causation
 - US BPA litigation
- **Strong laws affecting primary polluters**
 - EU ‘polluter pays’
 - Anglo-Saxon law of nuisance
- **Manufacturers further away**
 - ‘Market share’ causation not widely accepted
 - ‘Public nuisance’ in its infancy



Insurance implications: environmental liability



- **High risk to polluting facilities**

- Municipal entities as claimants
- NGOs as claimants
- Environmental regulation

- **Growing threat to manufacturers**

- Lawful product defence in many jurisdictions
- More causation issues
 - Improper disposal by customers
 - ‘Market share’
 - German climate liability model

The threat to insurers

Harms	Liability pathway	Claim activity	Claim severity	Affected programs
Human harms	Injury to employees	Moderate	High	Employers liability
	Injury to consumers	Low		Product liability
	Injury to the public	Moderate		General liability
Economic and ecosystem service harms	Toxic accumulations in public infrastructure		General liability	
		Environmental liability		
Nature harms	Escape of harmful substances from plastics manufacture	Moderate	Moderate	Environmental liability

Thank you. Any questions?

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