

# Plastic pellet pollution: A preventable source of microplastic pollution affecting communities, land and sea

## Overview

Nurdles, lentil-sized microplastics, also called plastic pellets, flakes and powders (hereinafter collectively referred to as “pellets”) are the industrial feedstock used to produce all plastic products. Transported all over the world, millions are lost every day due to lack of regulations, polluting the environment and impacting species.

Fidra, a Scottish registered charity, works with NGOs and communities around the world to draw attention to pellet pollution and put a stop to pellet loss on land and sea, because with the right legislation this pollution is preventable.



**"Lagoons, mangroves and coastal ecosystems engulfed in pellets are very difficult to restore and it is very difficult to remove pellets"** - Muditha Katuwawala, The Pearl Protectors, Sri Lanka

## The problem

Pellet spills and leaks occur at all stages of the lifecycle and supply chain - through mishandling and mismanagement at pellet production sites, during transport by land and sea, at product manufacturing sites and at recycling facilities.

Once pellets enter the environment, they are highly mobile and very difficult to remove. Between an estimated 2.2- 22.4 trillion pellets are lost each year through:

**Chronic terrestrial leaks** from the plastic industry's ongoing mishandling of pellets, the biggest source of pellet pollution.

**Acute terrestrial and marine spills:** large volumes of pellets are lost during major incidents such as train derailments, shipping disasters or flooding of plastic facilities with catastrophic impacts on wildlife and communities. In 2023 alone, there have been 5 known incidents so far, but many are unreported.

## Pellet loss is preventable: Global solutions

**Prevention measures could reduce plastic pellet loss by 95%**, but current efforts to address this major source of microplastic pollution have been insufficient.

To prevent plastic pellets from entering the environment, the Treaty must **mandate robust national legislation and be compatible with international agreements to ensure that the entire global plastic supply chain meets strong zero pellet loss standards.**

Parties must **implement prevention measures to eliminate pellet loss in terrestrial and marine environments.**

The Treaty must outline **mechanisms for accountability in the case of spills and ongoing loss**, with compensation and remediation for those impacted.

## Recommendations for the Plastics Treaty

1. Eliminate pellet loss through legally binding measures and effective guidance, ensuring **all pellet handlers and operators across the supply chain meet international standardised measures** with reporting mechanisms.
2. Legislation must apply to all pellet feedstocks, including raw fossil fuel, recycled and biomass sources.
3. Ensure each Party adopts legal and administrative measures into **national legislation** to require and verify pellet loss prevention measures and **mandatory reporting of all loss and spills across the supply chain.**
4. Enable the Conference of the Parties to adopt **guidelines for pellet clean-ups, disaster response protocols and pellet-loss remediation.**
5. Facilitate a **financial mechanism** for compensation that operationalises the Polluter Pays Principle in respect of pellet loss and spills.
6. End overproduction of plastic and enable a **transition to a safe and circular plastic economy through elimination of harmful chemicals and chemicals of concern** and adopting transparent identification and traceability of chemical additives across the plastic pellet lifecycle.

# Global impacts of plastic pellets

Pellets are the **second largest direct source** of primary microplastic pollution globally, and a major source of **upstream plastic pollution**. Annually, **over 445,000 tonnes of pellets** leak out of the global plastic supply chain directly into the environment.

- **Species:** Wildlife mistake pellets for food, which can lead to starvation and/or organ damage. Via ingestion, toxic chemicals and additives can enter the food chain and cause multiple health issues
- **Ecosystems:** Pellets smother sensitive coastal ecosystems such as seagrass beds, threatening the myriad species that use these meadows as a breeding or feeding ground
- **Livelihoods:** Build-up of pellets in the environment over time or from a large spill can have devastating impacts on local communities and economies, including fishing and tourism industries and the right of communities to a clean, healthy and sustainable environment.

## Cases of pellet pollution on land & sea

**Chronic terrestrial leaks:** The NGO [Good Karma Projects](#) uncovered significant pellet pollution in Tarragona, Spain, in front of a major petrochemical complex where more than 2 million tonnes of pellets are manufactured every year. Volunteers estimate they found 90-120 million pellets on a single beach. 37 chronic pellet pollution sites are known worldwide but this is an underestimate.

**Acute terrestrial spills:** A train derailment in September 2023 spilled recycled plastic pellets in the Anacostia River watershed, Maryland, USA. Lack of rules for monitoring, preventing and responsibility for cleaning up spills meant federal response was slow and locals volunteered to clean-up the spill. Acute spills such as this happen too often. Over 15 years, 25 acute terrestrial spills were recorded worldwide, but the total is likely greater. If pellets were labelled and handled as hazardous materials these pollution events would be much better controlled.

**Acute marine spills:** Up to 75 billion plastic pellets spilled into the sea on the western coast of Sri Lanka after the MV X-Press Pearl ship caught fire in May 2021, because there are no rules on pellet transportation and they were not stowed securely. **Deemed the world's worst recorded pellet spill, plastic pellets smothered beaches, killed turtles, fish and dolphins, and wiped-out tourism, fishing and local livelihoods overnight.**

Without internationally agreed disaster response protocols for pellets the local community volunteered to help clean-up, but they are yet to be fully compensated for their losses and full remediation and restoration has not yet been achieved. Once pristine coastal areas are now polluted, and pellets spread to other countries and continue to impact species. Other marine pellet pollution incidents are known but many more go unreported.

[www.zsl.org/globalplasticstreaty](http://www.zsl.org/globalplasticstreaty)



Credit: Julie Davies

**"At least 1 trillion plastic pellets ended up in our ocean after just 8 maritime disasters. We must act now to stop plastic pellets polluting our land and sea"** - Tanya Cox, Senior technical specialist, Marine Plastics, Fauna & Flora

## Key messages

Plastic pellets can be produced from **fossil fuel derivatives and biological material** (as primary polymer) or **recycled plastic** (secondary polymer) or a combination thereof

Plastic pellets are an **upstream source of plastic pollution on land and sea** caused by industry's **mishandling of pellets through the plastic supply chain**

Plastic pellet pollution is **widespread** and impacts communities, wildlife and livelihoods worldwide

**Pellet pollution is preventable with a robust treaty**

The treaty must **stop the overproduction of virgin materials and take measures to increase true non-toxic circularity**

The treaty must **include legally binding measures to eliminate pellet loss** across the global plastic supply chain with reporting, verification and guidance

Agreed **disaster response protocols, remediation and compensation** are required to ensure swift responses and polluters pay for pellet incidents

## Contact

**Email Fidra:** [info@fidra.org.uk](mailto:info@fidra.org.uk)

**Website:** [fidra.org.uk](http://fidra.org.uk)

**Instagram:** @greatnurdler

**Facebook:** Fidra

**YouTube:** @fidra2970

**Twitter/X:** @FidraTweets

**Fauna & Flora Plastics Team:**

[Tanya.cox@fauna-flora.org](mailto:Tanya.cox@fauna-flora.org)

**Scan for Fidra's Pellet Hub:**



[www.fauna-flora.org/plastic-treaty](http://www.fauna-flora.org/plastic-treaty)