

# NURDLES - QUESTIONS AND ANSWERS

## What are nurdles?

Nurdles are pre-production plastic beads (they look like tiny hailstones) used in the manufacturing of everyday plastic goods and products. They are small, lightweight and easy to transport in bulk. They pour readily and melt quickly and evenly during production.

They can enter stormwater and sewerage systems through spills at industrial facilities or during losses in transportation from trucks or shipping containers. Nurdles are easily dispersed by winds and ocean currents and they are known to wash up on beaches across the globe.



More information about nurdles and other plastics that can impact the environment is available here [engage.vic.gov.au/waste/plastic-pollution](https://engage.vic.gov.au/waste/plastic-pollution)

## How does plastic affect the environment?

Plastic pollution is an urgent environmental problem. Thousands of tonnes of plastic enter global waterways and oceans each year. It has been estimated that ocean surface waters alone could contain more than five trillion plastic pieces, weighing over 250,000 tonnes.<sup>1</sup>

It can take years for plastic to break up, meaning the impacts of plastic pollution are long term, and can become increasingly difficult to manage.

Smaller plastics such as nurdles are particularly dangerous because animals such as fish and seabirds can mistake the beads for food. When ingested, nurdles can obstruct an animal's digestive systems, reducing their food consumption. Nurdles can take up toxins from the environment in the longer-term, making them potentially toxic to marine life.<sup>2</sup>

## Why have nurdles become a major concern in south-west Victoria?

Like other plastics and rubbish, nurdles are often washed up on district beaches. However, in mid-November, several members of the public noticed large concentrations of nurdles washed up on Shelly Beach. This site is close to the Warrnambool Sewage Treatment Plant operated by Wannon Water.

After being made aware of the contamination, Wannon Water conducted an inspection of the sewage plant on November 21 and discovered nurdles in the tank and other equipment. An investigation showed the nurdles had been illegally dumped through the sewage treatment system and were being expelled to the ocean through the plant's effluent outfall.

Operations staff isolated the tank and physically removed more than 75 buckets of nurdles from the plant's infrastructure, preventing these from entering the ocean environment. Unfortunately, as evidenced by clean-up efforts to date, millions of the plastic beads had also washed up on nearby beaches before Wannon Water was aware of the contamination.

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1. Eriksen M, Lebreton LCM, Carson HS, Thiel M, Moore CJ, Borerro JC, et al. (2014) Plastic Pollution in the World's Oceans: More than 5 Trillion Plastic Pieces Weighing over 250,000 Tons Afloat at Sea. *PLoS ONE* 9(12): e111913. Retrieved from: <https://doi.org/10.1371/journal.pone.0111913>

2. O'Shea, O., Taylor, H., Smith, W. Tischler, M., Ashton, K. (2014) *Plastic resin pellets in the Melbourne metropolitan area and evidence of domestic release to the Port Phillip Bay catchment*. Report prepared on behalf of the Tangaroa Blue Foundation. Retrieved from: <http://www.tangaroablue.org/resources/reports/category/13-plastic-resin-pellet-information.html>

The clean-up on beaches has involved a concerted and sustained effort by large numbers of community members including individuals, groups, schools, Wannon Water and other agency staff.

### **How did the nurdles get through the sewage plant?**

The plant treats sewage and trade waste from Warrnambool, Allansford and Koroit and meets regulatory standards. Wannon Water releases treated water from the plant to the ocean under strict licence conditions set by the Environment Protection Authority.



Like most treatment facilities across Australia, it has multiple systems in place to filter out the huge majority of foreign material that should not be disposed of down the toilet or drain. Plastics, baby wipes and other materials are screened out prior to entering the plant, but the equipment is not designed to remove tiny plastics such as nurdles.

As a precautionary measure, Wannon Water has now gone beyond what is required in

regulatory standards by installing an additional screen to the plant's effluent outfall. This is designed to capture any remnant nurdles that may be dislodged from the sides of the tanks and in the plant during the continuing clean-up process.

Wannon Water also reported the event to Environment Protection Authority (EPA) and we continue to work with them throughout the ongoing clean-up effort.

While the sewage treatment plant is a secure site and monitored frequently, this incident of illegally dumped nurdles has triggered a broader review of security and monitoring at the plant as an extra precaution. Wannon Water is confident there are no more nurdles entering the plant.

Wannon Water checked its sewage treatment plants at Port Fairy and Portland (which also discharge to the ocean) as a precautionary measure but found no evidence of nurdles in either facility.

Deakin University Associate Professor Julie Mondon has advised us that the Warrnambool incident is the first recorded spill of nurdles from a sewage treatment plant in Australia that she is aware of. The incident is relatively small compared to spills incidents that have occurred in the Northern Hemisphere, particularly in Hong Kong.

### **How many nurdles were dumped in the sewage plant?**

At this stage, there is no way of knowing how many nurdles were illegally disposed of. Wannon Water continues to clean the beads from the plant on a daily basis, collecting them in hand nets and from the new effluent screen. The number of nurdles cleaned from the plant and the beach are being estimated each day.

### **Is the source of the nurdles being investigated?**

An investigation into the source of the nurdles is underway and will take some time to complete. This is a priority for Wannon Water. The joint investigation is being undertaken by specialist staff from Wannon Water and the EPA.



### Why has this incident been upgraded to a Class 2 State Emergency?

The spill of nurdles from Warrnambool's sewage treatment plant was declared a Class 2 incident under the Emergency Management Act on 30 November.

This occurred due to the increasing complexity of responding to the contamination onto district beaches and the need for a multi-agency response.

A regional Incident Control Centre (ICC) was established in Warrnambool with the Department of Environment, Land, Water and Planning (DELWP) as the lead agency.

DELWP will coordinate the response as part of an Incident Management Team (IMT) with support from Parks Victoria, the EPA and Wannon Water.

### Why did DELWP not become involved in the incident sooner?

The incident was primarily managed by the EPA and Wannon Water, however due to the increasing complexity of responding to the contamination, a decision was made for DELWP to lead the response.

The IMT is engaging with a broader Incident Emergency Management Team that includes Victoria Police, Warrnambool City and Moyne Shire representatives.

### How will the agencies work with the community to clean up the beaches?

An agency coordinator is acting as a liaison between the IMT and the community. This position ensures agency and volunteer resources are being used efficiently and all parties work collaboratively.

The IMT aims to maintain a safe and coordinated working environment for volunteers and agency staff within scheduled timeframes:

- **All this week:** Daily monitoring and clean up
- **Tuesday:** Transition/recovery plan signed off
- **Wednesday:** Targeted community meeting
- **Friday:** Shut down IMT
- **Weekend:** Wannon Water volunteer coordination at targeted locations
- **Next week:** Daily monitoring and clean up
- **Next week:** Wannon Water coordinating operational response with DELWP only involved in monitoring.

### **What support will the IMT offer community volunteers who have been coordinating the clean-up for over two weeks now?**

We would like to applaud the immediate community response to the nurdle contamination. The collective and voluntary efforts of individuals, school and university students, and environmental and community groups has been humbling and overwhelming.

The IMT has been speaking with Colleen Hughson, one of the community leaders behind the community effort to clean up the nurdles.

The Facebook page Good Will Nurdle Hunting (<https://www.facebook.com/nurdles3280/>) has been used as an online forum for the community to identify locations affected by nurdles and coordinate clean-up efforts.

Drop-off bins for nurdles are provided at major beaches, at Wannon Water's Gateway Road office and the Moyne Shire offices in Port Fairy.

Equipment including 68 sieves, 120 buckets, 12 baskets and 12 scoopers are available for use in beach clean-ups to support the community efforts.

To date, more than 485 Choose Tap bottles have also been presented to people participating in the clean-up efforts, including school students.

### **How are you mapping the nurdles?**

The DELWP/Wannon Water emergency management team has been deploying field crews this week to survey the occurrence of nurdles at beaches on the Warrnambool – Port Fairy coastline.

On advice from Deakin University, they use a scientific survey method, walking along the high-tide line and laying a 50 centimetre x 50 centimetre 'quadrat' every 100 metres.

The location is recorded with a GPS and the number of nurdles within the quadrat is counted, and the spot given a rating between 1 (no nurdles) and 4 (more than 30 nurdles). The survey team then continues another 100 metres to survey the next location.



Over the last three days, teams have surveyed the whole 30 kilometre coastline between East Beach in Port Fairy and Logans Beach in Warrnambool.

They have created a nurdle occurrence map, which helps direct the clean-up effort towards the most heavily affected areas.

### **Why has it taken so long for agencies to act?**

The first sighting of nurdles on Shelly Beach was reported on 20 November. The EPA was notified the following day, after Wannon Water detected nurdles at the Warrnambool Sewage Treatment Plant.

Wannon Water crews began removing nurdles from the sewage plant as soon as they were detected in the tank. Its beach clean-up efforts began on 22 November with a team working on Shelly Beach that evening. A mechanical beach sweeper was trialled at Port Fairy's East Beach on 23 November.

Crews then shifted their focus to the beaches on a daily basis once the majority of nurdles were removed from the treatment plant.

Wannon Water established a dedicated IMT at its Gateway Road office on 27 November to manage its resources and respond to an increasing number of impacted beaches.

Due to the increasing complexity of responding to the contamination, a decision was made to declare a Class 2 State Emergency and for DELWP to lead the response from 30 November.

### **Will Wannon Water be fined for the pollution?**

The EPA is investigating whether there are breaches at both the Wannon Water treatment plant and at the original source of the nurdles.

The EPA has issued two notices, one regarding Wannon Water's response at the sewage treatment plant and one regarding the clean-up activities on local beaches. Wannon Water is working very hard to ensure our response is consistent with these notices and that we meet community expectations.

### **How can the community help with the clean-up?**

We applaud and thank those community members who have been cleaning up nurdles from local beaches, as well as other plastics and litter. The IMT and Wannon Water continue to provide support for the community efforts.



Other individuals interested in assisting are encouraged to work in with the existing community efforts. The Good Will Nurdle Hunting Facebook page provides information about the community clean-up activities.

Resources to assist with collection and disposal of nurdles are available at designated beach locations, with agency staff providing advice on working safely on beaches during coordinated nurdle collection and disposal activities as well for self-managed clean ups.

### **Are there safe handling tips for nurdle collection?**

The main methods of collecting nurdles involve:

- manually handling, including sieving areas of sand
- collecting sand in buckets of water and waiting for the nurdles to float
- shaking clumps of seaweed over a bucket or sieve.

The nurdles themselves are not toxic in nature. While nurdles can absorb some other contaminants in the ocean over long periods of time, our advice from Deakin University suggests this does not pose any significant risk for those handling them during collection. At any rate, these nurdles have only been in the environment for a short period. As a

precaution, the IMT has been advising those collecting the nurdles to use good hygiene practices after handling them as a precaution (i.e. washing hands thoroughly).

### **How is cultural heritage being protected during the clean-up?**

The Eastern Maar and Gunditjmara are the traditional owners of the beaches in this region. DELWP, Parks Victoria and Wannon Water pay respects to their elders, past, present and future and appreciate their assistance in responding to this event.

There are sites of cultural heritage within the contaminant area. The IMT is working with Gunditjmara Aboriginal Cooperative and Eastern Maar Aboriginal Corporation to minimise any disturbance to these sites.

### **How can I avoid harming Hooded Plover nest areas?**

All known Hooded Plover nest sites are fenced off and sign-posted. Do not go inside the fenced area. There is a real risk of treading on nests, eggs and chicks. If nurdles are within the fenced areas, a special activity under the guidance of experienced Hooded Plover monitors will be conducted to remove these.

There is a 'disturbance zone' for Hooded Plovers in the area in front of the nest sites and 100 metres either side. Please do not set up marquees, tents, tables, bases of operation, rest points, sit, loiter, etc in the 'disturbance zone' Do not use machinery in the 'disturbance zone' - please hand sieve instead. Limit your time working in the 'disturbance zone' to 20 minutes per hour if the temperature is less than 25 degrees or 10 minutes per hour if it is greater than 25 degrees. Please do not return to the area until a break of 40-50 minutes to allow birds time for incubation/brooding duties.

For sites with chicks, which move about the beach well beyond the fenced area, an experienced Hooded Plover monitor needs to determine the location of the family of birds immediately before the clean-up.

If you are unsure, please call Robyn Bush of Parks Victoria on 0403 261 145 to determine if there are nest sites on a beach and whether they are "active" (i.e. presently or imminently have chicks or eggs).

### **What do I do if I find sick, dead or injured wildlife?**

Wildlife are being monitored to determine if nurdles are being ingested and whether there are any adverse health effects. All sick or dead wildlife observed in the area of the nurdle spill are being collected or assessed.

People are being advised to report dead wildlife to the Department of Environment, Land, Water and Planning (DELWP) on 136 186. Do not handle wildlife yourself.

In addition, whales or dolphins on beaches (alive or dead) are considered an emergency and must be reported directly to the Whale and Dolphin Emergency Hotline on 1300 136 017.

### **What happens to the nurdles once they are collected?**

Nurdles collected from the beaches and sewage plant are being passed on to Deakin University for a research project. Nurdles shouldn't go in landfill. People collecting them from beaches can place them into bins provided at beaches or at Wannon Water's Gateway Road foyer and the Moyne Shire offices in Port Fairy.



Plastic bags and markers are provided at the drop-off points. Please place your nurdles into these, label the bags with the date, time and location where they were found, and place them into the bin.

#### **What does the Deakin research involve?**

Deakin is researching the chemical signature of the nurdles that have washed up on district beaches as part of a worldwide research program.

#### **How can we make a difference for the future?**

The Victorian Government has released a discussion paper ***Reducing the impacts on plastics on the Victorian environment*** seeking public input on how to manage plastic pollution in the state, including a ban on single-use, light weight plastic shopping bags.

To find out more and have your say visit [engage.vic.gov.au/waste/plastic-pollution](https://engage.vic.gov.au/waste/plastic-pollution)