

# Beach Detective – Microplastics Investigation

Trash to Treasure Class Resource Kit



## Preparation

Class Level	Grade 6
Objectives	In this activity kit, students will learn what a microplastic is, what it is made out of, and how to identify and recover microplastics from samples.
Curricular Competencies	<p><b>Science:</b></p> <p>Questioning and Predicting</p> <ul style="list-style-type: none"><li>• Demonstrate a sustained curiosity about a scientific topic or problem of personal interest</li><li>• Make observations in familiar or unfamiliar contexts</li><li>• Identify questions to answer or problems to solve through scientific inquiry</li><li>• Make predictions about the findings of their inquiry</li></ul> <p>Planning and Conducting</p> <ul style="list-style-type: none"><li>• Explore and pose questions that lead to investigations</li><li>• Observe, measure, and record data, using appropriate tools, including digital technologies</li><li>• Use equipment and materials safely, identifying potential risks</li></ul> <p>Evaluating</p> <ul style="list-style-type: none"><li>• Identify possible sources of error</li><li>• Suggest improvements to their investigation methods</li></ul> <p>Processing and analyzing data and information</p> <ul style="list-style-type: none"><li>• Experience and interpret the local environment</li><li>• Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data</li><li>• Identify patterns and connections in data</li><li>• Compare data with predictions and develop explanations for result</li></ul> <p><b>Social Studies:</b></p> <p>Differentiate between short- and long-term causes, and intended and unintended consequences, of events, decisions, and developments</p>
Background	<p>Students may have previously taken part in the shoreline cleanup part of NS3's "Trash to Treasure" program. In addition, students may also have completed the optional follow-up activity "Fishing for Microplastics".</p> <p>If the class has not participated in NS3's "Trash to Treasure" program, it is recommended that the class take part in a beach/park or school clean-up as an introduction to this activity, however, it is not necessary to complete this lesson.</p> <p>This sign-out activity kit explores how to effectively remove microplastics from beach sand or dirt.</p>

Materials/Equipment	<p>Included in Kit:</p> <p>Part 1</p> <ul style="list-style-type: none"> <li>• One 10x Magnification Microscope</li> <li>• Six prepared microscope slides <ul style="list-style-type: none"> <li>○ Sand from the Departure Bay Beach (Slide 1)</li> <li>○ Microplastics from body wash (Slide 2)</li> <li>○ Microplastic and Sand (Slide 3)</li> </ul> </li> <li>• 30 Animal Cards</li> <li>• Microplastics Guessing Game (5 vials labelled A-E)</li> <li>• Products with Microplastics (Sample Kit 1)</li> <li>• Coffee filters</li> <li>• Large sheets of paper (for Placemat Activity)</li> <li>• Eight Crayola markers</li> <li>• Bucket of salt with microplastics</li> <li>• Five small strainers</li> <li>• 30 containers with lids</li> </ul> <p>Part 2</p> <ul style="list-style-type: none"> <li>• 6 large buckets</li> <li>• 6 large sieves</li> <li>• 30 tweezers</li> <li>• 6 plastic pipets</li> <li>• 50 white plates</li> <li>• Blank glass slides and slide covers</li> <li>• Microplastics Recovery Jar</li> </ul>
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### Activity

<p><b>Part 1</b> Introduction</p>	<p>To begin this activity, the teacher will need to introduce the plastics problem to the students (if the class has already completed the “Fishing for Microplastics follow-up activity, skip to Part B).</p> <p><b>Part A</b></p> <p>Introduction to plastics discussion may include the properties of plastics, plastic’s ability to remain in the ocean environment, and the growing problem of the plastics in the environment. Using visual aids to introduce the plastic problem is often the most impactful method. It should be noted that some images of wildlife affected by plastics can be upsetting to some children.</p> <p>Important Points:</p> <ol style="list-style-type: none"> <li>1. Plastics are manmade.</li> <li>2. Plastics are found in water and along beaches.</li> <li>3. Plastics come in all shapes and sizes and can be mistaken for food.</li> <li>4. Small plastics less than 5mm in size are called <i>microplastics</i> (5mm is about the diameter of a pencil eraser). <i>Macroplastics</i> are larger than 5mm.</li> <li>5. Microplastics are harming organisms by creating internal abrasions and blockages in the digestive system, false-satiation (feeling full), and POSSIBLE transfer of pollutants to animals from particles adsorbed (adhered) onto the plastic surface.</li> </ol>
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