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| Journey Down The Drain Student Worksheet |
| Background Every time you wash your hands, flush the toilet or wash your clothes, you’re creating wastewater. Think of how much wastewater comes out of your own home. Then consider all the houses in your street, your suburb, and your city. Then consider all the industries, shops and farms. Suddenly, we have got a lot of wastewater to treat and, as the population grows, so does the amount of wastewater. Indeed, in many places, water authorities are struggling to keep up with the amount of wastewater being generated by the community.Many of us have sewerage tanks which are emptied Clearly, sewage needs to be treated first to remove the useful components and harmful substances. How would you go about treating it? |
| Keywords: sewage, sewer, sewerage, sludge, wastewater, effluent, filter, solution, mixture, sieve.  |
| For the actual filter you could use:• piece of cotton or fly screen type material (old t-shirt or shirt would work)• kitchen towel • cotton wool Kitchen spongeCoffee filterAny other items you think will help you filter the waste water | What you need:To create your own wastewater mix you will a selection of the following equipment:• 2 plastic bottles, jugs, or containers• cooking oil • liquid soap • soil / sand / stones• grass clippings • sticks / leaves• toilet paper• plastic bag bitsFood colouring (represents chemicals)Scraps of food (optional) |
| What to do: 1. Make a plan

Before going any further think about how you’d separate your wastewater mix. Write down a plan for separating the mixture, using the equipment from the list or items you have at home that you think will work.1. Prepare

Collect together all the things you are going to need before you begin. Read the planning section before you start as you will be using your own scientific thinking to create your home made filter.1. Experiment

Once ready make the mixture in one of your containers by putting mixture items together with some clean water. You can use whatever you have at home so don’t worry if you don’t have everything.You could add some squares of toilet paper, shredded plastic, and some food scraps as optional items. If you are going to leave to stand for a few days I would suggest you miss out on the food scraps. Shake or mix vigorously for several minutes until you have waste water. (You will need to repeat this step just before you use your waste water)The result isn’t all that pleasant; imagine what it would be like if you added all the things you flush down the toilet plus chemicals from factories which go down the drains!Prepare your home made filter using items from home that you think will help you filter the waste water. Remember to explain why you chose them and why you put them in that order into your filter. Pour the prepared waste water through your filter. Observe what happens.Repeat possibly using different materials or a different order of items in the filter.  |
| Results:Write a brief report below about what you did and the outcome of your investigation. (you may like to add pictures or diagrams for each stage)What would you change?Which materials stopped different substances?What else would you like to try that could improve the investigation? |
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