

ACTIVITY

Flushable/Dispersible Non-Dispersible



OBJECTIVE

To demonstrate the difference between flushable and dispersible with regards to many personal care items and home cleaning products marketed as flushable and used today.

Municipal collection systems and pumps were not designed to handle many of these items; as a result, municipalities may spend thousands of dollars annually in the repair, maintenance and replacement of equipment damaged by these items, as well as ultimate disposal costs.

Homeowners may also incur additional expenses in clogged lines and pipes in their homes.

DEFINITIONS

Dispersible:

Something that breaks up in water; non-dispersible-does not break up in water

Flushable: Able to flush the item down the toilet or marketed/labeled as flushable

Just because it is labeled "flushable" does it mean that it is safe or advisable to flush?

EQUIPMENT

1. Clear plastic or glass containers with caps (plastic preferred), 125 ml minimum
2. Assortment of household items commonly used and marked or assumed to be "flushable," especially baby wipes, tissues, personal cleansing wipes, and paper towels, as well as different toilet papers and flushable kitty litter
3. Water source, timer, labels, scissors
4. Worksheets with table to record item vs. shake time in water to simulate flushing action and collection system action of pipes and pumps

SUGGESTIONS

Have the sample cups prefilled with water, have the paper products "precut" in 1 inch squares, and have a blank label on the top of each cup.

It may be best if every student has a cup to shake, rather than one being the time keeper and the other the record keeper, but it can be done either way.

Note: It is important to show the difference between dispersibility and when 2-ply paper separates; this is not the same as dispersible.

ACTIVITY

- Form teams of students, 3 – 4 per team; each team should have 3 – 4 items to test for dispersibility.
- Students may cut the items into 1 inch squares if not already done and label the tops of the containers so that the visibility of the water is not obstructed.
- Students should fill out the top and left-hand column of the data sheet.
- Cups/containers of water will be filled allowing head space for shaking; for a 125 ml bottle, fill to the 90 ml line.
- When ready or instructed, the students will drop the item into the cup and tighten the cap. Start the timer and begin shaking the cup for 1 minute intervals. At the end of the minute, students will record their observations of the items.
- Suggested observations: Look for foaming of some wipes containing soaps and detergents, break up of 2 ply papers, no change, or dispersibility.
- Students should repeat this for 3 individual one minute intervals. Then allow the items to sit for 5 – 10 minutes and repeat the shaking exercise, again recording observations.
- Items can also be left overnight and dispersibility recorded in the morning.
- The expected observations are that the items that did not disperse within 3 minutes will not disperse even overnight, demonstrating that when flushed down the toilet, they will arrive at the treatment plant whole/intact and can cause clogs and obstructions in either homeowners' pipes or problems in the sewer collection system, as well as at the treatment plant.

ADDITIONAL EXERCISE

Hair and dental floss, as well as Q-tips and other items, can get all entangled with each other when flushed; if mechanical stirring or mixing is available, a demonstration of these items can also be shown.

Non-dispersible items can also become stuck in FOG (fats, oils, and grease) in the collection system, resulting in what was called a "FATBERG" in London.

Show photos and videos of clogged pipes and pumps.

CONCLUSION

Using this activity, the students become aware of the difference between flushable and dispersible and sewer safe items. Discuss disposal methods, consumer choices, and consumer education regarding these products and the impacts they can have on a home system and the wastewater process at large. Promote sustainability, biodegradability, and green practices, as dispersible products do not require additional energy or labor to remove from the wastewater stream.

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