

# **STANDARD OPERATING PROCEDURE FOR EVALUATING MATERIALS IN PUMP CLOGS AND SEWER OBSTRUCTIONS**

**Background:** This standard operating procedure (SOP) is designed to enable operators and maintenance workers to determine the nature of pump clogs and sewer obstructions at various locations. Currently there are limited data on the nature of these interferences. Obtaining more information will allow the industry to better understand the extent of the problem, characterize the materials that are responsible for the interferences and determine how to ultimately solve the problem.

**Purpose:** A variety of materials such as paper towels, baby wipes, and feminine hygiene products have been responsible for interference in wastewater systems. This SOP is an approach to better assess the nature and amount of flushed materials that are causing the interference. Additionally, this SOP collects information about whether the materials are dispersible, and, if so, how rapidly the materials degrade and disperse when compared to toilet tissue, which is rapidly dispersible.

## **Recommended Equipment for this Procedure:**

- A camera,
- Several 5-gallon plastic buckets,
- A water hose,
- Clean water,
- Several tarps to protect surfaces and arrange materials,
- Tape measure,
- Data entry forms, and
- An appropriate sanitary drainage system to collect runoff and rinse waters and protect surface waters.

## **Recommended Personal Protective Equipment (PPE):**

- Safety Glasses,
- Face Shields,
- Aprons,
- Steel Toed Work Boots,
- Gloves (for protection from liquids as well as sharp objects and needles),
- Hard Hat,
- Fall protection and confined space entry equipment per site specific safety analysis.

**Safety Awareness and Planning:** Safety is of paramount importance – all work shall be undertaken in a planned and safe manner and follow any specific agency or city procedures that will supersede these guidelines.

## **Method:**

1. Remove and collect the pump clog or sewer obstruction. Note location of the obstruction and conditions that caused it, if known, on the data entry form. Photograph the material for later review.
2. The following steps are guidelines and intended to allow the operator or maintenance worker to separate the material up into smaller, possibly identifiable pieces:

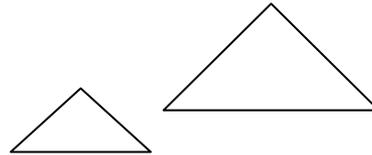
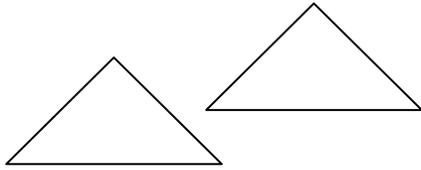
- a. Place the material into 5-gallon buckets
  - b. Gently flush the material with clean water from a hose. A gentle “swirl” will help loosen the material, making separation easier. The clean water will also flush or rinse organics away and “freshen” the sample to remove odors and prepare them to be handled.
  - c. Once the material begins to loosen, proceed to the next step.
3. Begin removing individual items from the collected mass sample. For comparison of the total volume of each different material, group similar items into piles. Place materials into similarly sized piles or use the smallest pile as a reference for other piles (for example, one pile may be 2 or 3 times larger than the smallest). All piles should be on tarps. (See example on next page)
  4. Sort and note the following on the data entry form:
    - a. Can the material be easily torn by pulling with two fingers and a thumb? (Y/N)
    - b. What is the size of the material (paper towel sheet, large cleaning wipe, personal wipe, make-up remover squares, etc.)? Use the size guidelines on the data entry form.
    - c. Are there clear identifiers? Look for recognizable imprints, designs, or patterns in the fabric, such as quilting and teddy bear or flower prints.
    - d. Separate the feminine hygiene products from other materials.
    - e. Add materials to data entry form that are present in sample but not already listed.
  5. Continue the process until the material can no longer be readily sorted. Using the data form, describe any material that is unidentifiable and can’t be sorted into unique piles. For example: can it be torn by hand, is it uniform, stringy, random, etc.? This step may take a few trial runs to improve your characterization process efficiency.
  6. Divide the material into similar-sized piles to determine proportion of each material type. For example, there may be 1 to 1-½ piles of paper towels, ½ pile large wipes, 1 pile baby wipes, ¾ pile of feminine hygiene products, and ½ pile remaining that is unidentifiable (cannot be torn by hand, etc.) Note proportions on the data entry form and photograph the piles. *Note: Use a 5-gallon bucket marked at half and one gallon levels to gauge volume instead of the “pile” approach. There should be some discussion on the size (or weight) of each pile and if each pile is of the same size. If weight is determined important, then the recommended equipment should include a scale.*
  7. Note any materials that may have caused the clog or obstruction to develop. *This may include a wire, plastic tie, or other stringy material that allowed the material to collect.*
  8. Clean and restore all tools, materials, and surfaces to as-found conditions and restore all equipment and manhole covers to their normal operating mode. Dispose of the collected materials in the agencies municipal solid waste system or “rag bin” at the treatment plant where these materials are currently disposed.
  9. Document any “should have had” or “should have done” items to help improve the process and efficiency in the future. Email these suggestions to [sfirmin@pwd.org](mailto:sfirmin@pwd.org).
  10. Return completed data form and photos to: [sfirmin@pwd.org](mailto:sfirmin@pwd.org).

**EXAMPLE: Using the “similarly sized pile” concept**

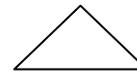
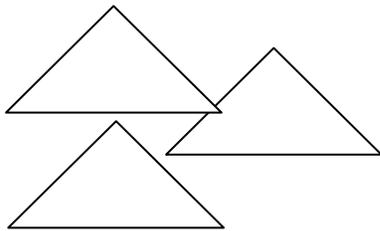
This concept will help determine the relative percentage of each material in the clog or obstruction:

Divide the material into “similarly sized” piles

**Baby Wipes** – 2 “similarly sized” piles



**Personal Wipes** – 1 and 1/2 “similarly sized” piles



**Feminine Products** – 1/2 “similarly sized” pile

**Paper Towels** – 3 “similarly sized piles”

Summary:

| <u>Item</u>       | <u># Piles</u> | <u>% of Total</u>                |
|-------------------|----------------|----------------------------------|
| Baby Wipes        | 2              | 2 piles / 7 piles total or 29%   |
| Paper Towels      | 3              | 3 piles / 7 piles total or 43%   |
| Personal Wipes    | 1 and ½        | 1 ½ piles / 7 piles total or 21% |
| Feminine Products | ½              | ½ pile / 7 piles total or 7%     |
|                   | 7 total        |                                  |

**Maine WasteWater Control Association  
Data Entry Form  
SOP for Evaluating Materials in Pump Clogs and Sewer Obstructions**

Municipality: \_\_\_\_\_

Location: \_\_\_\_\_

System type (circle one):      **COMBINED**                              **SEPARATED**

Nature of interference (pump clog, sewer obstruction, other): \_\_\_\_\_

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Date: \_\_\_\_\_ Weather Conditions: \_\_\_\_\_

Operator(s): \_\_\_\_\_

**Separate material into even sized piles for comparison. For instance, there may one pile of cleaning wipes and 2 and 1/2 piles of paper towels.**

**Rinsing materials in a bucket prior to screening may make it easier to separate and identify individual materials.**

| Material  | # of Piles | % of Total<br>(# Piles / Total # Piles) | Tear<br>(Yes or No) | Description   |
|---|------------|---|---------------------|---|
| Paper Towels  |            |   |                     | C-fold towels or serrated edge.   |
| Cleaning or Other Large Wipes<br><i>(8-12" on longest side)</i> |            |   |                     | Often have a perforated or serrated edge. Include shop towels, medical wipes, and "Swiffer" type pads here. |
| Baby Wipes<br><i>(Medium: 8" on longest side)</i>               |            |   |                     | Include all embossed or imprinted wipes here.   |
| Personal Wipes<br><i>(Small: 2-8" on longest side)</i>          |            |   |                     | Include makeup remover pads, hemorrhoid wipes, hand wipes.  |
| Hygiene Products  |            |   | N/A                 | Include tampons, tampon applicators, and sanitary pads as well as adult diapers.                            |
| Other:  |            |   |                     | Describe:   |
|   |            |   |                     |   |
|   |            |   |                     |   |
|   |            |   |                     |   |
| <b>Total # Piles</b>  |            |   |                     |   |

Describe anything that may have allowed material to collect around it (wire, plastic strapping, etc.): \_\_\_\_\_

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If you are unable to separate materials, generally describe what you see (can it be torn readily): \_\_\_\_\_

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Email completed forms to: [sfirmin@pwd.org](mailto:sfirmin@pwd.org)

