



What's really being flushed?

October 4th, 2017



Agenda

- Meeting objective
- Nice-Pak Introduction
- What's really being flushed?
- Recommendations
 - Guidelines
 - Nice-Pak Technology
 - Improved Labeling on nonflushables
 - Education
- Next steps

Why Am I Here?

- We share a strong mutual concern
 - **NON-FLUSHABLE PRODUCTS ARE BEING FLUSHED THAT SHOULD NOT BE**
- We want to work together to reduce the burden
- Keep the focus on real and realistic solutions

Mooreville, IN
Production Site



Orangeburg, NY
Global HQ and Production Site



Jonesboro, AR
Production Site



Montvale, NJ
R&D Innovation Center

Flint, United Kingdom

Wigan, United Kingdom

Magdeburg, Germany

1957

Nice-Pak initiates wet
wipe development,
production and
marketing

**3+ million
square feet**

combined
manufacturing and
distribution sites in
the U.S. and Europe

~2,500

associates
worldwide

**100+
billion**

number of
times we touch
consumers of our
products each year
worldwide



- Fourth-generation pioneer and global leader in the development, manufacturing and marketing of wet wipe solutions that promote health and wellness for retail, healthcare and foodservice
- We touch consumers of our products more than 100 BILLION times per year worldwide
- Largest producer of wet wipes from 100% renewable plant-based fibers
- Committed to meeting the growing demand for wet wipe solutions through business practices that respect the environment

Mission Statement:

To **lead** category by driving **education** and increasing awareness of wet wipes as the **superior** cleaning and hygiene solution through a relentless commitment to **research, innovation, quality** and our **customers**. We meet this growing demand for wet wipes through excellence in **manufacturing, service** and business practices built on a foundation of **trust** and **empowerment** that enhances the **well-being** of our **associates, their families, the communities** in which we operate and the **environment**.



So what's really being flushed?



What is really being flushed? 98% of what is being flushed was never designed to be flushed.

WHAT'S REALLY IN THIS PICTURE?

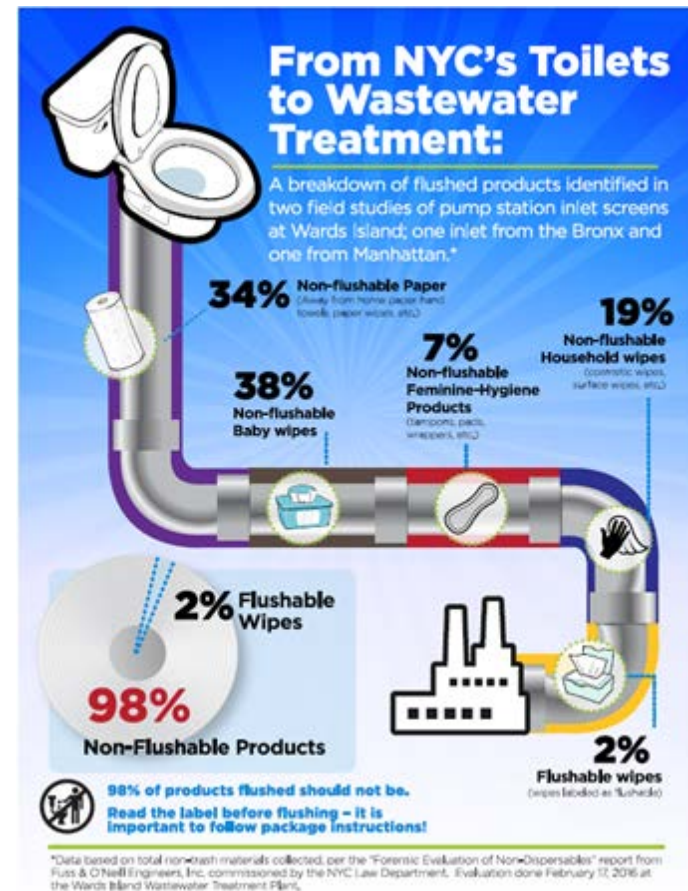


Forensic analysis of what is found on wastewater screens shows that almost all of what is there are items never designed nor marketed to be flushed.

*Data based on total non-trash materials collected, per the "Forensic Evaluation of Non-Dispersables" report from Fuss & O'Neill Engineers, Inc. commissioned by the NYC Law Department. Evaluation done February 17, 2016 at the Wards Island Wastewater Treatment Plant.

Recent collection studies continue to show that flushable wipes are not the cause of clogging in wastewater systems.

- Products not designed to be flushed were >98% of material recovered in 2016 NYC sewer study.
 - 75% reduction in number of flushable wipes found in 2016 collection study versus studies pre 2013.
- Perry lawsuit settled after no flushable wipes found in any clogs.
- Recent UK wastewater collection study found less than 1% flushable wipes in over 50+ clogs.



Yet media still blame “flushable wipes” for clogging ...

“Frustratingly, many articles on this topic in major media outlets still feature operators and superintendents referring to the wipes clogging their pumps as ‘flushable wipes’, when in fact they’re probably baby wipes, cleaning wipes, or other wipes. This misuse of the word ‘flushable’ confuses the issue for the public and takes education and enforcement energy away from the baby wipe (etc.) products.”

- Aubrey Strause, P.E., Maine Water Environment News, Spring 2015

'Fatberg' of grease, wipes blamed in Baltimore sewer overflow

John Bacon, USA TODAY Published 9:54 a.m. ET Sept. 28, 2017 | Updated 4:48 p.m. ET Sept. 28, 2017



Baby and Flushable Wipes are Designed Differently to Meet Different Consumer Needs

- Baby wipes (and household cleaning wipes, etc.) are designed to have high strength, generally are larger and prevent failure during use.
- Flushable wipes are designed to meet consumer use and disposal expectations *and* to be readily processed by municipal waste water systems
- Flushable and non flushable wipes are very different:

<u>Wipe</u>	<u>Wipe Size (sq.in.)</u>	<u>Fiber Length (mm)</u>
Kirkland Signature Baby Wipe	56	38
Kirkland Signature Moist Flushable Wipe	36	2 to 10

The Differences Inform their Sales, Marketing & Use

Baby Wipes:

- Generally merchandised with baby products
- Labeled with prominent “Do Not Flush” Logo
- 23% of purchasers have no children; 19% have no children in diapers*
- Among moms, baby wipes are disposed of usually in with the diaper
- Bought for convenience and versatility
 - Adults/infants in diverse settings (entire body, surfaces, stain removal, pets)

Flushable Wipes:

- Generally merchandised with toilet paper (except toddler wipes)
- Marketed as a complement to toilet paper
- Bought to feel fresh and meet desire for more sanitary experience with better cleaning than toilet paper alone
- Specifically intended for use in bathroom settings
- 97% store in the bathroom**

*Nice-Pak Baby Wipes Attitude & Usage Study, June 2011

*Nice-Pak MTT Attitude & Usage Study, June 2011

Very Different Development Processes

Baby Wipes:

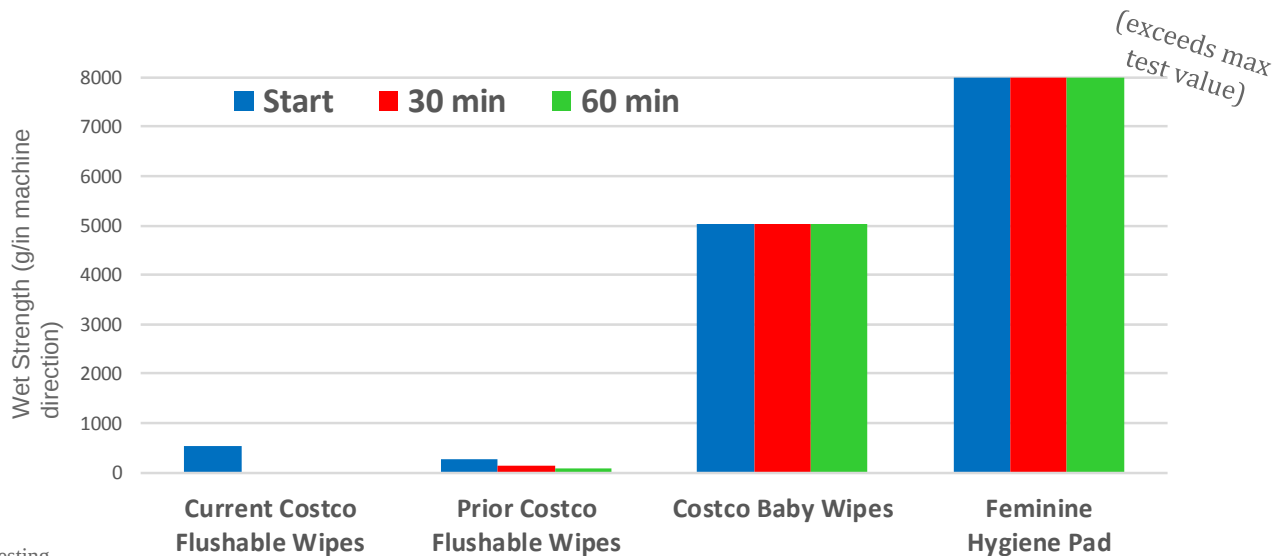
- Mature product category
- Minimal development expenses
- Largely established technology
- Abundant supply options

Flushable Wipes:

- Monumental R&D expenditures required
- Significant costs associated with flushability performance testing
 - Unique life cycle
- Extremely limited supply options
 - New factories and production lines required
- Complex intellectual property landscape

Flushable v. Non-Flushable Wipes In Use

- Baby wipes are approximately 10x stronger than flushable wipes
- Flushable wipes are designed to break down over time
- Baby wipes are designed to retain their strength



Source: Nice-Pak Internal Testing

Slosh Box Test

- Significant performance difference between baby and flushable wipes
- After thirty minutes:
 - KS Baby Wipes retain their strength and have minimal (<10%) mass loss
 - KS MFW have no wet strength (too low to test) and significant (>90%) mass loss
- KS Baby Wipes would FAIL the slosh box test

Measuring Performance of Dry Toilet Paper and Flushable Wipes via Slosh Box shows Nice-Pak Technology approaching dispersibility of toilet paper

Slosh Box:

61 degree water

2 liter, 26 rpm

Toilet Paper: 6 sheets folded

Highlights:

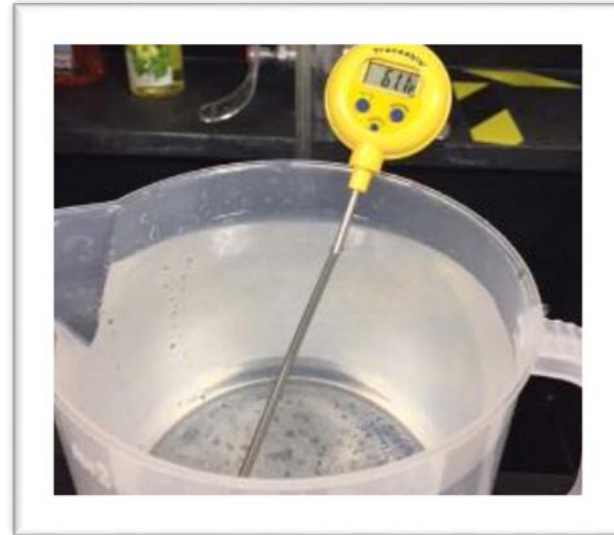
Dry Toilet Paper

Kirkland Bath Tissue: At 2 minutes dispersed into small pieces

Charmin Ultra Soft: At 6 minutes dispersed into small pieces

Wet Flushable Wipes

Nice-Pak At 6 minutes beginning to break up into small pieces



Toilet Paper Slosh Box Testing Kirkland Bath Tissue

2 minutes - broken into small pieces



Charmin Ultra Soft Takes Longer to Break Up: up to 6 minutes

2 minutes -
minimal break up



4 minutes - some break up



6 minutes - broken into small
pieces



Nice-Pak Flushable Wipe Dispersibility

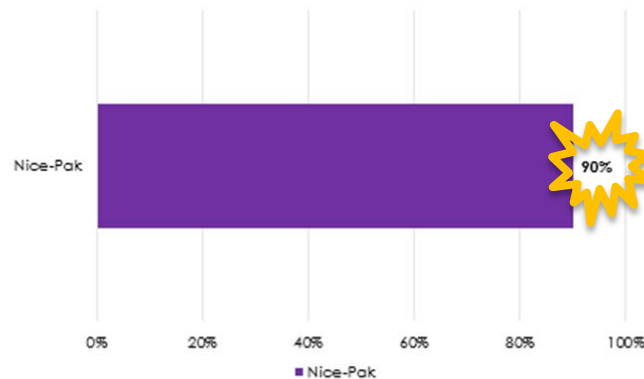
6 minutes: beginning to break up



8 minutes: broken up in small pieces



Slosh Box 15 Minutes % Dispersibility

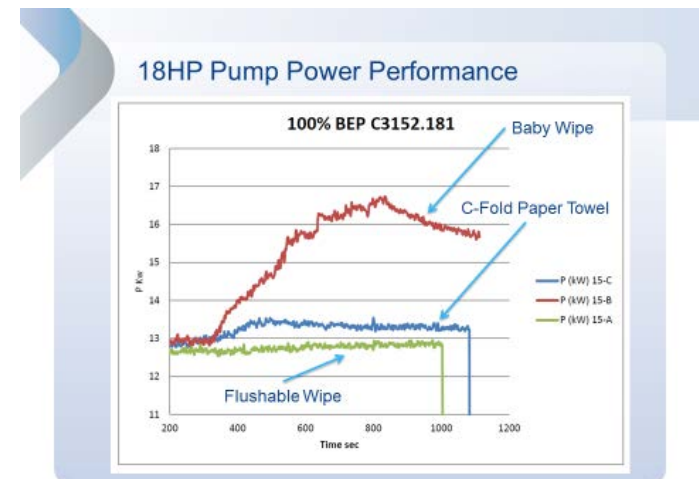
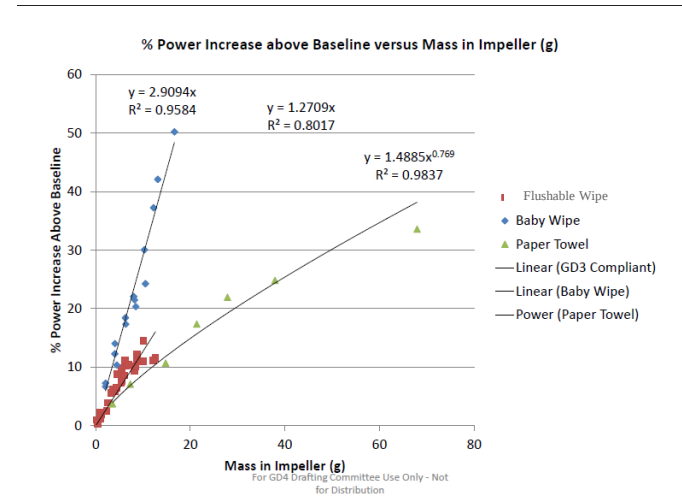


Household Pump Test

- KS Baby Wipes and KS Moist Flushable Wipes perform very differently in household pump (basements)
- During in-house tests:
 - KS Baby Wipes started to clog the pump after less than 30 wipes flushed
 - 2000 KS MFW passed through the household pump without any discernible negative impact on the pump
- **KS Baby Wipes would FAIL the household pump test**

Municipal pumps clog with non-flushable products. Clearly paper towels and baby wipes are problematic to pumps.

- The relationship between accumulation and power consumption is not equivalent across substrate types
- Three distinct pump power responses were observed
- The baby wipe tested drew significantly more power than the flushable wipe at a similar accumulation amount – an acute response
- The paper towel generated accumulation and power consumption that significantly exceeded those with the GD3-compliant wipe – a chronic response



Flushability Guidelines

With no flushable standard, there are multiple municipality initiatives to regulate flushable wipes. Most are calling for the establishment of flushable guidelines when there are no regulatory bodies actively developing them.

This creates the potential for non-fact based regulations that can in fact exacerbate the problem.

Our hope is to work with you to create fact based guidelines that can serve as a model for manufacturers and the wastewater community.

What does Nice-Pak recommend?

- Flushable wipes: New criteria for current tests. Ensure wipes used in or around bathroom for toileting purposes are made with best available dispersible nonwoven technology to comply with future standards and regulations.
- Non-flushable labeling: Add “Do Not Flush” logo on all non-flushable products likely to be flushed including paper towels, baby wipes, feminine hygiene products and others per previous slide
- Education: Develop consumer awareness campaign on responsible flushing and promote in-store and via social media



For the 98% being flushed that shouldn't be

- New labeling approved by INDA and Wastewater on non-flushable wipes to significantly increase prominence of Do Not Flush symbol
- Includes larger size of DNF symbol and placement at point of dispensing

Need to go further:

- Require Paper Towels, fem hy products, etc. to have the DNF symbol
- Consumer education outside of labeling: Point of purchase and social media education campaign



Consumer Education Needed to Reduce Burden on Wastewater

- Focus efforts on 98% of what's in wastewater.
- Develop graphics/tools
- Add signage at retail point of sale on “what not to flush”.
- Develop joint press releases with the retailers on not flushing paper towels, baby wipes and other non-flushables utilizing local news coverage

Focused Education works

Clear labelling is the starting point for effective education. EPA award winning education pilot by INDA and Wastewater :

- Changed flushing habits
- Reduced all trash in sewer 50%



So what's next?

- We want to work together to reduce the burden
- Conduct sewer collection study together
- Keep the focus on real and realistic solutions
 - Improved guidelines to ensure Best Available Dispersible Technology
 - Improved DO NOT FLUSH labeling on all nonflushables
 - Raising Consumer Awareness on responsible flushing

Questions?



Thank you!



Appendix



What is Flushability according to GD3?

Definition of Flushability

For a product to be deemed flushable there must be evidence indicating that it:

- Clears toilets and properly maintained drainage pipe systems when the suppliers recommended usage instructions are correctly followed;
- Freely passes through wastewater conveyance systems and is compatible with wastewater treatment, reuse and disposal systems without causing system blockage, clogging or other operational problems;
- Is unrecognizable in effluent leaving onsite and municipal wastewater treatment systems and in digested sludge from wastewater treatment plants that are applied to soil.