## Innovation Transforming Lives through the Power of Clean Water

#### August 20, 2018

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# Children's Safe Drinking Water

Transforming lives through the **Power** of **Clean** water



### **The Global Water Crisis**

- More than 800 million people still lack basic access to safe drinking water.
- Almost 1,000 children are still dying every day from water-borne diseases – more than HIV /AIDS and malaria <u>combined.</u>
- CSDW supports SDG number 6.







### **P&G's Solution**

- •1 billion+ packets distributed
- . 12 billion liters of water provided
- Emergency relief efforts in more than 90 countries





### Our Goal:

# 15 billion liters of clean drinking water by 2020





## The **Power of Clean Water** is Changing Lives

#### Health



Clinical studies show use of P&G Packets reduce diarrheal illness by 50%.

#### **Education**



Reduced illness enables children to **regularly attend school** so they can learn and advance their education.

Economic Opportunity



Helps adults stay healthy and reduces the burden of water management (especially for women) so they can work and create a better life for their families.



## The P&G Purifier of Water packet

- Powdered water purification technology invented by P&G scientists leveraging laundry cleaning expertise
- Each packet cleans and disinfects 10 liters of drinking water using coagulation, flocculation and disinfection
- Reverse engineered municipal water treatment process and contains same ingredients used in municipal systems
  - Calcium Hypochlorite as disinfectant
  - Ferric Sulfate as coagulant





# P&G Purifier of Water

#### **The Chemistry** – So what's going on here?

#### **Overall Process: Coagulation - Flocculation**

 agglomerates suspended solids together into larger bodies so that physical filtration processes can more easily remove them.

- particulate removal by these methods makes later filtering processes far more effective.
- This is followed by gravity separation (sedimentation) and filtration.

**Coagulant** - A substance that, when introduced to water, induces particulates to lump together for easier removal. Coagulants work by creating a chemical reaction and eliminating the negative charges that cause particles to repel each other.

**Flocculation:** The agglomeration (i.e., clumping) of particles suspended in water into larger particles ("flocs") that can be removed by sedimentation or flotation. This water churning induces particles to collide and clump together into larger and more easily removable clots, or "flocs."

# **P&G Purifier of Water**

#### **So what's in there?** 6 Ingredients

#### Ferric Sulphate - coagulant

 main ingredient that provides the coagulation and eventual clarification benefit.

#### Magnafloc LT25 - bridging flocculant

- key ingredient that drives flocculation (polyacrylamide)
- gives flocs of sufficiently high particle size that they can easily be separated from the water by simple straining through cloth.

#### Sodium Carbonate - alkalinity

- added to balance the acidic ferric sulphate
- ensures optimum performance in flocculation and coagulation
- ensures final pH of treated water is acceptable (typically pH = 5-7)

# **P&G** Purifier of Water

#### **Bentonite Clay - flocculation aid, disinfectant stability**

 coagulation/flocculation aid - provides insoluble sites on which floc grows, thereby giving a sinking floc of large size

• moisture sink that drives stability of chlorine active.

#### Calcium Hypochlorite - disinfectant.

- a powerful disinfectant to kill bacteria and viruses
- delivering the correct dose of calcium hypochlorite is a key requirement in production.

• too low a dose will be insufficient to kill all of the pathogens in the treated water, too high a dose causes regulatory and aesthetic (taste/smell) issues.

#### Potassium Permanganate – aesthetic aid

controls high manganese levels which is an aesthetic issue manganese can give rise to slow discoloration of the water

# The **Power** of **Clean**

P&G has been in the business of cleaning for more than 175 years, and we understand the power that clean has for families around the world. For more than a decade, the nonprofit P&G Children's Safe Drinking Water Program has been transforming dirty water into clean drinking water. With your help, we can continue sharing the power of clean water to improve health, enable education and give children and families the opportunity to thrive.



# Children's Safe Drinking Water Program Operations



- Distributed in times of major disasters
  - tsunami, floods, earthquakes, hurricanes, cholera outbreaks
- Packets are easy to transport, shown to be well accepted & used correctly in emergencies



- School and Clinic programs reach most vulnerable groups
- Efforts incorporate sanitation and hygiene education into personal and community communications



## The Power of Clean Water – Global Impact





# The Power of Partnerships

#### **P&G partners with:**

- More than 150 organizations to provide clean water and build awareness of the clean water crisis
- Community based groups, schools, clinics and charities as implementing partners to promote household water treatment and behavior change







# To learn more, please visit: www.csdw.org

Contact: Allison Tummon Kamphuis CSDW Program Leader tummon.ad@pg.com

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# How You Can Help

Tell your family and friends about water and sanitation challenges around the world

Write a letter to your government representatives & encourage them to support solutions to water, sanitation and hygiene issues

**Conduct a fundraiser** to support CSDW and partner projects in developing countries



