

# Development of standard operating procedures for faecal sludge laboratory analyses

## Workshop 4: FSM Systems Approach for Implementation and Operation

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## Key Objective (4)

To develop an understanding for the need of standard operating procedures (SOPs) for physical and chemical faecal sludge laboratory analysis.

# Three main points

1. What are SOPs and why are they important?
2. The expertise of the Pollution Research Group in producing SOPs for physical and chemical faecal sludge laboratory analyses
3. The difficulty of producing SOPs for physical and chemical faecal sludge laboratory analyses

# 1. What are SOPs and why are they important?

- ✓ An SOP is a procedure specific to your operation that describes the activities necessary to complete tasks in accordance with industry regulations, provincial laws or even just your own standards for running your business
- ✓ Any document that is a “how to” falls into the category of procedures
- ✓ Developing an SOP is about systemizing all of your processes and documenting them

# 1. What are SOPs and why are they important?

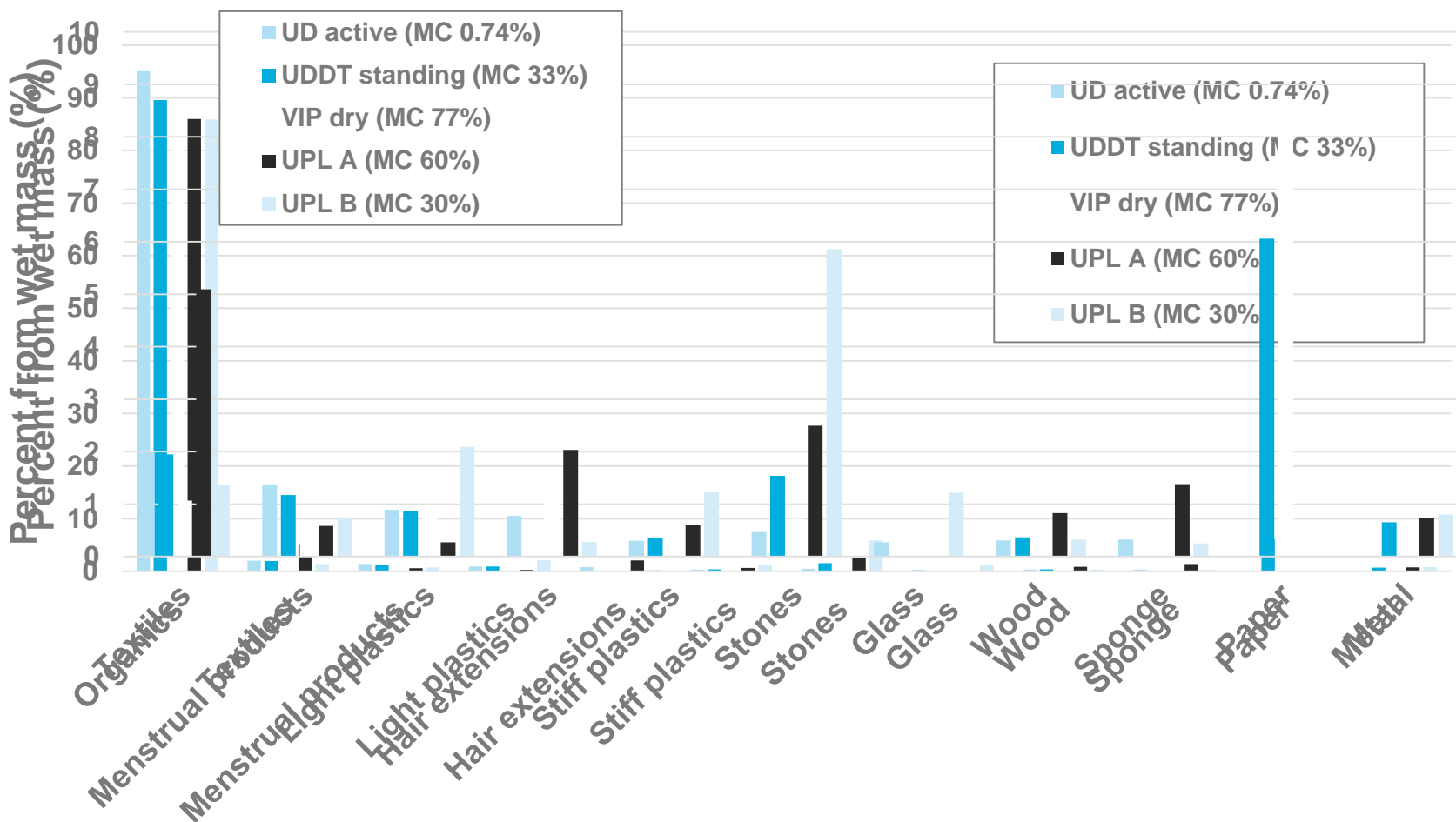
- ✓ Efficiency
- ✓ Consistency and reliability
- ✓ Quality control
- ✓ Fewer errors
- ✓ Healthy and safe environment
- ✓ Value added to your work/business
- ✓ A way to avoid/ resolve conflicts between partners
- ✓ Protection of potential liability

## **2. PRG expertise in producing SOPs for physical and chemical FS lab analyses**

### **SOP manual for FS – Pollution Research Group**

- ✓ Administration SOPs
- ✓ Chemical properties SOPs
- ✓ Thermal and mechanical properties SOPs
- ✓ Biological properties – parasites content
- ✓ Laboratory health and safety SOPs

## 2. PRG expertise in producing SOPs for physical and chemical FS lab analyses



# SOPs for physico-chemical properties of FS

- ✓ Total Solids
- ✓ Moisture content
- ✓ Volatile solids
- ✓ Ash content
- ✓ Ammonia
- ✓ Total Kjeldahl Nitrogen
- ✓ Nitrates and nitrites spectroquant test
- ✓ Nitrate electrode method



# SOPs for physico-chemical properties of FS

- ✓ Ammonia spectroquant test
- ✓ Phosphate - total P and ortho-phosphate spectroquant test
- ✓ Potassium spectroquant test
- ✓ Sodium spectroquant test
- ✓ COD
- ✓ pH
- ✓ Density
- ✓ VIP Odour Sampling
- ✓ Sludge Volume Index

# SOPs for thermal and mechanical properties of FS

- ✓ Calorific value
- ✓ Thermal conductivity
- ✓ Heat capacity
- ✓ Penetration resistance
- ✓ Liquid Limit
- ✓ Plastic Limit
- ✓ Rheology properties
- ✓ Particle size distribution

# Laboratory health and safety SOPs

- ✓ Field Collection and Storage of samples
- ✓ Faeces and FS sample preparation
- ✓ Faeces Sample Disposal
- ✓ Chemical and Biological waste disposal
- ✓ Chemical spills
- ✓ Gasses
- ✓ General safety in biochemistry laboratory
- ✓ Hazardous biological spills
- ✓ Storage of Chemicals
- ✓ Use and Disposal of hazardous chemicals

## 3. Challenges while producing FS SOPs

- ✓ Lack of international standards for FS analyses
- ✓ Standard methods for waste water and soil analyses adapted for FS
- ✓ Faecal sludge is a different material than waste water and usually requires modification of those methods
- ✓ Methods are being developed and modified over time (not a once off task)
- ✓ Faecal sludge is a heterogeneous material

# Acknowledgements

- Bill & Melinda Gates Foundation
- PRG team
- eThekweni Water and Sanitation
- Water Research Commission, SA
- Fukamela Building and Maintenance

# More information

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