Public Health Rapid Risk Assessment Tool

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Center for Global Safe Water at Emory University

BMGF-DFID City Partners Meeting and

Planning Workshop of FSM Toolboox

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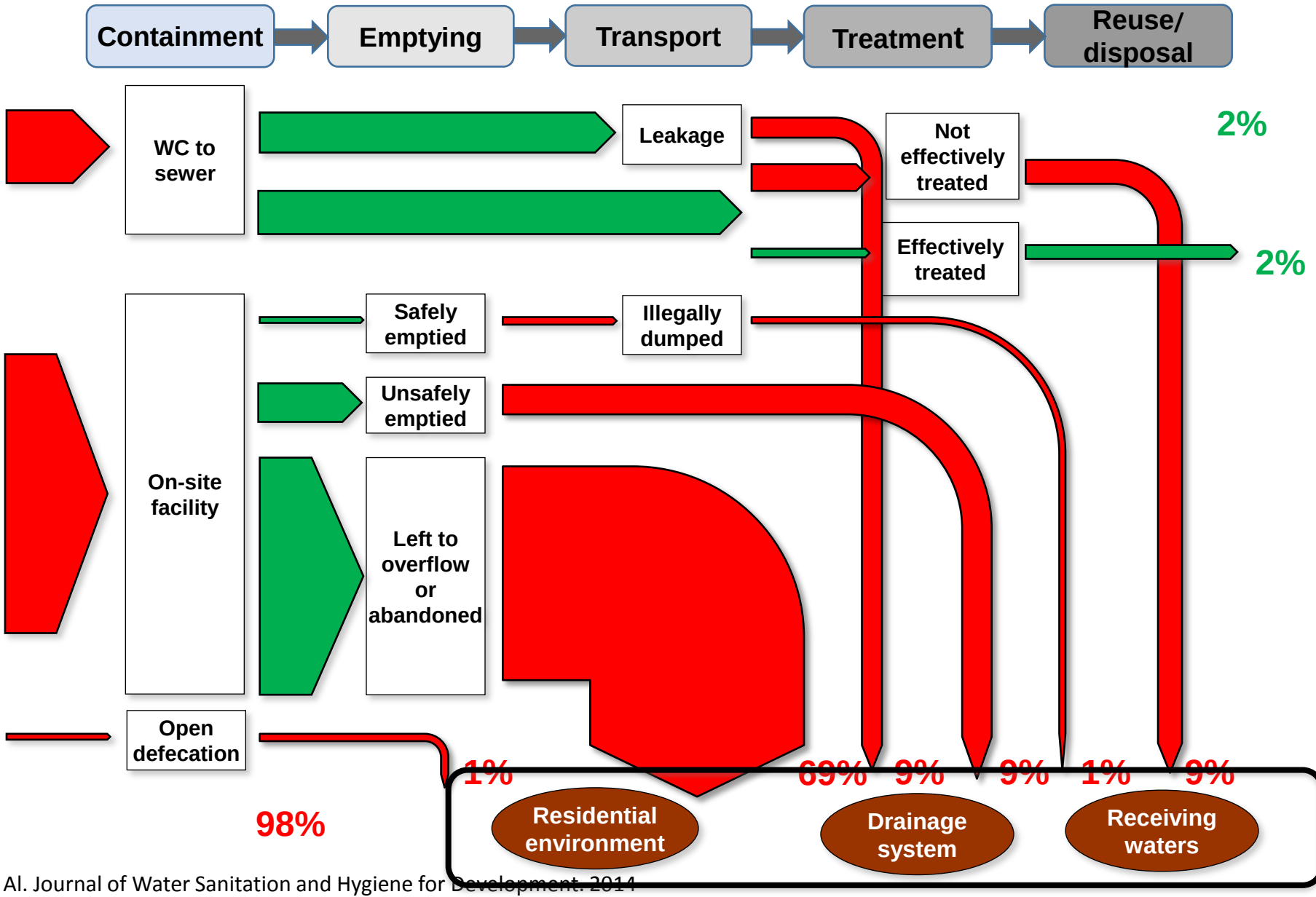
CITY SANITATION PLANNING

	Diagnose	Model	Implementation planning
How it should happen	City sanitation manager has complete diagnostic of sanitation health of the city, including: • financial • institutional • environmental • technical • social	• First, prioritize selection criteria and constraints (equity, costs, land-use, other implications) • Then, use data to model impact of individual or bundled interventions •	• Select solutions • Ability to implement and monitor the options arising from the modeling work
How our tools help	• Identify "leaks" in the FSM chain • Identify institutional gaps (budget, staffing, policy):	• Model the costs of options • Model the urban planning implications of these options (including equity, pro-poor impact)	• Exposure to successful cases • Identify and build a case with funders • Identify technical consultants • Link to commercialization partners of leading TT technologies

Shit Flows Analyses show that Fecal Sludge is NOT Contained – Reservoirs in Urban Environment



Peal et. Al. Journal of Water Sanitation and Hygiene for Development. 2014

FSM Public Health Questions

- How are adults and children exposed to fecal sludge in the environment?
- What are the public health risks from this exposure?
- What exposure routes/environmental reservoirs pose the greatest risks?
- What neighborhoods or parts of the city have the greatest risks?
- What FSM interventions would be most effective to reduce these risks?

What is the risk of exposure to fecal sludge in the urban environment?

Fecal contamination + Behavior

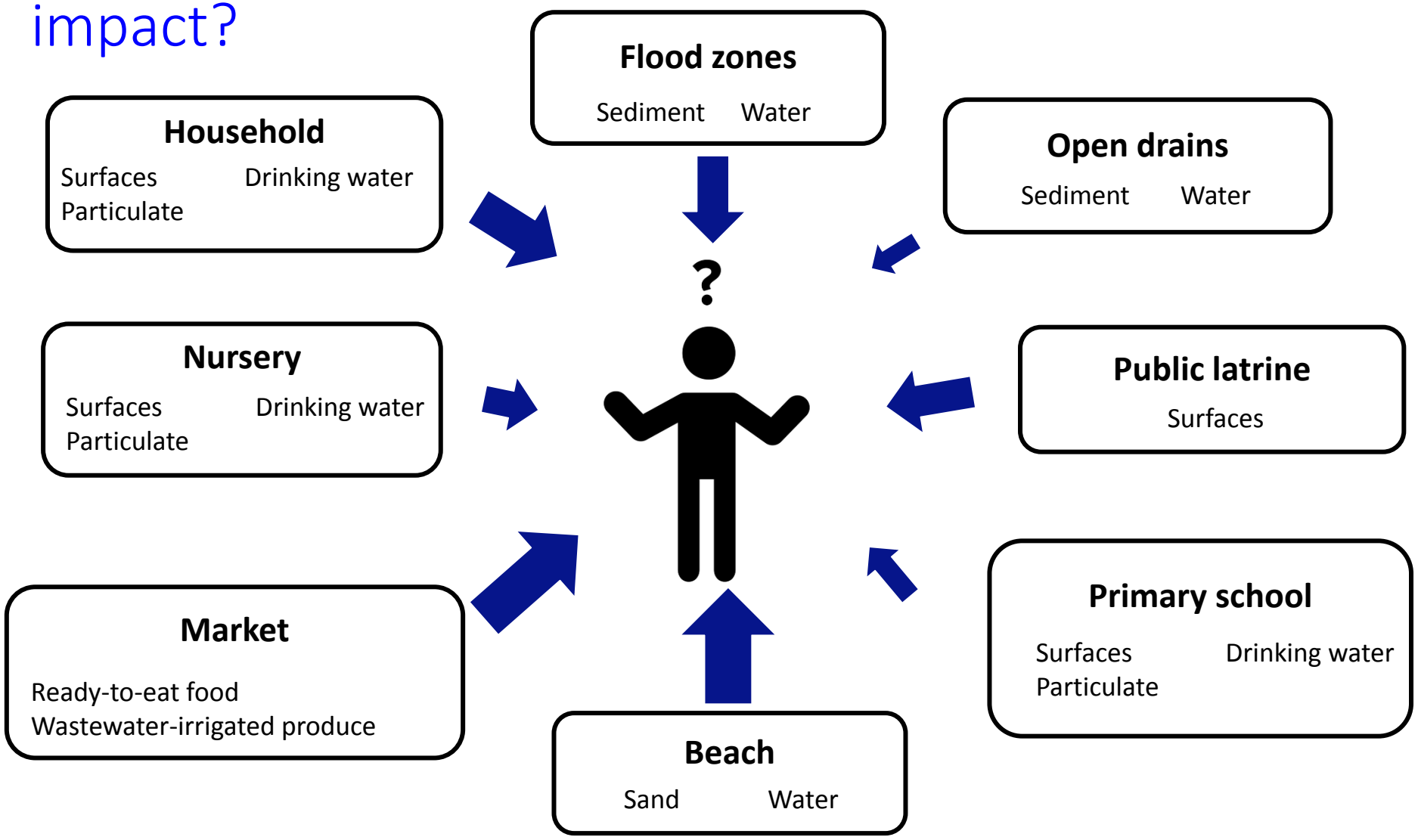
Examples from Accra, Ghana

Children have accidental and deliberate contact with open drains

Flooding moves fecal sludge from drains throughout the neighborhood – contaminating soil and households

Urban agriculture using drain water for irrigation

How should policy makers prioritize public sector sanitation investments to have the greatest health impact?



Confused designed by Jessica Look for The Noun Project

SaniPath Rapid Assessment Tool Goals

Based on in-depth risk assessment in Accra, Ghana

Rapid Tool tested in Vellore, India (2014), Maputo, Mozambique (2015) + two additional cities (TBD)

Guide users through the collection of relevant data to inform their understanding of relative risks of exposure

Provide users with easy to use software for data entry that can be customized for different contexts

Generate data on exposure to fecal contamination in **low-income, urban neighborhoods**

Synthesize these data to guide community, government, and service providers in their DECISION-MAKING process and ADVOCACY for sanitation demand and action

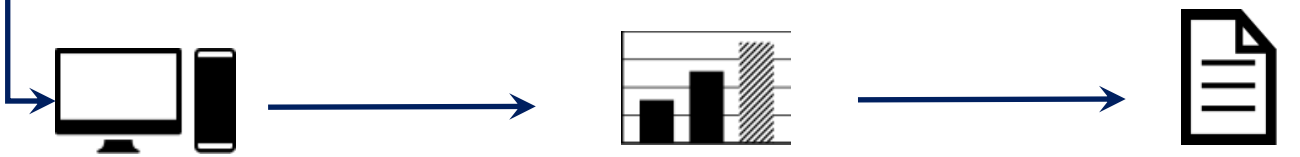
The Rapid Assessment Process

1) Conduct Key Informant Interviews & Transect Walks

2) Determine target neighborhood, modules, &sampling sites

3) Preliminary Assessment Report

5 & 6) Behavioral & Environmental Data Collection



7) Data Entry

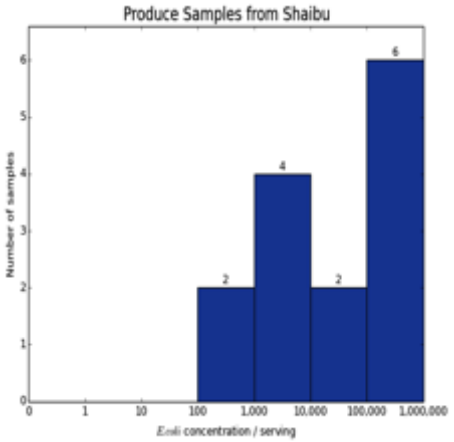
8) Risk Characterization & Summary Statistics

9) Final Report

Sarah Abraham, Martha Ormiston, Gilad Fried, and Juan Pablo Bravo from The Noun Project created the icons interview, neighborhood, water, and computer. Schematic created by Suraja Raj

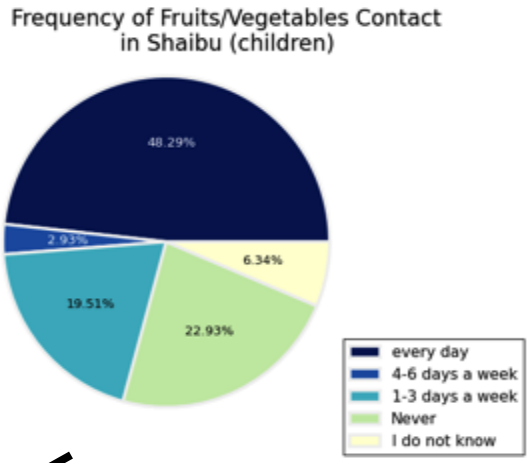
Environmental and behavioral data are combined to estimate exposure to fecal sludge via specific pathways

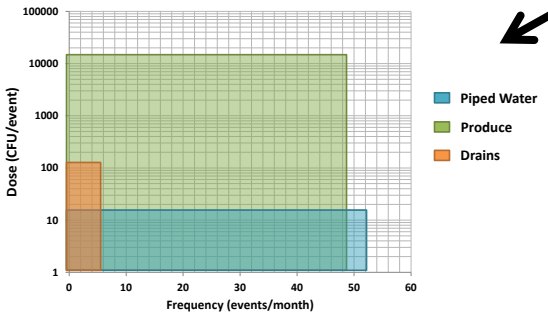
Environmental Contamination



Other parameters: intake volumes, duration of exposure, etc.

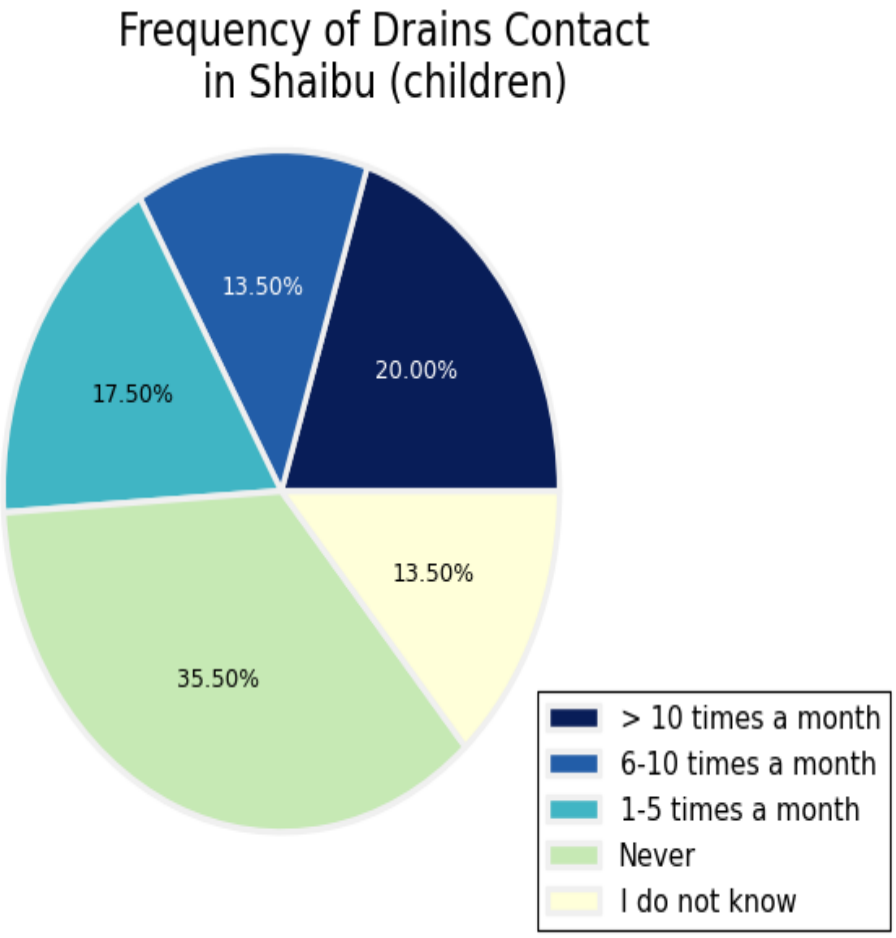
Behavior Frequency

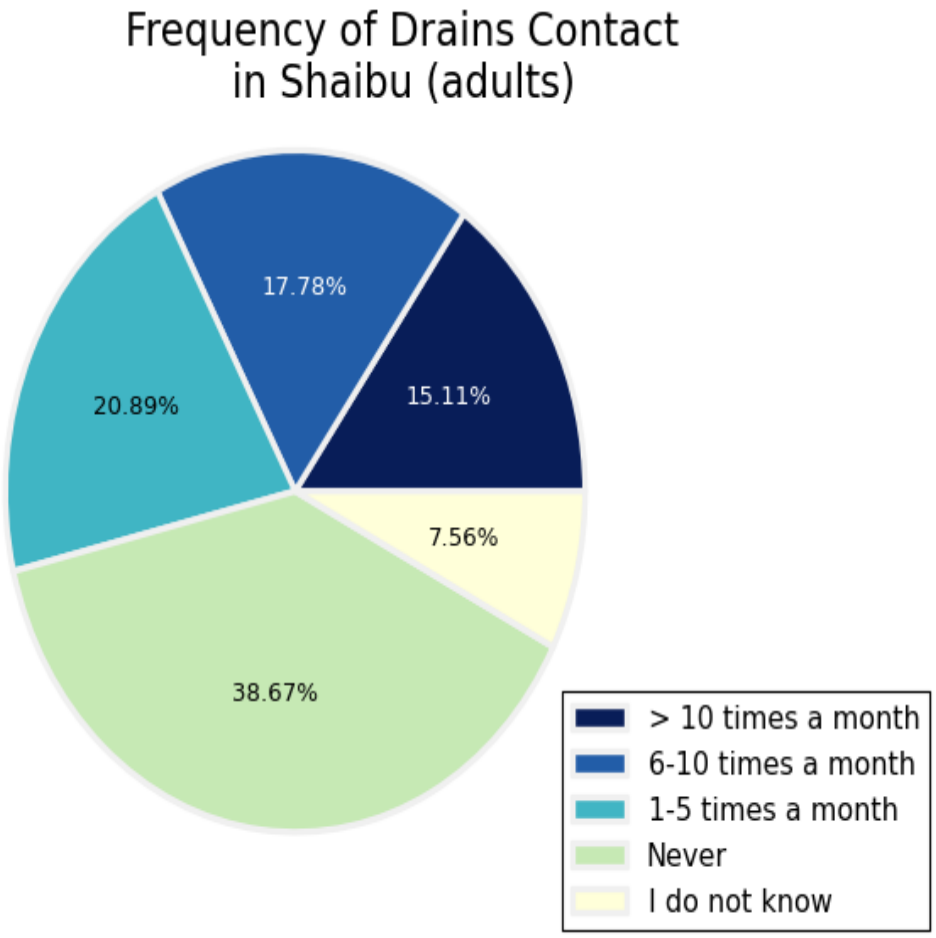




Risk of Exposure to fecal sludge

Reported Contact with Open Drains by Children and Adults – Shaibu, Accra





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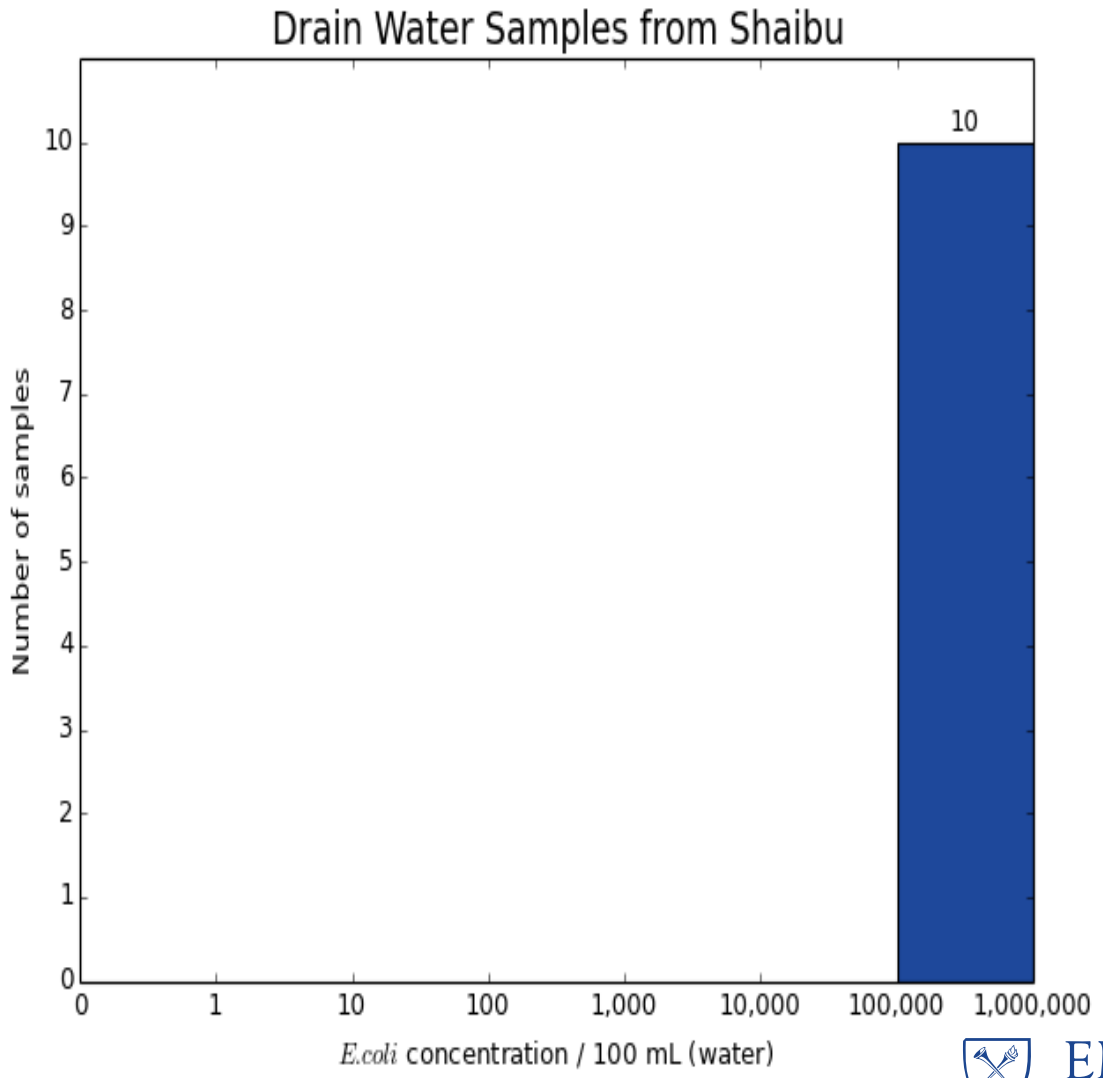
Drains: *E. coli* Concentrations in 10 Samples from Open Drains in Shaibu



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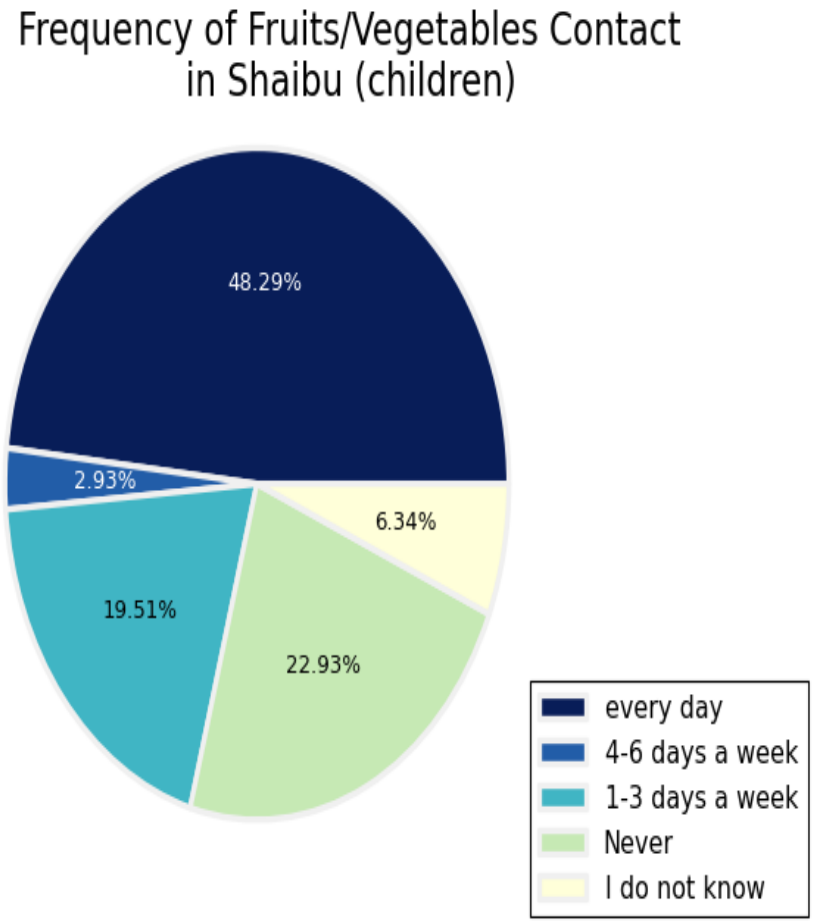
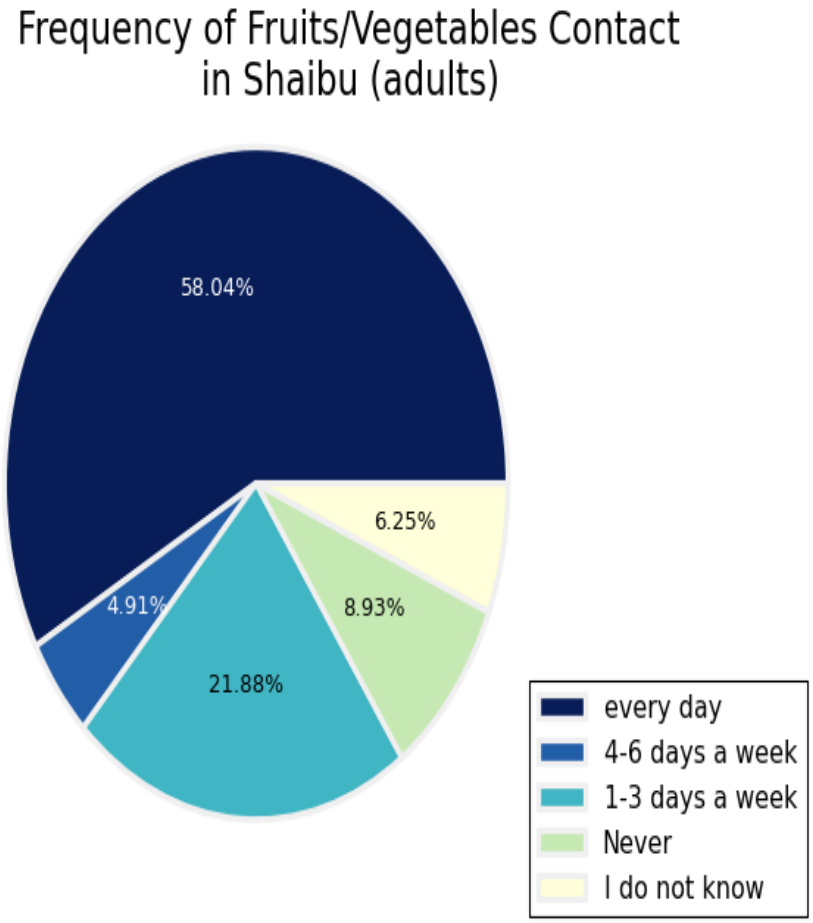
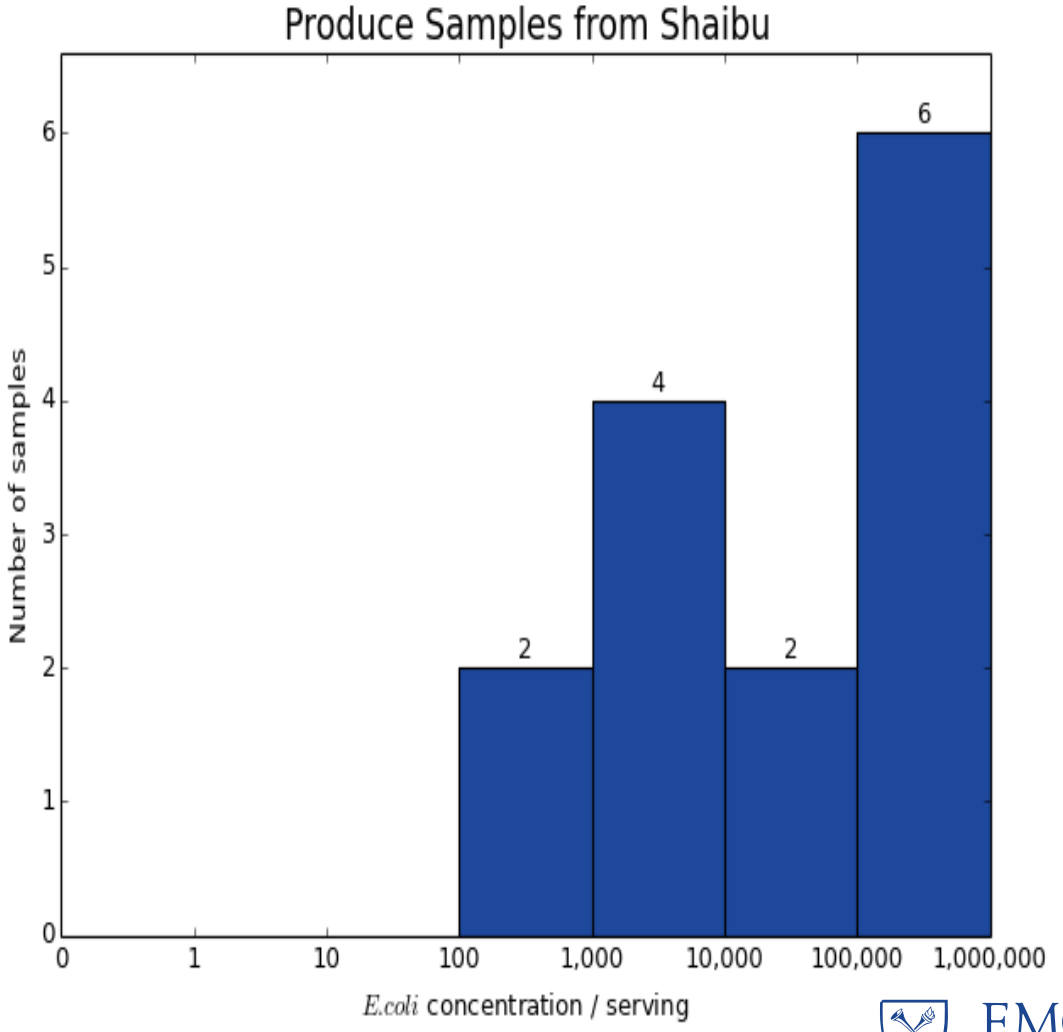
Produce: Reported Consumption of Uncooked Produce by Children and Adults in Shaibu

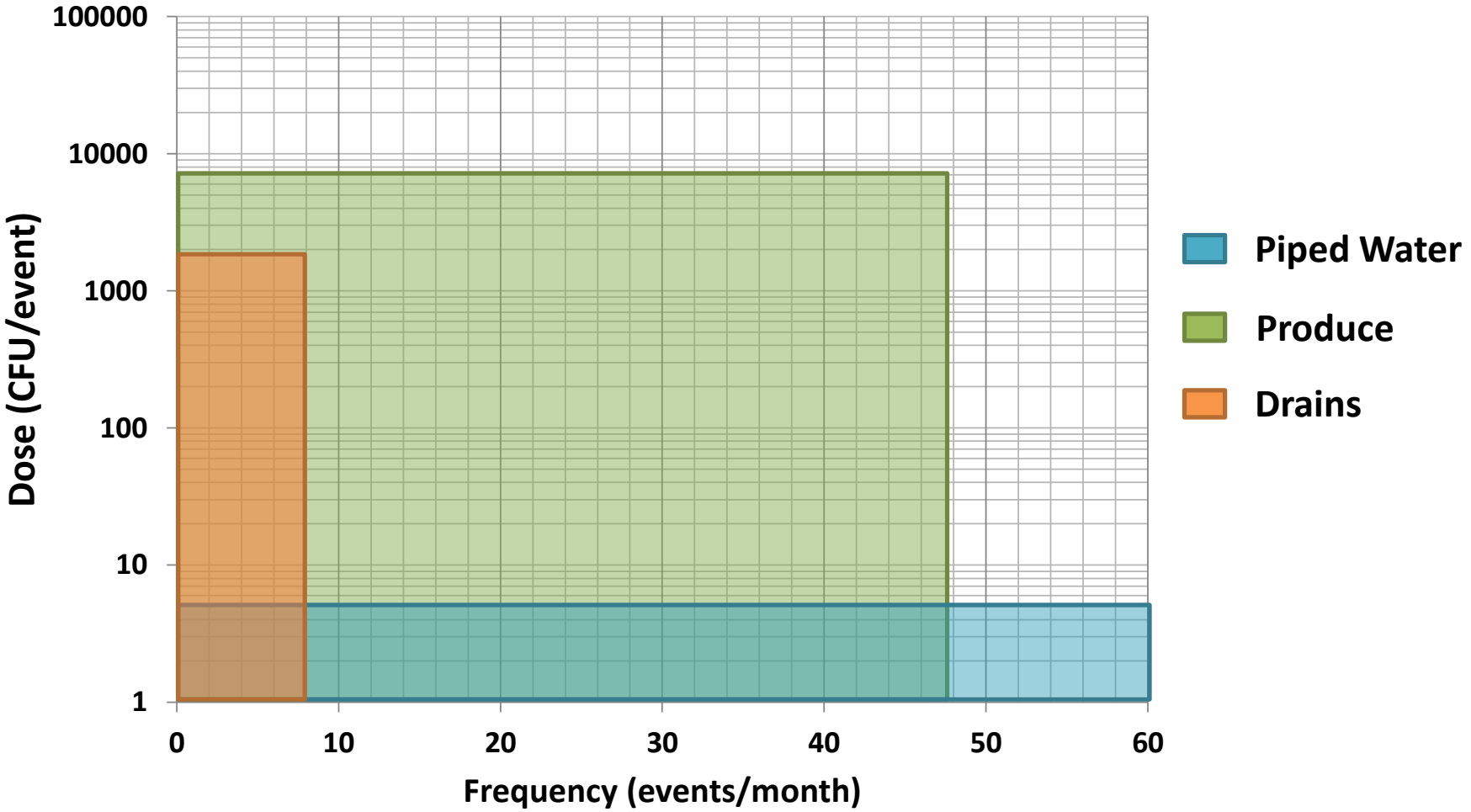




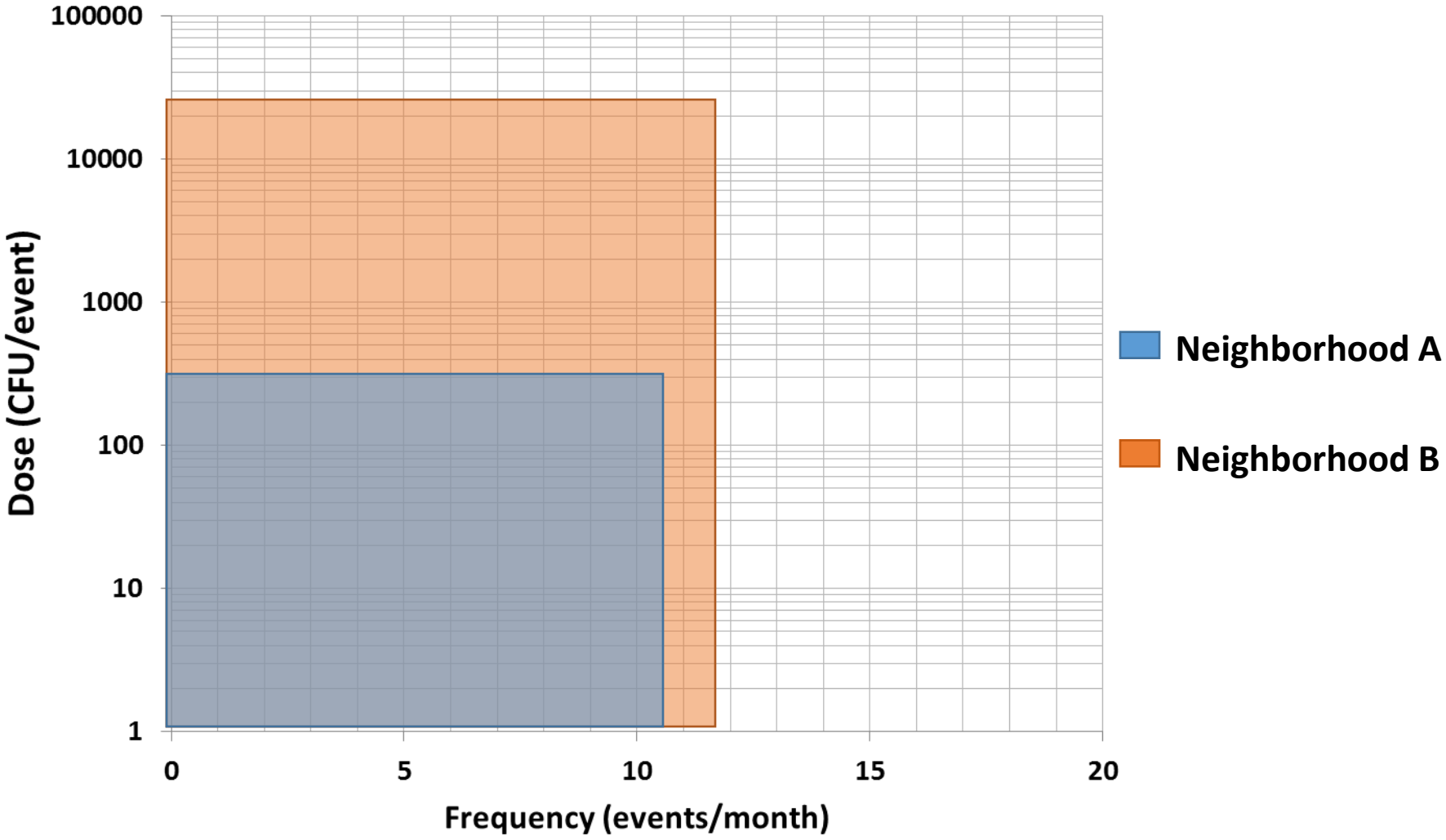
Produce: *E. coli* Concentrations in 14 Produce Samples from Shaibu



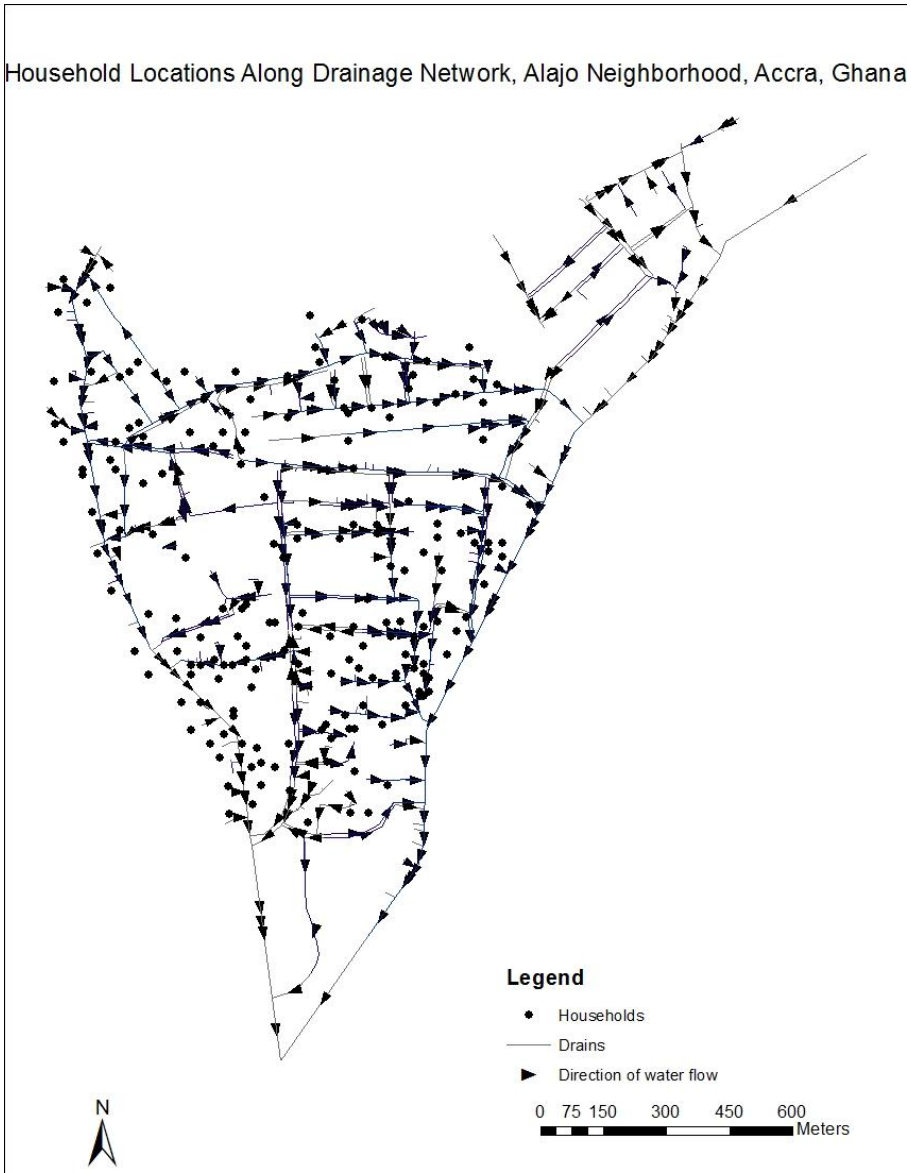
Comparing Risk of Exposure to Fecal Sludge from Three Pathways in One Neighborhood for Children



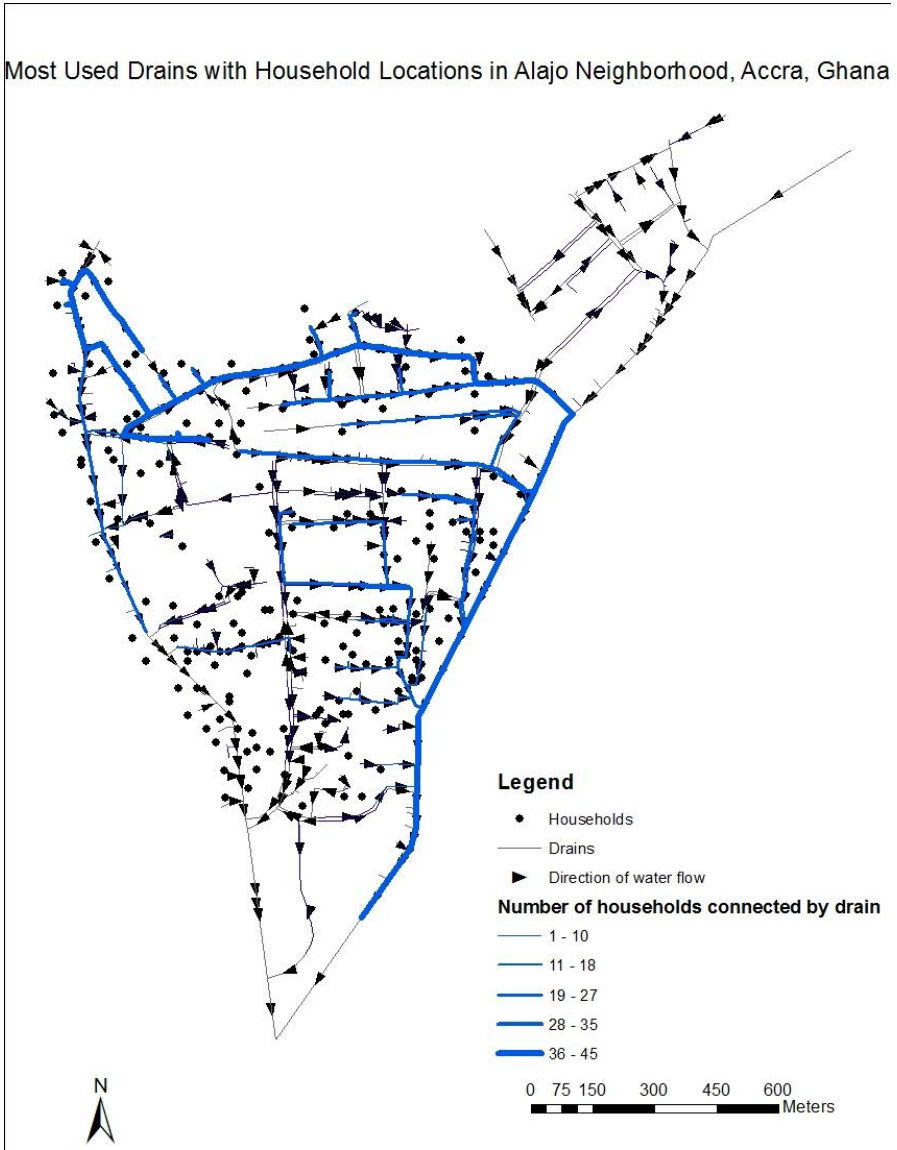
Comparing Risk of Exposure to Fecal Contamination from **Piped Water Consumption** in Two Neighborhoods



Spatial Analyses – **Where** in the city/neighborhood does fecal sludge concentrate?



Which drains serve the greatest number of households?

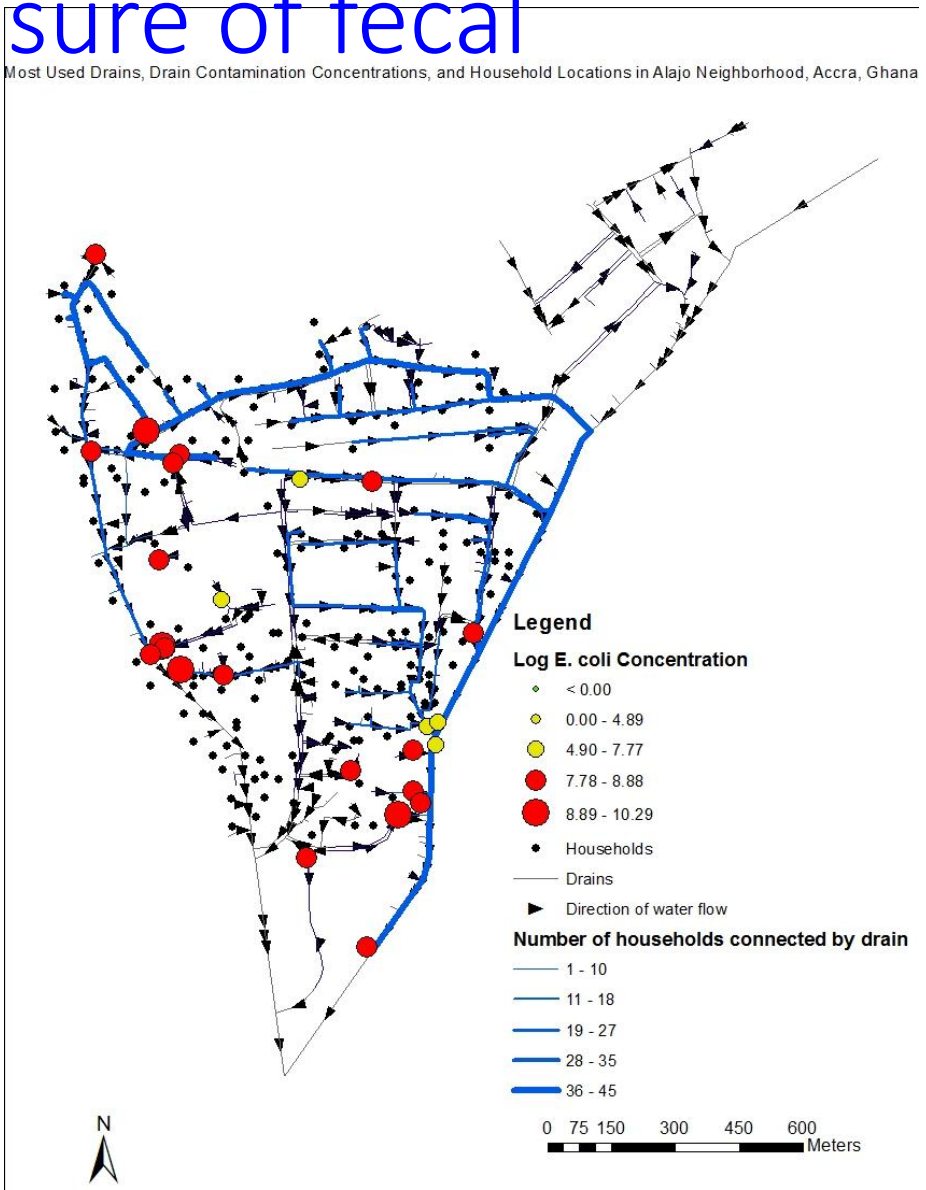


Alajo Neighborhood, Accra, Ghana

Where are the highest concentrations of fecal contamination?

Using *E. coli* as a measure of fecal contamination

Alajo Neighborhood, Accra, Ghana



How can you use this public health information?

- Understand where fecal contamination is concentrated in your city
- Understand the contribution of behavior and fecal sludge contamination to public health risk
- Understand which “pathways”, if intercepted, provide the greatest potential for reducing exposure to fecal sludge and disease causing agents – guide priorities for FSM interventions
- How can you use public health information in context with tools on sludge flow diagrams, economic analyses, stakeholder assessment, etc. to guide sanitation planning
  - Advocacy for sanitation demand and action
  - Reduce inequities in sanitation-related risks and services
- Monitor public health impact of FSM interventions.

We welcome your feedback!

- Is this tool useful?
- What additional public health information do you need for sanitation/FSM decision-making?
- Are you interested in using this tool?
  - Free download: www.sanipath.com

- Presentation by Suraja Raj – Tuesday 10:30 AM
- Workshop 1A: Diagnostic Tools and Guidelines for Fecal Sludge Management – Thursday AM

Acknowledgements

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Christian Medical College, Vellore: Gagandeep Kang

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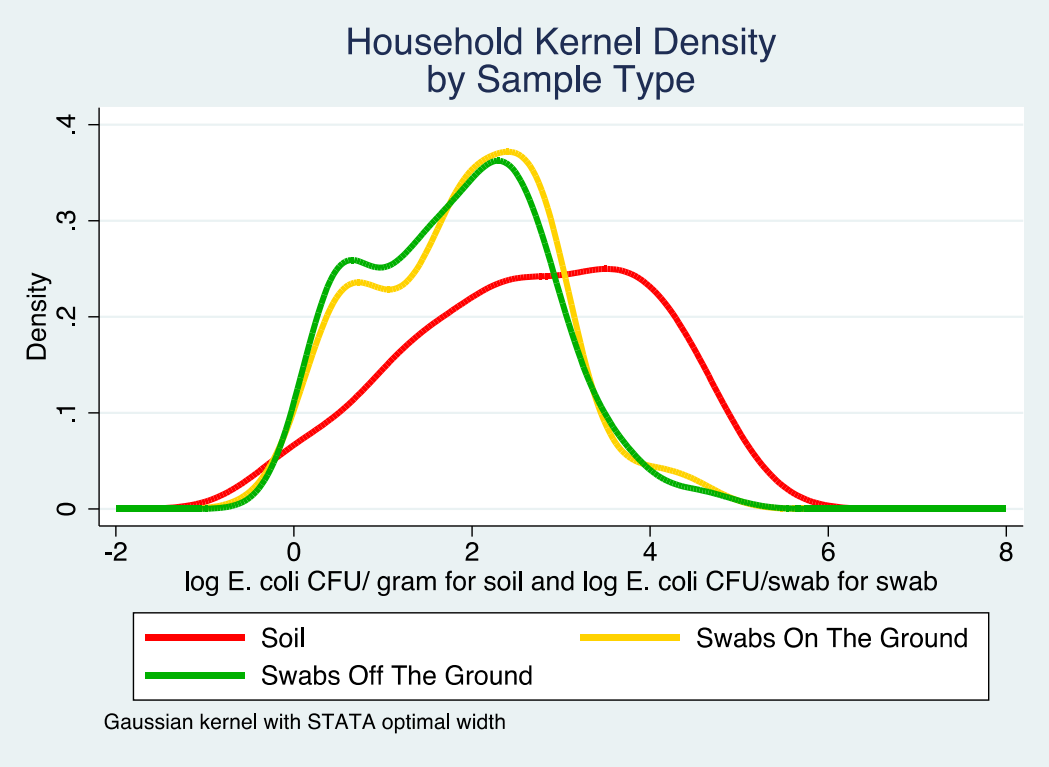
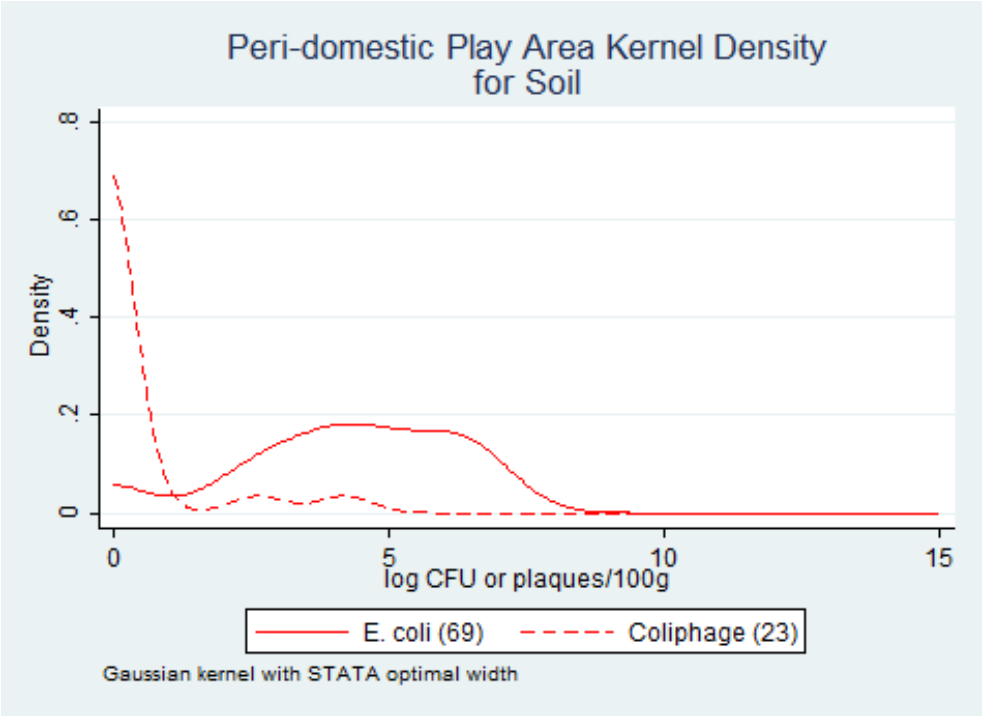
Fecal Contamination in the Domestic Environment



- Floors/soil in households were highly contaminated.
- Swabs of household surfaces indicated similar fecal contamination as floor
- Drinking water samples were relatively clean. Stored water was more contaminated than piped water or sachet water. (Data not shown)

Play Areas (Peri-domestic)

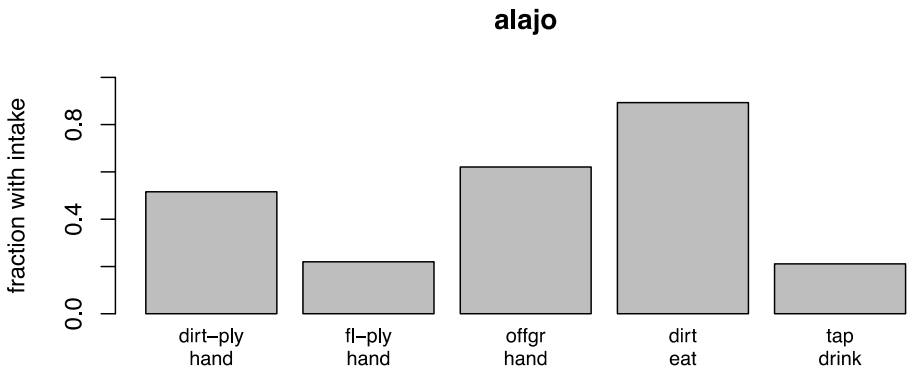


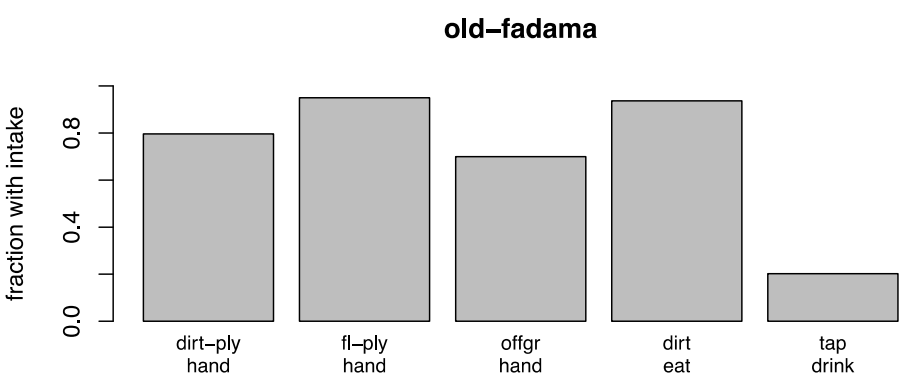
Soil samples (n=40) from peri-domestic areas where children were observed to be playing showed variable (and high) levels of contamination, eg. 10^3 – 10^7 CFU *E. coli* per 100 g.

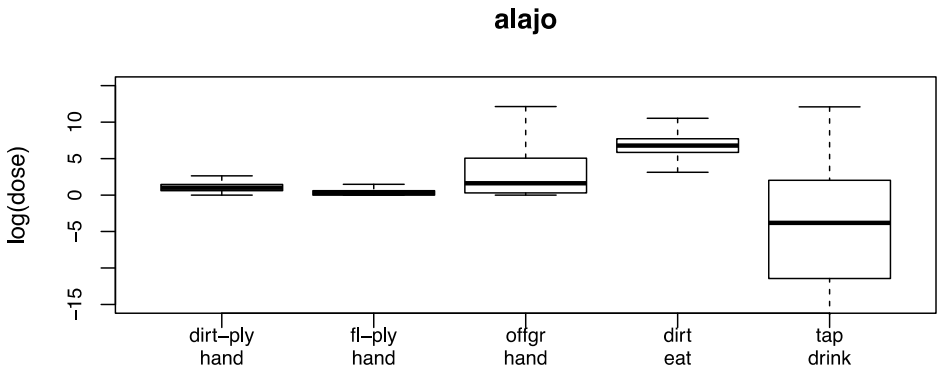
Summary of Child Exposure Behavior in the Home

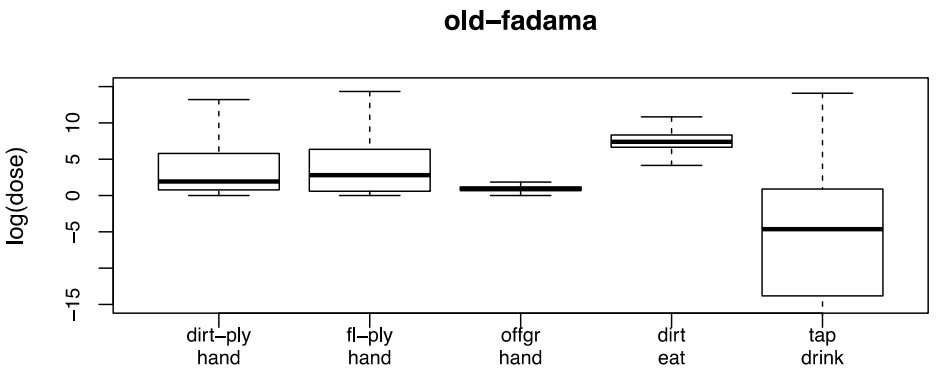
- Young children spent >50% of their observed time sitting on floors and unpaved surfaces
- Young children spent >50% of their observed time playing and eating
- Frequent mouthing of objects & hands
  - Children put objects in mouth median 4 times per hour (ranges from 1 to 7 objects per hour)
- Handwashing was rarely observed

Greatest Risks for Young Children from Eating and Playing on the Ground









How our tool provides public health information to identify which FSM weaknesses are critical