

Clean Water For All

Is access to clean drinking water a fundamental human right?

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Different facets

“Natural”
(or at least accidental)



naturally occurring
arsenic in groundwater

Anthropogenic



poor tailings management leading to runoff
and leaching of arsenic, mercury, etc.

Is **access** to clean drinking water a fundamental human right?

Service Level	Access measure	Quantity Available	Level of Health Concern
No access	> 1000 m, > 30 min	< 5 l/c/d	Very high
Basic access	100-1000 m, 5-30min	< 20 l/c/d	High
Intermediate access	< 100 m, < 5 min (yard tap)	\cong 50 l/c/d	Low
Optimal access	Multiple onsite taps, continuous	> 100 l/c/d	Very low

Modified from: Howard, Guy. Jamie Bartram. "Domestic Water Quantity, Service, Level and Health." WHO. Geneva. 2003.

Is access to **clean drinking water** a fundamental human right?

Improved (Low risk)

- household connections
- public standpipes
- boreholes
- protected dug wells
- protected springs
- rainwater collection

Unimproved (High risk)

- unprotected dug wells
- unprotected springs
- vendor provided water
- bottled water
- tanker truck
- Surface water
(river, dam, lake, pond, stream, canal, irrigation channel)

Is access to clean drinking water a **fundamental human right**?

Universal Declaration of Human Rights.

(Article 25-1) **Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family**, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

St. Cuthbert's M

- Public health worker lists dia
- significant issues faced in this
- Typhoid fever is endemic



Sanitation



Hygiene



Source



Household (Cups)

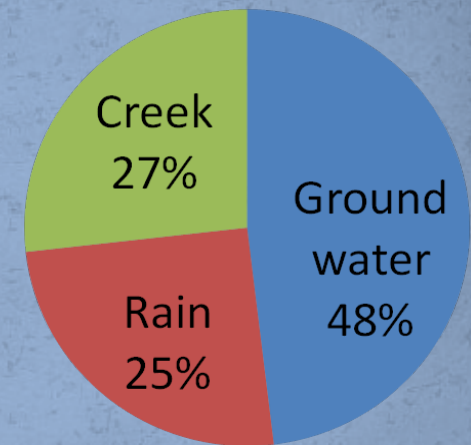


Water quality

Source Water

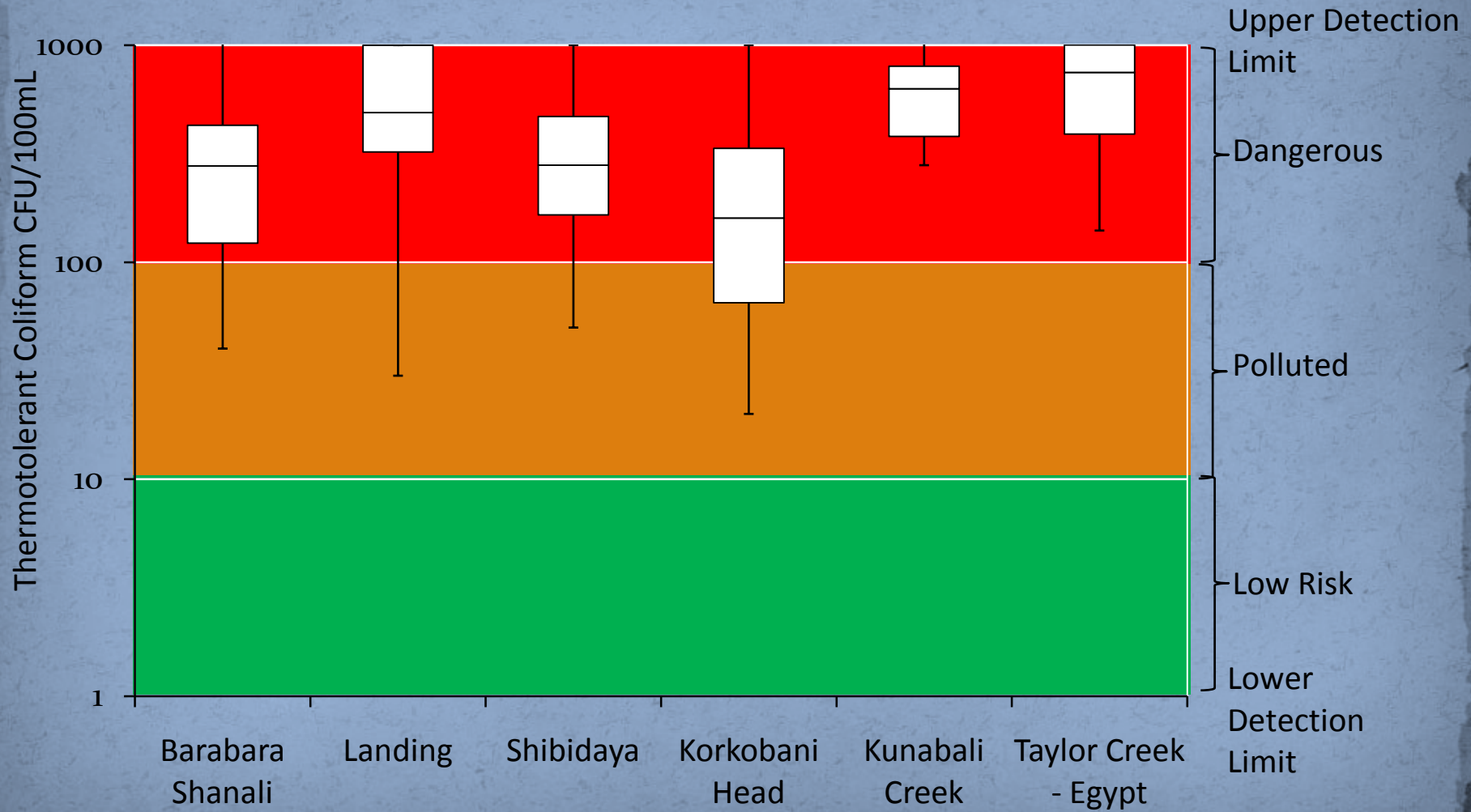


Drinking Water by Source

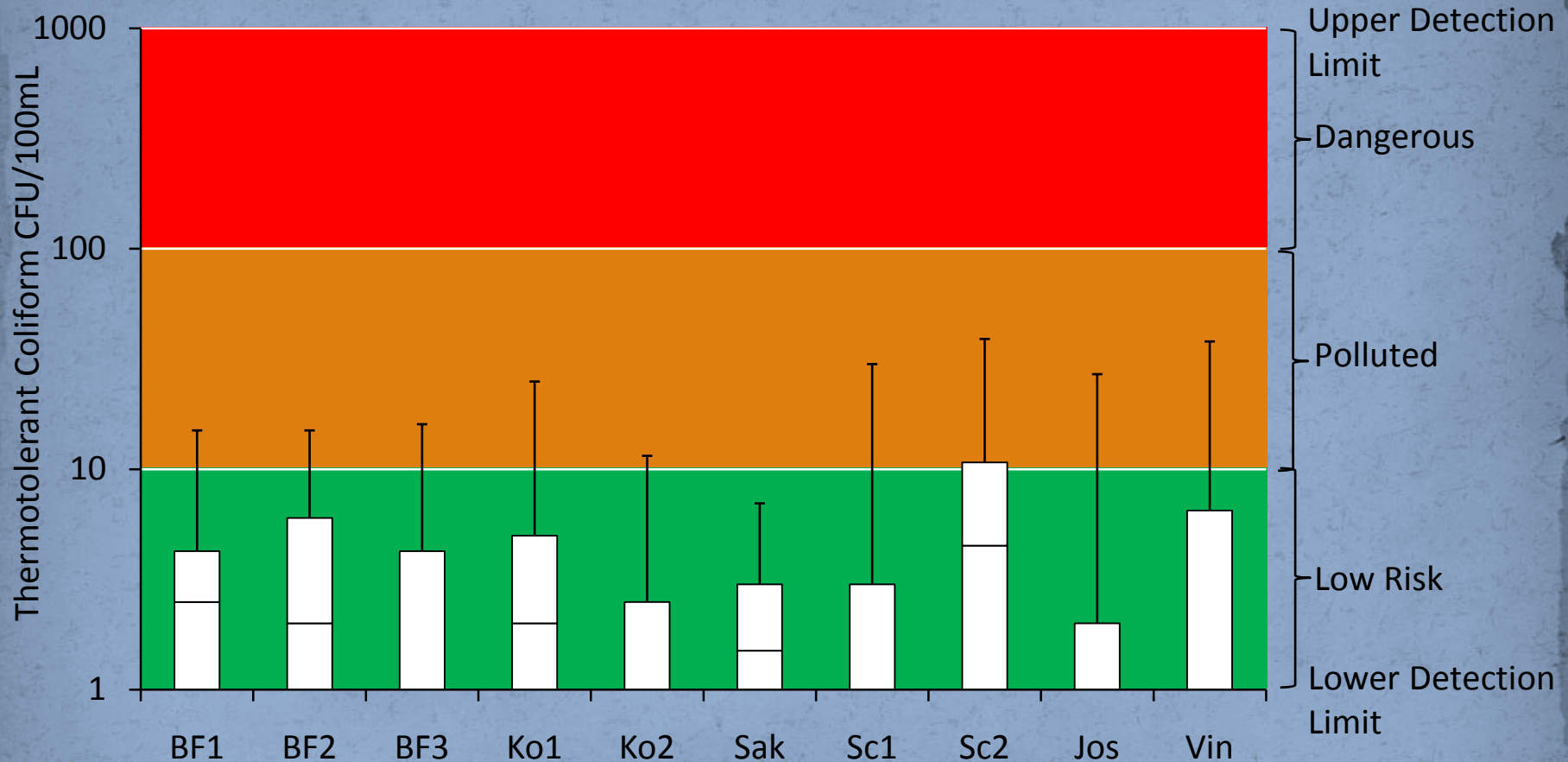


- Groundwater: deep well to 10 standpipes and about 20 yard taps (intermittent service)
- Most people have some rainwater collection
- 4 creeks with multiple collection points, several ponds (not for potable water)

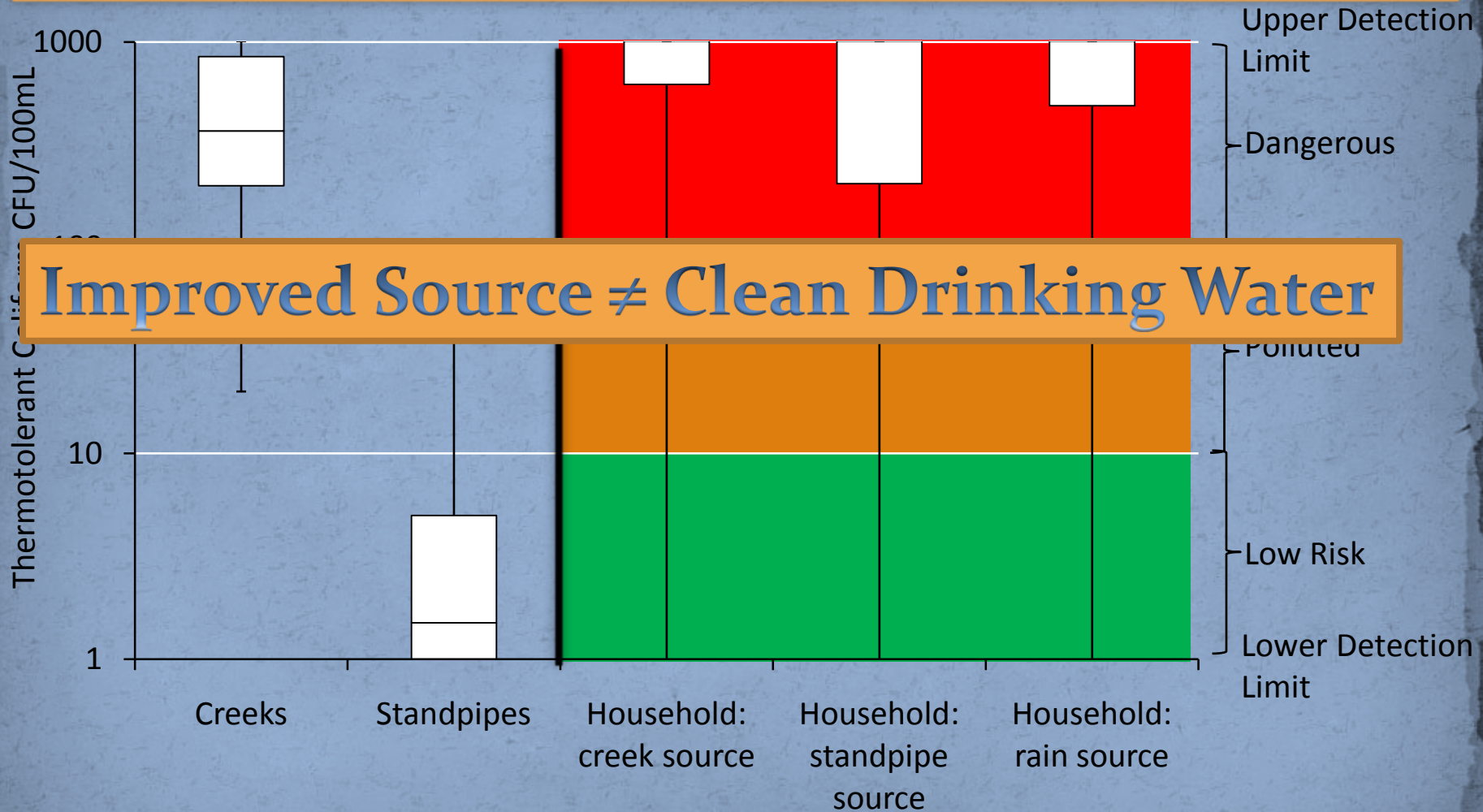
Source water: Unimproved (creeks)



Source water: Improved (standpipes)



Household drinking water samples



What about domestic contamination?

Randomized Control Trial

Control – no
treatment



50
households

Biosand
Filter / IOSSF



50
households

Ceramic
candle filter



50
households

Chlorine



50
households

Treatment Cost

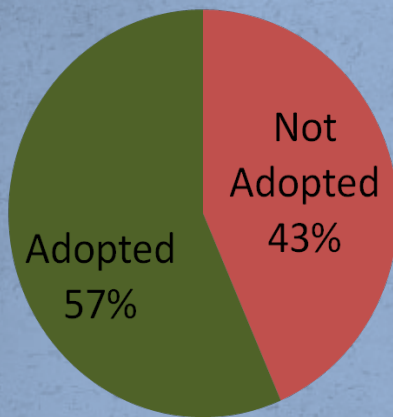
	First year cost	Annual recurring cost	Locally Produced?	Container	Labour	Treatment
Biosand Filter	\$ 85	\$ -	✓	\$ 18	\$ 35	\$ 32
Ceramic Candle	\$ 43	* \$ 21	x	\$ 16	\$ -	* \$ 21
Chlorine	\$ 23	\$ 4	✓	\$ 18	\$ -	\$ 4

** Note that this cost is grossly inflated due to expedited air freight shipping. Candles cost \$2.25 US from the supplier, and only 2 would be necessary per household per year

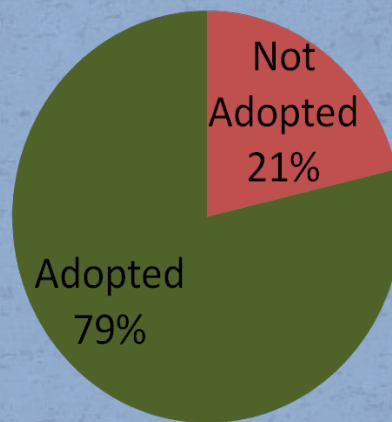
Who pays for treatment?

Treatment Adoption Rate

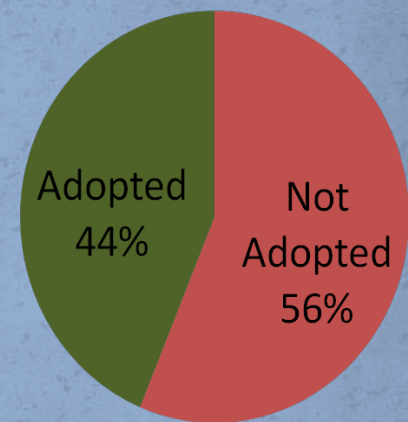
Biosand Filter



Ceramic Filter

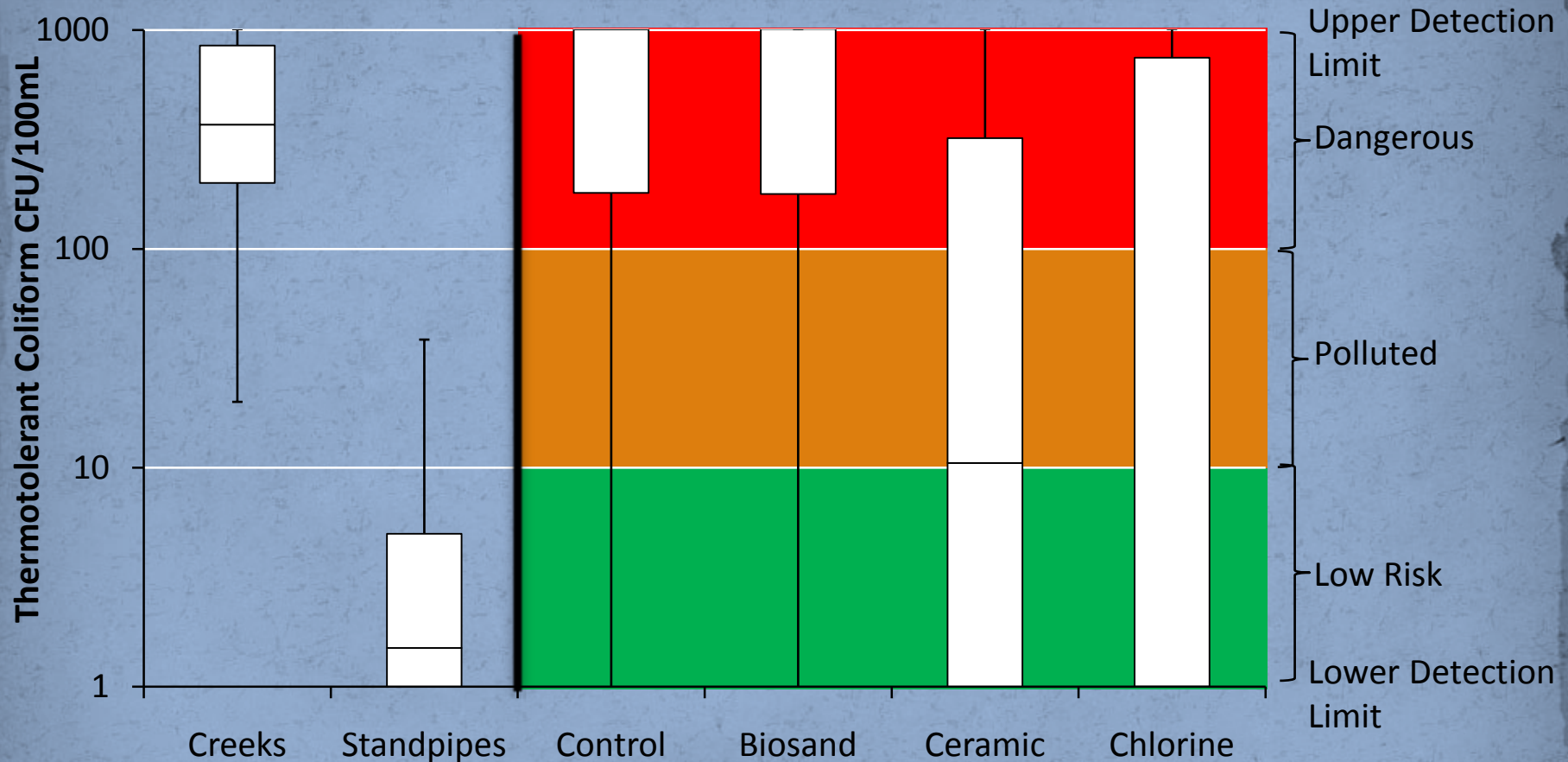


Chlorine



What about children in families who choose not to treat?

Treated water quality



Who follows up, tests, troubleshoots, trains?

Treatment Production

	Locally Produced?
Biosand Filter	✓
Ceramic Candle	x
Chlorine	✓

What happens when development goals conflict?

Questions

If access to clean drinking water is a fundamental human right:

- What about domestic contamination?
- Who pays for treatment?
- What about children in families who choose not to treat?
- Who follows up, tests, troubleshoots, trains?
- What happens when development goals conflict?
- **What are the consequences of considering access to clean drinking water a human right?**
- **Who is responsible?**

Thank you

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- Elizabeth Broussard, CEMCO Inc.,
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