

Water Treatment Technologies:

Role of Industries in Drinking Water Safety

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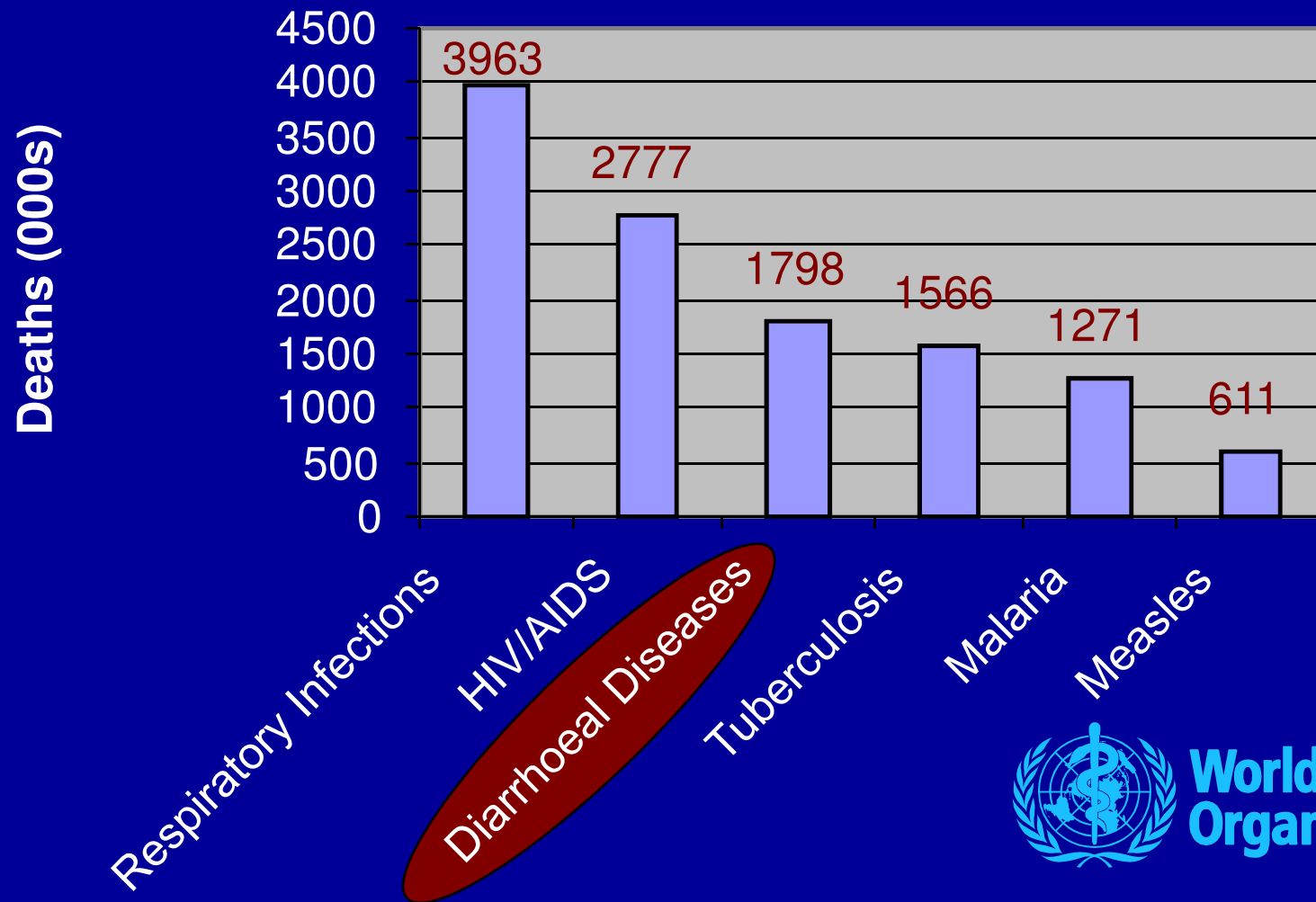


Outline

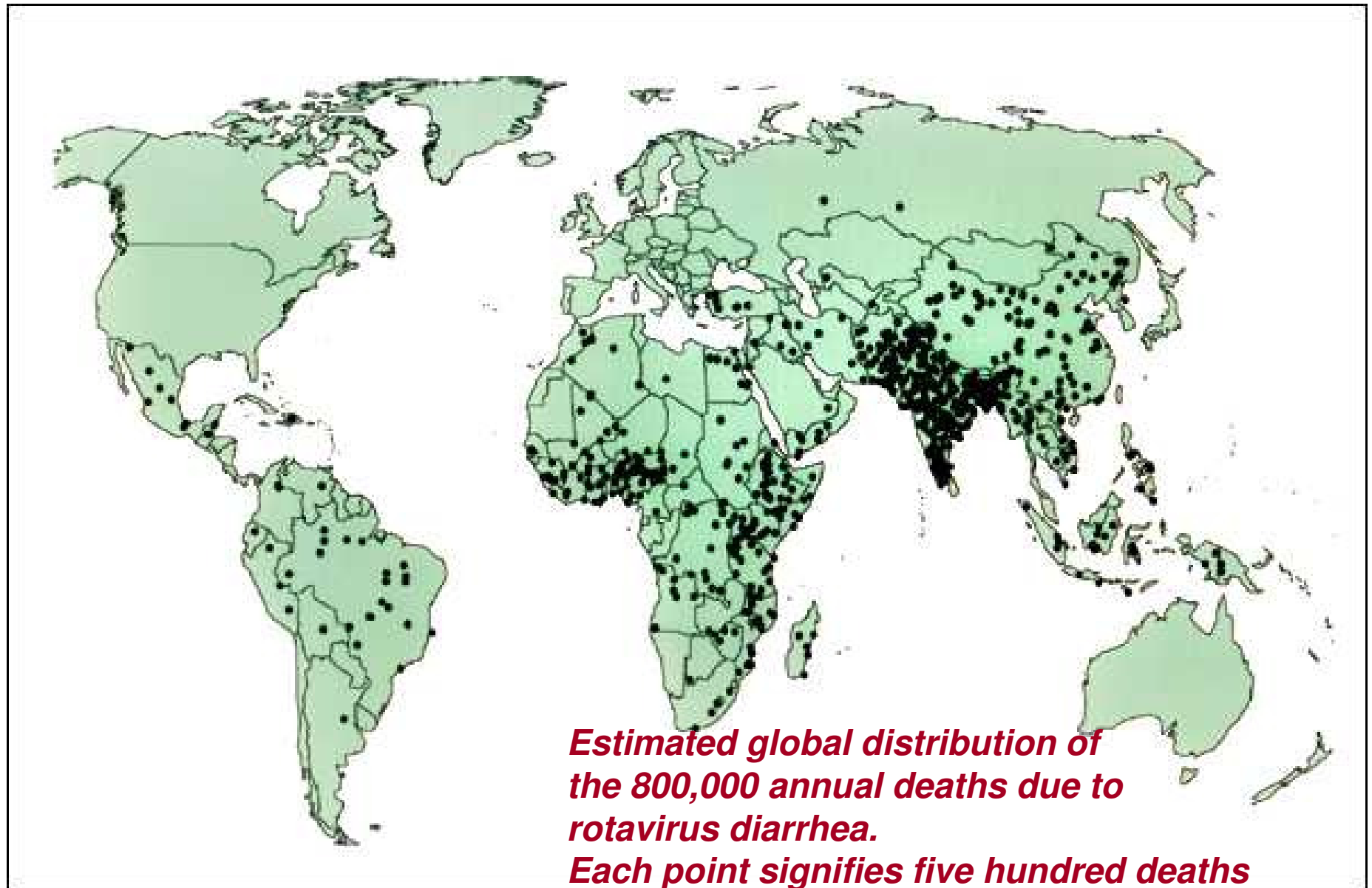
- **Drinking water – the D&E context**
 - **Infectious disease burden & health issues relating to drinking water**
 - **Limitations of ‘Improved Water (piped) Supply’**
- **Role of Industry**
 - **Innovation**
 - **Alignment to country needs**
 - **Reducing disease burden**
 - **Building Awareness about Water & Health**
 - **Scale-up & affordability**
 - **Standardization & Certification**
 - **Enabling informed choice for the citizens**

Leading Causes of Deaths from Infectious Diseases

2004 World Health Report



**World Health
Organization**

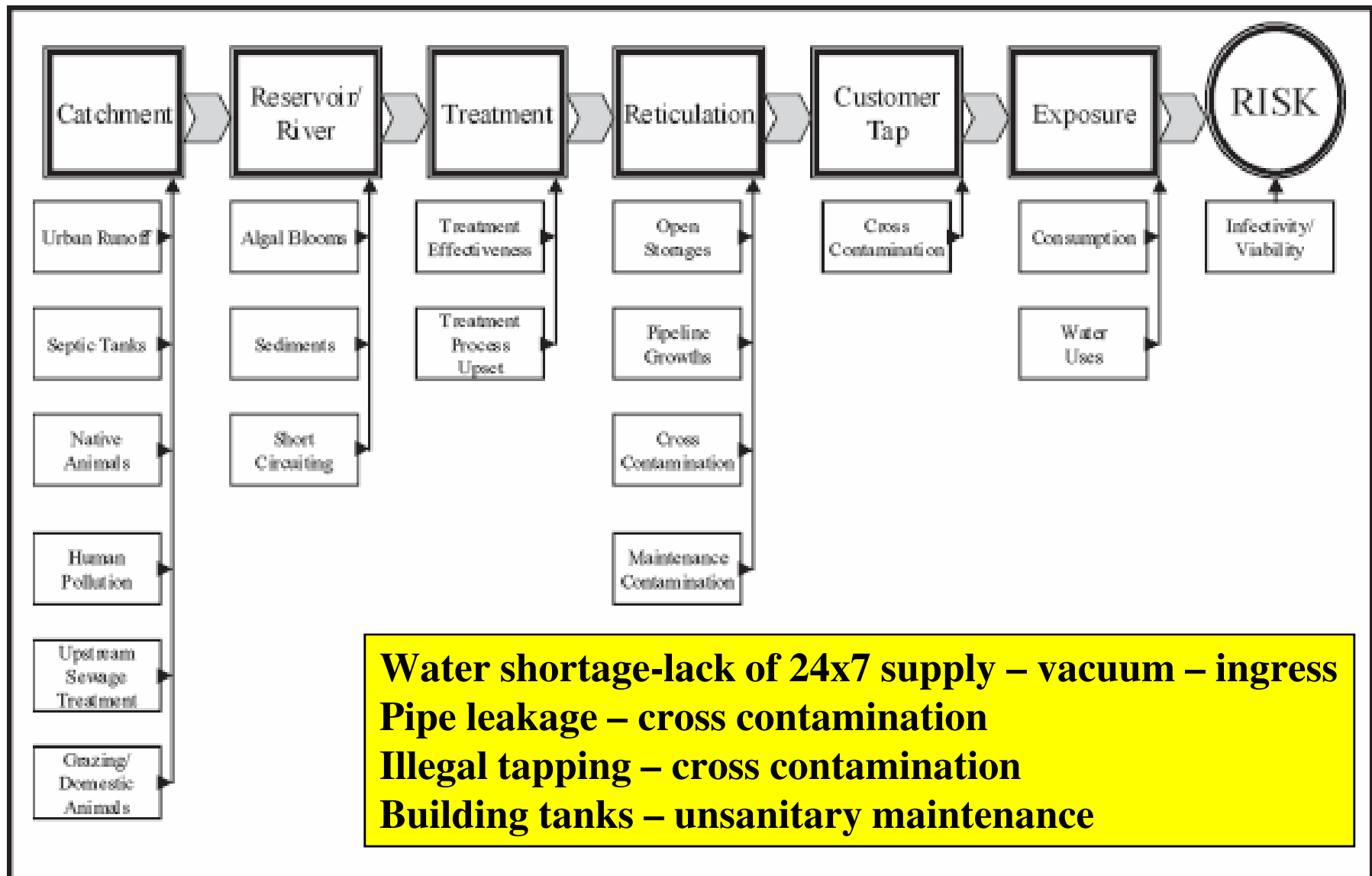


Microbial Contamination of Water

India – Very high under 5 deaths/ 1000 children

Generic flow diagram for sources of microbial risk in a drinking water context

(Adapted from Stevens *et al.*, 1995)



In & Near-home contamination

- **Unsafe transport, storage and handling practices at home**
- **Contamination in overhead tanks**
- **Unsanitary and inadequately protected (open/ partially covered) or cleaned collection and storage containers**
- **Unsanitary methods of dispensation**
 - **Feacally contaminated hands/ dippers**
- **Lack of protection against contamination introduced by vectors (flies cock roaches, rodents)**

**A systematic meta-analysis of 57 studies
measuring bacteria counts for source water
and stored water at home:**

**Significant decline post-collection
bacteriological quality**

-Wright et al, 2003

Microbiological Effectiveness and Cost of Disinfecting Water by Boiling in Semi-urban India

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Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, United Kingdom; Centre for Global Health Research, St Michael's Hospital, University of Toronto, Toronto, Canada; and Hindustan Unilever Research Centre, Unilever Research India, Bangalore, India

Abstract. Despite shortcomings, boiling is the most common means of treating water at home and the benchmark against which emerging point-of-use water treatment approaches are measured. In a 5-month study, we assessed the microbiological effectiveness and cost of the practice among 218 self-reported boilers relying on unprotected water supplies. Boiling was associated with a 99% reduction in geometric mean fecal coliforms (FCs; $P < 0.001$). Despite high levels of fecal contamination in source water, 59.6% of stored drinking water samples from self-reported boilers met the World Health Organization standard for safe drinking water (0 FC/100 mL) and 5.7% were between 1 and 10 FC/100 mL. Nevertheless, 40.4% of stored drinking water samples were positive for FCs, with 25.1% exceeding 100 FC/100 mL.

Role of Industry

1. Innovation

- Addressing specific contaminants
 - Microbiological treatment devices for reducing water-borne infectious disease burden
 - RO based POU devices for reducing hardness
- Enable consumer access to in-home water treatment
 - Specific features e.g. independent of electricity of running water
 - Affordability – e.g. Branded water treatment devices costing < Rs. 2000/-

2. Aligning to Country Needs: Reducing Infectious Disease Burden

**Effect Of Water Quality Intervention On Health Of
Children And The Risk Of Diarrhoeal Diseases
In Urban Slums In Chennai City**

A collaborative study

By

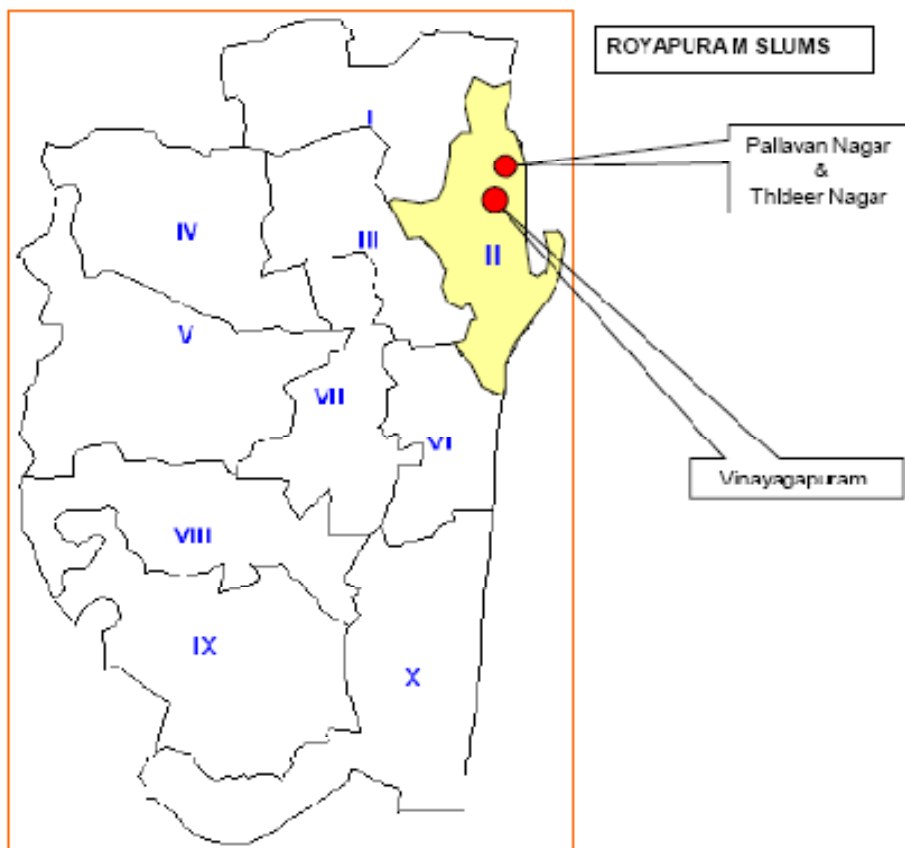
NATIONAL INSTITUTE OF EPIDEMIOLOGY
(Indian Council of Medical Research)



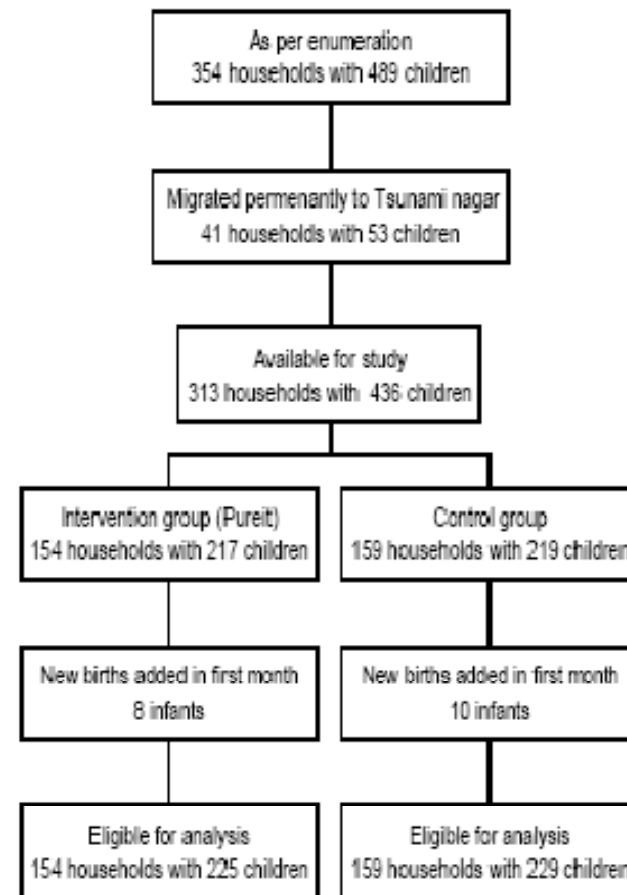
&

HINDUSTAN LEVER RESEARCH CENTRE

MAP 1: Chennai Corporation with Ten Zones & the Study Area

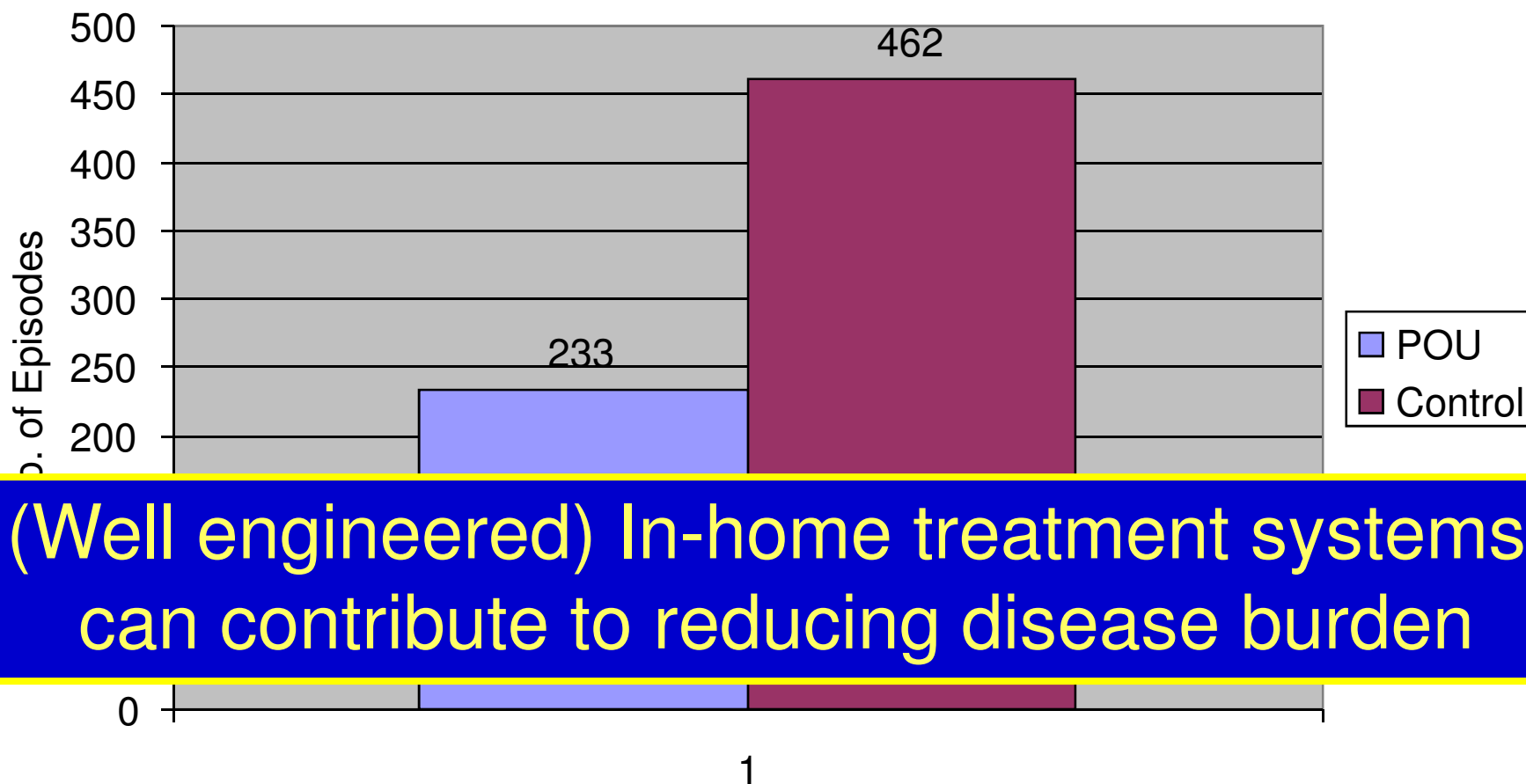


Flow Chart 2: Households And Children In The Study





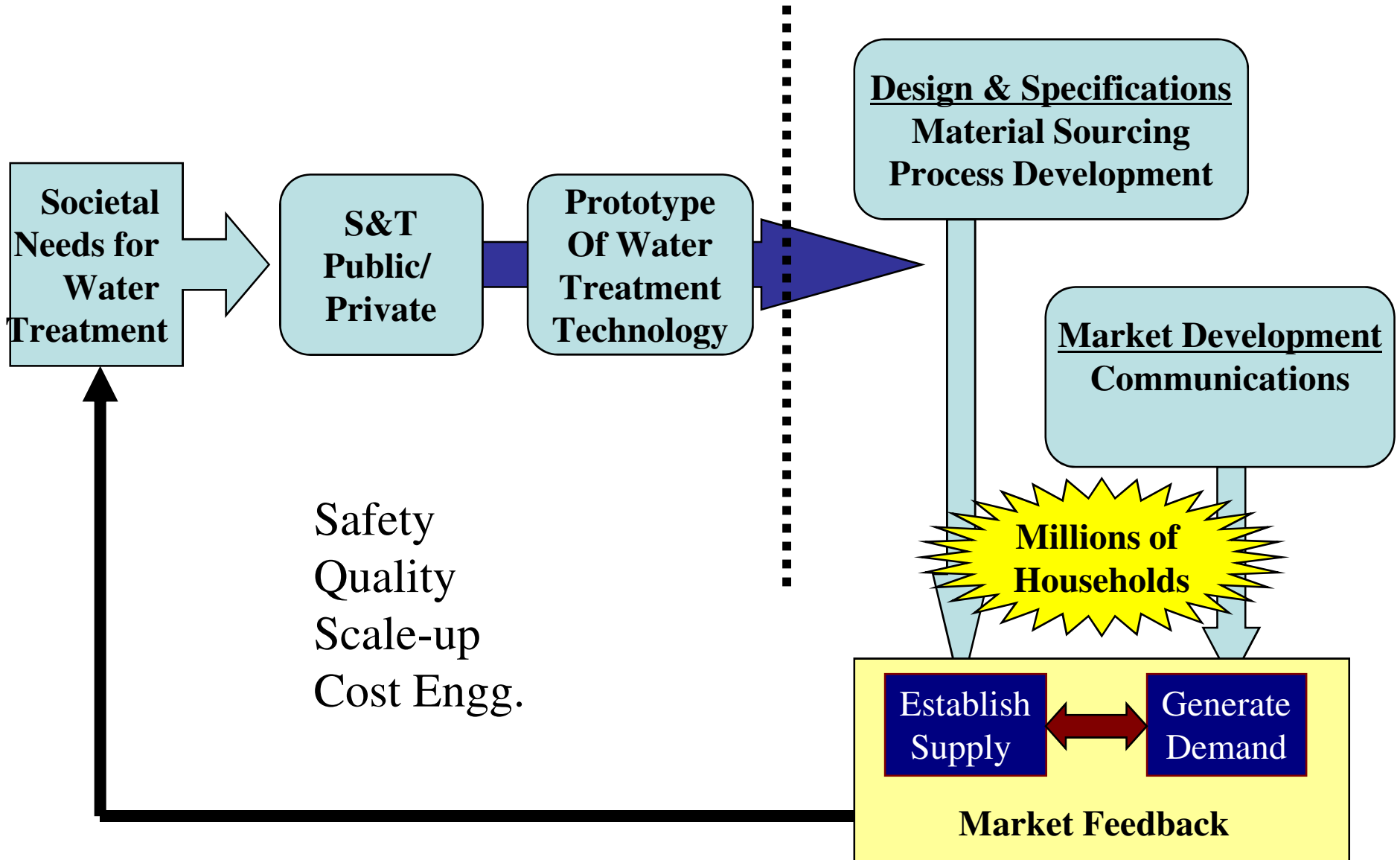
Total Number of Diarrheal Episodes



3. Awareness & Education



4. Scale-up & Affordability



Standardization & Certification

Enabling informed choice for the citizens



American National Standards Institute

Thank You