Health Based Targets – Friend or Foe?
WQRA Meeting February 22, 2013
Disdain for DBPs but a

Passion for pathogens – greatest threat to public health

HBTs (for microbial WQ) = you have my attention

But not my heart (in 2009)
• Aversion to WQ by numbers
• Didn’t understand how it worked

Acquired some understanding recently
• Threat to opportunity?
Learnings so far

• Source and water treatment assessments are imprecise
• It is hard to be convinced that one micro is achieved
• Whole lot of salivating
  – Pathogen monitoring ($1000 per sample for C&G)
  – Research (virus assays)
  – WTP validation (a la recycling)
  – QMRA (Monte Carlo simulations)
  – New WTP’s
• Standback - What does one micro DALY mean?
Water Safety Continuum

- What does one micro DALY mean?
- For a city of one million people there would be
  1.8 cases of cryptosporidiosis per day
- 10 micro DALY = 18 cases per day
  100 = 180
  1000 = 1800
  10,000 = 18,000
- Background GI ~ 2700 cases per day
- HBTs cannot be a pass/fail (unlike E coli)
- Water Safety is a continuum
The Safety Band Concept part 1

Divide the continuum into 3 bands:

- **Safe**
  
  = 1 – 15 micro DALYs
  
  = Water contributes to < 1% background GI
  
  = Unquestionably safe
  
  = Big buffer to an outbreak under normal ops (not sensitive to assumptions)
  
  = Big source challenge or WTP underperformance ≠ outbreak
  
  = Good practice drives to aspirational 1 micro DALY
  
  = A GREAT PLACE TO BE (Sleep well at night)
The Safety Band Concept part 2

- **Outbreak**
  - >150 micro DALY
  - >10% community GI from water (100,000 pa)
  - Unquestionably unsafe
  - Outbreak imminent
  - NEVER WANT TO BE HERE

- **Marginal**
  - Not unquestionably safe
  - Vulnerable to unusual source challenge or WTP underperformance
  - Uncomfortable improvement required