

# Closure of recreational lakes because of toxic cyanobacteria: risk communication, risk perception, enforcement and economic impacts

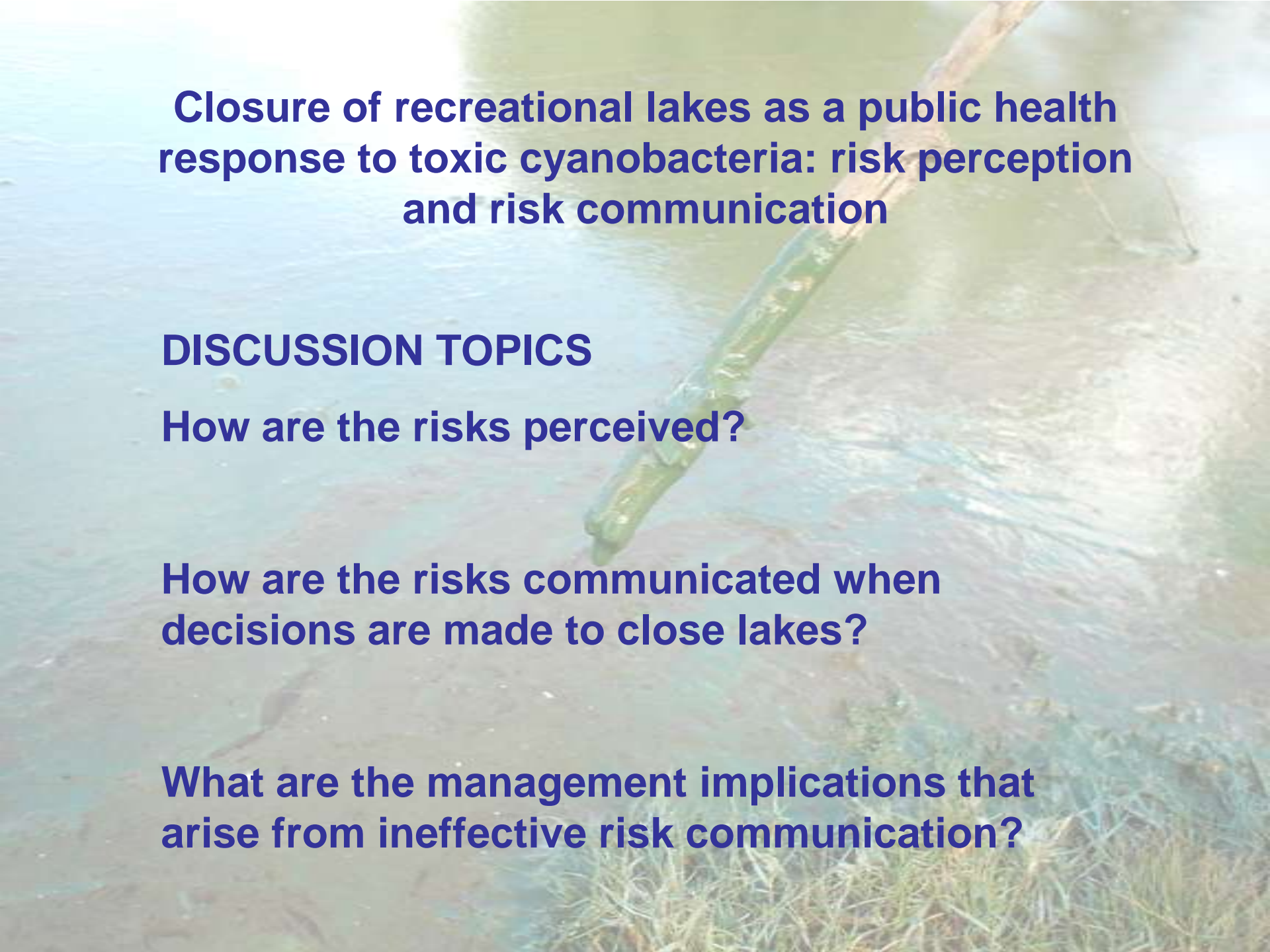
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**Closure of recreational lakes as a public health response to toxic cyanobacteria: risk perception and risk communication**

**DISCUSSION TOPICS**

**How are the risks perceived?**

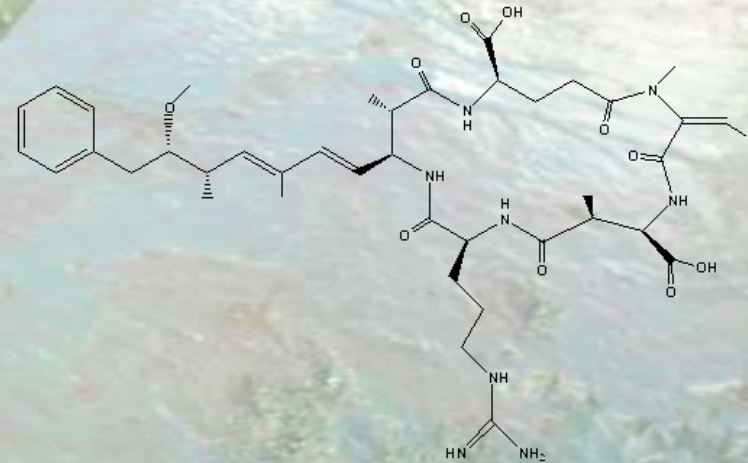
**How are the risks communicated when decisions are made to close lakes?**

**What are the management implications that arise from ineffective risk communication?**

# Cyanobacteria bloom, recreational lake, southeast Queensland 2008/09

September 2008: bloom of *Nodularia  
spumigena* identified at a recreational lake in  
southeast Queensland

Toxic bloom: nodularin





# RISK PERCEPTION



St Johns River, NE Florida



## **Cyanobacteria bloom, recreational lake, southeast Queensland 2008/09**

**Management taskforce: Logan Council advised by  
Queensland Health**

**Cable ski park proprietor agreed to voluntary closure  
of his business**

**Closed for three months**

**Treated with Phoslock**

**Estimated cost: \$300,000 (“my Ferrari”)**



**Cyanobacteria bloom, Lake Burley Griffin,  
Canberra, February – June 2009**

**Partial and full closures**

**Cancellation of ACT State wakeboard title meet**

**World Rowing Championships training moved  
to Sydney. Cost to AIS: \$5,000 per day**

**ACT Water Police enforced closure**

# Guidelines for closure of recreational waters due to cyanobacteria / cyanotoxins

**NHMRC: *Potential* risk reduction measures: “...curtailing recreation during blooms...”**

**WHO: Level 3 guideline (High probability of adverse health effects): “Immediate action to control scum contact; possible prohibition of swimming and other water contact activities”**

**Oregon: “Under extreme conditions, or if evidence exists of illness, the appropriate jurisdiction for a waterbody can invoke an official closure”**

**France: Level 3: presence of scums → All activities are prohibited**

**Germany: Level 3: >100µg/L MCs: “... temporary closure recommended”**

**Madison, Wisconsin: golf course pond,  
July 2002**



**Swam in golf course pond with 4  
friends**

**horseplay, forced immersion**

**24 hours later: severe G-I illness –  
abdominal cramping, vomiting,  
diarrhoea**

**36 hrs: collapsed and died**

**Dane Rogers**

# **RISK COMMUNICATION**

## **EXPOSURE ROUTES**

- 1. Parenteral: not relevant**
- 2. Inhalational: ???**
- 3. Oral: unequivocally hazardous**
- 4. Dermal: negligible risk of systemic intoxication**

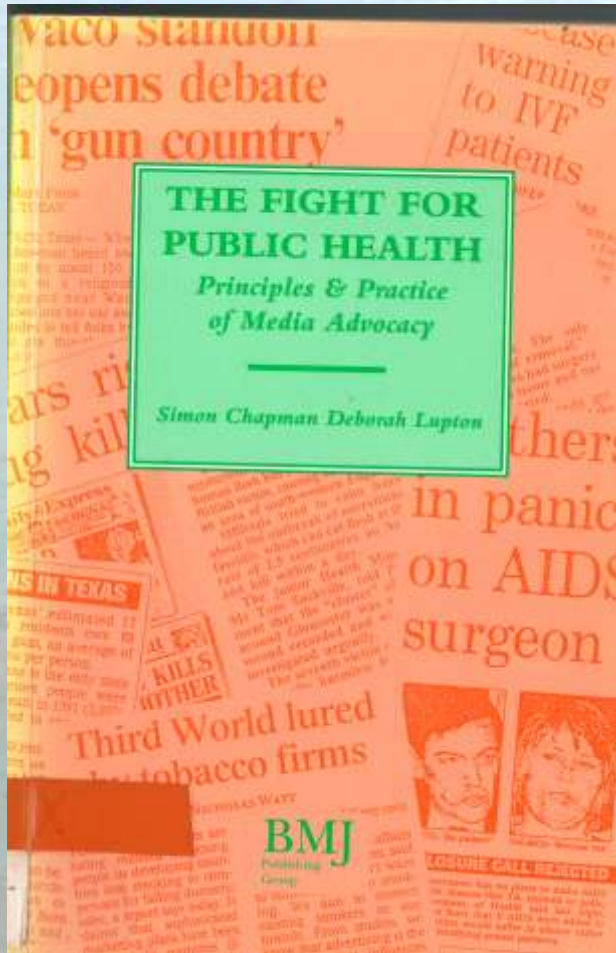
**(+/- *Lyngbya*-related toxins)**

# RISK COMMUNICATION

## QUESTIONS

1. Should we devise recommendations and protocols to direct closure of recreational waterbodies? Contrasting example of *Naegleria fowleri*?
2. Irrespective of answers to 1. above, should we offer more by way of explanation as to why recreational access is restricted because of cyanobacteria?
3. Should the risk of systemic intoxication be the yardstick by which decisions to close a lake are measured? Or not?

# RISK COMMUNICATION



Chapman S. Advocacy for public health: a primer. *J Epidemiol Community Health* 2004; 58(5):361-5

- How the mass media operates
- Framing the issue for the media
- Newsworthiness
- How health scares work



## **RISK AMELIORATION**

**Long-term nutrient input reduction program**

**Riparian buffer zones**

**Closed catchments**

**Support for targeted toxicology and  
epidemiological research**

# **RISK COMMUNICATION**



**Outreach program related to *decisions to restrict access:***

## **DISCUSSION TOPICS:**

- **Why we are concerned about cyanobacteria**
- **What causes the problem (NUTRIENTS)**
- **How it can affect you (Oral exposure)**

# **INEFFECTIVE RISK COMMUNICATION**



- **Warning fatigue**
- **Suspicion of expert incompetence. The media love to present conflicts (“The Emperor’s new clothes”)**
- **Litigation – perception of “arbitrary and capricious” decision-making**

# **RISK PERCEPTION**



**Antihistamine prophylaxis prior to recreational water activities**

**High demand for access to recreational water**

# RISK PERCEPTION



Lake Coolmunda, SE Queensland

## **CONCLUSIONS**

- **Community opposition to public health interventions**
- **Mass media frame uncertainty as disputes**
- **Outreach and information specifically for interventions to restrict recreational access**
- **MORE RESEARCH**