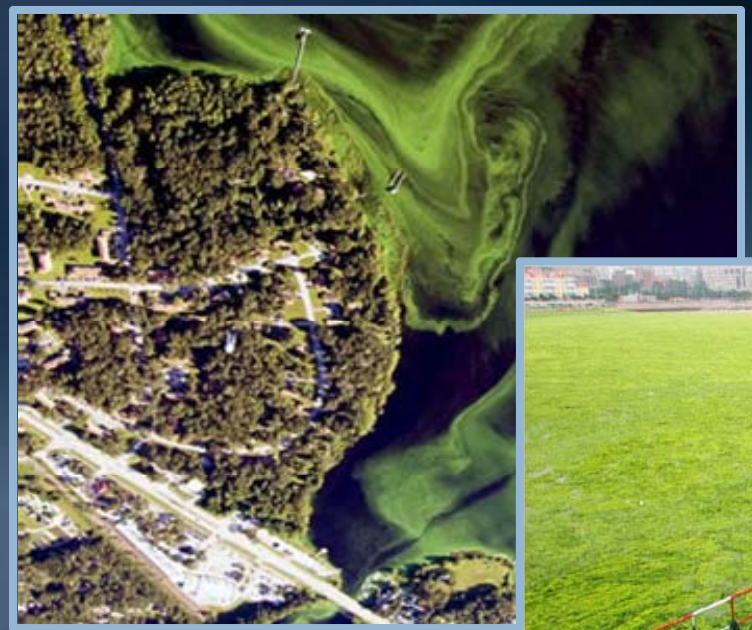
# Algae Management Program

Engineering & Operations Committee
Item 6a
April 13, 2015

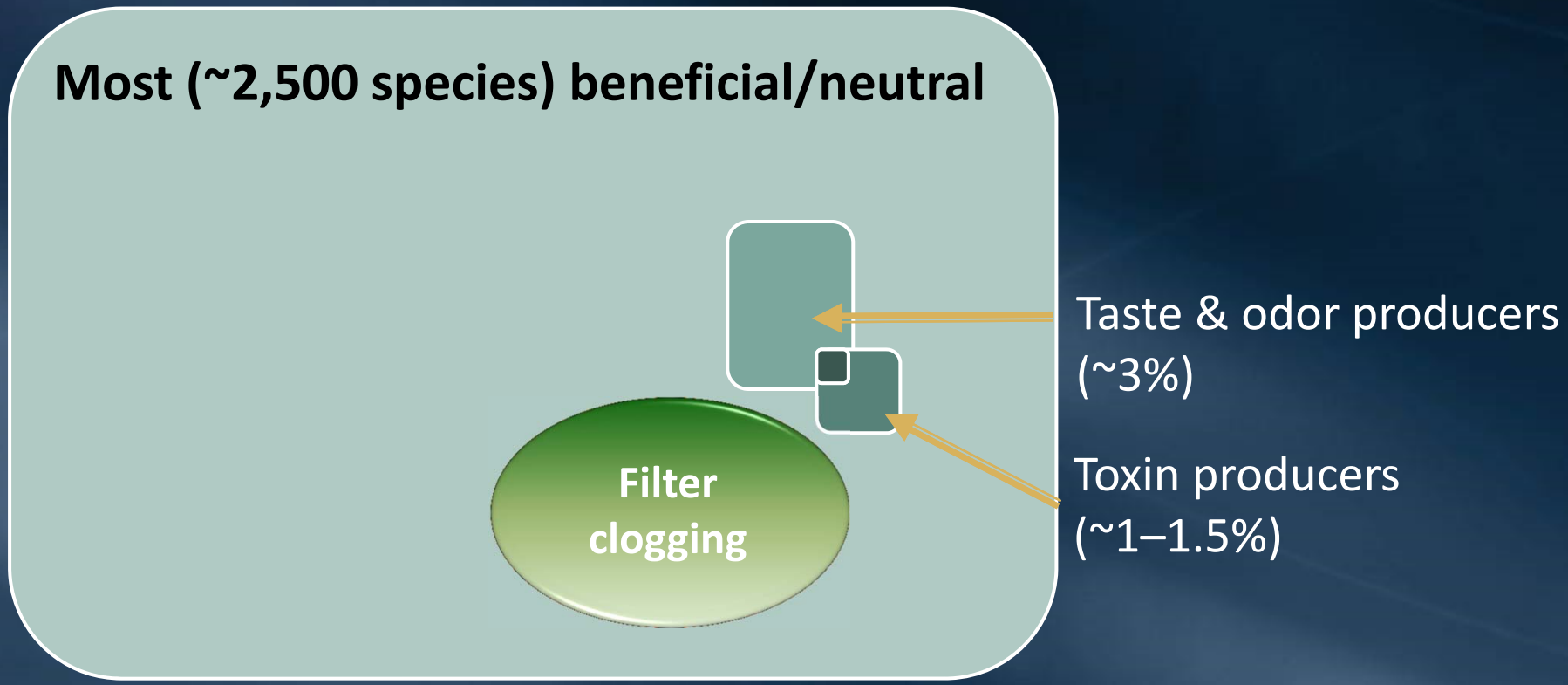
# Algal blooms




# Algal Bloom at Copper Basin (March 21, 2015)

***Cyanobacteria***

# Overview of Algae (Cyanobacteria)




**Note: Toxins produced by cyanobacteria are called cyanotoxins**

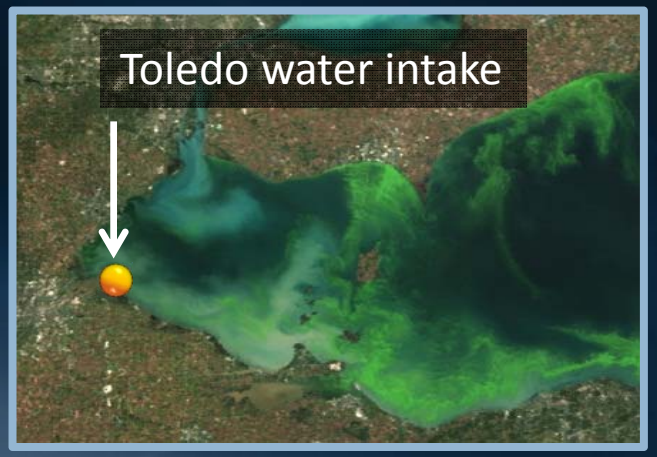
# Potential Health Effects of Algal Toxins

- Acute
  - Livestock/Pets
    - Liver and kidney failure
    - Muscular weakness and paralysis
  - Human body-contact recreation
    - Liver damage
    - Neurological damage
- Chronic
  - Lifetime human consumption
    - Liver damage
    - Neurological damage

# Microcystin in Lake Erie

- In August 2014 an algae bloom produced microcystin in the water supply for Toledo, Ohio

- Contributing Factors
  - Nutrient loading to Lake Erie
  - Shallow lake depths
  - Only one tier for water intake
  - No alternative source water

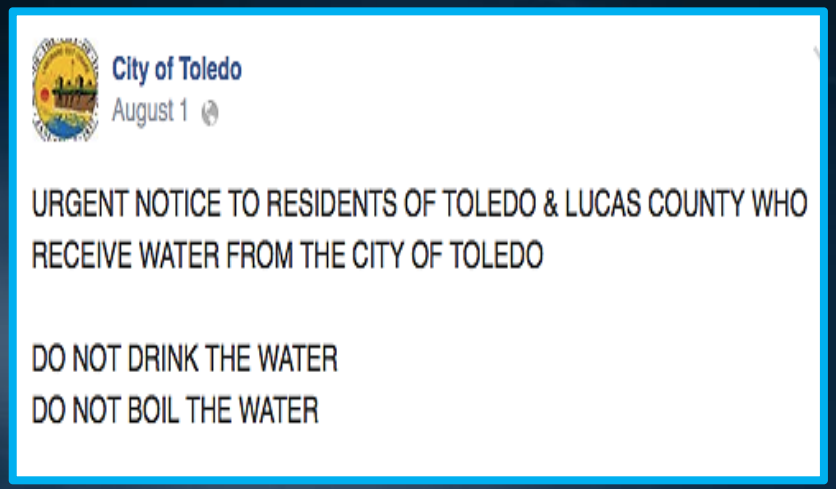



***Microcystis* algae bloom visible on Lake Erie**

***Water sample collected at Toledo's intake on Lake Erie***

# Toledo, Ohio water alert

- Toledo issued "Do Not Drink" and "Do Not Boil" notice
- 400,000 people without potable water for 3 days
- Ohio EPA adapted World Health Organization microcystin guideline of 1 ppb
- Concentration in Toledo treated drinking water reached 2.5 ppb




# Federal Legislation

- H.R. 212 (Latta) and S. 460 (Portman) Feb 2015
  Drinking Water Protection Act
  - USEPA to develop strategic plan for cyanotoxins within 90 days

- H.R. 243 (Kaptur) Jan 2015 and S. 462 (Brown) Feb 2015
  Safe and Secure Drinking Water [Protection] Act of 2015
  - USEPA to publish public health advisory for microcystins within:
    - 90 days for H.R. 243
    - 180 days for S. 462

# State Legislation

- AB 300 (Alejo) — Safe Water and Wildlife Protection Act of 2015
  - Establishes Algal Bloom Task Force to review risks and impacts of algal blooms
  - State Water Resources Control Board is lead agency
  - Findings due January 1, 2017

# Status of Cyanotoxin Regulations in U.S.

**Public Health Advisory**

- Recommended precautionary level in absence of full data
- Not enforceable/reportable
- Not a drinking water standard

***EPA likely to Issue April 2015***

**Regulatory Determination**

- Listing as a contaminant
- Technical assessment period
- Promulgation of a regulation (as MCL or TT)

***UCMR*4***

***Published late 2016***

***Monitoring begins Jan. 2018***

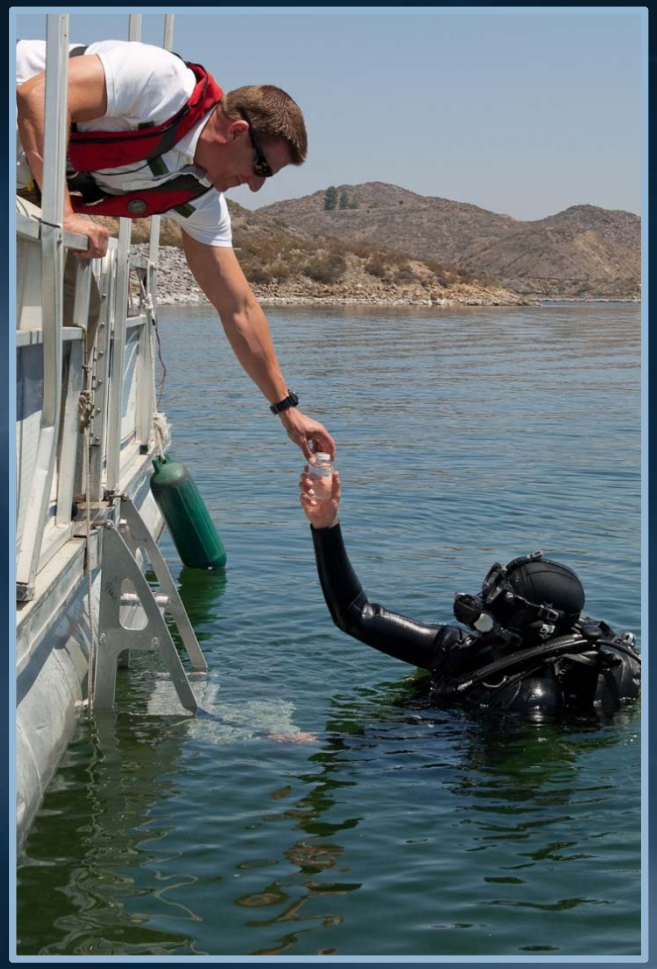
*UCMR= Unregulated Contaminant Monitoring Rule

# History of Cyanotoxin Investigations at Metropolitan

- 1995- AWWARF (now WRF) study included samples from MWD's reservoirs
- 2001- Algal samples sent to contract laboratories
- 2004- Algal samples analyzed at WQL
- 2012- Developed Interim Response Plan for cyanotoxin producing blooms
- 2015- Co-investigator on WRF study to optimize water treatment for cyanobacteria/toxin removal

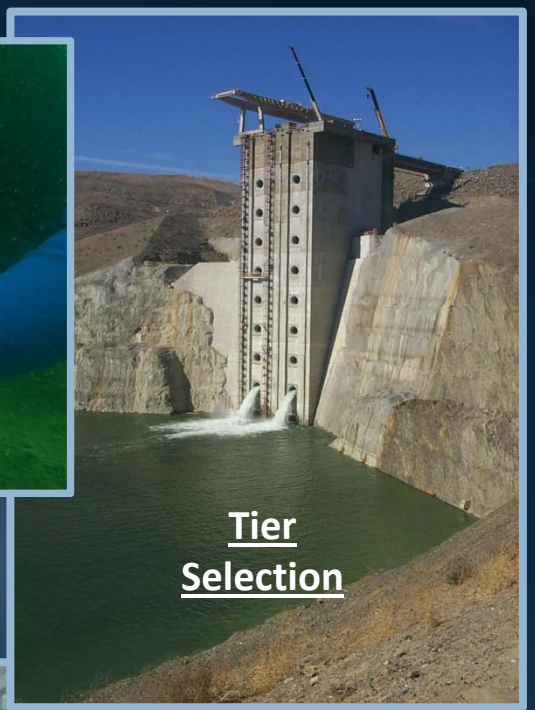
# Algae Management in Reservoirs

- Monitor for early warning
- Know the target
- Seek operational solutions, treating the cause not the symptom
- Treat during the window of opportunity



# Algae Management "Toolbox"

Monitoring



Tier Selection

Lake Treatment


Bypass

Ozone

# Summary

- Metropolitan's Algae Management Program provides effective tools to control blooms and toxins
- Metropolitan's investments in system flexibility and ozone treatment provide additional control measures
- The Toledo, Ohio incident has stimulated legislation to develop health advisories and strategic plans on algal toxins
- An EPA Health Advisory on two cyanotoxins is expected this year


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928