

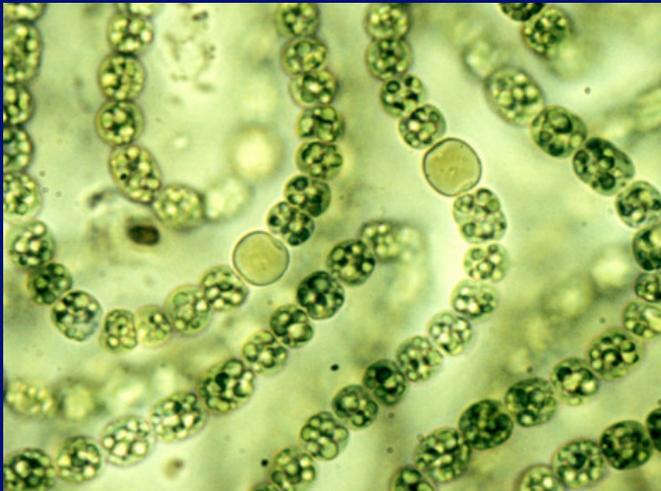


**Virginia Roberts**  
**Joana Yu (Karna LLC)**

NWQMC Meeting  
07/25/2016

# Harmful Algal Blooms (HABs)

- Harmful algal bloom (HAB) – overgrowth of phytoplankton (cyanobacteria or microalgae) that can cause harm to animals, people, or the local ecology
  - Occur in warm, nutrient rich fresh or marine waters
- Adverse effects:
  - Economic (e.g., beach closures, shellfish harvest closures)
  - Ecologic (e.g., oxygen depletion, sunlight deprivation)
  - Health (e.g., human and animal illnesses)



Source: CA Water Boards - Cyanobacteria



Source: UCSB Biolum - Dinoflagellate

# HABs and Public Health

- ❑ Exposure pathways: ingestion (water or food), inhalation, dermal contact
- ❑ Emerging public health issue
  - Warming climate, nutrient pollution
- ❑ One Health issue – humans, animals, and the environment
- ❑ Challenges: identifying and characterizing HAB-associated illnesses



Source: Jill Stegrist



Source: USGS



Source: David Zapotosky

# An Emerging Public Health Issue

- ❑ **Frequency and geographic distribution**
  - How many cases of illness annually? Where? When?
  - Illnesses occurring more/less frequently?
- ❑ **Case definitions**
  - What are the symptoms of HAB-associated illness? How do they vary by toxin? Concentration?
  - How to interpret the clinical, epidemiological, and environmental data?
- ❑ **Risk factors**
  - How do factors such as age, route of exposure, and immune status affect susceptibility?
- ❑ **Prevention efforts—needs? impacts?**

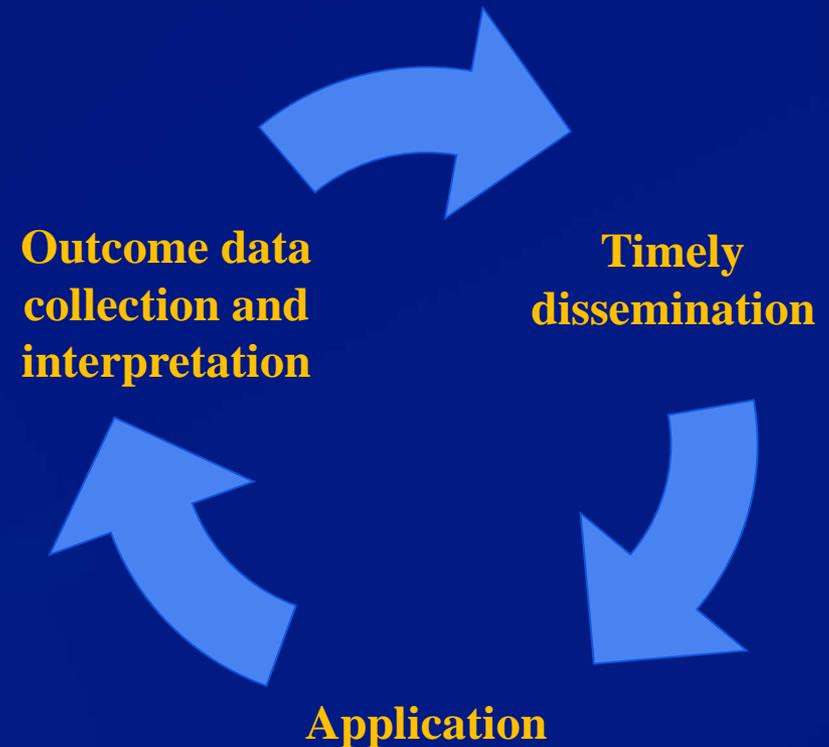
# One Health



- ❑ The health of humans is connected to the health of animals and the environment.
- ❑ Animals share susceptibility to some diseases and environmental hazards such as harmful algal blooms (HABs); animal illnesses may serve as early warnings for potential human illness.
- ❑ Successful public health interventions require the cooperation of the human health, veterinary health, and environmental health communities.

# Public Health Surveillance

- **Public health surveillance:**
  - *The ongoing, systematic collection, analysis, and interpretation of outcome-specific data for use in the planning, implementation, and evaluation of public health practice.*



# HAB-associated Illness Reporting Systems in the U.S.



- Web-based
- Outbreak data ( $\geq 2$  human illnesses)
- Foodborne and waterborne HABs

2009-present



- HABs, human cases, & animal cases

2016

2009-2013

## Harmful Algal Bloom-related Illness Surveillance System (HABISS)

- HABs, human cases, animal cases
- Enhanced surveillance in 11 states
- Program ended in 2013

# Partners

□ Great Lakes Restoration Initiative (GLRI)

□ OHHABS Working Group

□ NORSTeam

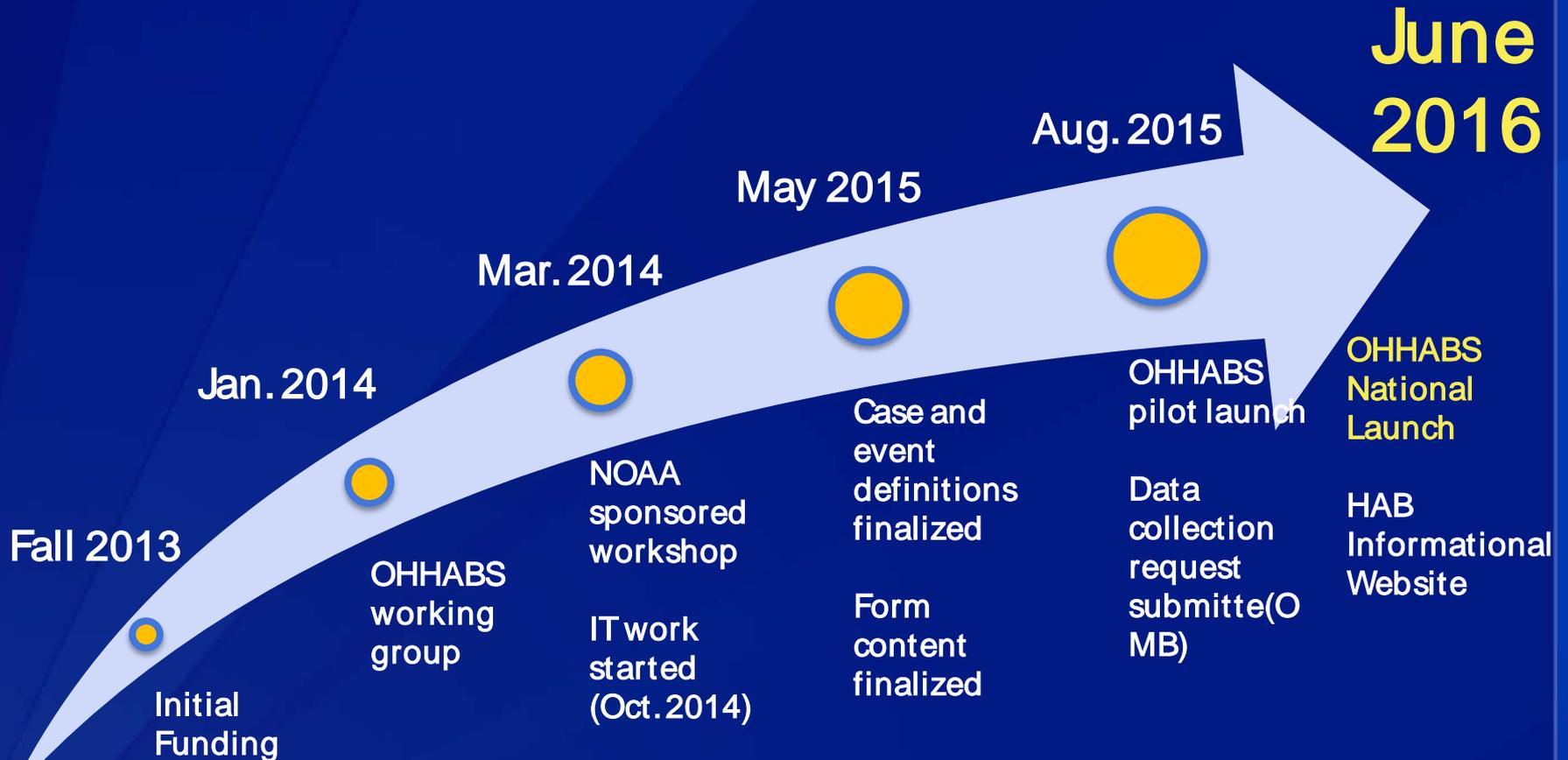
The image displays a central map of the United States with red stars marking the following states: Washington, Oregon, Kansas, Nebraska, Oklahoma, Missouri, Illinois, Indiana, Michigan, Ohio, Pennsylvania, New York, and Florida. A legend below the map indicates that a red star represents an "OHHABS Working Group State".

Surrounding the map are several partner logos:

- FDA** (U.S. Food and Drug Administration)
- EPA** (United States Environmental Protection Agency)
- NOAA** (National Oceanic and Atmospheric Administration, U.S. Department of Commerce)
- CDC** (Centers for Disease Control and Prevention)
- ATSDR** (U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry)
- USGS** (U.S. Geological Survey, science for a changing world)
- National Park Service** (Archeological logo)
- Great Lakes RESTORATION** (Logo featuring a map of the Great Lakes and a boat)
- International Joint Commission** (Logo with Canadian and American flags)

**NORS**  
National Outbreak  
Reporting System

# OHHABS Development Timeline



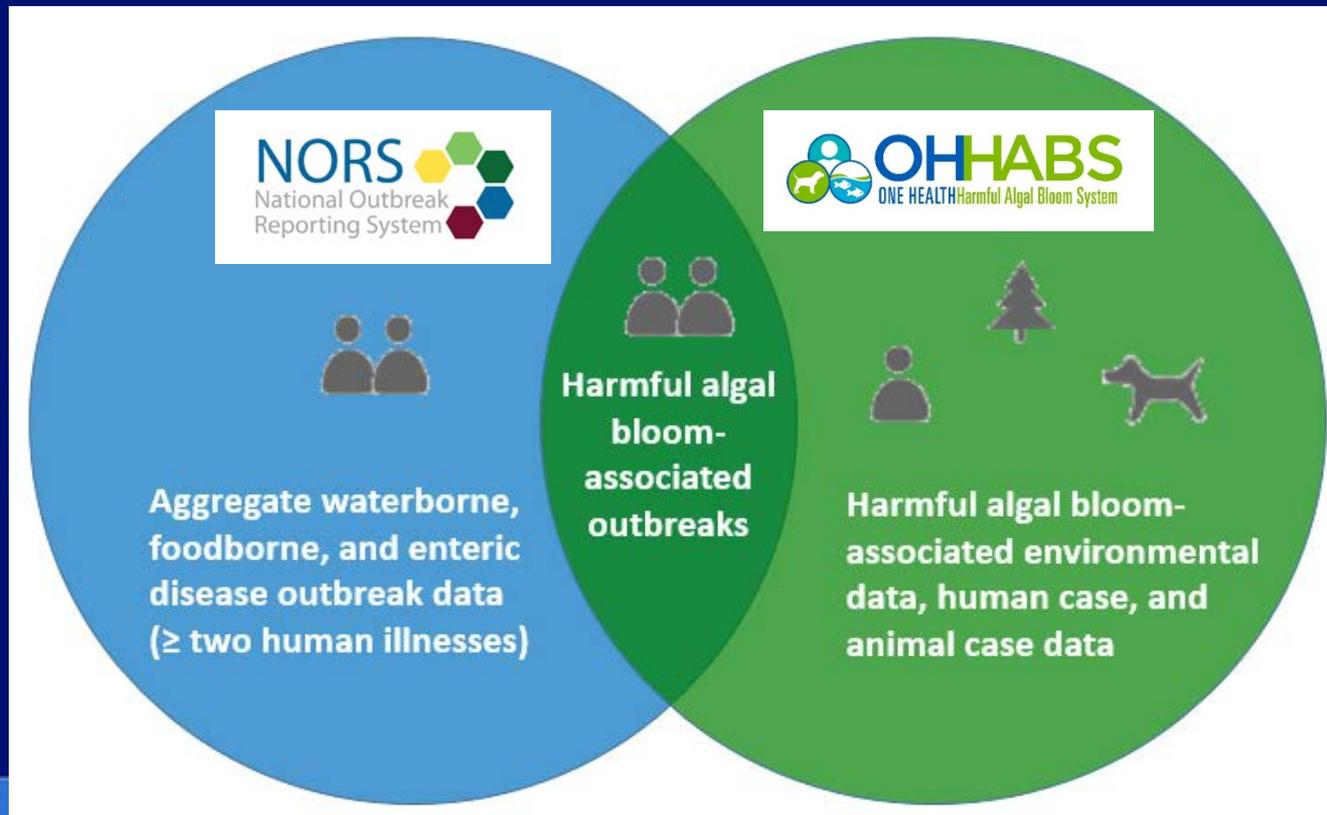


- ❑ **Electronic reporting system launched in 2016**
  - **Web-based, password-protected system**
  - **Event-based, not for routine water monitoring**
  - **Not a real-time notification or case investigation system**
- ❑ **Voluntary reporting to the Centers for Disease Control and Prevention (CDC)**
- ❑ **Collects data on foodborne and waterborne HAB events in fresh and marine water settings:**
  - **HAB events (environmental data)**
  - **HAB-associated human cases of illness**
  - **HAB-associated animal cases of illness**
- ❑ **Fills a gap in health surveillance, and will inform understanding of HAB occurrences and HAB-associated illnesses**

# Who Can Report?



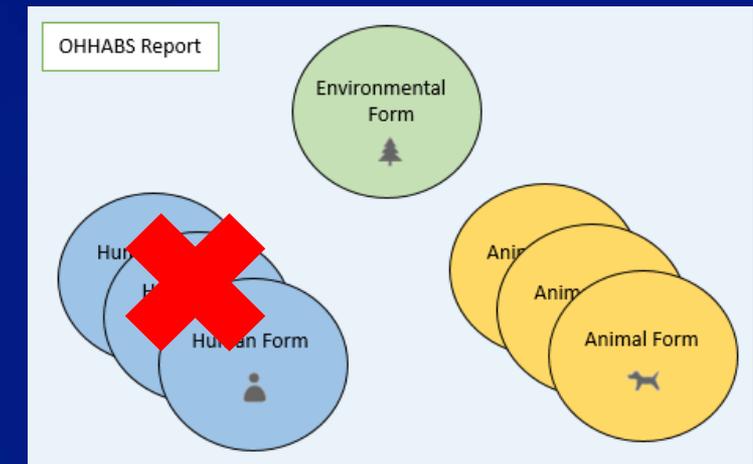
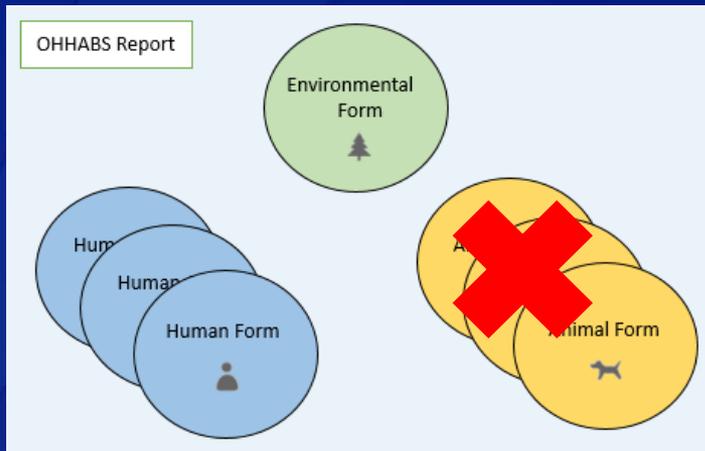
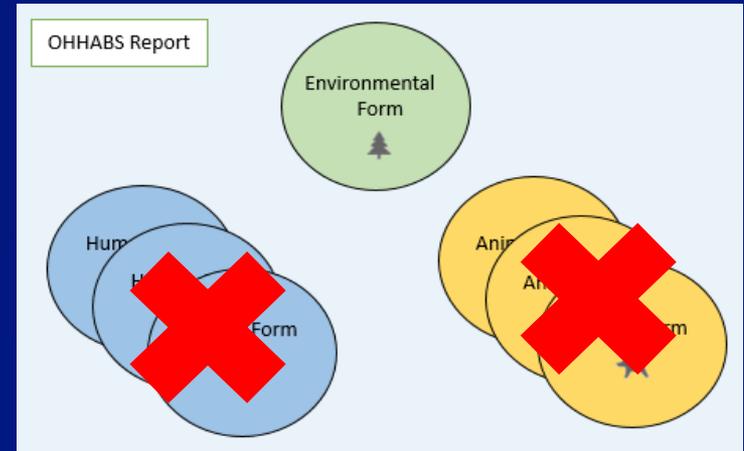
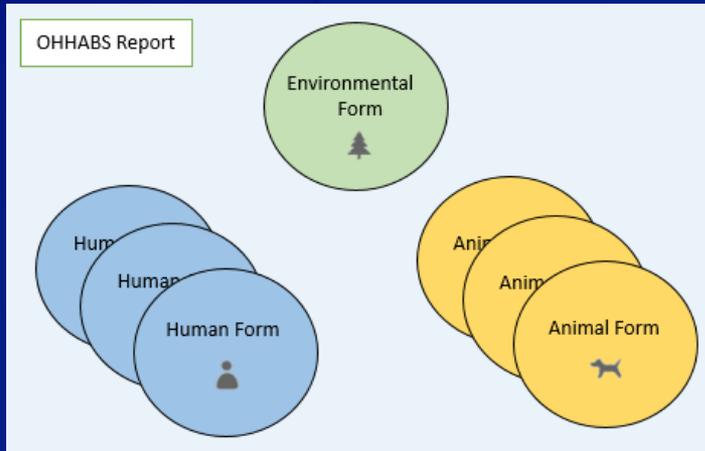
- ❑ Local, state, and territorial public health partners and their designated environmental health and animal health partners
- ❑ OHHABS and NORS are linked



# What Data Can be Reported?

Form Type	Types of Data Collected
<b>Environmental Form</b>	<ul style="list-style-type: none"><li>• Location of the HAB event</li><li>• Observed water body characteristics</li><li>• Advisories and health warnings</li><li>• Laboratory testing – event sample testing</li><li>• Pathogens or toxins detected</li><li>• Other data systems that contain associated information</li><li>• Seafood catch or harvest location for HAB-associated foodborne illnesses</li></ul>
<b>Human Form</b>	<ul style="list-style-type: none"><li>• General case information (e.g., sex, age in years)</li><li>• Exposures (e.g., activities, duration)</li><li>• Signs and symptoms of illness</li><li>• Medical and health history</li><li>• Clinical testing</li><li>• Pathogens or toxins detected in clinical samples</li></ul>
<b>Animal Form</b>	<ul style="list-style-type: none"><li>• General case information (e.g., type of animal, single/group of animals)</li><li>• Exposures (e.g. activities, duration)</li><li>• Signs of illness</li><li>• Health information (e.g., veterinary treatment)</li><li>• Clinical testing</li><li>• Pathogen or toxins detected in clinical samples</li></ul>

# How Are Events and Cases Reported in OHHABS?



# OHHABS Demo

- [wwwn.cdc.gov/norshab/](http://wwwn.cdc.gov/norshab/)

## Online Resources

- ❑ OHHABS resources at [www.cdc.gov/habs/ohhabs](http://www.cdc.gov/habs/ohhabs)
  - Guidance documents
  - Case and event definitions
  - Static and fillable PDF forms
- ❑ Harmful Algal Bloom – Associated Illness website for the general public at [www.cdc.gov/habs](http://www.cdc.gov/habs)
- ❑ Health promotion materials at [www.cdc.gov/habs/materials/index.html](http://www.cdc.gov/habs/materials/index.html)
  - OHHABS partner toolkit (fact sheet, slides, newsletter article, resources list)
  - Cyanobacterial Fact Sheet
  - Posts
  - Reference Cards for veterinarians, physicians, and the general public

# Thank you! Questions? [NORSWater@cdc.gov](mailto:NORSWater@cdc.gov)

**For more information please contact Centers for Disease Control and Prevention**

1600 Clifton Road NE, Atlanta, GA 30333

Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

Visit: [www.cdc.gov](http://www.cdc.gov) | Contact CDC at: 1-800-CDC-INFO or [www.cdc.gov/info](http://www.cdc.gov/info)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.