

Evidence-based community input for CyanoHABs signage

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CCHAB Network meeting

TOPICS

- **Sign Testing – First Round**
 - Background Information
 - Methodology
 - Report of Findings
- **Next steps in testing – Second Round**
- **Modifiable signs**
- **Proposal** for understanding local HABs signage needs

Sign Field Testing Background Information

Environmental
Justice

Health Equity



The ability of US adults to use printed and written health-related information to function in society, to achieve one's personal goals, and to develop one's knowledge and potential.

Current signs on CCHAB website

CAUTION

Harmful algae may be present in these waters.
For your family's safety:



DO NOT SWIM OR WADE near algae or scum.



DO NOT let pets or livestock go into or drink the water, or eat scum on the shoreline.



KEEP CHILDREN AWAY from algae in the water or on the shore.



For fish caught here, **THROW AWAY GUTS AND CLEAN FILLETS** with tap water or bottled water before cooking.



DO NOT drink this water or use it for cooking.



DO NOT eat shellfish from these waters.

Call your doctor or veterinarian if you or your pet get sick after going in the water.
For more information, contact: Enter your contact information here.
Do not enter more than 2 lines of text.

WARNING

Toxins from algae in these waters can harm people and kill pets and livestock



NO SWIMMING



DO NOT let pets or livestock go into or drink the water, or go near the scum.



STAY AWAY from scum, and cloudy or discolored water.



DO NOT eat shellfish from these waters.



DO NOT use these waters for drinking or cooking. Boiling or filtering will not make the water safe.



For fish caught here, **THROW AWAY GUTS AND CLEAN FILLETS** with tap water or bottled water before cooking.

For people, the toxins can cause:

For animals, the toxins can cause:

- Diarrhea, vomiting
- Convulsions and death

For more information, contact: Enter your contact information here.
Do not enter more than 2 lines of text.

DRAFT 10/2014

DANGER

Toxins from algae in these waters can harm people and kill pets and livestock



STAY OUT OF THE WATER UNTIL FURTHER NOTICE. Do not touch green scum in the water or on shoreline.



DO NOT let pets or livestock drink or go into the water or eat algal scum.



DO NOT eat fish or shellfish from these waters.



DO NOT use these waters for drinking or cooking. Boiling or filtering will not make the water safe.

For people, the toxins can cause:

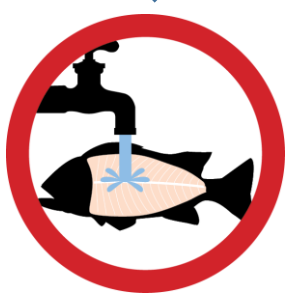
- Skin rashes, eye irritation
- Diarrhea, vomiting

For animals, the toxins can cause:

- Diarrhea, vomiting
- Convulsions and death

Call your doctor or veterinarian if you or your pet get sick after going in the water.
For more information, contact:

Pre-test Field Testing Instrument



Methods

- Developed survey instrument for 1:1 in-person interviews
 - Survey designed to determine participants' comprehension of messages
 - Tested icons separately from text in each message
 - Pre-tested
- Survey instrument in English and Spanish
- Identified locations for testing
- Each participant examined and responded to questions about 1 sign

CAUTION

Harmful algae may be present in these waters.
For your family's safety:



STAY AWAY FROM algae and scum in the water.



DO NOT let pets or livestock go into or drink the water, or eat scum on the shore.



KEEP CHILDREN AWAY from algae in the water or on the shore.



For fish caught here, **THROW AWAY GUTS AND CLEAN FILLETS** with tap water or bottled water before cooking.



DO NOT drink this water or use it for cooking.



DO NOT eat shellfish from these waters.

Call your doctor or veterinarian if you or your pet get sick after going in the water.
For more information, contact:

PRECAUCIÓN

Puede haber algas dañinas en estas aguas.
Para protección de su familia:



MANTÉNGASE ALEJADO de algas y agua espumosa.



NO deje que sus mascotas o ganado se metan o beban el agua, o coman la espuma lamosa en la orilla del agua.



MANTENGA A LOS NIÑOS ALEJADOS de algas en el agua o orilla del agua.



Al pescado que pesque aquí, debe **QUITARLE Y TIRAR LOS INTESTINOS A LA BASURA Y LIMPIAR LOS FILETES** con agua de la llave o embotellada.



NO beba de esta agua o use para cocinar.



NO coma mariscos de estas aguas.

Llame a su médico o veterinario si usted o su mascota se enferman después de meterse al agua.
Para obtener más información, comuníquese con:

WARNING

Toxins from algae in these waters can harm people and kill pets and livestock



NO SWIMMING



STAY AWAY from scum, and cloudy or discolored water.



DO NOT use these waters for drinking or cooking. Boiling or filtering will not make the water safe.



DO NOT let pets or livestock go into or drink the water, or go near the scum.



DO NOT eat shellfish from these waters.



For fish caught here, **THROW AWAY GUTS AND CLEAN FILLETS** with tap water or bottled water before cooking.

For people, the toxins can cause:

- Skin rashes, eye irritation
- Diarrhea, vomiting

For animals, the toxins can cause:

- Diarrhea, vomiting
- Convulsions and death

Call your doctor or veterinarian if you or your pet get sick after going in the water.

For more information, contact:

ADVERTENCIA

Toxinas de algas en estas aguas pueden causar daño a la gente y matar animales domésticos y de ganado



PROHIBIDO NADAR.



MANTÉNGASE ALEJADO de la espuma lamosa, y agua turbia o descolorida.



NO use use esta agua para beber o cocinar. Hervir o filtrar el agua no hace que sea segura.



NO deje que sus mascotas o ganado se metan o beban el agua, o se acerquen a la espuma lamosa.



NO coma mariscos de estas aguas.



Al pescado que pesque aquí, **DEBE QUITARLE Y TIRAR LOS INTESTINOS A LA BASURA Y LIMPIAR LOS FILETES** con agua de la llave o embotellada antes de cocinarlo.

En las personas

- las toxinas pueden causar:
- Erupciones en la piel, irritación en los ojos
 - Diarrea, vómito

En los animales

- las toxinas pueden ocasionar:
- Diarrea, vómito
 - Convulsiones y muerte

Llame a su médico o veterinario si usted o su mascota se enferman después de meterse al agua. Para obtener más información, comuníquese con:

DANGER

Toxins from algae in these waters can harm people and kill pets and livestock



STAY OUT OF THE WATER UNTIL FURTHER NOTICE. Do not touch scum in the water or on shore.



DO NOT let pets or livestock drink or go into the water or go near the scum.



DO NOT eat fish or shellfish from these waters.



DO NOT use these waters for drinking or cooking. Boiling or filtering will not make the water safe.

For people, the toxins can cause:

- Skin rashes, eye irritation
- Diarrhea, vomiting

For animals, the toxins can cause:

- Diarrhea, vomiting
- Convulsions and death

Call your doctor or veterinarian if you or your pet get sick after going into the water.

For more information, contact:

PELIGRO

Toxinas de algas en estas aguas pueden causar daño a la gente y matar animales domésticos y de ganado



MANTÉNGASE LEJOS DEL AGUA HASTA NUEVO AVISO. No toque la espuma lamosa en el agua u orilla del agua.



NO deje que sus mascotas o ganado beban o se metan al agua, o se acerquen a la espuma lamosa.



NO coma pescado o mariscos de estas aguas.



NO use esta agua para beber o cocinar. Hervir o filtrar el agua no hace que sea segura

En las personas las toxinas pueden causar:

- Erupciones en la piel, irritación en los ojos
- Diarrea, vómito

En los animales las toxinas pueden ocasionar:

- Diarrea, vómito
- Convulsiones y muerte

Llame a su médico o veterinario si usted o su mascota se enferman después de meterse al agua. Para obtener más información, comuníquese con:

Results: Participant Demographics

Participant Race/Ethnicity

Race/Ethnicity	N	%
Caucasian	12	30.0
Asian	10	25.0
Black/African Am.	7	17.5
Latino/Hispanic	4	10.0
Native American	3	7.5
Other	4	10.0
<i>Total %</i>	40	100.0

Participant Education

Education	N	%
None	5	12.5
Middle School or less	4	10.0
Some High School or graduate	17	42.5
Some college	12	30.0
Bachelor's Degree	2	5.0
<i>Total %</i>	40	100.0

Participant Primary Language

	CAUTION (n=14)		WARNING (n=8)		DANGER (n=12)		TOTAL (n=40)	
	n	%	n	%	n	%	N	%
Primary Language								
English	10	71.4	11	78.6	9	75.0	30	75.0
Spanish	1	7.1	1	7.1	0	0.0	2	5.0
Mien	1	7.1	0	0.0	3	25.0	4	10.0
Khmu (Lao)	2	14.2	2	14.2	0	0.0	4	10.0
<i>Total %</i>		100.0		100.0		100.0		100.0

Results:

Sign Icon Comprehension

Icons that were routinely understood

At least 2/3 of participants demonstrated adequate understanding of the following icons:



CAUTION SIGN

WARNING SIGN

DANGER SIGN

“In your opinion, what do you think this picture is trying to say?”



Do not use water in the lake
for drinking or cooking.

Understood the icon's message:	Yes	No
Number (n=40)	26	14
Percentage	65.0%	35.0%
Response	n/a	<i>Examples:</i> <ul style="list-style-type: none"> • No drinking alcoholic beverages. • No drinking. • Participant confused about what was in the cup. • Holding a sign

CAUTION SIGN

“In your opinion, what do you think this picture is trying to say?”



Stay away from algae and scum in the water.

Understood the icon's message:	Yes	No
Number (n=14)	9	5
Percentage	64.3%	35.7%
Response	<p><i>Additional comments:</i></p> <ul style="list-style-type: none">• Green lines look like seaweed• At first it looks like someone diving	<p><i>Examples:</i></p> <ul style="list-style-type: none">• Something you shouldn't be touching (but did not recognize as algae).• Dirty water.• There is something in the water.

CAUTION SIGN

“In your opinion, what do you think this picture is trying to say?”



Keep children away from algae
in the water or on the shore.

Understood the icon's message:	Yes	No
Number (n=14)	9	5
Percentage	64.3%	35.7%
Response	n/a	<i>Examples:</i> <ul style="list-style-type: none">• Did not mention child• Not sure, something with bucket and sand• Holding a bucket to get something in water

CAUTION SIGN

WARNING SIGN

DANGER SIGN

“In your opinion, what do you think this picture is trying to say?”



Do Not eat shellfish from these waters.

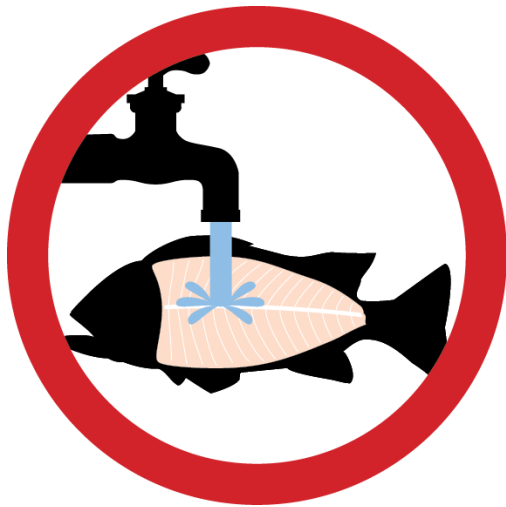
Do Not eat fish or shellfish from these waters.

Understood the icon's message:	Yes	No
Number (n=40)	25	15
Percentage	62.5%	37.5%
Response	n/a	<i>Examples:</i> <ul style="list-style-type: none">• Not shelling. (Participant very confused).• No catching clams.• Something to eat on a table

CAUTION SIGN

WARNING SIGN

“In your opinion, what do you think this picture is trying to say?”








For fish caught here, **Throw Away Guts and Clean Fillets** with tap water or bottled water before cooking.

Understood the icon's message:	Yes	No
Number (n=28)	14	14
Percentage	50%	50%
Response	<i>Examples</i> <ul style="list-style-type: none">• You should clean the fish• Wash fish when you catch it	<i>Examples:</i> <ul style="list-style-type: none">• Station to wash fish• Don't wash fish with faucet water• Don't clean the fish

Icon Summary

Summary of participants that Do Not understand the icons' messages

Icon	# of signs	# participants/ total participants tested	% participants NOT understand
	2	14/28	50.0%
	3	15/40	37.5%
	1	5/14	35.7%
	1	5/14	35.7%
	3	14/40	35.0%

Non-English Speakers with Low Literary

Most of these 9 participants demonstrated adequate understanding of the following icons:



Non-English Speakers with Low Literacy

Most of these 9 participants did not adequately interpret the meaning of the following icons:



Common misunderstandings:

- Circle with slash is not generally understood
- Clams look like eggs or mushrooms
- Did not recognize that the “child” icon represents a child
- Dog icons were interpreted as warning of dangerous dogs or animals
- Cup of water looks like a person holding a sign

Key Messages

CAUTION SIGN

WARNING SIGN

DANGER SIGN

“In your opinion, what is the main message of this sign?”

Main Message	Number of Participants (n=40)*	Example
Stay away from the water	14	<i>“Stay away from the water. Keep pets away. Don’t wade.”</i>
Toxic/Poison	11	<i>“There is toxic algae present in the lake.” “If you drink water you might get poisoned”</i>
Dangerous/Danger	5	<i>“This area has a problem or is dangerous.”</i>
Safety	5	<i>“The water is not safe”</i>
Warnings	5	<i>“Warnings about what you should do.” “Be cautious”</i>

* Even though the sample is n=40, some participants voiced multiple messages.

Non-English Speakers with Low Education

All 9 participants demonstrated an understanding of the main message and/or purpose of the signs.

Sign	Response for Main Message
Caution	<ul style="list-style-type: none">• There is danger. Don't drink or play in water.• This area has problem or is dangerous• Danger or a problem there
Warning	<ul style="list-style-type: none">• The water is not safe• Cannot do things that are crossed out. Not good to do them.• Don't do things on the sign. Warning.
Danger	<ul style="list-style-type: none">• Sign is saying they can't go near the water• Don't do all of those things in the water• Anytime red circle with slash it means don't

Activities

CAUTION SIGN

WARNING SIGN

DANGER SIGN

“What activities are you thinking are not okay for adults, children and pets to do in this lake?”

Activity	Number of Participants (n=40)	Percent of Participants
Drinking	32	80.0%
Entering	31	77.5%
Swimming	21	52.5%
Eating fish or shellfish	14	35.0%
Cleaning the fish*	11	27.5%

*Participants recognized this as an activity that they **should** do.

Additional Suggestions

CAUTION SIGN

WARNING SIGN

DANGER SIGN

“In your opinion, what words on this sign might be confusing to people who visit the lake?”




Words	Number of Participants (n=40)	Percent of Participants	Suggestions
None/ No response	24	60.0%	<i>n/a</i>
Scum	8	20.0%	<i>“Bacteria Scum” “Green stuff”</i>
Livestock	4	10.0%	<i>“Animals” “Pets”</i>
Algae	3	7.5%	<i>“Show definition; green stuff”</i>
Shellfish	3	7.5%	<i>“Clams”</i>
Convulsions	2	5.0%	<i>Seizure</i>
Fillet	2	5.0%	<i>“Fish or seafood”</i>

CAUTION SIGN

WARNING SIGN

DANGER SIGN

“In your opinion, what icons on this sign might be confusing to people who visit the lake? What can we do to make it less confusing?”

Icon	Participants (n=40)		Suggestions
	n	%	
	11	27.5%	<ul style="list-style-type: none"> • <i>Put algae in the water</i> • <i>Maybe move this icon to the top of the list.</i> • <i>Hand washing fish</i> • <i>Show some of the guts</i>
	8	20.0%	<ul style="list-style-type: none"> • <i>Larger picture</i> • <i>Black shellfish</i>
	6	15.0%	<ul style="list-style-type: none"> • <i>Thought it was holding a sign</i> • <i>Words are clear, but not the picture</i>

CAUTION SIGN

WARNING SIGN

DANGER SIGN

If you want to learn more information about harmful toxins from algae, where would you go to look at this information?

Response	Number of Participants (n=40)	Percent of Participants	Suggestions
Internet	17	42.5%	<i>Add a website. Add park information. National Wild life Association. Berkeley Oceanic Research. Put information on social media.</i>
No Response	12	30.0%	<i>n/a</i>
Not sure/Don't Know	4	10.0%	<i>n/a</i>
Contact people	3	7.5%	<i>Sandy or someone from APEN Lake staff</i>

CAUTION SIGN

WARNING SIGN

DANGER SIGN

Do you think it would be helpful to include a QR code/Web Address on our sign?

QR Code

Response	Participants (n=40)	Percent
No Response	17	42.5%
Yes	12	30.0%
No	10	25.0%
Not Sure	1	2.5%

Web Address

Response	Participants (n=8)*	Percent
Yes	6	75.0%
No	1	12.5%
No Response	1	12.5%

Acknowledgements – staff involved in sign testing

CDPH EHIB Staff

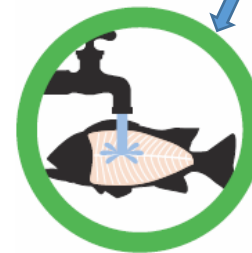
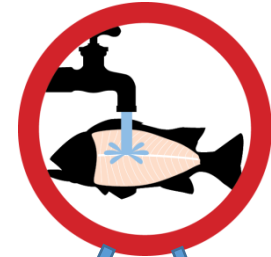
- Alcira Dominguez, Health Program Specialist, EHIB
- Mariana Ponte-Cordova, Public Health Associate, EHIB
- Jessica Parry, Environmental Justice MPH Intern, EHIB

Impact Assessment Contractors

- Lauren Wohl-Sanchez, Graphic Designer
- Ian Walker, Health Educator
- Beth Saiki, Health Educator/Evaluator

Next Steps

Icon changes for Round 2 Field Testing



CAUTION SIGN

WARNING SIGN

DANGER SIGN

Round 2 Field Testing

Modifiable Signs

Pretty much fully modifiable signs for in-house printing

- PowerPoint files
- Can delete individual icon/text message components that may not be appropriate for a specific water body.
- text within each component cannot be changed
- Local agency contact information may be added through a text box at the bottom of each sign.
- available in both English and Spanish
- Will be posted to the CCHAB website next week

CAUTION

**Harmful algae may be present in these waters.
For your family's safety:**



DO NOT SWIM OR WADE
near algae or scum.



DO NOT let pets or livestock
go into or drink the water, or
eat scum on the shoreline.



KEEP CHILDREN AWAY
from algae in the water or
on the shore.



For fish caught here, **THROW
AWAY GUTS AND CLEAN
FILLETS** with tap water or
bottled water before cooking.



DO NOT drink this water or
use it for cooking.



DO NOT eat shellfish from
these waters.

Call your doctor or veterinarian if you or your pet get sick after going in the water.

For more information, contact: Enter your contact information in this text box

Addressing Local Needs

CDPH EHIB proposal for customizing HAB advisory signs

- **Rationale**

- Learn issues important to local jurisdictions
- Provide service useful to HAB-affected communities
- Lessons learned can apply to other environmental health concerns

- **Process**

- Local decision-maker submits proposed text or icon changes
- EHIB health education staff review for literacy issues
- CCHAB or external expert may review for scientific accuracy
- CDPH/EHIB produced revised signs for requestor

CAUTION SIGN

WARNING SIGN

DANGER SIGN

Discussion

Q & A

