

Health Consultation

Evaluation of Fish Contaminant Data

LONG ISLAND SOUND

FEBRUARY 23, 2009

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

Evaluation of Fish Contaminant Data

LONG ISLAND SOUND

Prepared By:

Connecticut Department of Public Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

The conclusions and recommendations in this health consultation are based on the data and information made available to the Connecticut Department of Public Health (CTDPH) and the Agency for Toxic Substances and Disease Registry (ATSDR). CTDPH and ATSDR will review additional information when received. The review of additional data could change the conclusions and recommendations listed in this document.

BACKGROUND AND STATEMENT OF ISSUE

Long Island Sound, an estuary whose area is approximately 1320 square miles, is a place where saltwater from the ocean mixes with freshwater from rivers and the land. Its drainage basin or watershed is approximately 16,820 square miles with a coastline of 600 miles. Long Island Sound is unique in that it has two connections to the sea (The Race to the east and the East River to the west), and several major rivers. Ninety percent of the freshwater comes from three major Connecticut rivers: the Thames, Housatonic, and Connecticut. More than 120 species of finfish occupy these waters, including 21 tropical species that live there seasonally and at least 50 species spawn in the Sound. The Sound provides feeding, breeding, nesting, and nursery areas for a diversity of plant and animal life, and contributes an estimated \$5.5 billion per year to the regional economy (EPA 2008).

In 1994, the United States Environmental Protection Agency (US EPA), the state of New York, and the state of Connecticut developed a cleanup and monitoring plan entitled, “Comprehensive Conservation and Management Plan.” All three agencies used this plan as a blueprint for protection and restoration to develop a Long Island Sound Study (LISS). The 2003 Long Island Sound Agreement is an agreement developed by these three agencies as part of the LISS to “make the Long Island Sound’s waters cleaner and healthier, its living resources more abundant and diverse, and its economic and recreational worth of the region ever more valuable” (EPA 2003).

As part of the 2003 Long Island Sound Agreement, several species of fish from the sound were sampled and analyzed for polychlorinated biphenyls (PCBs) and mercury by the US EPA. CTDPH reviews new fish tissue data sampled by the US EPA or CT DEP and evaluates whether the current fish consumption advisory needs to be modified to protect public health based on the level of contamination. CTDPH has evaluated fish sampling data from 2006 and the results of this evaluation are the focus of this health consultation. The US EPA also performed another round of sampling and analyzing of fish in 2007 and CTDPH will evaluate this data when it is available.

Demographics

Since the area surrounding Long Island Sound in Connecticut is very large, the demographics described here include the towns surrounding this water body. As seen in Table 1, several towns and therefore, a very large population live on the coastline of Long Island Sound. The total population of these towns surrounding Long Island Sound

is 1,062,402. This is approximately 31% of the total population of the state of Connecticut. This is a very conservative estimate of a population that may be affected. It is unlikely that one third of the state's population fish in Long Island Sound.

In addition, Long Island Sound is a popular fishing destination for people across all of Connecticut and even for people from out of state. Therefore, these demographics for local towns do not necessarily reflect the true nature of the people fishing on the river.

Table 1. Demographics for Connecticut Town Bordering Long Island Sound[^]

Surrounding Towns	Total Population[^] (Sample Year)	Area (square miles)
Greenwich	62,236 (2005)	67.2
Stamford	124,261 (2006)	52.1
Darien	20,452 (2005)	23.4
Norwalk	84,437 (2006)	36.3
Westport	26,615 (2005)	33.3
Fairfield	57,813 (2005)	31.3
Bridgeport	137,912 (2006)	19.4
Stratford	49,943 (2005)	19.9
Milford	54,802 (2005)	23.7
West Haven	52,721 (2006)	11.0
New Haven	124,001 (2006)	20.31
East Haven	28,755 (2005)	28
Branford	29,089 (2005)	13.4
Guilford	22,307 (2005)	49.7
Madison	18,812 (2005)	36.8
Groton	41,336 (2005)	45.2
Westbrook	6,599 (2005)	21.4
Essex	6,783 (2005)	11.8
Old Lyme	7,488 (2005)	28.8
Old Saybrook	10,512 (2005)	21.6
East Lyme	18,459 (2005)	42.0
Waterford	18,940 (2005)	44.4
New London	26,174 (2005)	10.76
Stonington	18,343 (2007)	50.0
Clinton	13,612 (2005)	19.0

[^]United States Census Bureau (2005, 2006, 2007)

Health Comparison Values and Fish Tissue Contaminant Levels

From May to October 2006, 136 bluefish and 103 striped bass of various sizes were sampled from Long Island Sound for PCB and mercury content as part of the US EPA's monitoring program described previously. All of the fish fillets except for small bluefish contained PCB levels that exceeded CTDPH's Modified Great Lakes Protocol PCB value for fish consumption which is described below.

1. Health Comparison Values

In order to set safe levels of PCBs in fish, CTDPH uses a modified version of the Protocol for a Uniform Great Lakes Sport Fish Consumption Advisory (GLP) (1993). The GLP is a framework for setting risk-based fish consumption advisories in the Great Lakes states. Using the GLP, the Great Lakes Task Force developed a Health Protective Value (HPV) for PCBs of 0.05 µg/kg/day by using a “weight of evidence” approach which considered all of the existing toxicological values and studies (mostly human and monkey). The “weight of evidence” approach differs from a reference dose which typically uses a single critical study. The HPV is a unique value developed specifically for the Great Lakes sport fish advisory process. The development of the HPV was based on some key assumptions: average meal size for a 70 kg adult of one-half pound (227 grams) and a 50% reduction in PCB fish fillet content (skin on, scales off fillet) through trimming and cooking losses of fatty portions of the fish. The goal of the advisory program was to limit PCB exposure to 3.5 µg/day (0.05 µg/kg/day *70 kg = 3.5 µg/day). At this exposure level, cancer risks would not be expected to exceed 1 excess cancer in 10,000 exposed people and non cancer health effects would not be likely.

Concerning non-cancer health effects, there are several animal and human studies that resulted in a variety of adverse health effects from exposure to PCBs. The main effects from exposure to PCBs in animals include hepatic, dermal, immunological, and neurobehavioral development. Because the most sensitive effects are immunological and neurobehavioral development, the GLP Task Force tended to weigh more heavily on these studies when developing its HPV (Great Lakes Sport Fish Advisory Task Force 1993).

Cancer risks associated with the HPV were evaluated using a Cancer Slope Factor (CSF) of 2 (mg/kg/day)⁻¹. If a population were exposed to PCB levels of 0.05 µg/kg/day (HPV) every day for 70 years (a lifetime), there would be a theoretical excess cancer risk of 1 person in a population of 10,000. This theoretical excess cancer risk is on the upper end of a generally acceptable range (1 in 10,000 to 1 in 1,000,000). The cancer slope factor of 2 (mg/kg/day)⁻¹ is derived from rat studies resulting in liver cancer from oral exposure to PCBs.

CTDPH’s version of the GLP takes into account detection limit issues and the somewhat greater concern for higher risk individuals (Ginsberg and Toal, 1999). CTDPH allows for unlimited consumption at PCB levels up to 0.1 ppm (parts per million), the point where practical quantification of PCBs in fish becomes certain whereas the GLP allows unlimited consumption only up to 0.05 ppm.

High risk individuals include pregnant women, women planning to become pregnant within a year, breastfeeding women, or children under the age of six. Pregnant women or women planning to become pregnant are particularly sensitive because PCBs can be passed through the mother to the unborn fetus and can result in central nervous system (CNS) effects as well as others. Children under the age of six are also particularly

vulnerable because they tend to eat more per body weight. In addition, the developing organs (brain and thyroid gland) of children can sustain permanent damage if exposure to PCBs occurs during critical growth stages. Breastfeeding women are also in the high risk group because PCBs can pass through breast milk and expose young children to PCBs. Low risk individuals include the remaining population. Table 2 gives the details of CTDPH's fish consumption advisory as it relates to PCB levels in fish.

Regarding the issue of higher risk individuals, the animal toxicology studies support an HPV that is in the same range for reproductive and other (immunological, dermal) endpoints. This suggests that in utero development is no more sensitive to PCBs than are endpoints seen in adult animals. However, the evidence of low dose effects in humans is strongest for in utero effects (central nervous system development). This creates a somewhat greater concern for pregnant women and women planning pregnancy. Additionally, while the cumulative PCB dose from long-term exposure may be the most critical determinant for immunological or dermal effects, the period of exposure needed for in utero effects is uncertain. Monkeys exposed to low doses of PCBs during pre-pregnancy over several years resulted in adverse health effects among offspring. Therefore, it is uncertain whether the accumulation of maternal PCB body burden prior to and during pregnancy is critical or a relatively short exposure period (during pregnancy) could also produce low dose developmental effects (Ginsberg and Toal 1999). Two short term studies in mink and rats also resulted in low dose developmental effects from exposure to PCBs. Therefore, CTDPH believes that there may be a greater sensitivity during in utero exposure such that recent exposures that do not involve a cumulative body burden (which is important to adult toxicity) could produce an adverse health effect. This uncertainty over PCBs pharmacokinetics and developmental outcomes supports a prudent avoidance (do not eat) approach for pregnant women for markedly elevated PCB concentrations (e.g. over 1 ppm). CTDPH's recommendation of "do not eat" for high risk groups for PCB levels in fish of 1.1-1.9 ppm differs from the GLP's approach which recommends a "1 meal per 2 months" restriction for fish consumption for all risk groups for PCB levels of 1.1-1.9 ppm (Ginsberg and Toal 1999). In addition, CTDPH's recommendation also differs from the GLP's approach which recommends a "one meal per week" restriction for all risk groups for PCB levels of 0.06-0.20 ppm (Table 2).

When using the HPV, setting limits based on cancer risk less than 1 in 10,000 would lead to virtually no fish consumption (local or commercial) due to the widespread occurrence of low levels of PCBs in fish. This would result in the benefit of fish consumption to be lost in the interests of minimizing cancer risks. Given that number of frequent consumers of locally caught fish in Connecticut may not be large, the theoretical 1 in 10,000 cancer risk is of less concern than if this were a population-wide exposure (Ginsberg and Toal 1999). Therefore, CTDPH and The Great Lakes Protocol focus on prevention of non-cancer health effects of PCBs.

Table 2. CTDPH's Modified Great Lakes Protocol for Fish Consumption[^]

PCB Level (ppm [*])	Consumption Advisory	
	Low Risk [@]	High Risk [#]
< 0.1	Unlimited Consumption	Unlimited Consumption
0.1-0.2	One meal per week	One meal per month
0.21 - 1.0	One meal per month	One meal per month
1.1 - 1.9	One meal every 2 months	Do not eat
> 1.9	Do not eat	Do not eat

[^](Ginsberg and Toal, 1999)

^{*}Parts Per Million

[@]Includes all other groups not included in the low risk group

[#]Includes pregnant women, women planning to become pregnant within a year, nursing women, and children under 6 years old

2. Fish Contaminant Levels

The 2006 contaminant data show that average PCB concentrations in all of the fish fillets except for small bluefish (305-508 mm) from Long Island Sound were above the concentration limit for unlimited consumption (0.1 ppm). Average PCB levels in small bluefish tended to be lower than large bluefish (> 508 mm). Average PCB levels in large striped bass (> 712 mm) were lower than small striped bass (< 712 mm). Table 3 gives the average total aroclor based PCB concentrations in Long Island Sound in the 2 fish species sampled in 2006.

It is important to note, however, that with respect to CTDPH's consumption advisory for Long Island Sound, small bluefish are 13-25 inches long and large bluefish are over 25 inches long. Bluefish smaller than 13 inches are not included in the advisory. These size classifications are arbitrary and are not equal to the sizes categories used in the 2006 Long Island sampling analysis described above.

Table 3. PCB Concentrations in Two Species of Fish Caught in the Long Island Sound in 2006

Species (Length (mm))	Number of Samples[@]	Average (Total Aroclors *) PCBs (ppm[^]) in 2006	Range (Total Aroclors) PCB (ppm)
Bluefish (305-508mm)	25	0.07	0.02-0.24
Bluefish (>508 mm)	111	0.48	0.05-3.17
Striped Bass (<712 mm)	39	0.28	0.07-1.45
(Striped Bass (>712 mm)	64	0.24	0.02-0.85

[@] All of the samples were individual fillets

*The aroclor-based analysis method is a measurement of commercial mixtures of PCB compounds.

[^]Parts per Million

3. Time Trends

It is also informative to evaluate trends in contaminant levels in fish tissue over time. Table 4 gives the trend over time for average PCB contamination in 2 species of fish sampled from Long Island Sound. The average PCB levels have decreased greatly in Long Island Sound from a high of 1.18 ppm in striped bass in 1994 to a low of 0.07 ppm in small bluefish (305-508 mm) in 2006. Overall, there has been a large decrease in PCB levels in all of the locations from the mid 1990s to 2006.

Table 4. PCB Levels in Long Island Sound from Previous Year Sampled Compared to Recent Sampling in 2006

Fish Species	Average (Total Aroclors) ^ PCBs (ppm[@]) (Previous Year Sampled)	Average (Total Aroclors) PCBs (ppm) in 2006
Small Bluefish (305-508 mm)	0.36 (1997)	0.069
Bluefish (> 508 mm)	0.9912 (1997)	0.483
Striped Bass (<712 mm)	1.18 [#] (1994)	0.279
Striped Bass (>712 mm)	1.18 [#] (1994)	0.238

[^]The aroclor-based analysis method is a measurement of commercial mixtures of PCB compounds.

[@]parts per million

[#] There was no size separation in this round of sampling

4. Data Evaluation Issues

In calculating average total aroclor based PCB concentrations, CTDPH used arithmetic average concentrations for each species because the sample size was large. For this reason, CTDPH decided that it was not necessary to calculate 95% UCLs. CTDPH is confident that the arithmetic average PCB concentrations provide a conservative estimate of the “true” average.

DISCUSSION

Exposure Pathway Analysis

To evaluate potential exposures to the contaminated fish in Long Island Sound, CTDPH evaluated the fish tissue data and considered how people may come into contact with contaminants in the fish. Ingestion (eating) was the only exposure pathway considered in this review.

Environmental data show that fish in Long Island Sound are contaminated with PCBs. Individuals who catch and eat fish from this water body would likely be exposed to PCBs in the fish fillets. In addition, their families would also be exposed to PCBs if they eat the fish.

Public Health Implications for Adults and Children

When determining the public health implications of exposure to hazardous contaminants, CTDPH considers how people might come into contact with contaminants and compares contaminant concentrations with health protective levels. When contaminant levels are below health-based comparison values, health impacts from exposure to those levels are unlikely. Contaminant levels exceeding comparison values do not indicate that health impacts are likely, but instead warrant further investigation. As described in the Environmental Contamination section of this health consultation, CTDPH used a modified Great Lakes Protocol for fish consumption to set a health protective value (HPV) for PCBs in fish. In addition, this modified protocol is a risk-based protocol which takes into account detection limit issues and the somewhat greater concern for higher risk individuals.

Ingestion of two species of fish in Long Island Sound which contain elevated levels of PCBs is a completed exposure pathway and is evaluated in this health consultation. Using CTDPH's Modified Great Lakes Protocol for Fish Consumption, we have classified each fish species according to its appropriate consumption category. CTPH has concluded that striped bass (all sizes) and large bluefish from Long Island Sound contain PCBs at levels where adverse health effects from ingestion of these fish cannot be ruled out. Ingestion of these fish present a public health hazard to individuals who do not follow the consumption advisory. However, if community members adhere to the current consumption advisory, exposure to PCBs in fish would not be significant enough to cause adverse health effects. CTDPH believes that its consumption advisory is necessary to protect public health while allowing community members to benefit from the nutritional advantages of eating fish.

Table 5 gives the CTDPH fish consumption advisory that has been updated in response to the 2006 PCB data from Long Island Sounds and compares it to the previous advisory from 2007. This table shows that the 2008 updated advisory is unchanged as compared with the 2007 advisory.

Table 5. 2008 Advisory for Two Fish Species in Long Island Sound

Location	Fish Species	Consumption Advisory	
		Previous (2007)	Updated (2008)
Long Island Sound	Small Bluefish	1 Meal per Month-Everyone	No Change
	Large Bluefish	1 Meal/2 Months Low Risk-Do Not Eat-High Risk	No Change
	Small Striped Bass	1 Meal/2 Months Low Risk-Do Not Eat-High Risk	No Change
	Large Striped Bass	1 Meal/2 Months-Do Not Eat-High Risk	No Change

1. Small Bluefish

Environmental data indicate the average PCB levels in small bluefish from Long Island Sound are below the concentration limit for unlimited consumption according to CTDPH's modified Great Lakes Protocol for fish consumption (Table 2). However, PCB levels in the previous sampling round were above the concentration limit for unlimited consumption at 0.36 ppm and were within the "1 meal/month everyone" consumption advisory. The US EPA is doing another round of fish sampling in Long Island Sound in 2007. CTDPH has decided to maintain the current advisory as noted above until it has received and compared the two recent rounds of sampling (2006 and 2007) to the 1997 sampling data. CTDPH has not received this 2007 sampling data.

In summary, CTDPH has decided to maintain the advisory at “1 meal/month-everyone” for small bluefish in long Island Sound for the following reasons:

1. Past fish sampling has indicated moderately high levels of PCB contamination on this river.
2. Further sampling is necessary to show that PCB levels in small bluefish are low enough to allow more consumption.

2. Large Bluefish

In 2006, large bluefish had an average PCB level (0.48 ppm) within the “1 meal/month-everyone) restriction level. However, in the past, fish sampling has indicated moderately high levels of PCB contamination. The US EPA is doing another round of fish sampling in Long Island Sound in 2007. CT DEP has decided to maintain the current advisory of “One meal/2 months- low risk, do not eat-high risk” until it has received and compared the two recent rounds of sampling (2006 and 2007) to the 1997 sampling data. CTDPH has not received this 2007 sampling data

In summary, CTDPH has decided to maintain the advisory of “One meal/2 months- low risk, do not eat-high risk” restriction level for the following reasons:

1. Past fish sampling has indicated moderately high levels of PCB contamination on this river.
2. Further sampling is necessary to show that PCB levels in large bluefish are low enough to allow more consumption.

3. Small Striped Bass

In 2006, small striped bass had an average PCB level (0.28) within the “1 meal/month-everyone) restriction level. However, in the past, fish sampling has indicated moderately high levels of PCB contamination. The US EPA is doing another round of fish sampling in Long Island Sound in 2007. CT DEP has decided to maintain the current advisory of “1 meal/2 months-low risk, do not eat-high risk” until it has received and compared the two recent rounds of sampling (2006 and 2007) to the 1997 sampling data. CTDPH has not received this 2007 sampling data

In summary, CTDPH has decided to maintain the advisory of “1 meal/2 months-low risk, do not eat-high risk” restriction level for the following reasons:

1. Past fish sampling has indicated moderately high levels of PCB contamination on this river.
2. Further sampling is necessary to show that PCB levels in small striped bass are enough to allow more consumption.

4. Large Striped Bass

In 2006, large striped bass had an average PCB level (0.24) within the “1 meal/month-everyone) restriction level. However, in the past, fish sampling has indicated moderately high levels of PCB contamination. The US EPA is doing another round of fish sampling in Long Island Sound in 2007. CT DEP has decided to maintain the current advisory of “1 meal/2 months, do not eat-high risk” until it has received and compared the two recent rounds of sampling (2006 and 2007) to the 1997 sampling data. CTDPH has not received this 2007 sampling data

In summary, CTDPH has decided to maintain the advisory of “1 meal/2 months, do not eat-high risk” restriction level for the following reasons:

1. Past fish sampling has indicated moderately high levels of PCB contamination on this river.
2. Further sampling is necessary to show that PCB levels in large striped bass are enough to allow more consumption.

EVALUATION OF COMMUNITY CONCERNS

The following is a list of general concerns that CTDPH has received in recent years through inquiries from the public and community leaders:

1. I eat fish often from Long Island Sound. Why have I not gotten sick?

The PCBs present in fish from Long Island Sound are not present at levels that will make you acutely (immediately) sick. They are chronic toxins (i.e. they take a long time to cause an effect). The health effects of concern for PCBs are potential cancers and developmental problems in children/fetuses. PCBs accumulate in your body over time. The more PCB contaminated fish you eat, the greater the PCB levels that will build up in your body. PCB exposure is a particular concern to pregnant women because the exposure their unborn child receives through the mother can cause developmental, behavioral, and learning problems in children.

2. I have eaten lots of fish from Long Island Sound. Is there medicine I can take to get rid of these chemicals?

There is no medicine or other procedure to get rid of the chemicals your body has accumulated from eating fish. The chemicals will very slowly leave your body over time. If you follow the advisory you will decrease your exposure and allow your body the time needed to reduce the levels of the chemicals.

3. Are there fish in Long Island Sound that are less contaminated than bluefish and striped bass?

There are other species of fish like winter flounder and scup that are less contaminated than striped bass and bluefish in Long Island Sound. People in the high risk group can have up to 2 meals/week of certain fish species (like winter flounder and scup) with low contaminant levels. People in the low risk group can safely eat a greater amount of fish meals per week.

4. I am concerned that there are not enough signs along Long Island Sound to alert people to this advisory. In addition, I am concerned that there may be a language barrier preventing people from understanding these signs.

Signs are posted by conservation officers at every access point along Long Island Sound. If you need more signs, then contact the CTDEP, Bureau of Natural Resources to request signs. Consumption advisory signs in other languages have been prepared and are posted in areas where these populations are thought to fish. Recently, more signs have been placed in these areas in response to this concern.

CONCLUSIONS

Recent fish tissue data indicates that two different fish species from several locations along Long Island Sound were found to have elevated levels of PCBs. Only small bluefish contained PCB concentrations that were above levels that would typically trigger a consumption advisory. CTDPH uses this fish tissue data to issue a general fish consumption advisory for the entire Long Island Sound. Except for small bluefish, the current PCB levels (based on 2006 data) are elevated enough to warrant a continued consumption advisory. The recent PCB data would allow for a loosening of the consumption advisory for more consumption for striped bass and bluefish, however, CTDPH has decided to maintain the current advisory until we have a more solid time trend data showing that the PCB concentrations are remaining low. Therefore, CTDPH has not modified the consumption advisory in 2008 for these two fish species in Long Island Sound.

ATSDR has a characterization scheme whereby the level of public health hazard at a site is assigned to one of five conclusion categories (Appendix B). CTPH has concluded that two species from Long Island Sound present a public health hazard to individuals who do not follow the consumption advisory. If community members adhere to the current consumption advisory, exposure to PCBs in fish would not be significant enough to cause adverse health effects. CTDPH believes that this consumption advisory is necessary to protect public health while allowing community members to benefit from the nutritional advantages of eating fish.

RECOMMENDATIONS

1. CTDPH recommends that the Connecticut Department of Environmental Protection (CTDEP) and the US EPA continue to work together with CTDPH on their future fish sampling plans for Long Island Sound.
2. CTDEP Fisheries and US EPA should continue to work with CTDPH to educate fishing populations along Long Island Sound about the consumption advisory.

PUBLIC HEALTH ACTION PLAN

Actions Taken

1. CTDPH along with CTDEP Fisheries have worked together to educate both the general public as well as minority fishing populations along Long Island Sound about the consumption advisory as well as other populations along the river. CTDEP, Bureau of Natural Resources has posted signs along the river to inform the public about the consumption advisory.

2. CTDPH has held “Train the Trainer” sessions to educate leaders in the New Haven and Bridgeport community as well as other areas of the state about Connecticut’s fish consumption advisory issues so that they will be able to educate other members of the community.
3. CTDPH added questions to the 2007 CTDEP CREEL survey to gain information about the level of knowledge of the fish consumption advisory.

Actions Planned

1. CTDPH, along with CTDEP, will continue to work together to educate the general public as well as minority fishing populations along Long Island Sound about the consumption advisory as well as other populations along the Sound.
2. CTDPH will update its Long Island Sound fish consumption advisory in the spring of 2009 in response to the 2006 and 2007 fish sampling data. The advisory will be printed in our annual brochure and distributed to towns and local health departments along Long Island Sound.
3. CTDPH will continue to hold more “Train the Trainer” sessions throughout the state of Connecticut in the future as needed.
4. CTDPH will continue to evaluate new fish contaminant data and will update its current Long Island Sound consumption advisory as needed.
5. CTDPH will continue to review its fishing sampling protocol periodically and modify it as appropriate.

REFERENCES

EPA 2003. United States Environmental Protection Agency. 2003. Website Available at: <http://www.longislandsoundstudy.net/pubs/news/winspr03txt.htm>. Accessed on December 22, 2008.

EPA 2008. United States Environmental Protection Agency. 2003. Website Available at: <http://www.epa.gov/region1/eco/lis>. Accessed on December 22, 2008.

Ginsberg and Toal 1999. Risk-Based Approach for PCBs Fish Consumption Advisories in Connecticut. Connecticut Department of Public Health. May 1999.

Great Lakes Sport Fish Advisory Task Force 1993. Protocol for a Uniform Great Lakes Sport Fish Consumption Advisory. September 1993.

United States Census Bureau 2005,2006, and 2007. United States Census Bureau Website. Available at: http://factfinder.census.gov/home/saff/main.html?_lang=en. Accessed on December 22, 2008.

CERTIFICATION

The Health Consultation for the Public Health Evaluation of Fish Contaminant Data in Long Island Sound, Connecticut was prepared by the Connecticut Department of Public Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodology and procedures existing at the time the health consultation was initiated. Editorial review was completed by the ATSDR Cooperative Agreement Partner.

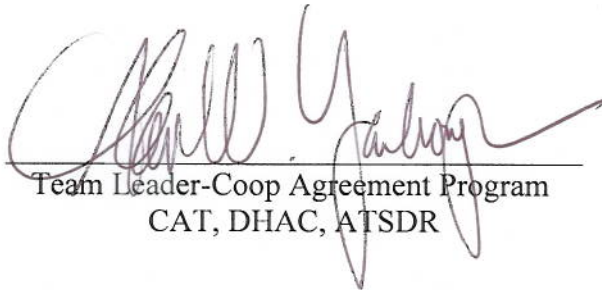


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The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation and concurs with its findings.



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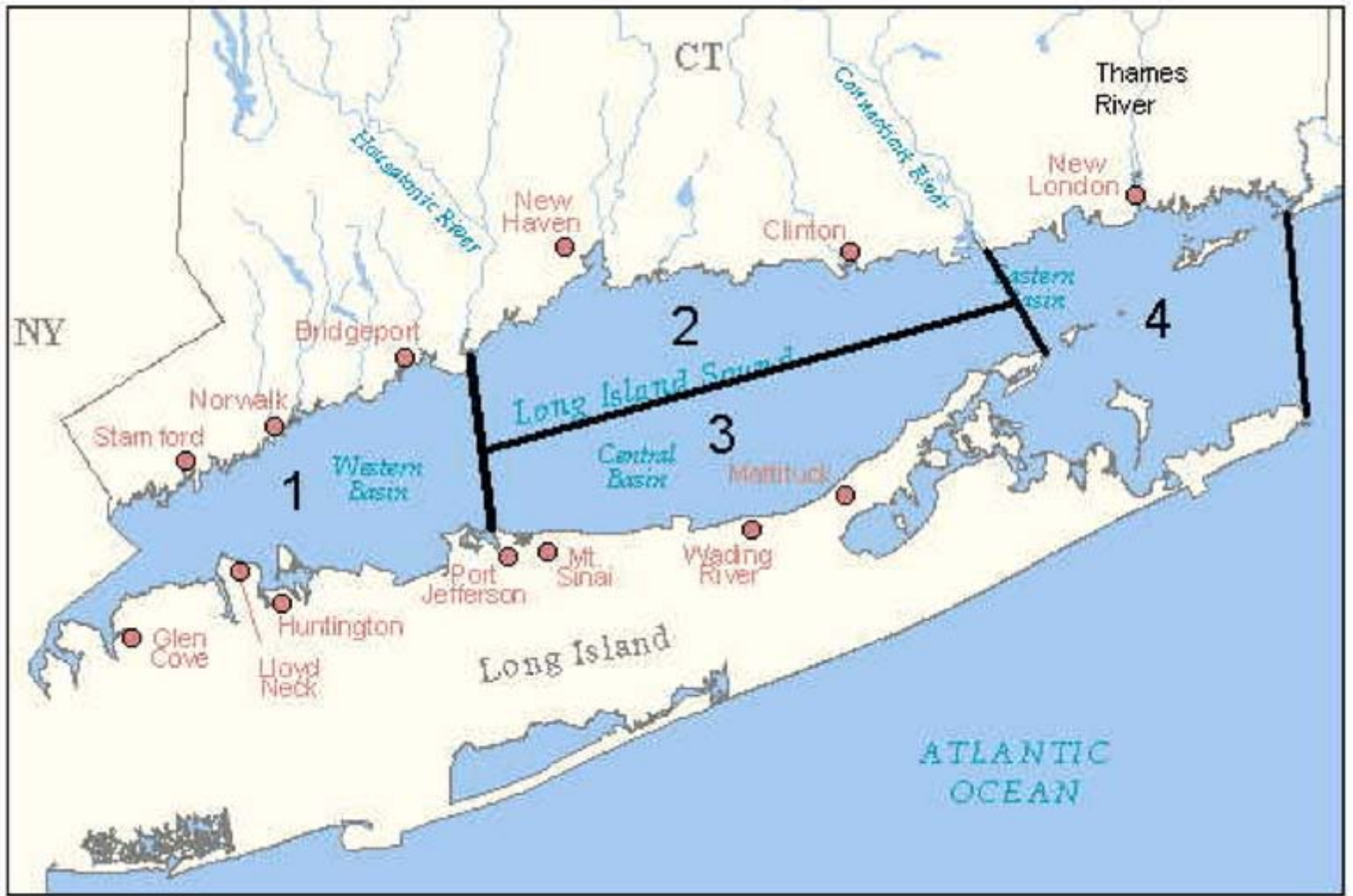
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Appendix A

Map of Long Island Sound



Note: Numbers 1-4 are sampling quadrants within Long Island Sound

Appendix B. ATSDR Interim Public Health Categories

CATEGORY / DEFINITION	DATA SUFFICIENCY	CRITERIA
<p>A. Urgent Public Health Hazard</p> <p><i>This category is used for sites where short-term exposures (< 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid intervention.</i></p>	<p><i>This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</i></p>	<p><i>Evaluation of available relevant information* indicates that site-specific conditions or likely exposures have had, are having, or are likely to have in the future, an adverse impact on human health that requires immediate action or intervention. Such site-specific conditions or exposures may include the presence of serious physical or safety hazards.</i></p>
<p>B. Public Health Hazard</p> <p><i>This category is used for sites that pose a public health hazard due to the existence of long-term exposures (> 1 yr) to hazardous substance or conditions that could result in adverse health effects.</i></p>	<p><i>This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</i></p>	<p><i>Evaluation of available relevant information* suggests that, under site-specific conditions of exposure, long-term exposures to site-specific contaminants (including radionuclides) have had, are having, or are likely to have in the future, an adverse impact on human health that requires one or more public health interventions. Such site-specific exposures may include the presence of serious physical or safety hazards.</i></p>
<p>C. Indeterminate Public Health Hazard</p> <p><i>This category is used for sites in which “critical” data are insufficient with regard to extent of exposure and/or toxicologic properties at estimated exposure levels.</i></p>	<p><i>This determination represents a professional judgement that critical data are missing and ATSDR has judged the data are insufficient to support a decision. This does not necessarily imply all data are incomplete; but that some additional data are required to support a decision.</i></p>	<p><i>The health assessor must determine, using professional judgement, the “criticality” of such data and the likelihood that the data can be obtained and will be obtained in a timely manner. Where some data are available, even limited data, the health assessor is encouraged to the extent possible to select other hazard categories and to support their decision with clear narrative that explains the limits of the data and the rationale for the decision.</i></p>
<p>D. No Apparent Public Health Hazard</p> <p><i>This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.</i></p>	<p><i>This determination represents a professional judgement based on critical data which ATSDR considers sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</i></p>	<p><i>Evaluation of available relevant information* indicates that, under site-specific conditions of exposure, exposures to site-specific contaminants in the past, present, or future are not likely to result in any adverse impact on human health.</i></p>
<p>E: No Public Health Hazard</p> <p><i>This category is used for sites that, because of the absence of exposure, do NOT pose a public health hazard.</i></p>	<p><i>Sufficient evidence indicates that no human exposures to contaminated media have occurred, none are now occurring, and none are likely to occur in the future</i></p>	

*Such as environmental and demographic data; health outcome data; exposure data; community health concerns information; toxicologic, medical, and epidemiologic data; monitoring and management plans