



# The Monmouth County Board of Health

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## **1880-2005: 125 YEARS OF LOCAL AND COUNTY HEALTH DEPARTMENTS IN NJ**

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The first Board of Health in the US was formed in the capital city of Philadelphia in 1794, during George Washington's second term as President, as a year-old epidemic of yellow fever spread throughout the nation (Pfizer, 2006). Baltimore (1797), Boston (1799), Washington, D.C. (1802), New Orleans (1804), and New York City (1805) subsequently formed their own Boards (Pfizer, 2006). One year after the NYBOH was formed, the outbreak subsided and support for public health diminished. Interest was soon renewed by an outbreak of Asiatic cholera in June 1832 in Manhattan, and a group of citizens known as "sanitary reformers" began lobbying to improve living conditions (Answers.com, 2007; Pfizer, 2006).

In 1842, following epidemics of influenza and typhoid, Edwin Chadwick published his groundbreaking public health study of poverty and disease in England, "The Sanitary Conditions of the Laboring Population" (Answers.com, 2007; Cowen, 1964). In 1845, John Griscom published "The Sanitary Conditions of the Laboring Class of New York, with Suggestions for Its Improvement"; and in 1850, Lemuel Shattuck published the most forceful American call for public health, "Report of the Sanitary Conditions of Massachusetts" (Answers.com, 2007). By 1849 in NJ, a committee of the state Medical Society had begun inquiring into improving the health laws of the state (Answers.com, 2007; Cowen, 1964). From 1857 to 1860 a series of "Sanitary Conventions" were held throughout the country, which today are considered "the real beginning of the American sanitary revolution" (Answers.com, 2007). During the Civil War the sanitary reformers convinced Abraham Lincoln to form a Sanitary Commission to improve conditions in the Union Army (Pfizer, 2006). After the war, the Sanitary Commission's measures were adopted by New York, Chicago, and Massachusetts, and by the 1870's most large cities had formed public health organizations of some kind (Pfizer, 2006). In 1866, NJ had established its own Sanitary Commission under the chairmanship of Dr. Ezra M. Hunt (Cowen, 1964). The first state board of health was established in Massachusetts in 1869, with NJ following in 1877 (Cowen, 1964; Melosi, 1981).

Three years later on March 11, 1880, "An act concerning the protection of the public health and the record of vital facts and statistics relating thereto" required municipal governments in New Jersey to provide for local boards of health (Cowen, 1964; NJDHSS, 2007). This included having a keeper of vital statistics, a municipal physician, and a part-time health inspector. The boards were directed to eliminate nuisances and to provide for vaccination of underprivileged school children (Cowen, 1946). The Public Health Nuisance Code, still in effect today after

many revisions, is one of the first public health regulations in NJ. In 1882, boards were authorized to pass ordinances and prescribe penalties. By 1886, the various statutes were eventually consolidated “after some difficulties over the jurisdiction of local and county health departments.” The boards’ powers were expanded to include disease prevention; isolation and quarantine; food and drug enforcement; removal of nuisances; regulating the living conditions in tenements and public housing; as well as the environmental health protection of water supplies; regulation of plumbing, sewage, cesspools and privies; regulation of garbage and “filth”; and the regulation of burials. In 1888, Newark was the first to promulgate a municipal sanitary code (Cowen, 1946).

Chapter 129 of the Laws of 1906 authorized municipalities or townships to regionalize health services under one health officer; Public Law 1929, Chapter 148 authorized counties and towns to enter into joint public health contracts, which was the beginning of the present system of interlocal agreements (NJDHSS, 2007). A statute in 1938 enabled the creation of regional health commissions (NJDHSS, 2007). In 1960, the first county health department was formed in Cape May County (NJDHSS, 2007), although an “act concerning county boards established for the protection of the public health, and the registration of vital facts and statistics in counties of the state” had been passed in 1884 (36 NJ 51; 174 A.2d 890; 1961 NJ Lexis 246).

By 1955, only 195 of the then 567 municipalities employed a full or part time health officer (NJDHSS, 2007). In December of 1959, the “Recognized Public Health Activities and Minimum Standards of Performance for Local Boards of Health” was adopted effective 4/1/1961 (this was replaced in February of 2003 by the “Public Health Practice Standards of Performance for Local Boards of Health in New Jersey”) (NJDHSS, 2007). In 1974, the NJ County and Municipal Government Commission issued the Musto Report, which is the basis of the current NJSA 26 and the Local Health Services Act (Pfizer, 2006). This was the first time that state-licensed Health Officers were required to be employed full-time for all county and municipal Health Departments (NJ remains the only state to license its Health Officers) (NJDHSS, 2007). Subsequently, municipal health departments that had been employing part-time Health Officers and Sanitary Inspectors consolidated into municipal, regional, and county health departments headed by a full-time, licensed Health Officer. Nevertheless, while there were 291 health departments statewide in 1974, there were still 177 municipalities that did not have a full-time health officer (NJDHSS, 2007). The Local Health Services Act of 1975 eventually rectified this, and resulted in a reduction in the number of health departments to 120 by 1980 (NJDHSS, 2007). Since the mid 1980’s, the number of health departments statewide have ranged between 113 and 117 (NJDHSS, 2007).

Nationwide, there are more than 3000 county and city health departments, 3000 local boards of health, 59 state and territorial health departments, and more than 160,000 public and private laboratories; 448,754 professionals work in the governmental portion of the public health workforce alone (Pfizer, 2006). One out of six of the nation’s boards of health are located in NJ; there are almost as many boards (estimated at 500) as there are municipalities (566). Nationally, county health departments are the predominant local health agency; only 5 states have more local health departments than NJ: Georgia (159), Massachusetts (324), Ohio (134), Texas (143), and Virginia (119) (NJDHSS, 2007).

Out of the 114 health departments in NJ, 88 are local health departments serving 135 municipalities, and 7 are regional health commissions serving 51 municipalities (NJDHSS, 2007). The nineteen county health departments that serve 333 of the 566 municipalities are also certified under the County Environmental Health Act (NJDHSS, 2007). About 100 years after local

boards of health had been established, the 1977 CEHA established and partially funded Environmental Health programs in county or regional health departments to control water, air, noise, solid waste and hazardous materials, under the leadership of the Department of Environmental Protection (not the State Health Department); it took almost 30 years until every county had a CEHA agency (NJDHSS, 2007). In 1998, a CEHA-like consolidation of public health services began when the Local Information Network and Communication System (LINCS) was created by the NJDHSS which designated one agency per county to serve as communications and information sharing hub (NJDHSS, 2007). The role of the LINCS agency was crucial during 9/11 and the anthrax mailings, and a subsequent huge increase in funding for Homeland Security preparation has re-invented public health, a process that is still developing (NJDHSS, 2007).

In 1974, the Monmouth County Freeholders began reviewing proposals for a county health department that they had already budgeted for (LWV, 1974). Many current health departments were formed after 1974, when the NJ County and Municipal Government Commission issued the Musto Report requiring that all municipalities have health departments with full time health officers; for example, 5 of the 8 health departments currently operating in Monmouth County were formed after 1974. The oldest and the youngest health departments in Monmouth County are Long Branch (predates 1936) and the Monmouth County Health Department (1978). The following notes about health departments in Monmouth County and their first full-time Health Officers is a work in progress, and corrections and additional information are welcome.

<b>MC HEALTH DEPTS</b>	<b>1<sup>ST</sup> F-T HO</b>	<b>F-T HO Yr</b>	<b>NOTES</b>
Colts Neck HD	William McBride	1979	
Freehold HD	R.Chadwick Taylor	1978	Ordinances from 1959
Long Branch HD	R.E. Errickson?	1936?	Ordinances from 1906
Middletown HD	Dr. Marc Krohn	1948	Minutes from 1896
Manalapan HD	Stephen McKee	1978	
Monmouth County HD	Lester Jargowsky	1978	
MC Reg Hlth Comm #1	R.E. Errickson	1938	Formerly pt of LBHD

### **HEALTH DEPARTMENT LINKS**

Colts Neck Health Department  
<http://www.colts-neck.nj.us/>

Freehold Township Health Department  
<http://www.twp.freehold.nj.us/departments/Health/default.asp>

Long Branch Health Department  
<http://www.longbranch.org/Directory/directory.htm#hname>

Middletown Township Health Department  
<http://www.middletownnj.org/>

Manalapan Township Health Department  
<http://www.twp.manalapan.nj.us/depts/health.htm>

Monmouth County Health Department  
[www.visitmonmouth.com/health](http://www.visitmonmouth.com/health)

A map of the health departments' jurisdictions in Monmouth County can be accessed at:  
<http://co.monmouth.nj.us/documents/121/HealthDepartments2009.pdf> .

Thanks to Nancy Ippolito for maintaining a chronology of the MCRHC#1.

### **Appendix A: FORMER HEALTH DEPTS.**

Asbury Park HD – incorporated into the MCHD in 1985; Martin Chomsky was the HO at the time it joined the County HD.

Howell HD – incorporated in the MCHD in 1983; Raymond English, HO (also first full time HO in 1960's).

Matawan Regional HD – incorporated into the MCRHC and MCHD in 2004; Alan Hopper, HO (first full time HO – Robert Hary in mid 1970's).

Ocean Township HD – incorporated into the MCHD from 1989-1996; in 1997 into the MCRHC. William Brown, Chief Sanitarian.

Red Bank Regional HD – incorporated into MCRHC in 2003; Frederick Reichart, HO (also the first full time HO, starting in the mid 1970's).

Hazlet Health Department – incorporated into the MCHD in early 2008. First Health Officer - Patrick Hansen in 1975; 2<sup>nd</sup> and last HO, Robert Scapicio. Hazlet has BOH minutes from 1910.

### **LOCAL HEALTH DEPARTMENT NOTES**

Long Branch is the oldest health department in the County, dating from before 1936; in 1966, it broke from the Monmouth Regional Health Commission and re-established a borough Health Department with a full time Health Officer. Charles Rockhill was the sanitary inspector.

Dr. Marc Krohn was also the County Physician around the time he was HO of Middletown.

Previous part time HOs include Ray English (1950's and 1960's: Howell, Freehold Township and Boro, Manalapan); Fred Reichart (Neptune Township); James Davis and other NJDOH staff who also were employed as part time HOs before 1974; and Vincent Horan (Red Bank), who is the great uncle of Robert Scapicio, the current HO of Hazlet. Charles Kaufman, who was a part-time HO for Manalapan in the 1960's, later worked for the NJDOH, and then became the first certified Public Health Coordinator of the Ocean County Health Dept from 1971-1991; the OCHD had been established in 1930 (Przywara, 2000).

Other former HOs within the past 30 years were Albert Leff, Howell; Thomas Emmons and Dr. Robert Crelin, MCRHC; William Richardson, Middletown; Frederick Schuster, Long Branch; Andrew Simpf; Manalapan; and Steven Papenberg, Matawan.

Some Sanitary Inspectors who supervised health departments in between HOs were Garrett Stefanile (MCRHC, between Ray English and Doc Crelin), Harry Huber (Middletown, in

between Bill Richardson and Steve McKee), William James (Long Branch, in between Fred Schuster and Dave Roach), William Brown (Ocean), and Larry Kasica (Matawan before joining County).

Many towns in western Monmouth employed Isidore Sackowitz as a part-time Health Officer, and towns in eastern Monmouth employed Joseph Quail as a part-time Sanitary Inspector.

Before 1974, an “Executive Officer” could serve part-time in place of a licensed HO for towns with a population less than 10,000.

## **Appendix B: LOCAL PUBLIC HEALTH HISTORY**

### **The Bayshore**

Atlantic Highlands’ first Board of Health was appointed June 6, 1889, when the borough was first formed: James H. Leonard, J.T. Stout, Dr. J.H. Van Mater, Dr. G.D. Fay, Dr. E.C. Curtis, Dr. H.A. Clark, and John B. Swan. During the 1918 Influenza Pandemic, an assistant health inspector was appointed who visited the sick to see that they were receiving nursing care and had adequate supplies of food and medicine. A Canteen Committee prepared food, medicines and oxygen were purchased, and volunteer nurses were deployed through a cooperative effort between the Atlantic Highlands Board of Health and the Red Cross (Leonard, 1923). The first civilian case of the flu in NJ had been reported in Newark on September 25, 1918, and in less than 100 days, it had killed 12,000 in the state (Cowen, 1964).

The 1832 outbreak of Asiatic cholera that started in Manhattan and inspired the formation of the “sanitary reformer” movement also impacted the economy of truck farms in Middletown. In 1832, vegetables and fruit shipped from Leonardville (Leonardo) and Chanceville (New Monmouth) to NY were rejected and sent back because produce had been linked to the spread of the disease:

“1832 was the year of the first cholera in this country. The doctors forbid the citizens of New York and other cities eating of the farmer’s produce, new potatoes, green corn, cucumbers, watermelon and citron. ... We had twenty acres that year in watermelons. They would not buy them in the city of New York. Captain Henry Schenck took a large schooner load up to New Haven, but brought them all back.” (Leonard, 1923).

### **Western Monmouth**

During the winter of 1910, there was an epidemic of rabies in Freehold, and police shot stray dogs “on sight”. In 1916, a polio epidemic caused the start of schools in Freehold to be postponed for a month and caused 5 deaths Countywide (Blair, 1993). In 1920, tuberculosis was the greatest health hazard according to local health officials in the County; 150,000 died across the nation from TB in 1918, the same year that the Spanish Influenza started (Blair, 1993).

### **Sewage, Storm Runoff, Typhoid and the end of Oyster Beds in Raritan Bay**

The Interstate Shellfish Sanitation Conference was formed in 1982, and the following year it adopted the guidelines promoting shellfish sanitation developed by the National Shellfish Sanitation Program (Yuhas, 2002). The NSSP guidelines, written the year it was formed in 1925, had been developed by the Surgeon General in response to the decades of outbreaks of typhoid fever related to the consumption of raw oysters and other shellfish harvested from waters

impacted for centuries by discharges of untreated sewage into NY Harbor, Raritan Bay, and Sandy Hook Bay and its two rivers (Yuhas, 2002).

About 500 BC, large oyster beds began forming along the tributaries feeding inner Raritan Bay (USGS, 2007). By the 1600s, oysters grew in 2 large beds in the Bay: the largest was about 1 mile across and was located off the mouth of the Raritan River, and a smaller colony called Chingarora by the Lenape was located in Keyport Harbor (USGS, 2007). Early settlers used the shell middens (piles) left by the Algonquin (Lenape) to for fertilizer and to pave roads (Tottenville on Staten Island was known for its oyster shell roads (USGS, 2007). By the 1700's, raw sewage had closed the beds of the "foot-long" oysters of Gowanus Bay that had been harvested by the Dutch settlers (Kurlansky, 2006). By the mid nineteenth century, the Rockaway oyster beds of Jamaica Bay were closed after towns in Long Island dumped tons of raw sewage into it (Kurlansky, 2006). In 1854, an outbreak of Asiatic Cholera among NY's upper class that was linked to the consumption of raw oysters in polluted waters began an "oyster panic", moving NYC Mayor Henry Wood in 1855 to enforce an 1839 law outlawing the sale of oysters from May 1<sup>st</sup> through September 1<sup>st</sup> (months lacking an "R") (Kurlansky, 2006). NYC's annual Harbor Survey Program, now performed by the Interstate Environmental Commission, was first initiated in 1909, and from then until 1960, sampling revealed extremely low dissolved oxygen levels in the lower Hudson River (in 1960 there were some upgrades to the sewer plant at Yonkers) (Waldman, 1999).

By 1910, 600 million gallons a day of raw sewage were still being dumped into the estuary by NYC, and sewage bobbed among the swimmers using the floating bathhouses off Manhattan (Kurlansky, 2006). In 1914, the City began closing most of its bathing beaches to swimming, and a NY Times article in 1924 estimated that 14,000,000 tons of sewage was discharged into the Hudson River every year (Kurlansky, 2006). This was in addition to the estimated 120,000 horses in NYC used for hauling trollies, cabs, and carts that produced 35-50 pounds of manure per horse per day, which washed out into the Harbor when it rained (Melosi, 1981). (Horse manure was a problem in London as well, where in 1894 one journalist predicted that every street would be covered with nine feet of manure by 1944 (Jones, 2005)).

In August 1897, there was a discussion at a public meeting in Sea Bright about whether or not to dredge an inlet south of Sandy Hook from the Shrewsbury River to the ocean (the inlet, which had opened during storms in October 1896, had since closed) (Methot, 1980). While the steamboat company and the oystermen were in favor of keeping this inlet closed, Dr. W.S. Whitmore, the president of the Shrewsbury Township Board of Health, warned that the inlet should be kept open because tide water would dilute the large amount of raw sewage that was being discharged daily into the Navesink and Shrewsbury Rivers ("the greater volume of tide water and its greater swiftness would tend to keep the river pure and sweet") (Methot, 1980). It was typical of municipalities at that time to correct their problem of overflowing 'privies' by installing a centralized system of pipes that would discharge untreated sewage into the rivers and bays (Leonard, 1923). For example, in 1893, Atlantic Highlands installed a sewerage system that discharged untreated sewage into Raritan Bay about 1100' off 1<sup>st</sup> Av., just east of the popular clamming beds by the mouth of Many Mind Creek (Leonard, 1923).

In spite of the concern for the public health, a year later in 1898, the Red Bank Board of Commissioners decided to run all the town's sewage into the river "for the present", because they had determined that groundwater infiltration into the sewer pipes made it too costly to construct a drainage field that could handle the volume of wastewater that would have to be pumped (Methot, 1980). While the public reacted so negatively that a meeting was held the next

month to protest this decision, it was noted that most of the people who complained during this meeting were themselves “sewering” into the river: residents from the area, the owner of the Central Hotel, and the Monmouth Boat Club.

In July 1901, oysterbeds in the two rivers were further degraded when storms discharged heavy amounts of sediment into the river from farms and streambanks; the oysters were smothered and became infested with a disease known as the “black death” (Methot, 1980). NJ had monitored coastal waters for shellfish safety since the early 1900’s, and in 1905, the State Board of Health attempted to persuade local boards of health to prohibit the practice of discharging raw sewage (Methot, 1980; NJDEP, 2004). It was a clear warning that the oysters in these two rivers had become unfit for consumption, as the State had just linked a case of typhoid fever at Oceanic (Rumson) to shellfish taken from the Shrewsbury River (Methot, 1980).

In 1923, the State Board of Health finally banned oyster harvesting in the Navesink and Shrewsbury Rivers after cases of typhoid in Red Bank were found to have originated from oysters that had been taken from the rivers: “this latest ban prohibits oysters from being taken under any circumstances from the badly polluted portion of the river lying west of Guyon’s Point” (Guyon’s Point is just west of where McClees Creek discharges into the Navesink River) (Methot, 1980). The resulting typhoid scare caused a panic all the way to Florida; oyster production in Chesapeake Bay, which had been supplying juvenile oysters to stock Raritan Bay, was cut in half (MacKenzie, 2000). The last of the oyster beds in Raritan Bay was finally closed in 1927 (Kurlansky, 2006).

The wastewater treatment that we take for granted today began a few years after the 1854 oyster panic in NYC, when Louis Pasteur developed the “germ theory” of disease (Kurlansky, 2006). By 1880, the German bacteriologist Carl Joseph Eberth had discovered the typhoid bacillus (now called *Salmonella Typhi*). By the 1890’s, *Salmonella bacillus* was established as the bacteria linked with oysters, sewage, and typhoid (Kurlansky, 2006). The first wastewater system to have separate sewage and stormwater pipes, the “Waring System”, was built in Lenox, Massachusetts in 1874, however its designer, George Waring, determined that a separate system was not cost effective for densely populated cities like New York (Melosi, 1981). In 1886, the NYC Board of Health built the first wastewater facility in the US to use chemical treatment on Coney Island; and screening for floatables was installed at the Jamaica Bay plant by 1927 (Kurlansky, 2006; WMI, 1988). NYC today still has about 450 Combined Sewer Overflows discharging raw sewage into Raritan Bay when it rains (NJ has about 250, from Perth Amboy north); in May and June of 1976, 436 million gallons a day of raw, unscreened sewage was still being discharged into NY Harbor (Melosi, 1981; WMI, 1988).

In NJ, a landmark study in 1880 of the public health benefits of sewers had been conducted in Newark by Edgar Holden, the president of the board of medical directories for the Mutual Life Insurance Company (Cowen, 1946; Newark Water and Sewer, 2006). After plotting “preventable disease” outbreaks on 2 sewer maps, one in 1872 and the other in 1876, Holden had concluded that the decrease in mortality rates was due to the increase in sewer construction. This study – methodically reminiscent of John Snow’s 1854 map of London that showed cholera outbreaks clustered around the Broad Street well pump - was the first local evidence of how effectively sewers could reduce disease. As a result, the Newark Board of Health worked aggressively to promote sewers and remove privies and cesspools. It wasn’t until 1899 that a State Sewerage Commission was created, and in 1907 the NJ legislature first mandated sewage treatment; a year later, the powers of the SSC were transferred to the NJ State Board of Health (Cowen, 1946; Newark Water and Sewer, 2006).

## Trash and Ocean Dumping Along the Shore

Pigs wandering the streets of Manhattan apparently provided an acceptable level of garbage disposal until about 1776, when ocean dumping soon became NYC's preferred method for managing its garbage and sewage (Kurlansky, 2006). One of the earliest references to a ban on ocean dumping was instituted when the Common Council of the City prohibited dumping of wastes into NY Harbor in 1683, less than a generation after Henry Hudson had first spotted the "North River" in 1609 (Connor et al., 1979; O'Connor et al., 1983). During the 1854 oyster panic in NY, people intensified their complaints about dead animals and other waste washing up on the beaches after it had been taken out to sea by garbage scows (Kurlansky, 2006). A newspaper article in 1878 described NY's waters as being "impregnated" by kerosene refineries, which was rendering the striped bass "as to be unfit for the table" (O'Connor et al., 1983). In 1886, NYC dumped 1,031,180 of its 1,049,855 cartloads of trash into the ocean; the debris clogged the Harbor and beaches "on the NJ shoreline looked like cesspools. It was not uncommon for swimmers to be nudged by mattresses and old shoes ..." (Melosi, 1981). In 1898, Harper's Weekly published an article called "The Fouling of the Beaches" during the week of the Fourth of July (Melosi, 1981). Driftwood that mixed in oily slicks was called "sleek" and burned by Manhattan residents in their stoves because it fired so well (Waldman, 1999). A woman ended her swim at Bradley Beach when she bumped into a dead dog (Waldman, 1999).

The Army Corps of Engineers has been responsible for issuing permits for ocean disposal since 1888; previously, the Corporation of NY had required that non sewage wastes be dumped 300 feet from the end of piers (Connor et al., 1979; WMI, 1988). In 1888, the first known permitted site, identified as the "mud buoy", was about 2.5 miles south of Coney Island; because it caused shoaling, it was moved frequently from 1890 to 1914, until a site near the Hudson Canyon was ultimately established (Connor et al., 1979; WMI, 1988). From 1890 - the year the first national Rivers and Harbors Act was passed to control dumping - to 1971, about 1.4 billion cubic yards of waste solids were dumped in the waters off NY and NJ - more than the suspended sediment discharge of all the rivers along the Atlantic Coast (Connor et al., 1979; O'Connor et al., 1983).

In 1885, Lt. H.J. Reilly of the US Army built the country's first trash incinerator on Governors Island in NY (Cowen, 1964; Kurlansky, 2006). NYC dumped its last garbage at sea on June 28, 1934, after losing a 1933 Supreme Court Case brought by coastal cities in NJ, and began incinerating and landfilling its trash (Melosi, 1981; Kurlansky, 2006; WMI, 1988). NY's first documented dump dates to 1625, and the City continued to dump its trash in its 89 malfunctioning landfills until 1948, when they were replaced by the 2100 acre Fresh Kills Landfill in Staten Island (Kurlansky, 2006; O'Connor et al., 1983). The highest hill on the eastern seaboard south of Maine is now Fresh Kills Landfill on Staten Island, which had been designed to reach a maximum height of 450 feet when it was closed shortly after the attacks on the World Trade Center in 2001, until it finally closed in 2003 (Americas Roof, 2006; IEI, 2007).

In 1931, the Governor's Special Long Island Sanitary Commission reported that it cost as much as \$10,000 per mile to remove floatables from the south shore beaches (WMI, 1988). Aldous Huxley wrote in "Hyperion to a Saytr" (1956) about the impact of floatables and inadequate sewage treatment on the ocean off southern California before WWII (WMI, 1988). By 1948, offshore dumping was suspected to be the cause of the decline in fish populations in the NY Bight; and in 1951, the National Academy of Sciences recommended intensive monitoring of the effects of chemical wastes being dumped into the ocean (O'Connor et al., 1983). However, the National Marine Fisheries Lab at Sandy Hook was the only entity that sampled water, sediment

and organisms of the Bight near the dump sites until more intensive and coordinated monitoring began in 1968; and in 1973, NOAA coordinated the comprehensive sampling conducted as part of the MESA-New York Bight project (O'Connor et al., 1983).

NY continued to dump its sewage sludge 12 miles offshore, centering around the Christiaensen Basin, until 1987, when it was moved to the "106-mile site; the foam in the wakes of vessels moving through this 16 mi<sup>2</sup> zone would turn from white to black, and locally known as the "Dead Sea" (Kurlansky, 2006; O'Connor et al., 1983; Waldman, 1999). In 1977 a loud blast from a jet's sonic boom that had been magnified by an atmospheric inversion, was for some time widely believed to have occurred when lightning ignited methane bubbling up from the dump site (Waldman, 1999). In 1989, the Industrial Waste Site (Acid Dump) located 106 miles off the coast was closed; a titanium plant in NJ barged sulfuric acid and sulfate wastes that turned the water yellow, which was reported to attract bluefish (Kurlansky, 2006; O'Connor et al., 1983; Waldman, 1999). In 1992, the 106 Mile Sewage Sludge Sites was closed; and in 1993, the 17 Mile Woodburning Site was closed (Kurlansky, 2006; O'Connor et al., 1983). In July of 2006, the "Clean Ocean Zone" bill was proposed to reduce pollution in the NY/NJ Bight through several measures including the prohibition of new ocean dumpsites (COA, 2006). But litter that is capable of surviving in the ocean as floatables that wash up on beaches has increased over recent decades. From 1970 to 1985, for example, resin manufacture increased 135%, from 20 billion to 47 billion pounds, while solid waste increased almost 9%, from 1147 pounds per person per year, to 1249 pounds (WMI, 2007). Life magazine did a story on "Throwaway Living" in its August 1<sup>st</sup>, 1955 issue (WMI, 1988). By the mid-1960s, the styrofoam cup and disposable diapers were in use; by late 1969 the plastic tampon applicator was introduced, and later the 1-liter polyethylene terephthalate (PET) plastic soda bottle (WMI, 1988).

## **Quarantine**

Quarantine and isolation remain some of the oldest, most effective, and controversial defenses against disease (Stephenson, 2004). Charleston, South Carolina, and Boston, Massachusetts, instituted the first quarantine practices in America in the early 1700's (Answers.com, 2007). The oldest record of quarantine in NJ was when Burlington prohibited all fairs during a smallpox outbreak in Philadelphia, Pa. in 1731 (Cowen, 1946). In 1799, there were some attempts at ship quarantine, and in 1812 a special law was passed quarantining ships coming into Perth Amboy (Cowen, 1946).

In 1857, when legislation empowered the Sheriffs of Monmouth and Middlesex to order the removal of infected ships beyond territorial waters, it also made the erection of a quarantine hospital at Sandy Hook a misdemeanor (Cowen, 1946). After being transferred from NJ to the U.S. military on March 12, 1846, Sandy Hook was almost designated as a federal quarantine station for the steamboats coming into NY harbor in the summer of 1892 during a cholera outbreak.

The mayors of Atlantic Highlands and Middletown quickly protested to NJ Governor Leon Abbot, who telegraphed a warning to President Benjamin Harrison about infected floatables coming ashore.

"... if the United States assumes quarantine powers it will have proper vessels to take up all floating matter thrown away from any of the incoming steamers and destroy such refuse, and that it will prevent in the future such steamers from throwing this dangerous matter into the waters of the lower bay, where it floats upon our shores. Boxes and bedding from these steamers have already been found upon the shores of the Township of Middletown, between

Keyport and Atlantic Highlands. In former visitations of cholera our people who handled matter floating on the shores from cholera ships were attacked with this disease, and those now living there are, therefore, naturally anxious lest the same result flow from like causes now existing. If the United States assumes quarantine control of these vessels its official can secure the people living upon the shores of this State from this danger. Our State and local Boards of Health are doing everything possible to guard against the entry of cholera into the country through their jurisdiction, and desire to act in harmony with all other authorities working for like ends.” (Leonard, 1923).

The President responded by promising to have the Attorney General look into the right of the federal government to designate a quarantine station there, and referred the complaints about “infected articles being thrown into the bay” to Secretary Foster (Leonard, 1923). The idea was dropped.

Their decision may have been influenced by memories of the quarantine station that had been burned to the ground on the shores of Staten Island by a “mob of angry villagers” in 1858, a year after the law prohibiting the construction of a facility at Sandy Hook (Stephenson, 2004). On September 1 that year, dozens of residents, predominantly farmers and “oyster gatherers”, battered down the brick wall of the New York Marine Hospital in Tompkinsville, near the present site of the Staten Island Ferry. While no one died as a direct result of the fire, almost every building on the 30 acre tract – hospitals (including one for smallpox), barns, doctors’ residences, outhouses and kitchens - was destroyed.

At the peak of immigration during the 1840’s and 1850’s, the station housed more than 1500 passengers and sailors, treating up to 8000 patients a year with various medications of the time, including the application of 1300 leeches in one year. Since 1799, the locals had considered the station to be a threat to their community – one that also lowered property values and scared off investors - when it was forced on them by NY State under the right of eminent domain. In 1821, an epidemic of 29 cases of yellow fever on the Island happened shortly after a storm had driven a number of infected vessels ashore; a second severe outbreak of yellow fever occurred in 1848, and a third occurred in 1856 which sickened 30 residents and killed 11. Furthermore, dead bodies from the station were routinely carted through the town on the way to the off-site cemetery:

“The Dead cart regularly came out with yellow fever on the subjects in the twilight and in one instance Broke down and the Body Laid in the street  $\frac{3}{4}$  of an Hour till an open cart was brought.” (Stephenson, 2004).

Residents petitioned the NY legislature to move the hospital, which passed an act in 1849 to move it to Sandy Hook, but the state of NJ as well as shipping interests in NY did not support the law, and the station remained in Tompkinsville. In August of 1858, the Board of Health in nearby Castleton, which had built a high fence around the station a year earlier in response to the 1856 outbreak, passed ordinances encouraging residents to “block quarantine activities.” On August 15<sup>th</sup>, straw, matches and flammable liquids were dumped near the station grounds, and a stack of wooden beams fastened with handles for carrying and battering were placed next the to the walls on August 31<sup>st</sup>. On the afternoon of September 1<sup>st</sup>, the day of the arson, the Castleton Board of Health held an outdoor meeting and adopted a series of resolutions, which were then posted on the stations’ outside walls, including:

“Resolved. That this Board recommend the citizens of this county to protect themselves by abating this abominable nuisance without delay” (Stephenson, 2004).

Later that night, the local fire companies responding to the alarm stopped and watched the fire burn down the buildings, claiming that their hoses had been cut. Two Harbor Policemen were

later jailed for interfering with efforts to stop the mob. The station Health Officer had his life allegedly threatened by one of the leaders of the arsonists who was also the grandson of Governor Daniel D. Thompkins, whose family owned much of the land to the south of the station, and for which the town was named after. The following night, a meeting attended by 200 people was held in Thompkinsville supporting their right to rid their community of this public health hazard, and calling for the station to be moved to the Battery. The NY Herald took the side of the arsonists, while the NY Times lashed out at the “mobocrats”. Dozens of arsonists were jailed, then bailed out by philanthropist Cornelius Vanderbilt, who had been born on Staten Island. On November 11<sup>th</sup>, a judge who lived within a mile of the station, and whose brother-in-law had died of yellow fever, ruled in favor of the defendants. In 1859, the station was relocated, not to Sandy Hook, but to a ship anchored 9 miles offshore, the “Florence Nightengale” (Stephenson, 2004).

One of the station’s former Health Officers, Elisha Harris, went on to create the NYC Metropolitan Board of Health in 1866, following an outbreak of cholera the year before (it was eventually absorbed by the NYC Board of Health) (Stephenson, 2004). The Marine Hospital was moved to two artificial islands in NY Harbor that were specifically built for it, Swinburne and Hoffman islands, but was finally relocated to Ellis Island in the 1920’s (Stephenson, 2004). After the germ theory of disease validated quarantine as a viable public health tool in the 1880’s, the “New Jersey Quarantine Service” was created statewide for ship inspection in 1897 (Cowen, 1946). In 1891, the Marine Hospital Service was tasked with inspecting and quarantining immigrants at the nation’s ports; in 1902 its name was changed to the Public Health and Marine Hospital Service, and in 1912 finally changed to the Public Health Service (Answers.com, 2007).

### **Philadelphia’s Yellow Fever Outbreak in 1793**

Hot, dry winds forever blowing,  
Dead men to the grave-yards going:  
Constant hearses,  
Funeral verses;  
Oh! What plagues – there is no knowing!

... Nature’s poisons here collected,  
Water, Earth, and air infected –  
O, what a pity,  
Such a City,  
Was in such a place erected!

- “Pestilence” by Philip Freneau, Philadelphia, 1793.

Bring Out Your Dead: The Great Plague of Yellow Fever in Philadelphia in 1793, by J.H. Powell, describes the outbreak that disrupted the nation’s temporary capital; it is sometimes reminiscent of Daniel Defoe’s narrative of the 17<sup>th</sup> century bubonic plague epidemic in London, Journal of the Plague Year. Washington, Adams, Jefferson, and Hamilton joined many other leaders and residents that summer on an exodus from Philadelphia during the worst of the epidemic that was also called the Black Vomit. A house that Adams had lived in, called Bush Hill, was appropriated by the mayor and what remained of the municipal council, and turned into a plague hospital that had to be staffed almost totally by volunteers. Prophylactic measures taken by those venturing from their homes included smoking cigars, and using garlic, vinegar, tar and camphor vapors to protect them from infection. The sick were bled by physicians, and most died. In actions anticipating events during the anthrax letters of 2001, postmasters in New Jersey, Maryland and Virginia dipped letters from Philadelphia in vinegar before handling them, and

subscribers to Philadelphia newspapers soaked them in vinegar and dried them before a fire before reading them. In Trenton, Bordentown and Lambertville, NJ, boats and commerce from Philadelphia were banned; citizens were prohibited from crossing the Delaware into NJ, and Philadelphians already in NJ were ordered to leave. Philip Freneau, the poet who had fought a few years before in the war for independence, and for whom the Freneau section of Aberdeen in Monmouth County is named, was the editor of National Gazette of Philadelphia. He wrote editorial poems about the outbreak, including “Orlando’s Flight”, which condemned the exodus of physicians leaving the capital:

“On prancing steed, with sponge at nose,  
From town behold Sangrado fly;  
Th’ infected shafts of death defy –  
Safe in an atmosphere of scents,  
He leaves us to our own defence.”

At the time, Philadelphia was the medical center of the nation, and its medical expertise was considered progressive. One of the notable medical practitioners of the city during the plague, commenting on the primitive measures of his medical predecessors, had said” Yea, tho’ we may with some reason, from the enlightenment of medical science since, smile at the mode of theorizing ... let us rather pay all due respect to their memory and give them all the credit we can ...”. But knowledge about mosquito transmission and the development of a vaccine would not begin until 1900, when a commission including Dr. Walter Reed began the modern war against this disease. The outbreak subsided that year in October with the coming of cooler weather, and continued to be an annual threat to the nation for more than a century afterwards. In 1794, a year after what has been called “the worst, the most frightening, the very classic of plagues” in the US, Philadelphia formed the nation’s first board of health (Pfizer, 2005; Powell, 1949).

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