

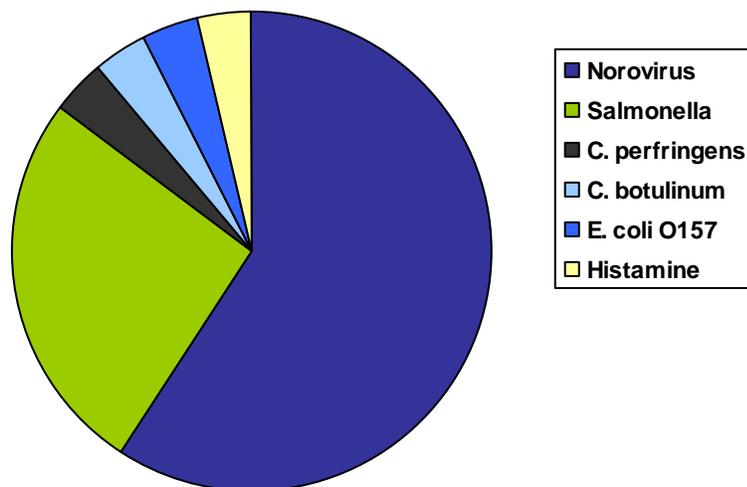
# PROFILES OF SELECTED OUTBREAKS

The Outbreak Response and Bioterrorism Investigation Program (ORBIT) at the Ohio Department of Health (ODH) assisted local health jurisdictions in Ohio in the investigation of 309 outbreaks during 2007. These outbreaks were detected in 61 of 88 counties throughout the state. The number of Ohioans known to be ill from these outbreaks was 5,855. The outbreaks were classified as: person-to-person (117), foodborne (87), staphylococcal skin infections (39), outbreaks of a Class A agent (28), scabies (18), hospital-acquired (eight), waterborne (nine), conjunctivitis (two) and pediculosis (one). Causative agents identified during the outbreak investigations included: *Balamuthia mandrillaris*, *Clostridium botulinum*, *Clostridium perfringens*, *Cryptosporidium*, *E. coli* O157, *Legionella* spp., Norovirus, *Salmonella* spp., *Sarcoptes scabiei*, *Serratia marcescens*, *Shigella sonnei*, *Staphylococcus aureus* (including methicillin-resistant) and *Tinea* spp. Point-source outbreaks that are neither foodborne nor waterborne account for an increasing percentage of outbreaks investigated. Details on selected types of outbreaks are discussed below.

## FOODBORNE OUTBREAKS

In 2007, 27 of the 87 foodborne outbreaks reported in Ohio were confirmed foodborne disease outbreaks. These outbreaks met the general definition of a foodborne outbreak: “An incident in which two or more persons experience a similar illness after ingestion of a common food, and epidemiologic analysis implicates the food as the source of the illness.” These 27 outbreaks also met the agent-specific criteria for confirmation of outbreaks, as shown in Figure 1. For these 27 foodborne outbreaks, the causative agent was distributed as follows: Norovirus (16), *Salmonella* (seven), *Clostridium perfringens* (one), *Clostridium botulinum* (one), *E. coli* O157 (one) and scombroid fish poisoning (one).

**Figure 1: Confirmed Foodborne Disease Outbreaks by Etiologic Agent, Ohio, 2007**



Source of outbreak data: Ohio Department of Health Outbreak Response and Bioterrorism Investigation Program.

## UNUSUAL INCIDENCE OUTBREAKS

In 2007, ORBIT assisted local health jurisdictions in Ohio to investigate 117 outbreaks classified as “Unusual Incidence.” These outbreaks were detected in 35 of Ohio’s 88 counties (Table 1). The number of Ohioans known to be ill from these outbreaks was 3,346. One-hundred two (87 percent) of these outbreaks were identified as gastrointestinal (GI) illnesses, primarily caused by Norovirus. Fifty-three (52 percent) of these GI outbreaks were confirmed Norovirus by stool testing at ODH Laboratory. The remaining suspect Norovirus outbreaks could not be confirmed either because no stool specimens were submitted or an inadequate number of stool specimens were positive (i.e., fewer than two). The Norovirus outbreaks occurred in a variety of settings, including assisted living/retirement communities, child care centers, correctional facilities, group homes, hospitals, long-term care facilities, private homes and schools.

**Table 1: Unusual Incidence Outbreaks by County, Ohio, 2007**

<b>County</b>	<b># of Outbreaks (# of Ill Persons)</b>		<b>County</b>	<b># of Outbreaks (# of Ill Persons)</b>	
Allen	3	(120)	Lake	7	(178)
Ashland	2	(96)	Logan	1	(6)
Ashtabula	1	(7)	Lorain	7	(297)
Belmont	1	(45)	Lucas	3	(15)
Butler	1	(4)	Medina	5	(69)
Clark	4	(129)	Montgomery	4	(147)
Clermont	2	(24)	Muskingum	2	(36)
Clinton	1	(75)	Pickaway	1	(50)
Cuyahoga	28	(726)	Pike	1	(11)
Delaware	3	(60)	Richland	3	(135)
Erie	1	(6)	Ross	1	(11)
Fairfield	1	(55)	Sandusky	7	(256)
Franklin	9	(250)	Seneca	1	(104)
Hamilton	7	(159)	Shelby	1	(8)
Harrison	1	(41)	Stark	2	(79)
Henry	1	(10)	Summit	2	(28)
Hocking	1	(46)	Wood	1	(60)
Jefferson	1	(3)	<b>Total</b>	<b>117</b>	<b>(3,346)</b>

Source of outbreak data: Ohio Department of Health Outbreak Response and Bioterrorism Investigation Program.

## WATERBORNE OUTBREAKS

In 2007, nine waterborne outbreaks were reported in Ohio from seven counties (Table 2). Counties reporting included Auglaize (1), Cuyahoga (3), Franklin (1), Lake (1), Medina (1), Mercer (1) and Warren (1). The outbreaks affected 749 individuals and ranged in size from 1 to 692 (median = 4). These outbreaks met the CDC case definition.

**Table 2: Waterborne Disease Outbreaks by Month of Onset, Ohio, 2007**

County	Month	Predominant Symptoms	# of Cases (Deaths)	Type of Water	Etiology	Setting
Warren	Feb.	Respiratory	692 (0)	Recreational	Chemical	Water park
Auglaize	Mar.	Skin	2 (0)	Recreational	Rash (unknown)	Hot tub
Cuyahoga	Mar.	GI	4 (0)	Drinking	Suspect Chemical	Bottled water
Lake	Mar.	Multi (skin, eye, resp.)	31 (0)	Recreational	Suspect chemical	Pool
Franklin	Mar.	Skin	4 (0)	Recreational	Rash (unknown)	Pool/Spa
Medina	Jun.	Meningo-encephalitis	1 (1)	Recreational	<i>Balamuthia mandrillaris</i>	Pond
Mercer	Sep.	GI	10 (0)	Recreational	<i>Cryptosporidium</i>	Pond
Cuyahoga	Oct.	Respiratory	2 (0)	Recreational	<i>Legionella</i> spp.	Hotel
Cuyahoga	Nov.	Respiratory	3 (0)	Unknown Intent	<i>Legionella</i> spp.	Healthcare-associated

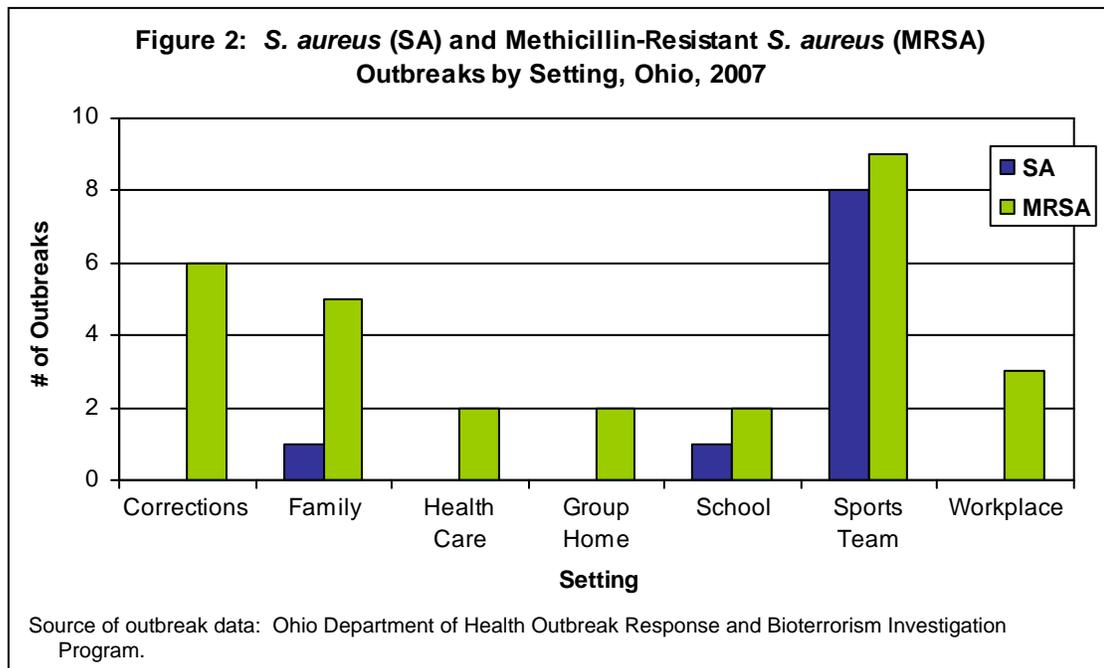
Source of outbreak data: Ohio Department of Health Outbreak Response and Bioterrorism Investigation Program.

## OUTBREAKS INVOLVING *STAPHYLOCCUS AUREUS*

In accordance with the Ohio Administrative Code (OAC) 3701-3-02, suspected or confirmed staphylococcal skin infection outbreaks and healthcare-associated outbreaks, including those caused by staphylococcal bacteria, are reportable to local public health districts.

In 2007, there were 39 outbreaks due to *Staphylococcus aureus* (SA) bacteria reported to ODH. Methicillin-resistant *S. aureus* (MRSA) was identified in 29 (74 percent) of the outbreaks reported in 2007. Ill persons related to these outbreaks numbered 230. *S. aureus*, often called “staph,” are bacteria commonly carried on the skin or in the nose of healthy people. Approximately 25 percent to 30 percent of the population is colonized (when bacteria are present but not causing an infection) with staph bacteria. Colonization by *S. aureus* bacteria at these sites is often, however not always, a precursor to staphylococcal infections. A staph bacterium is one of the most common causes of skin infections in the United States.

Some staph bacteria are resistant to antibiotics. MRSA is resistant to all available beta-lactam agents (penicillins and cephalosporins). The epidemiology of infections caused by MRSA is rapidly changing. In the past 10 years, infections caused by this organism have emerged in the community. The figure below, Figure 2, depicts the number of outbreaks caused by *S. aureus* (SA) and MRSA reported to ODH in 2007.



The majority of outbreaks reported in 2007 involved students on sports teams in school settings (Figure 2). Obstacles to the investigation of many of these outbreaks have been delayed reporting and the misconception that laws providing privacy to individual students do not allow outbreaks to be investigated by public health. However, once outbreaks in school settings are identified, school officials and public health are quick to identify possible causes of transmission and to initiate appropriate steps to prevent additional cases.

New strains of MRSA have emerged in the community with implications for management of skin infections and other staphylococcal infections. Patient education on proper wound care is a critical component of case management for patients with skin infections. Strategies

focusing on increased awareness, early detection and appropriate management, enhanced hygiene and maintenance of a clean environment have been successful in controlling outbreaks of infections.

## MULTISTATE INVESTIGATIONS

In 2007, Ohio had cases in three multistate foodborne outbreaks involving products that were distributed nationwide. These are summarized briefly below:

In February 2007, an outbreak of *Salmonella* Tennessee was recognized by pulsed-field gel electrophoresis (PFGE). There were 425 cases reported nationwide; 19 were from Ohio. Serotyping and PFGE analysis of Ohio's clinical isolates was done by the ODH Laboratory. This outbreak was associated with the consumption of several brands of peanut butter, which were made at a single plant in Georgia. A nationwide recall of the implicated peanut butter occurred on Feb. 14, 2007.

In July and August 2007, Ohio reported three cases of foodborne botulism. These cases were linked to consumption of Castleberry hot dog chili sauce. This product was recalled nationwide. ODH Laboratory identified botulinum toxin and grew the bacterium, *Clostridium botulinum*, from leftover sauce from one of the Ohio cases.

In October 2007, a nationwide outbreak of *Salmonella* (I) 4,[5],12:i:- was recognized by PFGE. There were 345 cases nationwide, 21 of which were from Ohio. Serotyping and PFGE analysis of Ohio's clinical isolates was done by the ODH Laboratory. These cases were associated with the consumption of frozen pot pies. A nationwide recall of several brands of these products occurred on Oct. 11, 2007.

Further information about these outbreaks can be found at the following sites:

*Salmonella* Tennessee: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/salmonellosis\\_2007/outbreak\\_notice.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/salmonellosis_2007/outbreak_notice.htm)

Botulism: <http://www.cdc.gov/botulism/botulism.htm>

*Salmonella* (I) 4,[5],12:i:-: <http://www.cdc.gov/salmonella/4512eyeminus.html>

Also in 2007, there was one multistate outbreak involving dog food and one involving turtles. These are summarized below:

During spring/summer 2007, Ohio had three human cases and one dog that were PFGE linked to *Salmonella* Schwarzengrund. This is a very rare strain of *Salmonella* (0.6 percent of all *Salmonella* cases as of January 2008) that infected both people and dogs in 19 states. The common link in these cases appeared to be related to dog food that was manufactured in the same plant.

In September 2007, a nationwide outbreak of *Salmonella* Paratyphi B, var. Java was uncovered by PFGE. There were 133 cases nationwide from 33 states; three of these were from Ohio. Serotyping and PFGE analysis of Ohio's clinical isolates was done by the ODH Laboratory. These cases were associated with contact with small turtles. More than 60 percent of cases had contact with turtles, and 87 percent of those had contact with illegal small turtles with a carapace size less than four inches.

Further information about these outbreaks can be found at the following sites:

*Salmonella* Schwarzengrund: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5719a4.htm>

*Salmonella* Paratyphi B, var. Java: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5703a3.htm>