



American
Waterways
Operators



July 31, 2013

U.S. Coast Guard – American Waterways Operators Safety Partnership National Quality Steering Committee

Towing Industry Safety Statistics 1994 – 2012

Established Safety Metrics

For approximately 13 years, the partnership has used three measures to track overall trends in safety and environmental protection. The measures are presented to the National QSC twice a year. During the regular winter meetings, updates on the most recent calendar year are presented. “Normalized” accident rates are presented at summer meetings, after waterway usage figures become available from the Corps of Engineers. While not all-encompassing, the measures are considered to be useful indicators, given the non-regulatory scope of the partnership. The safety measures are:

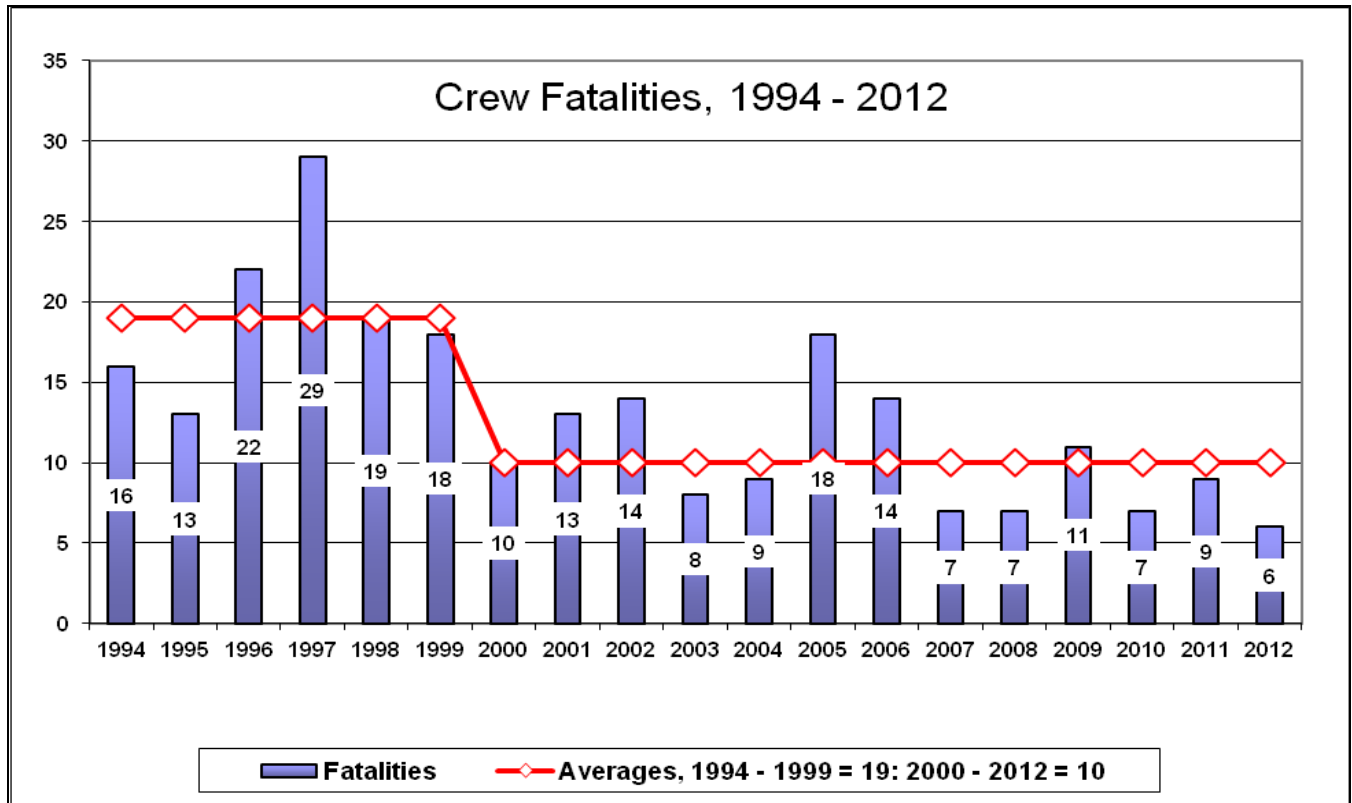
- Crew fatalities per 100,000 towing industry workers.
- Gallons of oil spilled from tank barges per million gallons transported.
- The number of vessel casualties, (overall or by incident severity).

In addition to the “standard measures,” this report includes statistics on crew member injuries, for calendar years 2006 – 2012.

Crew Fatality Counts

Crew fatalities include all deaths and missing crew members on towing vessels or barges. Deaths due to natural causes, deaths of external parties, shipyard, or shore-side workers are excluded from this measure. Chart 1 shows the annual fatality counts for calendar years 1994 through 2012.

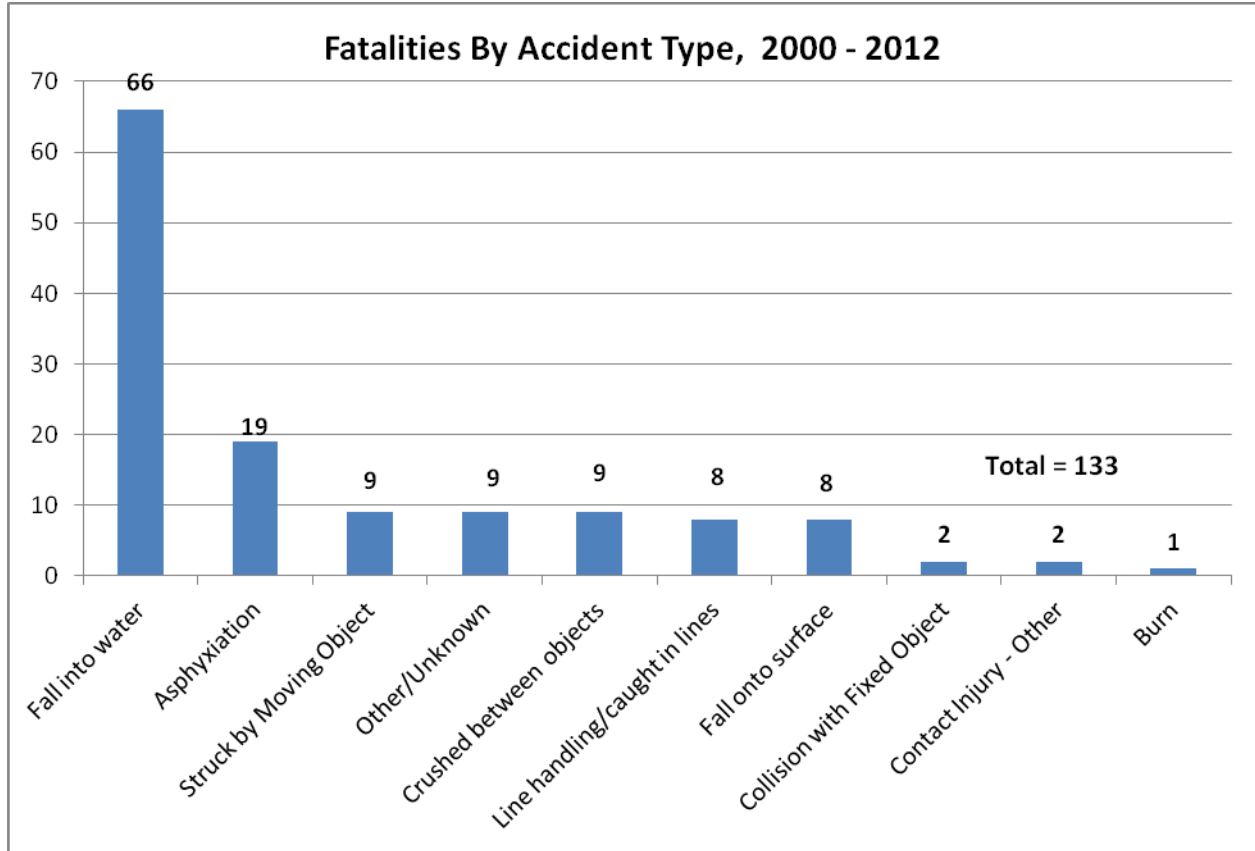
Chart 1



Overall, the number of fatalities in 2012 was a record low year. The average number of fatalities per year, from 2000 through 2012 is 10. (.23). Of the 6 fatalities in 2012, 2 were the result of falling overboard (one from barge and one from a zodiac – good Samaritan). Two were the result of asphyxiation (one overcome after entering a cargo tank & other drown as a result of vessel flooding/sinking). One person was crushed between objects (barges) and another died as a result of burns incurred by an engine room fire.

For the 13 year period ending in 2012, Chart 2 shows the distribution of fatalities, by accident type. The largest number of fatalities, (66 of 133, or 50%) is attributed to falls overboard. The next largest group of fatalities is asphyxiation, with 14% of the total. Those fatalities resulted from vessel casualties and diving accidents, (i.e. crew members attempting to un-foul propellers).

Chart 2

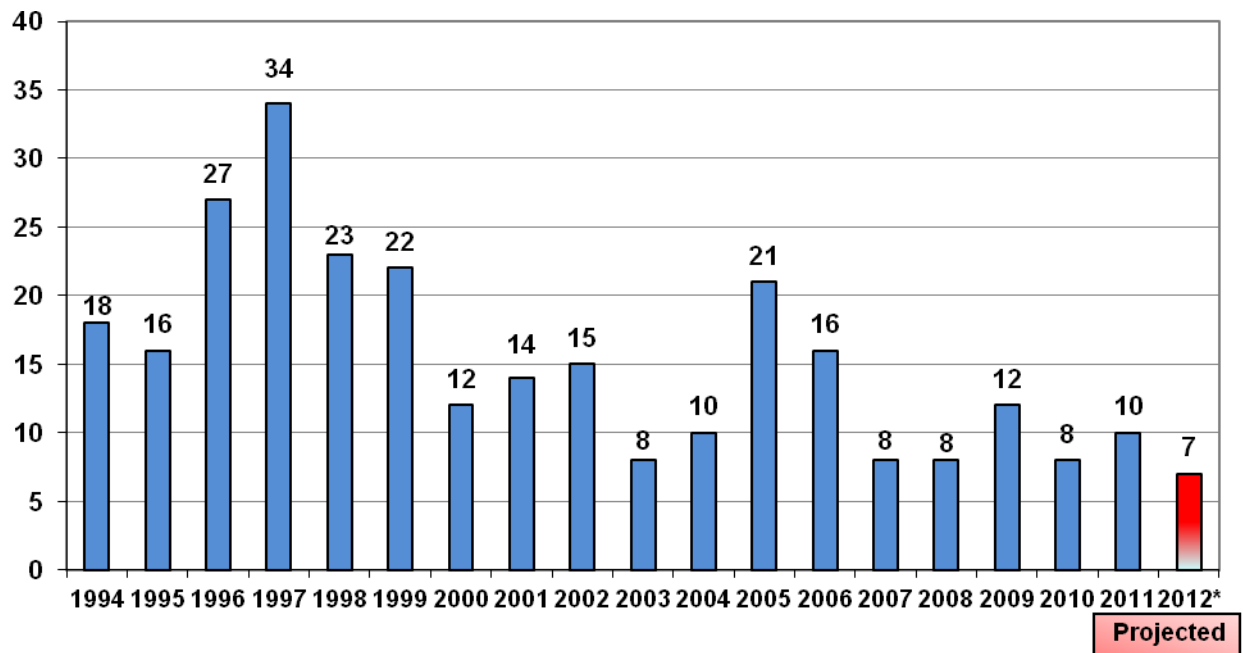


Crew Fatality Rate

Using the “Mercer Model” that was developed with AWO-funded research, the crew fatality rate is shown on Chart 3. The denominator for this rate is derived from the number of towing vessels in operation, as reported by the U.S. Army, Corps of Engineers. The most recent data is calendar year 2011. The 2012 rate is a projection, based on the 2011 Corps data.

This information can be used in comparisons with other industries. For example, the Bureau of Labor Statistics reports that the 2011 nationwide total of 4,693 fatal work injuries represents a slight increase from the 4,690 fatal work injuries reported for 2010. That translates to a fatality rate for all workers, including office workers, of 3.5 per 100,000.¹ The published fatal injury rate for 2011 equals the lowest rate reported by the program (2009 rate) since the conversion to hours-based rates in 2006. Conversely, although the rate is down from the previous year, commercial fishing continues to rank the highest of all occupations at 127.3 fatalities per 100,000 workers.

Chart 3: Crew Fatalities per 100,000 FTE², 1994 - 2012



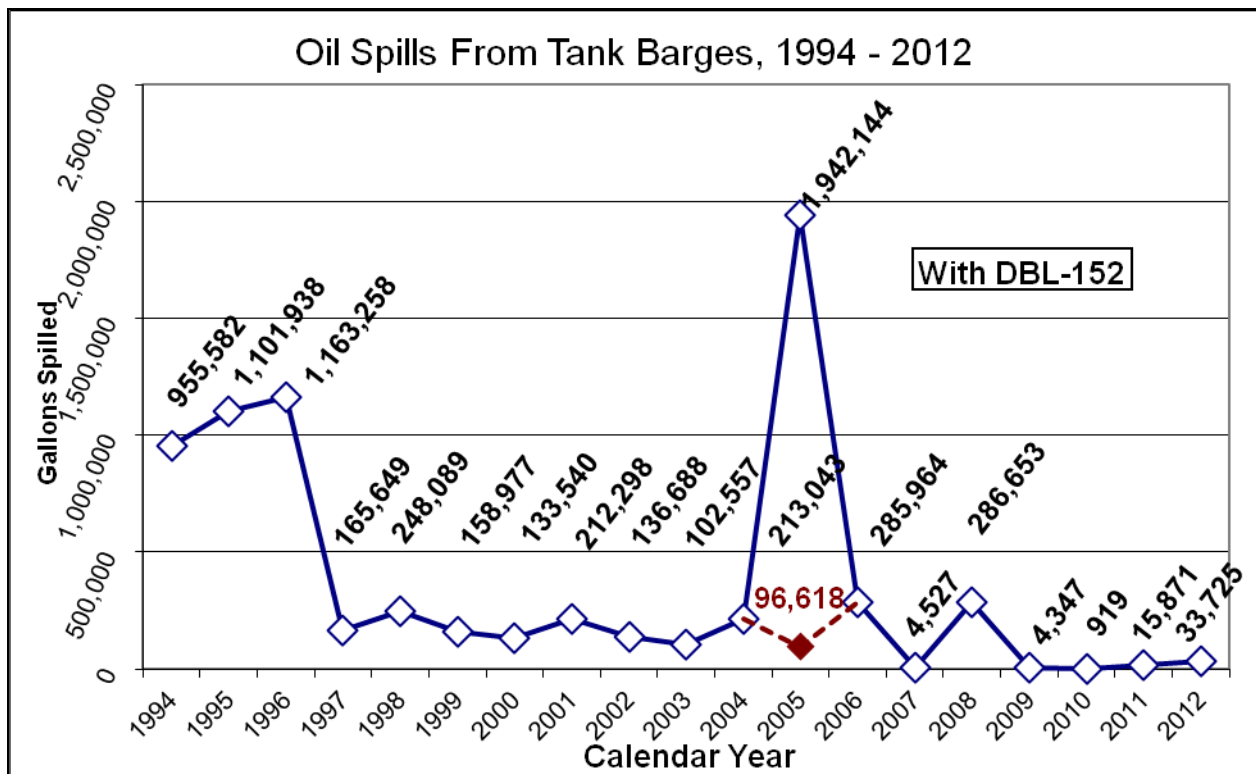
¹ <http://www.bls.gov/iif/oshwc/foi/cfch0010.pdf>, page 18, accessed 28 June 2013.

² An FTE, or full time employee, is the equivalent of one person working a 40-hour work week, for 50 weeks of the year.

Oil Spill Volumes

Shown below are the gallons of oil spilled from tank barges. Within the period of the Safety Partnership the highest spill amount, 1.9 million gallons, occurred in 2005. The 2005 spill amount included 1.8 million gallons from the allision of the tank barge DBL-152 with an oil platform that was sunk by Hurricane Rita. The chart also shows this series without the hurricane-related spill as the dashed line. More recently, 2010 shows the lowest spill amount from tank barges since 1973, when Coast Guard recordkeeping began.

Chart 4



Additionally, historic spill data shows that in any given year, one spill accounts for the majority of the annual volume. The 2007, 2009 and 2010 record lows include no significant incidents. Conversely, nearly all of the oil discharged for 2008 came from the MEL OLIVER - TINTOMARA collision (282,828 gallons). Therefore, excluding that spill 3,825 gals were spilled by all other sources.

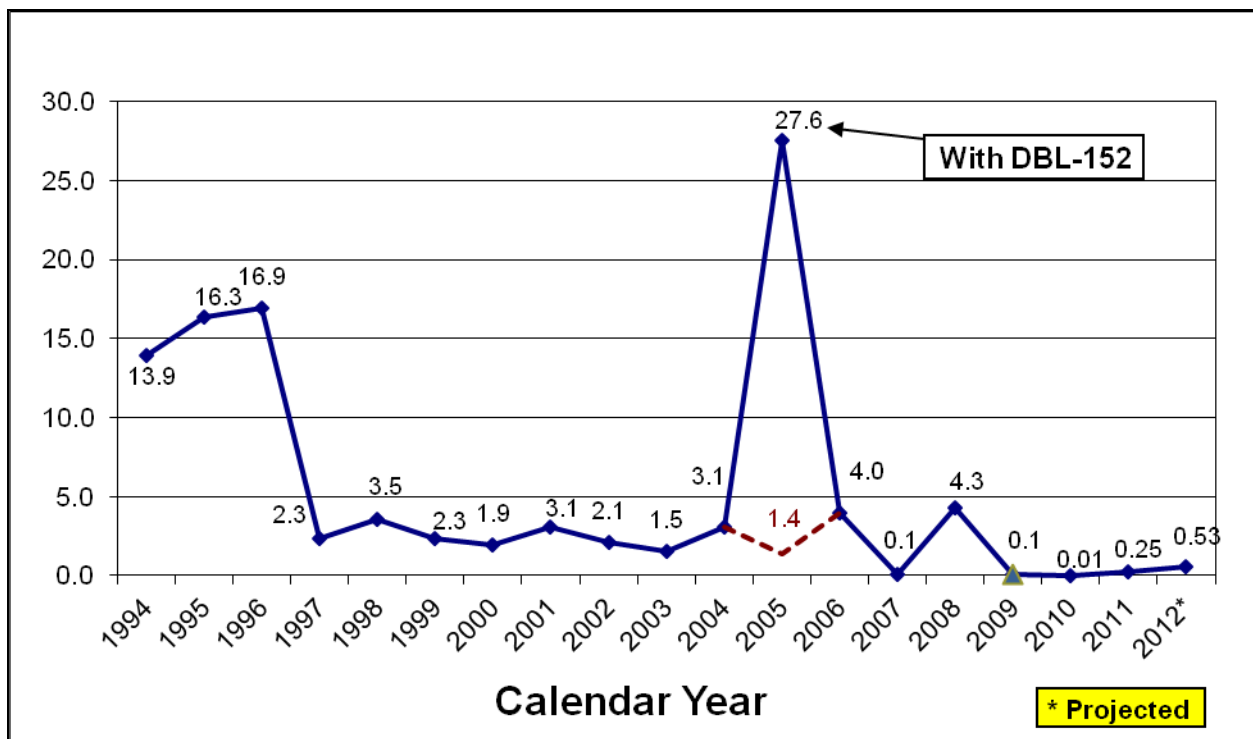
In 2012 there were 82 tank barge pollution incidents spilling a total of 33,725 gallons of oil. The largest spill was the result of a barge punctured below the waterline, after striking an unknown submerged object while transiting the Kill Van Kull, NY, which spilled 20,000 gals of oil accounting for nearly 60% of the total spilled all year. The second largest spill was a result of a collision between a tank barge and crane barge on the Mississippi River which spilled 7,518 gallons (22% of the total oil spilled for the year). These two spills accounted for 82% of the total oil spilled from barges for the entire year. Additionally, there were two spills of 1,680 gals each, one of 1,050, 600 and 550 gallons. All the remaining spills were less than 100 gallons including 33 incidents where spilled amounts were one gallon or less.

Oil Spill Rate

The tank barge oil spill rate is calculated using a denominator from the annual U.S. Army Corps of Engineers publication “*Waterborne Commerce of the United States*,” Part 5, Table 2-3. The most recent complete data year of that publication is 2011. Therefore, the 2012 value is a projection.

For 2011, the Corps of Engineers reported that 231.8 million short tons or approximately 63.5 **billion** gallons of oil was transported by barge on U.S. waterways. That amount represents 76% of all oil carried on domestic waterways. When compared to the amount transported, the spill rate for 2012 is projected to be approximately 1 gallon per 2 million gallons transported.

Chart 5: Gallons of Oil Spilled From Tank Barges, Per Million Transported



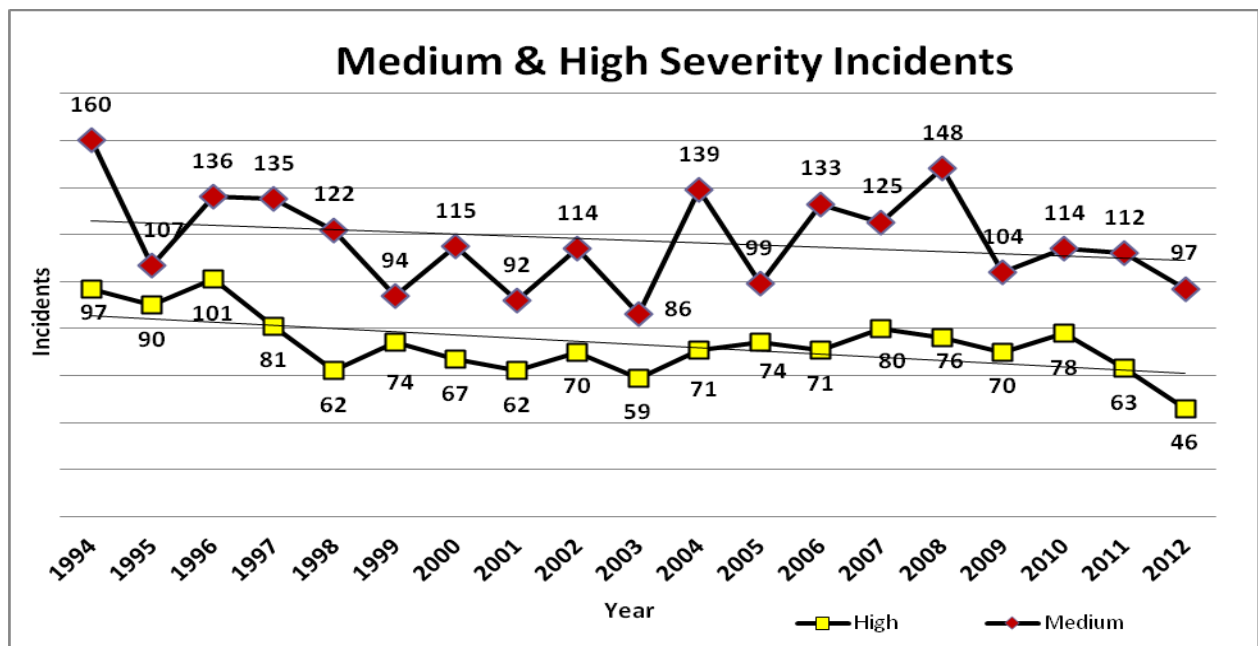
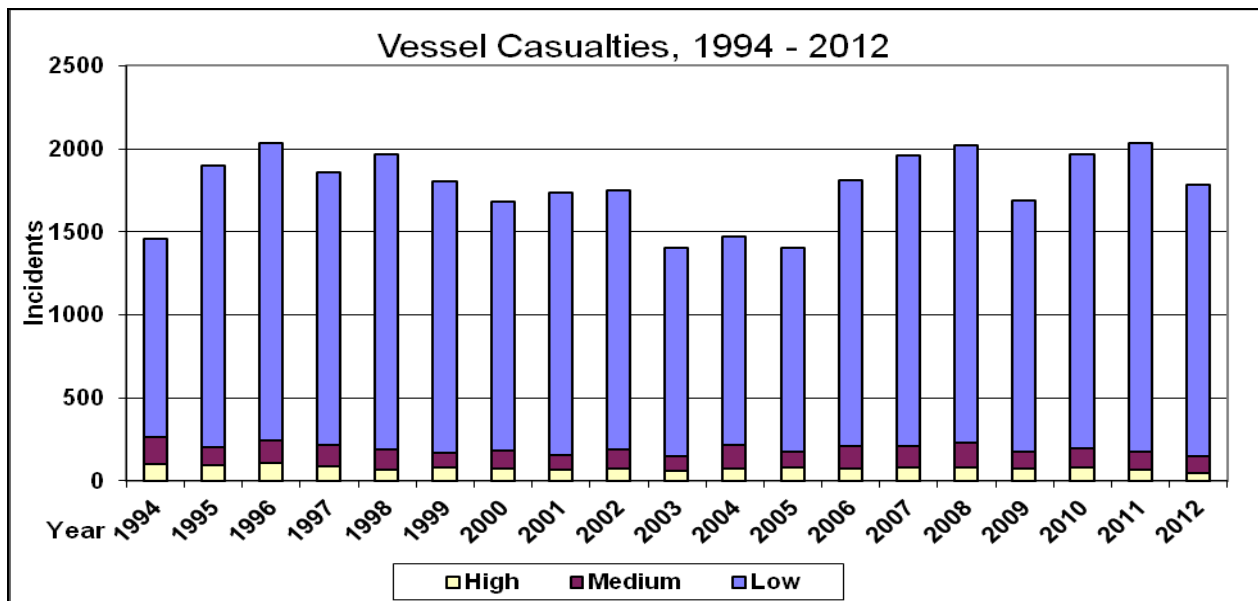
Even though the total annual amount spilled has doubled in the past year the amount spilled per million gallons carried is still in the range consistent with recent historic record low levels.

Vessel Incidents

Using a scale that was previously approved by the Safety Partnership, all towing incidents are shown here, by severity. Towing incidents include all reportable casualties, per Coast Guard regulations, that involve any towing vessel or barge. Each incident is counted only once, regardless of the number of vessels involved.

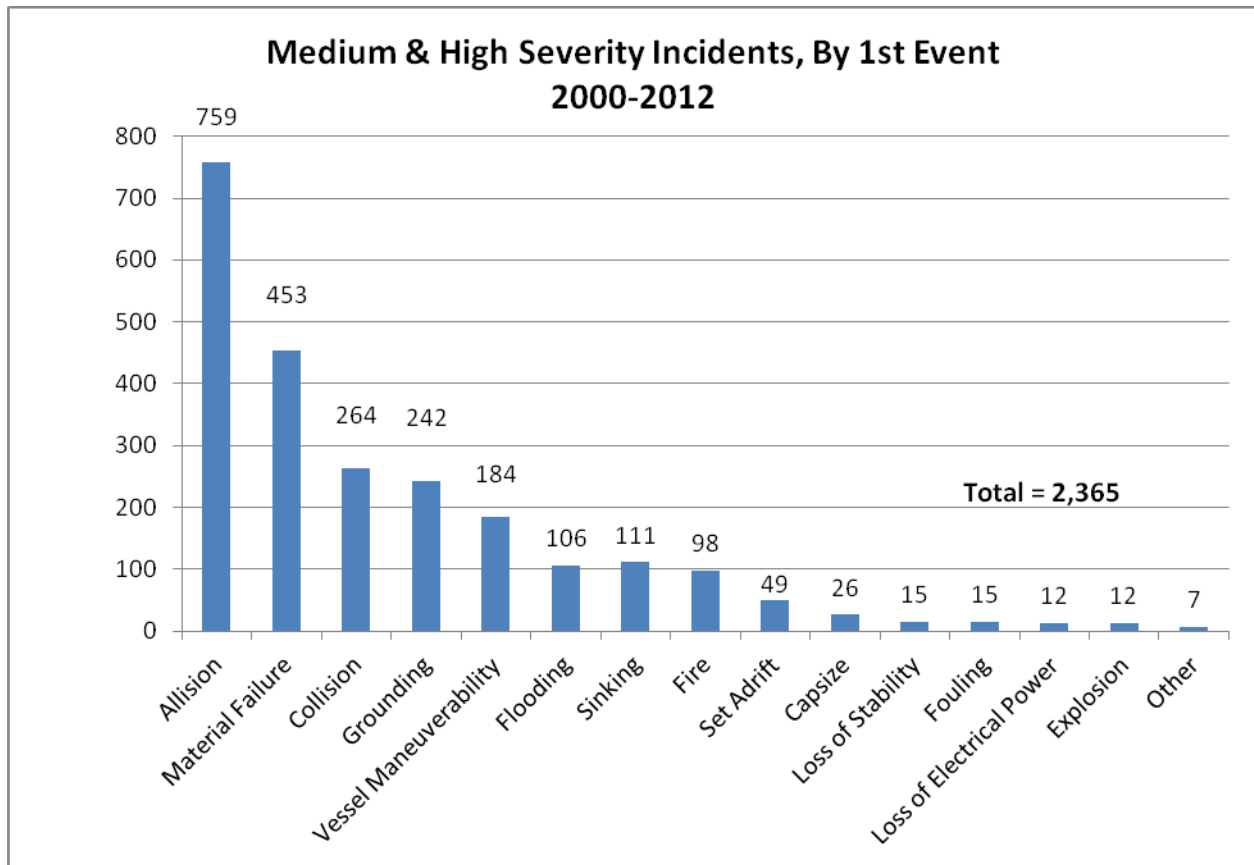
The data shows that, throughout the history of the Safety Partnership, most casualties remain to be of the low severity type (~89%). Medium and high severity incidents remain at 7% and 4% of all incidents, respectively. The severity scale description is provided at the end of this report.

Chart 6: Vessel Incidents, By Severity



For the last 13 years ending in 2012, the chart below shows the medium and high severity incidents, by the first reported event.³ Almost one-third (32%) of all medium & high severity incidents began with an allision.

Chart 7



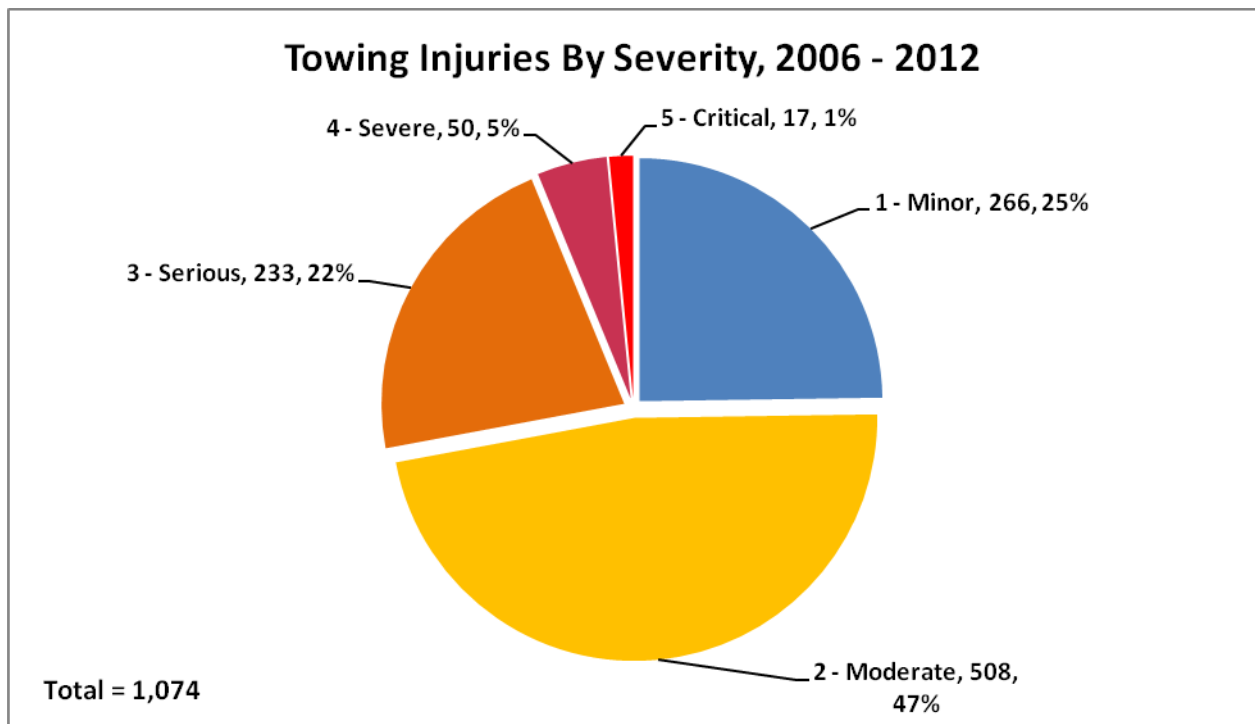
³ The Coast Guard's information system is designed to document marine casualties as a series of events, with corresponding locations, involved vessels and other details.

Crew Member Injuries

In mid-2005, the Coast Guard began collecting injury severity indicators with personnel casualty investigations. This new information will allow better analysis of injury data, because the more serious incidents can be identified and examined separately. A description of the injury severity scale is provided at the end of this report.

Chart 8 summarizes crew member injuries by severity, for calendar years 2006 – 2012. The data shows that most injuries (72%) were minor or moderate in severity, requiring limited amounts of medical treatment.

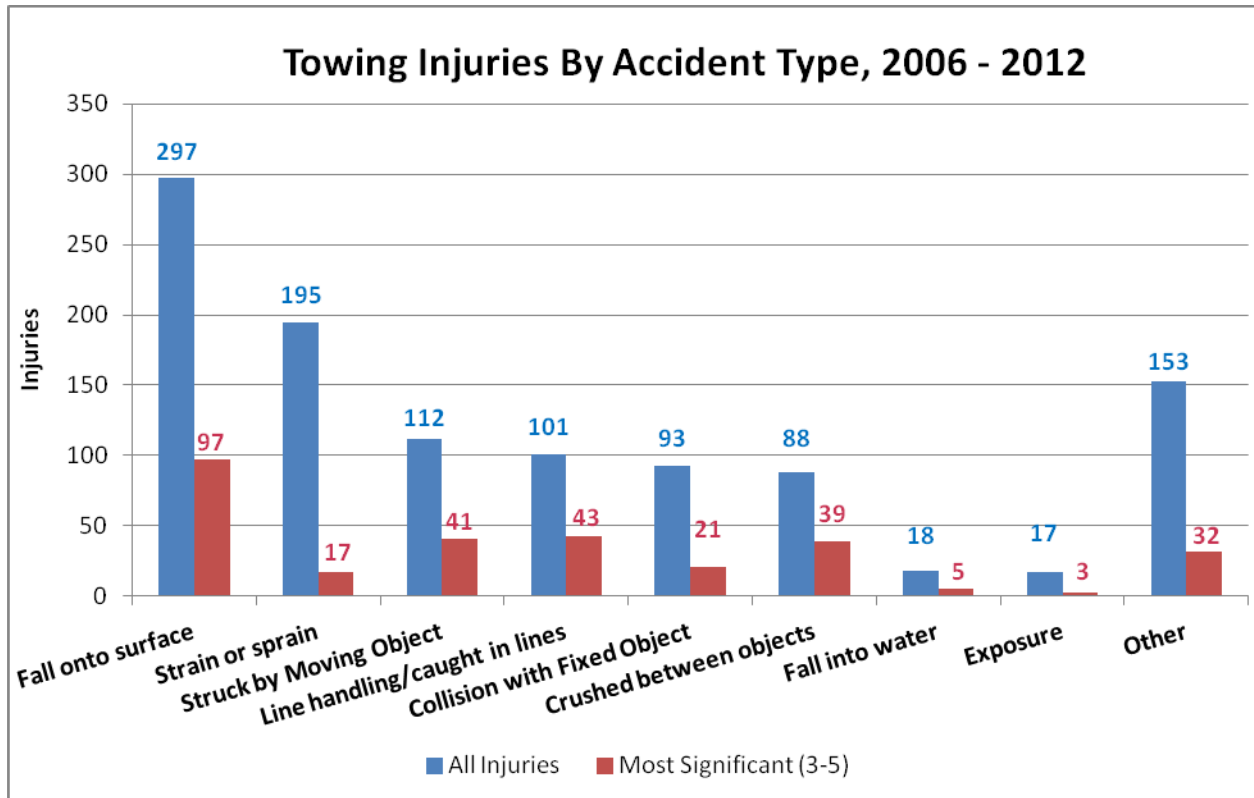
Chart 8



Injury data may also be grouped by type of accident. Four accident types appear to account for most of the higher severity injuries:

- Fall onto surface,
- Struck by moving object,
- Line handling/caught in lines, and
- Crushed between objects.

Chart 9



- 1 Minor - Injury is minor or superficial. No professional medical treatment was required.
- 2 Moderate - The Injury exceeds the minor level, but did not result in broken bones (other than fingers, toes or nose), loss of limbs, severe hemorrhaging, muscle , nerve, tendon or internal organ damage. Professional medical treatment may have been required. If so, the person was not hospitalized for more than 48 hours within 5 days of the injury.
- 3 Serious - The injury exceeds the moderate level and requires significant medical/surgical management. The person was not hospitalized for more than 48 hours within 5 days of the injury.
- 4 Severe - The injury exceeds the moderate level and requires significant medical/surgical management. The person was hospitalized for more than 48 hours within 5 days of the injury and, if in intensive care, was in for less than 48 hours.
- 5 Critical - The injury exceeds the moderate level and requires significant medical/surgical management. The person was hospitalized and in intensive care for more than 48 hours within 5 days of the injury.

AWO Safety Partnership Severity Classes for Vessel Casualties

Incident Severity	Description
Low	Damage: \$0 - \$50,000 or not reported No injuries or deaths Pollution: 0 - 10 gallons of oil spilled CG Casualty Class: None/Routine
Medium	Damage: \$50,001-\$250,000 No injuries or deaths Pollution: 11-1000 gallons of oil spilled CG Casualty Class: "Significant"
High	Damage: \$250,001 or more ANY injuries or deaths Pollution: 1,001 or more gallons spilled Casualty Class "Serious" or "Major"

USCG Injury Severity Scale

Injury Severity Scale Description and Examples ✕

Minor The injury is minor or superficial. No professional medical treatment was required.

Examples: Minor/superficial scrapes (abrasions); minor bruises; minor cuts; digit sprain; first degree burn; minor head trauma with headache or dizziness; minor sprain/strain

Moderate The injury exceeds the minor level, but did not result in broken bones (other than fingers, toes or nose), loss of limbs, severe hemorrhaging, muscle, nerve, tendon or internal organ damage. Professional medical treatment may have been required. If so, the person was not hospitalized for more than 48 hours within 5 days of the injury.

Examples: Broken fingers, toes or nose; amputated fingers or toes; degloving of fingers or toes; dislocated joint; severe sprain/strain; second/third degree burns covering 10% or less of body (if face included, move up one category); herniated disc

Serious The injury exceeds the moderate level and requires significant medical/surgical management. The person was not hospitalized for more than 48 hours within 5 days of the injury.

Examples: Broken bones (other than fingers, toes, or nose); partial loss of limb (amputation below elbow/knee); degloving of entire hand/arm or foot/leg; second/third degree burns covering 20-30% of body (if face included, move up one category); bruised organs

Severe The injury exceeds the moderate level and requires significant medical/surgical management. The person was hospitalized for more than 48 hours within 5 days of the injury and, if in intensive care, was in for less than 48 hours.

Examples: Internal hemorrhage; punctured organs; severed blood vessels; second/third degree burns covering 30-40% of body (if face included, move up one category); loss of entire limb (amputation of whole arm/leg)

Critical The injury exceeds the moderate level and requires significant medical/surgical management. The person was hospitalized and in intensive care for more than 48 hours within 5 days of the injury.

Examples: Spinal cord injury; extensive second- or third-degree burns; concussion with severe neurological signs; severe crushing injury; internal hemorrhage; second/third degree burns covering 40% or more of body; severe/multiple organ damage