

The image features the OSHA logo prominently in the center. The logo consists of a stylized 'O' with a blue and grey circular design inside, followed by the letters 'S', 'H', and 'A' in a white, serif font with a slight shadow effect. The background is a close-up, slightly blurred view of the stars and stripes of the United States flag, with the stars in the upper left and the stripes extending across the rest of the frame.

OSHA

adds value to business,
work and life.

OSHA

Commercial Diving Fatalities

1989-2007

Stephen Sea Butler

Director, Office of Maritime Enforcement

Underwater Intervention 2008

New Orleans, Louisiana – January 28-31, 2008

Commercial Diving Fatalities 1989-2007

Overview – Industry Sectors

Type Diving	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07
Oil Field/Offshore:	1	1	2	2	2	0	0	2	0	1	0	0	0	0	1	0	0	0	0
Harbor/Inland/Ship:	8	8	3	14	9	2	5	3	10	2	1	4	0	2	0	1	2	1	7
Marine Harvesting:	5	6	6	3	7	4	3	6	1	1	0	1	0	0	1	0	0	0	0
Gov't,Non-Military:	1	0	0	1	0	1	0	0	3	0	1	0	0	2	0	1	0	0	0
Recreational Inst':	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0
TOTALS PER YEAR:	15	16	11	20	20	7	8	11	14	4	2	5	0	4	2	2	3	1	7

Commercial Diving Fatalities 1989-2007

5-Year Averages

<u>5-Year Period</u>	<u>Fatalities/Year</u>
• Years 1989-1993 =	16.4
• Years 1990-1994 =	14.8
• Years 1991-1995 =	13.2
• Years 1992-1996 =	13.2
• Years 1993-1997 =	12.0
• Years 1994-1998 =	8.8
• Years 1995-1999 =	7.8
• Years 1996-2000 =	7.2
• Years 1997-2001 =	5.0
• Years 1998-2002 =	3.0
• Years 1999-2003 =	2.6
• Years 2000-2004 =	2.6
• Years 2001-2005 =	2.2
• Years 2002-2006 =	2.4
• Years 2003-2007 =	3.0 {7 Fatalities in 2007}

Commercial Diving Fatalities 1989-2007

Type of Diving Mode

- SCUBA.....81
- Hookah.....20
- Surface-Supplied...51
- TOTAL.....152

Commercial Diving Fatalities 1989-2007

Overview – Contributing Factors Involved

<u>Contributing Factor</u>	<u>All Dvs</u>	<u>No SH</u>	<u>SSDS</u>
• Two-Man Team.....	85/152	34/89	5/44
• Equipment.....	87/152	48/89	19/44
• Training Deficiencies.....	99/152	55/89	20/44
• Differential Pressure.....	27/152	26/89	15/44
• Entanglement.....	19/152	13/89	9/44
• Entrapment.....	11/152	11/89	3/44
• AGE.....	9/152	3/89	1/44
• Explosion.....	4/152	4/89	4/44
• Decompression Sickness....	3/152	2/89	1/44

Commercial Diving Fatalities 1989-2007

Year 2000

- Hydro-Electric Plant: Delta-P (SSDS)
- Sea Harvest Diver: AGE (SSDS)
- Concrete Piling Cleaning: Entanglement (SSDS)
- Pier Repair: Ran Out of Air (Scuba)
- Siphon Debris Removal: Delta-P (Scuba)

Commercial Diving Fatalities 1989-2007

Year 2001

No Commercial Diving Fatalities

Commercial Diving Fatalities 1989-2007

Year 2002

- Reservoir Drain Pipe: Entrapment (Scuba)
- Vessel Sand & Silt Removal: Entrapment (SSDS)
- Free Electrical Cable: Entanglement (Scuba)
- Fire Department Training: Entanglement (Scuba)
- Dam Cofferdam Repair: Delta-P (SSDS)
- Golf Ball Retrieval: Entanglement (Scuba)

Commercial Diving Fatalities 1989-2007

Year 2003

- Gas Line Repair: Explosion (SSDS)
- Sea Harvesting-Mussels: Drowning (Hookah)

Commercial Diving Fatalities 1989-2007

Year 2004

- Recovery Operations: Delta-P (Scuba)
- Clean Lake Aerator: Entanglement (Scuba)

Commercial Diving Fatalities 1989-2007

Year 2005

- Diving Instructor: AGE (Scuba)
- Jack-Up Boat Dive Ops: Entanglement (SSDS)
- Hydro-Electric Dam: Delta-P (SSDS)

Commercial Diving Fatalities 1989-2007

Year 2006

- Lake Dam Outlet Tower: Delta-P (Scuba)

Commercial Diving Fatalities 1989-2007

Year 2007

- Trash Rack Inspection (2 FATs): Delta-P (Scuba)
- Anchor Pile Driving: Entrapment/Crushed (SSDS)
- Working Under Barge: Helmet Flooded (SSDS)
- Install Survey Equipment: Ran Out of Air (Scuba)
- Pipe Penetration: Equipment, Lost Hat (SSDS)
- Retrieve Scientific Equipment: AGE (Scuba)

Commercial Diving Fatalities 1989-2007

Closing Summary

- Two-Man Diving Teams: 85/152 Fatalities (56%)
 - Adherence to the minimum requirement of a 3-Man Team is critical to safe diving practice
- Scuba Equipment: 81/152 Fatalities (53%) {14/26 since 2000}
 - Not for most commercial diving; limited air supply
- Hookah Equipment: 20/152 Fatalities (13%)
 - This equipment is not in compliance with Federal Rules

Commercial Diving Fatalities 1989-2007

Closing Summary

- Equipment: Scuba regulator malfunction, Scuba Air Runs Out, Compressor Air (CO), In-Water Helmet Detachment, Helmet Non-Return Valve Missing or Malfunctioning, Selection of Improper Diving Mode, Keep Umbilical Out of Suctions
- Training: Data shows that a weak area is recognition and avoidance of underwater hazards such as Delta-P, entrapment, entanglement; and response when such hazards are encountered

Commercial Diving Fatalities 1989-2007

Closing Summary

- Surface-Supplied Diving (excluding sea harvest diving w/SSDS):
 - Primary in-water hazards are Delta-P (15/44), Entanglement (9/44), Explosions (4/44), and Entrapment (3/44).
 - Primary equipment issues involve umbilical in suction/props, helmet disconnecting, masks blown off when jetting, helmet flooding and compressor CO

Commercial Diving Fatalities 1989-2007

QUESTIONS????????????????

Dive Safe

.....Every Job

.....Every Day

.....Every Dive

The background of the image is a close-up, slightly blurred view of the American flag, showing the stars and stripes. The OSHA logo is centered in the upper half of the image. The letter 'O' is a large, stylized circle with a blue outer ring and a grey inner ring. The letters 'S', 'H', and 'A' are white with a 3D effect and a drop shadow. The text 'OSHA' is in a large, bold, serif font.

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