CHARGE TO THE WORKSHOP
DELIVERING ON THE PROMISE IN THE LAST FRONTIER

By CAPT Richard A. Lemen, USPHS

Dr. Peter M. Nakamura: The last speaker of this first session is Captain Lemen of the United States Public Health Service who will give the *Charge*. Richard A. Lemen, Ph.D., is the Deputy Director for the National Institute for Occupational Safety and Health (NIOSH) in Atlanta, Georgia, and has been since August 1991. He is a Captain on active duty with the United States Public Health Service where he has served for 22 years. Prior to that Captain Lemen was on active duty with the U.S. Army for 2 years. Prior to his current assignment, Dr. Lemen served as Assistant Director, NIOSH, Washington, D.C., from October 1988 to August 1991. He was Director of the Division of Standards Development and Technology Transfer from June 1980 to September 1988 and has served NIOSH in a variety of management positions including Assistant Chief, Industrywide Studies Branch in the Division of Surveillance, Hazard Evaluations and Field Studies, and Chief of the Biometry Section and Branch in the Field Studies Division. He is a recipient of two USPHS Commissioned Officer Commendation Medals, the USPHS Distinguished Service Medal, and the U.S. Army's Commendation Medal for Meritorious Service in addition to various service ribbons. He is the author of many scientific publications including joint editorship of the book, *Dust and Disease*. He received his B.A. from Central Methodist College where he was named a Distinguished Alumnus in 1987. He has an M.S. in epidemiology from the University of Missouri and a Ph.D. in Epidemiology from the University of Cincinnati. CAPT Richard Lemen:

Ladies and Gentlemen, let me add my welcome to that of Dr. Bender's and Senator Stevens'. It is with great pleasure that I am here in the Nation's Last Frontier, and I wish to pass along from Rear Admiral J. Donald Millar, the Director of NIOSH and my boss, his regrets for being unable to attend this workshop. He was in Anchorage last year for the opening of the NIOSH Alaska Activity and enjoyed every minute of his stay.

It struck me upon my arrival in Anchorage that Captain James Cook was here 214 years ago exploring the coast line of Alaska and the Bering Sea in his search for the Northwest Passage. With his sailing vessels, *Resolution* and *Discovery*, he entered the inlet that was named after him, Cooks Inlet, in 1778.

Captain Cook's legacy offers a solid foundation for me in giving the charge at this workshop. Not only was he a pioneer in Alaska, he also maintained a concern for the health of his men at sea. Foremost among these were his successes in preventing the dread of seafarers of that day, the disease scurvy.[1] In the spirit of the concern for the health of these workers at sea, we are convened to consider the disease and injury problems faced by Alaska's seafarers of today, the commercial fisher.

In giving you the charge to this workshop, our interest in the long run is in the problems of both diseases and injuries as they relate to work in the fishing industry; and our concern extends well beyond Alaskan waters to the protection of all Americans who make their living from fishing. Moreover, what we do in the United States is of vital interest to preventive

efforts internationally. We are here to discuss these problems and learn more about how we can work together to prevent them.

Our purpose at this workshop is to increase the awareness about fishing safety, build coalitions, share information and experiences, and encourage action to prevent injury and disease that result from working in commercial fishing.

DISEASES AND INJURIES

The recognition that fishing can have health consequences is not new. Bernardino Ramazzini, a physician of Italy and the "Father of Occupational Medicine," wrote in 1700:

"The clothes of fishers are always wet through, hence they are exposed to diseases that arise from obstruction of transpiration; such as acute fevers, chest troubles, pleurisy, pneumonia, coughs, dyspnoea, and similar diseases. It is a known fact that fishers are sometimes attacked with torpor and numbness of the arms and feet..."

He also wrote that...

"when a doctor happens to have some fisher entrusted to his care, let him carefully consider that theirs is a very toilsome and exacting calling; that the man (or woman) has to endure the cruel buffets of the winds, freezing cold in winter...for fishers the night is usually spent in toil and sleepless."

The history of diseases and injuries faced by seafarers is replete with examples of a variety of health problems. Among these are problems not only with drowning and hyperthermia, as are so evident in Alaskan waters, but with diet — such as with scurvy, dehydration for lack of drinking water, lead colic from water drawn from leaded pipes, asphyxiation in bilge rooms where poisonous gases collected, burns, infectious diseases such as the plague, and seasickness.[2] The study of diseases among workers in the commercial fishing industry is increasing, as is demonstrated by investigations into the causes of lung diseases among crab workers.

Crab Workers' Bronchitis

Just last year, 1,000 crab processing workers in Alaska reported to the emergency room at Dutch Harbor with respiratory symptoms. This 1,000 are out of a total work force of 2,500 on processing ships, two out every five workers.[3]

At a seminar on September 2, 1992, at our facility in West Virginia, Dr. Dorsett Smith of the University of Washington presented the results of his investigation on behalf of an insurance carrier. He examined 41 crab processing workers, 33 male and 8 female, who gave up their 3 months of contract earnings because they were sick with bronchitis and a wrenching cough.

> ...we are serving at the vanguard for developing programs to demonstrate to the rest of the nation and the world how prevention can work to save life and limb.

His work indicates an association of an unusual lung disease with the butchering of crab and with the steam from crab boiling operations aboard crab processing vessels. A possible association was found with the crab's mouth foam, which it exudes during the "butching" operation. This foam contains a toxin that will burn the skin when used in a skin patch test. Much remains to be learned beyond

Dr. Smith's findings about this new organic lung disease.

Many crab harvest workers also work as crab processors. This problem may be shared on vessels other than just the large processing ships.

Other Diseases and Injuries

Many other problems of occupational safety and health among fish harvesters and processors bear attention. These include musculoskeletal injuries, noise-induced hearing loss, neurotoxic disorders, and stress. I will discuss some general studies of the health problems among fishers.

In 1988, Stanislaw Tomaszunas, et. al., published a paper[4] that examined morbidity among fishers. The population of fishers and seafarers included 1,131 from the North Pacific; 1,253 from the South West Atlantic; and 84 from the South East Atlantic. The five leading diseases per 1,000 fishers per year diagnosed in this study follow:

Disease	Incidence
Injuries	**545**
Respiratory diseases, acute infections	**537**
Skin, other than infections	**209**
Oral cavity diseases	**201**
Musculoskeletal diseases	**181**

The same study found the following leading causes of incapacity and sick absence by number of work days lost per 1,000 fishers per year:

Disease	Number
Injuries	**619**
Diseases of nerves and ganglia	**116**
Musculoskeletal diseases	**102**
Diseases of stomach, duodenum	**98**
Appendicitis	**94**

A 7-country study concluded for the years 1954 to 1979 that 70 percent of all diseases and injuries were attributable to the following four causes:[5]

Disease	Percent
Injuries	**33.5**
Digestive diseases	**15.7**
Respiratory diseases	**11.2**
Musculoskeletal disorders	**8.9**

What one sees in all of these results is that injuries are at the top of the list. For our consideration at this workshop the injury problem among the fisher population is the most compelling.

THE INJURY PROBLEM

Our data support not only that injuries are a compelling problem, but that we must look in Alaska first for some solutions. Our data for the years 1980 to 1988 show Alaska's occupational fatality rate of 33.1 per 100,000 is the highest among states and more than 4½ times the U.S. rate of 7.2. The major industrial division with the highest fatality rates in Alaska is agriculture, forestry, and fishing at a rate of 132.2 per 100,000, by far the highest in the nation. This high rate is attributable to the activity of commercial fishing.

We will hear more detail about this high rate in Alaska later in this workshop. We will also hear about ways to set priorities for research and control through surveillance, and of research needs in associating cause with affect and in developing and demonstrating better controls, and of ways to control the problem.

We are dealing with a specific population at risk, the American fisher. Our interventions to control injuries that they experience must include a balance of promoting health and safety through training and education, of protecting health and safety through engineering controls

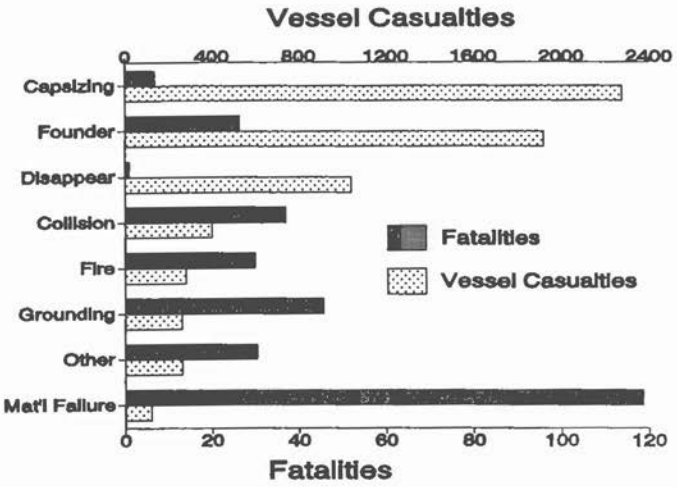

Figure 1. Number of Vessel Casualties Ranked Against Vessel-Related Fatalities by Nature of Casualty.

—Source: National Research Council

and different technology, and of preventive health services that range from forecasting weather to prompt rescue and resuscitation.

In understanding the problem, we must use care in associating the injury problem with the appropriate causes. Figure 1, when contrasted with Figure 2, illustrates the difference in ranking of problems by the measure selected. Grounding, Material Failure, and Fire and Explosion rank the highest in frequency as associated with vessel casualty. Conversely, capsizing, foundering, and disappearance rank the highest as associated with the frequency of fatalities related to casualties of commercial fishing vessels.[6]

THE ARCTIC DIMENSION

The extreme climate in Alaskan waters points to some likely international partners in our efforts. The countries that are located in or fish in circumpolar waters experience many common hazards of extreme cold, wind, rough waves, and darkness; and the common problems of sickness and injury. What we can do to prevent these problems may be learned

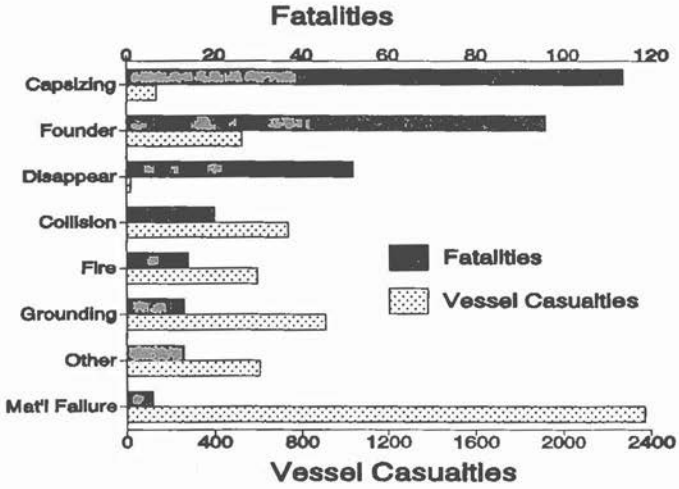

Figure 2. Number of Vessel-Related Fatalities Ranked Against Vessel Casualties by Nature of Casualty.

—Source: National Research Council

from other circumpolar countries or through joint efforts.

THE CHARGE

Our interest is in both diseases and injuries, and we are here to explore programs that will not only serve Alaskans but other Americans who fish in Alaskan waters. We are serving at the vanguard for developing programs to demonstrate to the rest of the nation and the world how prevention can work to save life and limb.

I want to offer a depiction of a tool that can help us find causes of the problems that we try to prevent. Figure 3 shows a cause-effect diagram that can help to bring together the many risk factors that may be associated with the problems, and thus, its solution. It demonstrates well the many factors that must be considered in prevention.

I charge you to share your knowledge and experience toward preventing the unnecessary toll of death and injury, and of illness among workers in the fishing industry. We must "Deliver on the Promise" from the Occupational Safety and Health Act "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and preserve our human resources." And since 1982, the Nation includes our 200 nautical mile Extended Economic Zone, which is truly our Last Frontier.

To share what we discuss here, we will print the proceedings (of this historic event) as a reference document for us and for others.

With the spirit of Captain James Cook searching for the Northwest Passage, I challenge you to go forth with the vision of "Delivering on the Promise" in this, our Last Frontier. But unlike Captain Cook, let us deliver on that promise and preserve our human resources in the fishing industry!□

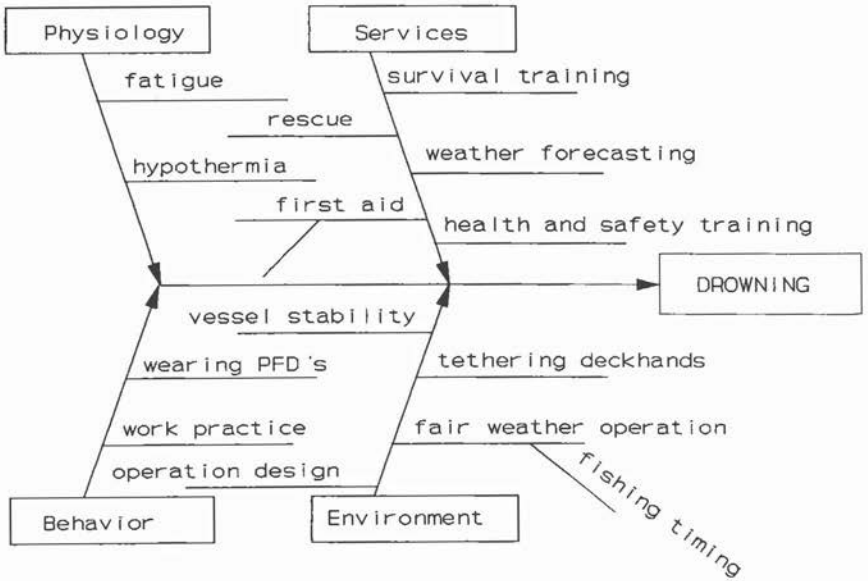

Figure 3. A Cause-Effect Diagram Related to the Problem of Fishers Drowning in Alaskan Waters.

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