



Health of Marine Inspectors and Marine Investigators

Report to Congress
July 10, 2025



U.S. Coast Guard

Foreword

July 10, 2025

I am pleased to present the following report, “Health of Marine Inspectors and Marine Investigators,” as prepared by the U.S. Coast Guard.

The Don Young Coast Guard Authorization Act of 2022 directs the submission of a study on the health of Marine Inspectors and Marine Investigators who have served as such Inspectors or Investigators for a period of not less than 10 years.

Pursuant to Congressional requirements, this report is provided to the following members of Congress:

The Honorable Ted Cruz
Chairman, Senate Committee on Commerce, Science, and Transportation

The Honorable Maria Cantwell
Ranking Member, Senate Committee on Commerce, Science, and Transportation

The Honorable Sam Graves
Chairman, House Committee on Transportation and Infrastructure

The Honorable Rick Larsen
Ranking Member, House Committee on Transportation and Infrastructure.

Please direct report inquiries to my Senate Liaison Office at (202) 224-2913 or House Liaison Office at (202) 225-4775.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Kevin E. Lunday', with a stylized flourish at the end.

Kevin E. Lunday
Admiral, U.S. Coast Guard
Acting Commandant





Health of Marine Inspectors and Marine Investigators

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I. Legislative Language

This report responds to the language set forth in Section 11237 of the Don Young Coast Guard Authorization Act of 2022 (Pub. L. No. 117-263), which reads:

SEC. 11237. CAREER INCENTIVE PAY FOR MARINE INSPECTORS.

(c) STUDY.—

(1) **IN GENERAL.**—Not later than 2 years after the date of enactment of this Act, the Secretary, in coordination with the Director of the National Institute for Occupational Safety and Health, shall conduct a study on the health of marine inspectors and marine investigators who have served as such inspectors or investigators for a period of not less than 10 years.

(2) **ELEMENTS.**—The study required under paragraph (1) shall include the following:

(A) An evaluation of—

(i) the daily vessel inspection duties of marine inspectors and marine investigators, including the examination of internal cargo tanks and voids and new construction activities.

(ii) major incidents to which marine inspectors and marine investigators have had to respond, and any other significant incident, such as a vessel casualty, that has resulted in the exposure of marine inspectors and marine investigators to hazardous chemicals or substances; and

(iii) the types of hazardous chemicals or substances to which marine inspectors and marine investigators have been exposed relative to the effects such chemicals or substances have had on marine inspectors and marine investigators.

(B) A review and analysis of the current Coast Guard health and safety monitoring systems, and recommendations for improving such systems, specifically with respect to the exposure of members of the Coast Guard to hazardous substances while carrying out inspections and investigation duties.

(C) Any other element the Secretary considers appropriate.

(3) **REPORT.**—Upon completion of the study required under paragraph (1), the Secretary shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report on the findings of the study and recommendations for actions the Commandant should take to improve the health and exposure of marine inspectors and marine investigators.

II. Background

The Coast Guard is responsible for ensuring the safety and security of commercial vessels and their crew in addition to the Marine Transportation System in which they operate. More than 700 Marine Inspectors and nearly 200 Investigating Officers are stationed at Coast Guard units across the United States, the Far East, and Europe to prevent maritime accidents and casualties.

Coast Guard Marine Inspectors are responsible for inspecting vessels for compliance with applicable laws and regulations. Many different types and sizes of vessels require inspection and/or examination by a Coast Guard Marine Inspectors, including U.S. registered passenger vessels, cargo vessels, barges carrying hazardous cargo, towing vessels, mobile offshore-drilling units, and foreign vessels that call in U.S. ports. Inspection rules vary for each type of vessel and area of operation, and inspectors must meet specific qualification standards for each vessel category and operational area before conducting inspection activities. In general, a vessel inspection consists of examining the hull structure and decks, boilers, engine room machinery, lifesaving equipment, fire apparatus, steering apparatus, and more. Typically, Marine Inspectors perform inspections on vessels during initial construction and at least annually thereafter, though there may be periodic inspections due to a casualty, repair, or other event.

The primary duty of Investigating Officers is to determine the cause or causes of a marine casualty or accident to determine what, if any, measures should be taken to avoid future incidents. A “marine casualty or accident” is any casualty or accident involving a U.S. vessel other than a public vessel, including but not limited to injury, loss of life, grounding, flooding, collision, and explosions. Investigating Officers gather evidence, interview those involved in the incident, and then prepare an in-depth report containing a detailed description of the incident along with recommendations and suggested solutions to prevent further occurrences. During the initial response to a marine accident or casualty investigation, Investigating Officers frequently respond to the scene of the incident to gather evidence, photograph the scene, and interview witnesses. This involves attending vessels directly following fires, groundings, collisions, pollution incidents, and other forms of accidents.

Coast Guard Marine Inspectors and Investigating Officers can be exposed to hazards while executing their duties. The specific activity determines the potential exposure that could occur. In addition, the duty station itself may factor into the potential for exposure based on the type of vessels that transit or operations that occur within that area. Marine Inspectors with the greatest probability of exposure are usually those with a lower military rank, due to the nature of their responsibilities.

During the mid-1980s, the Coast Guard implemented a personal protective equipment program that required wearing respirators with organic vapor cartridges while inspecting tanks that had previous cargos of benzene. The Occupational Medical Monitoring Program was launched in the early 1980s to evaluate occupational exposures and surveillance for persons working in high-risk environments with hazards such as asbestos, benzene, and lead. The program expanded to include additional hazards over time, becoming the Occupational Medical Surveillance and Evaluation Program in use today.

The current Coast Guard training programs include a basic level of chemical hazard recognition to assist Marine Inspectors and Investigating Officers with identification and protection from chemical hazards within the operational environment. Marine Inspector and Investigating Officer hazardous exposures may include physical, biological, chemical, and radiological. Chemical exposures of most significant concern include acrylonitrile, benzene, carbon tetrachloride, ethylene dibromide, ethylene dichloride, gasoline, styrene, toluene diisocyanate, tetrachloroethylene, trichloroethylene, vinyl chloride, chlorinated hydrocarbons, diesel exhaust, and welding fumes.

III. Evaluation of Hazards to Marine Inspectors and Investigators

The National Institute for Occupational Safety and Health conducted a study in 2024 that found Marine Inspectors and Investigating Officers have the potential to be exposed to various occupational hazards, including acute and chronic hazards. The most frequently cited perceived potential exposures included carbon monoxide exhaust and fumes, asbestos, unknown contents of containers or cargo, benzene, low oxygen, and petroleum/oil. The study also found that Marine Inspectors and Investigating Officers have concerns about the potential long-term effects of exposure at work and exposure to hazardous chemicals.

The report recommends that the Coast Guard:

1. Conduct a baseline exposure assessment for benzene, heavy metals, dusts, welding fumes, and any other chemical hazards as recommended by Marine Safety;
2. Provide all Marine Inspectors and Investigating Officers with their individual exposure monitoring results, an interpretation of what the results mean, and any medical follow-up if necessary;
3. Complete additional Job Hazard Analyses for all potential inspection types and focus on potential exposures;
4. Develop standardized Marine Inspectors and Investigating Officers training based on the hazards and controls identified in the Job Hazard Analyses;
5. Include in Marine Inspectors and Investigating Officers training an in-depth discussion regarding the limitations of the 4-gas meter and radiation pagers;
6. Explore Marine Inspectors and Investigating Officers concerns about potential exposures and views of risk perception and safety at work on a larger scale; and
7. Work with an expert in occupational health psychology to explore and mitigate various psychosocial factors in the workplace.

However, the study had several limitations, including:

1. The evaluation occurred at one Coast Guard field unit, with a relatively small number of Marine Inspectors and IOs compared to the more than 900 Marine Inspectors and Investigating Officers across the United States;
2. The study did not evaluate all types of inspections, nor did it observe Marine Inspectors and Investigating Officers in other regions who may experience additional hazards;
3. The study was unable to observe an Investigating Officer conduct an investigation, limiting its ability to assess exposures to Investigating Officers; and
4. The document review provided a limited overview of the potential hazards to Marine Inspectors and Investigating Officers, thus a more in-depth assessment is needed to fully identify all the potential exposures and protective measures.

Two previous studies were also conducted to evaluate the mortality among Coast Guard Marine Inspectors and non-Marine Inspectors.

The first study, “Mortality among United States Coast Guard Marine Inspectors,” published in 1989 in the Archives of Environmental Health, compared Marine Inspectors and non-Marine Inspectors for potential exposure to chemicals. The study suggested that contact with chemicals during inspection of vessels may be involved in the development of several diseases among Marine Inspectors. However, the study population was relatively small, and the specific chemical exposure could not be ascertained.

The second study, “Mortality Among United States Coast Guard Marine Inspectors: A Follow Up,” published in Military Medicine in 2009, provided follow-up with the cohort years later. The study included 1,767 Marine Inspectors and 1,914 non-Marine Inspectors. An overall comparison of the mortality experience of Marine Inspectors with other Coast Guard Officers uncovered excess mortality among inspectors from cancers of the colon, liver, skin, and lymphatic and hematopoietic (leukemia), though these findings were not statistically significant. The findings do, however, raise concern of the potential relatedness to organic solvents and other chemicals to which they were exposed to during their daily routine. These results imply that Marine Inspectors should take special care to limit exposure to chemicals during inspections.

Additional Analysis and Recommendations

The Coast Guard’s occupational medicine program only consists of a central Chief of Occupational Medicine with no specifically tasked clinic or regional occupational health oversight. Occupational Medical Surveillance and Evaluation Program is constrained by limited resources to include appropriate data systems for recording exposures and integrating the information seamlessly into the Military Health System Genesis electronic health record for active-duty members. Since Occupational Medical Surveillance and Evaluation Program is separated from the medical record, members are required to submit records of exposures for upload, and Coast Guard medical officers are to conduct an appropriate monitoring plan. It is recommended that additional resources are provided to implement an integrated program, purchase integrated data systems, hire personnel for program oversight, invest in training of all healthcare professionals on such systems, and monitor actions for exposed personnel.

With only one Chief of Occupational Medicine physician in the Coast Guard, there is an operational disconnect between exposure reporting and adequate oversight and monitoring. Unlike other military services, there is no specific medical readiness, public health, or occupational medicine section for members to report for follow-up. All follow-up is conducted at the limited Coast Guard clinics, military medical treatment facilities, or the TRICARE network. This presents a risk of loss of appropriate follow-up unless the member specifically reports and submits records of known exposures.

Another challenge is that some Marine Inspectors and Investigating Officers are government civilians who receive health care external to the Coast Guard. Furthermore, some military members seek healthcare from changing and geographically separated providers in the TRICARE network, making monitoring and evaluating exposures difficult over the long term. Implementing a robust system to include centralized and decentralized reporting tools would provide comprehensive assessments of all workers exposed to hazards including Marine Inspectors and Investigating

Officers, whether active-duty or civilian. Investment in systems, human resources, and training would provide the benefits needed to ensure Marine Inspectors and Investigating Officers are monitored, evaluated, and treated appropriately.

Coast Guard members face a wide range of occupational hazards and tailoring an Occupational Medical Surveillance and Evaluation Program to address all these hazards is complex. In addition, Marine Inspectors and Investigating Officers are potentially exposed to inconsistent and variable exposures that may be difficult to quantitatively evaluate with traditional industrial hygiene air monitoring and other sampling methods. Consideration should be given to use of advanced exposure science and sampling techniques (e.g., wearables) in addition to qualitative and semiquantitative evaluations. The introduction of commercial vessel alternative fuels, such as ammonia, hydrogen, and methanol, further exacerbates these concerns. These fuels present unique risks, including toxicity, flammability, and unknown long-term health effects. Additionally, the inherently dangerous work occurring in shipyards exposes Marine Inspectors to hazards adjacent to their work activities and outside their ability to control. Robust safety protocols and continuous health monitoring for Marine Inspectors and Investigating Officers remain important for understanding health risks over time.

IV. Conclusion

The work of Coast Guard Marine Inspectors and Investigating Officers involves a high potential for exposure to chemicals and other health hazards in their occupational environment. For this reason, the health of Coast Guard Marine Inspectors and Investigating Officers has been a subject of concern for several decades, with two studies over time to evaluate any excess morbidity or mortality among these individuals.

A robust Marine Inspector and Investigating Officer safety program can mitigate exposure hazards; however, the Coast Guard has not been consistently provided the funding and staffing required to ensure a safety program that sufficiently monitors and tracks exposures and trends. The health hazard assessment conducted by National Institute for Occupational Safety and Health recommended areas for improved training, equipment, and mitigation of hazards that the Coast Guard should work to improve.