Benefits of Using CEM

- Reduce shipboard safety risks
- Improve mariner health and well-being

CEM was developed to identify and control crew endurance risk factors in maritime work environments. These crew endurance risk factors are:

Insufficient daily sleep duration
Poor sleep quality
Fragmented sleep
Main sleep during the daytime
Changing work/rest schedule
Long work days
No opportunities to make up sleep
High workload
High work stress
Lack of control over work environment
Exposure to extreme environments
Poor diet
Little opportunity to exercise
High family stress
Isolation from family

Resources

The Coast Guard can provide assistance with CEM related questions or needs. Available are:

- Training
- Resources (e.g. CEM Guide, CEM tools suite)
- Implementation assistance
- Guidance

For more information contact us at

United States Coast Guard (CG-5211)
2100 2nd Street, SW
Washington, DC 20593-1726
Phone: 202-372-1354
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United States Coast Guard

Crew Endurance Management

Manage Crew Endurance Risk Factors
&
Protect Situational Awareness

Understanding CEM

In maritime operations, crewmembers face challenges that compromise their alertness and performance. Exposure to 24/7 operations, restricted sleep opportunities, and frequent sleep disruptions reduce their ability to avoid fatigue and maintain situational awareness. Crew Endurance Management (CEM) enables companies and crewmembers to manage the occurrence and effects of crew endurance risk factors that can lead to human error and performance degradation in maritime work environments.

What is the CEM System?

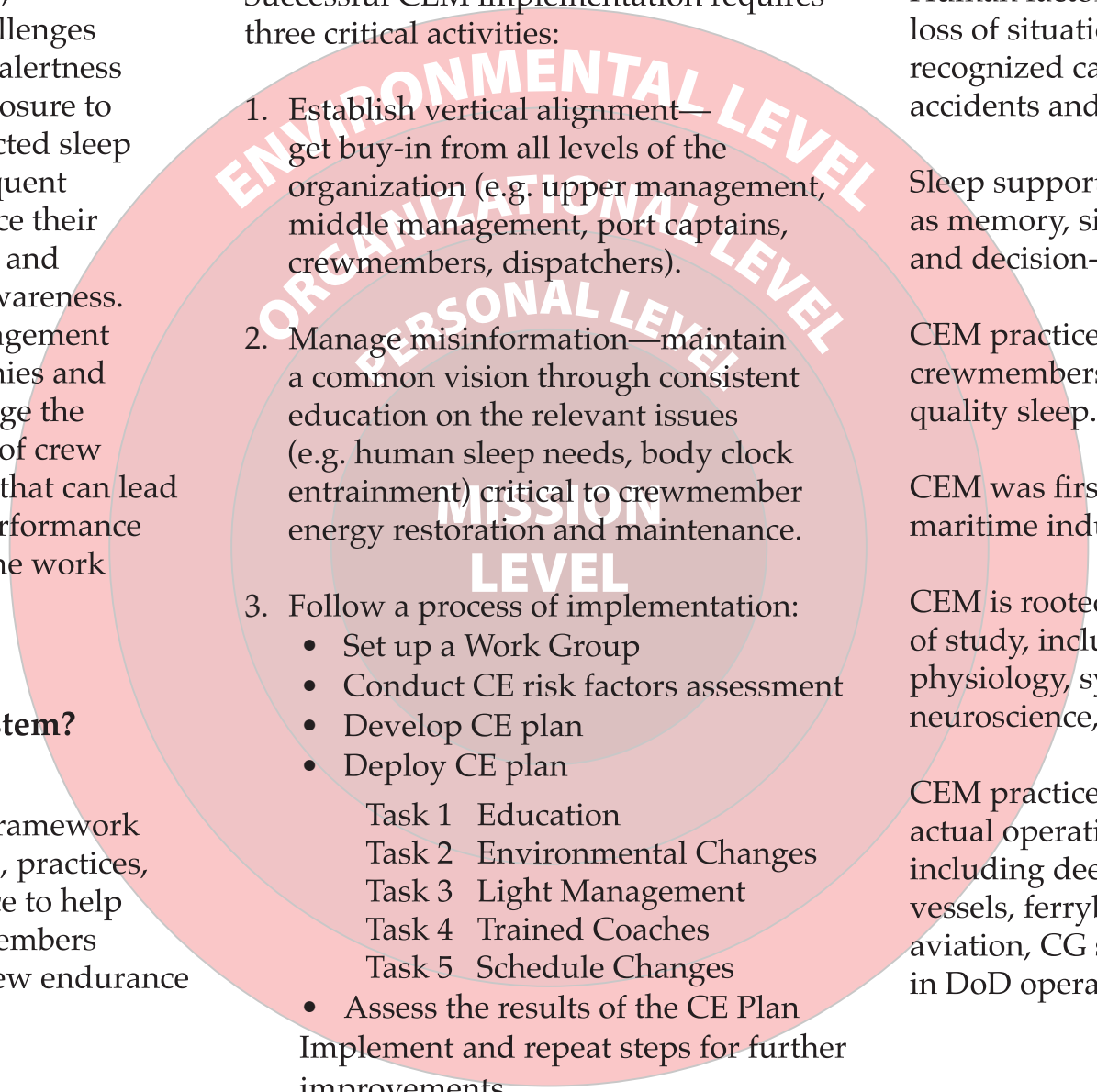
The CEM System is a framework that includes processes, practices, resources, and guidance to help companies and crewmembers identify and control crew endurance risk factors.

Getting Started

Successful CEM implementation requires three critical activities:

1. Establish vertical alignment—get buy-in from all levels of the organization (e.g. upper management, middle management, port captains, crewmembers, dispatchers).
2. Manage misinformation—maintain a common vision through consistent education on the relevant issues (e.g. human sleep needs, body clock entrainment) critical to crewmember energy restoration and maintenance.
3. Follow a process of implementation:
   - Set up a Work Group
   - Conduct CE risk factors assessment
   - Develop CE plan
   - Deploy CE plan
     - Task 1 Education
     - Task 2 Environmental Changes
     - Task 3 Light Management
     - Task 4 Trained Coaches
     - Task 5 Schedule Changes
   - Assess the results of the CE Plan

   Implement and repeat steps for further improvements.



Important Facts

Human factors, human error, and loss of situational awareness are recognized causes of transportation accidents and incidents.

Sleep supports brain functions such as memory, situational awareness, and decision-making.

CEM practices ensure that crewmembers receive sufficient quality sleep.

CEM was first introduced to the maritime industry in 1999.

CEM is rooted in various disciplines of study, including human physiology, systems science, neuroscience, and social science.

CEM practices are field-tested in actual operational environments including deep draft vessels, towing vessels, ferryboats, CG cutters, CG aviation, CG shore based units, and in DoD operations.